

**SOUTHLINE TRANSMISSION LINE PROJECT
NEPA PLAN OF DEVELOPMENT**

VOLUME I

Prepared for
Bureau of Land Management
Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005
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Submitted by
Southline Transmission, LLC
1900 North Akard Street
Dallas, Texas 75201
<http://southlinetransmissionproject.com/>

Prepared by
SWCA Environmental Consultants
3033 North Central Avenue, Suite 145
Phoenix, Arizona 85012
www.swca.com

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CONTENTS

VOLUME I

1. INTRODUCTION.....	1
1.1 INTRODUCTION	1
1.2 PROJECT OVERVIEW	1
1.3 PURPOSE OF THE PLAN OF DEVELOPMENT	2
1.4 ORGANIZATION OF THE PLAN OF DEVELOPMENT	3
1.4.1 Volume I.....	3
1.4.2 Volume II.....	5
1.5 RELATIONSHIP WITH OTHER ENVIRONMENTAL DOCUMENTS	5
1.6 FEDERAL, STATE, AND LOCAL PERMITS	5
2. ROLES AND RESPONSIBILITIES.....	11
2.1 INTRODUCTION	11
2.1.1 The Proponent.....	11
Construction Contractor(s)	11
2.1.2 Federal Agencies	12
Compliance Inspection Contractor	13
2.1.3 Communication Procedures and Notification Protocols.....	14
3. PROJECT DESCRIPTION.....	15
3.1 INTRODUCTION	15
3.2 PROPOSED FACILITIES	15
3.2.1 Transmission Structures	15
345-kV Structures – New Build Section	15
230-kV Structures – Upgrade Section	29
3.2.2 Structure Foundations	32
3.2.3 Transmission Line Hardware.....	33
Conductors.....	33
Insulators and Associated Hardware	34
Overhead Ground Wire	34
Grounding.....	34
3.2.4 Other System Facilities.....	34
Communication Systems	34
Communication Regeneration Station.....	35
Communication Regeneration Station Distribution Supply Lines	35
3.2.5 Other Electrical Hardware	35
3.2.6 Other Non-Electrical Hardware.....	36
3.2.7 Substations.....	36
3.2.8 Preliminary Access Road Information.....	37
3.3 INDUCED CURRENTS ON ADJACENT FACILITIES.....	38
3.4 LAND REQUIREMENTS AND CONSTRUCTION DISTURBANCE.....	39
3.4.1 Right-of-Way / Special-use Authorization Acquisition.....	39
3.4.2 Temporary and Permanent (Long-term) Construction Disturbance	40

4. OPERATION AND MAINTENANCE	45
4.1 INTRODUCTION	45
4.2 SYSTEM INSPECTION, MAINTENANCE, AND REPAIR	45
4.2.1 Routine Activities	45
Routine Inspection	45
Routine Maintenance	46
Routine Vegetation Management	47
Routine Right-of-Way and Access Road Maintenance	48
Routine Substation and Communication Regeneration Site Maintenance	48
4.2.2 Major Maintenance Activities	49
4.2.3 Emergency Maintenance Activities	49
5. ENVIRONMENTAL MITIGATION MEASURES	51
5.1 INTRODUCTION	51
5.2 SUMMARY OF ENVIRONMENTAL ISSUES BY ENVIRONMENTAL RESOURCE.....	51
5.2.1 Air Quality	51
5.2.2 Noise	51
5.2.3 Geology and Mineral Resources	51
5.2.4 Soil Resources	52
5.2.5 Paleontological Resources	52
5.2.6 Water Resources	52
5.2.7 Biological Resources	52
Vegetation	53
Wildlife	53
5.2.8 Cultural Resources	54
5.2.9 Visual Resources	55
5.2.10 Land Use, Including Farm and Range and Military Operations	55
Land Use	55
Farm and Range Resources	56
Military Operations	56
5.2.11 Special Designations	56
5.2.12 Wilderness Characteristics	56
5.2.13 Recreation	57
5.2.14 Socioeconomics	57
5.2.15 Environmental Justice	57
5.2.16 Public Health and Safety	58
5.2.17 Hazardous Materials and Hazardous and Solid Waste	58
5.2.18 Transportation	58
5.2.19 Intentional Acts of Destruction	58
5.3 OVERVIEW OF PROPONENT COMMITTED ENVIRONMENTAL MEASURES (BY RESOURCE)	59
5.4 OVERVIEW OF APPENDIX B	60
5.4.1 Access Road Plan	60
5.4.2 Traffic and Transportation Management Plan	60
5.4.3 Stormwater Pollution Prevention Plan	60
5.4.4 Spill Prevention, Control, and Countermeasures Plan	73
5.4.5 Historic Properties Treatment Plan	73
5.4.6 Blasting Plan	73
5.4.7 Plant and Wildlife Species Conservation Measures Plan	74

5.4.8 Erosion, Dust Control, and Air Quality Plan..... 74

5.4.9 Hazardous Materials Management Plan 75

5.4.10 Emergency Preparedness and Response Plan..... 75

5.4.11 Noxious Weed Management Plan 75

5.4.12 Fire Protection Plan 75

5.4.13 Stream, Wetland, Well, and Spring Protection Plan..... 76

5.4.14 Soil Management Plan..... 76

5.4.15 Reclamation, Vegetation, and Monitoring Plan 76

5.4.16 Health and Safety Plan 76

5.4.17 Avian Protection Plan..... 77

5.4.18 Waste Management Plan 77

5.4.19 Helicopter Flight Plan/Flight and Safety Plan 78

5.4.20 Decommissioning Plan 78

5.5 SELECTIVE MITIGATION BY MILEPOST 78

6. LITERATURE CITED 79

Appendices

APPENDIX A – CONSTRUCTION CONSIDERATIONS

- A1 Flagging, Fencing, and Signage Plan
- A2 Geotechnical Investigation
- A3 Project Construction
- A4 Special Construction Techniques
- A5 Construction Workforce
- A6 Environmental Compliance Management Plan

APPENDIX B – ENVIRONMENTAL PROTECTION / FRAMEWORK PLANS

- B1 Access Road Plan
- B2 Traffic and Transportation Management Plan
- B3 Stormwater Pollution Prevention Plan
- B4 Spill Prevention, Control, and Countermeasures Plan
- B5 Historic Properties Treatment Plan
- B6 Blasting Plan
- B7 Plant and Wildlife Species Conservation Measures Plan
- B8 Erosion, Dust Control, and Air Quality Plan
- B9 Hazardous Materials Management Plan
- B10 Emergency Preparedness and Response Plan
- B11 Noxious Weed Management Plan
- B12 Fire Protection Plan
- B13 Stream, Wetland, Well, and Spring Protection Plan
- B14 Soil Management Plan
- B15 Reclamation, Vegetation, and Monitoring Plan
- B16 Health and Safety Plan
- B17 Avian Protection Plan
- B18 Waste Management Plan
- B19 Helicopter Flight Plan/Flight and Safety Plan
- B20 Decommissioning Plan

APPENDIX C –TRANSMISSION CONSTRUCTION AND VEGETATION MANAGEMENT STANDARDS

- C1 Transmission Construction Standards
- C2 Vegetation Management Standards

Figures

Figure 1.1. Project overview 1	17
Figure 1.2. Project overview 2	18
Figure 1.3. Project overview 3	19
Figure 1.4. Project overview 4	20
Figure 1.5. Project overview 5	21
Figure 1.6. Project overview 6	22
Figure 1.7. Project overview 7	23
Figure 1.8. Project overview 8	24
Figure 1.9. Project overview 9	25
Figure 2. Typical 345-kV tangent lattice structure diagram	27
Figure 3. Typical 345-kV angle lattice structure diagram	27
Figure 4. Typical 345-kV dead-end lattice structure diagram	28
Figure 5. Typical 345-kV tangent tubular steel pole diagram.....	28
Figure 6. Typical 345-kV transposition tubular steel pole diagram.....	29
Figure 7. Typical 230-kV direct embedded tangent tubular steel pole diagram	30
Figure 8. Typical 230-kV tangent tubular steel pole diagram (foundation type).....	30
Figure 9. Typical 230-kV suspension angular tubular steel pole diagram	31
Figure 10. Typical 230-kV dead-end tubular steel pole diagram.....	31

Tables

Table 1. Applicable BLM Land Use Plans and Planning Documents.....	5
Table 2. List of Required Federal and State Permits and Approvals	6
Table 3. Typical Design Characteristics of the Proposed New Build Section 345-kV Transmission Line.....	15
Table 4. Typical Design Characteristics of the Proposed Upgrade Section 230-kV Transmission Line.....	32
Table 5. Typical Structure Foundations – Temporary and Permanent Land Requirements	33
Table 6. Project Interconnection Substations (Existing and Proposed).....	36
Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute and Segment	41
Table 8. Environmental Protection Measures by Resource.....	61

VOLUME II – PLAN OF DEVELOPMENT

Text in red indicates content to be included with Final POD (post Final EIS) - not included herein

Map Set 1 – Project and Environmental Features (1" = 2,000')

Map Set 2 – Key Mitigation Measures and Reclamation Practice (1" = 400')

Map Set 3 – Access Roads (1" = 400')

Chapter 1

INTRODUCTION

1.1 INTRODUCTION

Southline Transmission, LLC (Southline), a subsidiary of Hunt Power, L.P., submitted Standard Form (SF-) 299, “Application for Transportation and Utility Systems and Facilities on Federal Lands,” to the Bureau of Land Management (BLM) for a right-of-way (ROW) to use BLM-administered public lands for a portion of the Southline Transmission Line Project (Project) on December 4, 2009. Southline amended its application on December 22, 2010 to add an additional section to the Project. The Plan of Development (POD) has also been amended in response to Project changes and recommendations from the BLM, Western Area Power Administration (Western), other agencies, and public comment. This application has been assigned BLM Case File No. NMNM-124104.

Southline has also filed a Statement of Interest with Western’s Transmission Infrastructure Program (TIP) because it may seek to use Western’s borrowing authority under the 2009 amendment of the Hoover Power Plant Act (Public Law (PL) 98-381, Title III, § 301) (“the Hoover Act”) for the Project. Western needs to determine whether it will provide Hoover Act funding for the proposed Southline Project, and the nature and extent of its participation in the Project. Western may also participate under a trust funding agreement with the Desert Southwest Region if TIP funding is not provided. In the context of making these determinations, Western will evaluate the upgrade of its existing Saguaro–Tucson and Tucson–Apache 115-kilovolt (kV) transmission lines.

1.2 PROJECT OVERVIEW

The Project will consist of two sections. The first section will entail construction of approximately 240 miles of new double-circuit 345-kV transmission line in a new 200-foot ROW between the Afton Substation, south of Las Cruces, New Mexico, and the Apache Substation, south of Willcox, Arizona (Afton–Apache Section or New Build Section). The second section will entail the upgrade of approximately 120 miles of Western’s existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines in a 100-foot-wide existing ROW to a double-circuit 230-kV transmission line (Saguaro–Apache Section or Upgrade Section) with up to 50 feet of new ROW in places. The Upgrade Section will originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson, Arizona. Both new permanent ROW and temporary construction ROW will be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary Project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line will be 150 feet where expansion to that width is feasible.

The New Build Section (Afton–Apache) will include construction and operation of:

- 205 miles of 345-kV double-circuit electric transmission line in New Mexico and Arizona with a planned bidirectional capacity of up to 1,000 megawatts (MW). This section is defined by endpoints at the existing Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western’s existing Apache Substation, south of Willcox in Cochise County, Arizona;
- 5 miles of 345-kV single-circuit electric transmission line between the existing Afton Substation and the existing Luna–Diablo 345-kV transmission line;

- 30 miles of 345-kV double-circuit electric transmission line between New Mexico State Route 9 (NM 9) and Interstate 10 (I-10) east of Deming in Luna County, New Mexico, to provide access for potential renewable energy generation sources in southern New Mexico. This segment of the Project is included in the analysis, but development of this segment will be determined at a later date;
- one new substation in Luna County (proposed Midpoint Substation) to provide an intermediate connection point for future interconnection requests; and
- substation expansion for installation of new communications equipment at, and connection to, two existing substations in New Mexico and one in Arizona.

The Upgrade Section (Apache–Saguaro) will include:

- replacing 120 miles of Western’s existing Saguaro–Tucson and Tucson–Apache 115-kV single-circuit electric wood-pole H-frame transmission lines, which date to 1951, with a 230-kV double-circuit electric steel-pole transmission line. In locations where needed and where possible, an additional 50 feet of ROW adjacent to the existing 100-foot ROW will be obtained for the new 230-kV line. This Upgrade Section is defined by endpoints at the existing Apache Substation, south of Willcox in Cochise County, Arizona, to the existing Saguaro Substation, northwest of Tucson in Pinal County, Arizona;
- 2 miles of new build double-circuit 230-kV electric transmission line to interconnect with the existing Tucson Electric Power Company (TEP) Vail Substation, located southeast of Tucson and just north of the existing 115-kV Tucson–Apache line; and
- connections to, upgrading of, and modifications to or expansions at 12 existing substations in southeastern Arizona, including installation of new bays, transformers, breakers, switches, communications equipment, and related facilities associated with the voltage increase and compatibility with the existing substations. Depending on design and engineering considerations, at some locations substation expansions may require a separate yard.

1.3 PURPOSE OF THE PLAN OF DEVELOPMENT

This POD was developed to meet the requirements outlined in 43 Code of Federal Regulations (CFR) 2804.25(b). Under these requirements, the BLM may request information necessary to process a ROW application; this request for information may include a detailed construction, operation, rehabilitation, and environmental protection plan, i.e., a “Plan of Development,” and any needed cultural resource surveys or inventories for threatened or endangered species. On Federal lands administered by the BLM, the POD is an enforceable stipulation of the BLM ROW grant and pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. On other lands, Southline or Western will adopt the stipulations and measures in the POD, where appropriate.

This POD outlines the stipulations and mitigation measures (herein also Proponent Committed Environmental Measures (PCEMs)) identified in the Environmental Impact Statement (EIS) that must be followed during construction, operation, and maintenance of the Project, for which the BLM and Western are the joint lead federal agencies. The POD also is intended to be used Project-wide as (1) a summary of Project environmental requirements and protection measures, and (2) a description of the processes and procedures that will be used to ensure compliance with the requirements of the BLM, Western, and other Federal, State, and/or local agencies, as appropriate.

While neither BLM nor Western has the authority to enforce the POD and its PCEMs on State or private lands, BLM expects that most landowners would want the same protections afforded resources on BLM

administered lands to be extended to their properties as well. Therefore, BLM anticipates that the PCEMs and other specific stipulations and methods identified in the POD will largely be implemented over the entire length of the Project, regardless of jurisdiction. Since Southline and Western will have to obtain ROW leases from other Federal and State agencies, and many different private landowners, it is not possible at this time to identify the specific provisions applicable to these leases. Most of the PCEMs are based in laws, regulations, permit requirements, BMPs, and standard construction practices, and would be implemented on non-BLM lands, although inspections, monitoring, and reporting would likely be handled through different processes and procedures.

The agencies recognize that the POD is a living document and as such provisions therein may be modified, augmented, or deleted as appropriate. For non-BLM administered lands Western will likely be the lead Federal agency overseeing implementation of and compliance with the suite of PCEMs and other environmental protections identified in the EIS and supporting documents. State and private landowners may add additional requirements to those identified in the EIS and POD, or opt out of certain measures, as negotiated by Southline and/or Western with each landowner during ROW acquisition. Certain parts of the POD will not be applicable to or appropriate for non-BLM administered lands; examples include BLM reporting requirements, stipulations specific to the BLM's ROW grant, or the BLM variance process. BLM's environmental inspection and verification process is also quite different from Western's, and Western's process would be followed on State and private lands. Regardless of which agency is the lead, or the differences in the process followed, the environmental protections identified and committed to in the EIS will be implemented (with the possible exception of the landowner required additions or deletions mentioned above). On BLM administered land, all stipulations and PCEMs identified as applicable in any of the POD volumes should be adhered to for the life of the BLM ROW grant.

The BLM Las Cruces District Office and the Safford and Tucson field offices have required ROW grant holders to contract with an independent entity (i.e., a compliance inspection contractor (CIC)), who will conduct environmental compliance inspections during the construction phase of the Project. The objective is to monitor for compliance with environmental stipulations designed to protect the environment and prevent impacts from exceeding those described in the EIS or other permit approvals. The CIC will monitor and oversee implementation of the POD on all BLM-administered lands, as described in Appendix A6 – Environmental Compliance Management Plan of this POD.

1.4 ORGANIZATION OF THE PLAN OF DEVELOPMENT

The POD is organized into two major volumes. Volume I contains chapters 1 through 6 and the appendices. Volume II includes engineering, mitigation, and environmental mapping, which support information presented in Volume I. Following is an overview of the information contained in these two volumes.

1.4.1 Volume I

Volume I of the POD is intended to provide the reader with a general overview of the Project and key elements of the POD (chapters 1–6) and detailed information regarding the required PCEMs, protocols, and procedures for the construction, operation, and maintenance of the transmission line and ancillary facilities (appendices). While chapters 1 through 6 provide general information, the appendices (along with the mapping materials in Volume II) are more detailed and have been designed to serve as stand-alone documents that may be readily updated and refined. Following is an outline summary of the information and materials presented in chapters 1 through 6 and the appendices of this POD.

Chapters 1 through 6 include the following information:

Chapter 1 – Introduction – Introduces the Project, discusses the purpose and organization of the POD; explains the POD’s relationship to other documents; and lists required authorizations, permits, and approvals required for construction.

Chapter 2 – Roles and Responsibilities – Explains the roles and responsibilities of the Project team, and discusses Project communications and notification procedures.

Chapter 3 – Project Description – Describes the Project components/facilities (structures, foundations, conductors, access roads, substations, etc.), land requirements, construction disturbance, ROWs, and the Project’s relationship with other related ROWs and utilities.

Chapter 4 – Operation and Maintenance – Provides information related to the operation and maintenance of the Project’s transmission line(s) once construction is complete, including public and environmental protection and vegetation management.

Chapter 5 – Environmental Mitigation Measures – Includes a brief overview and introduction of the key environmental concerns associated with the construction of the Project and relevant mitigation measures/PCEMs to be applied in order to avoid or minimize potential effects.

Chapter 6 – Literature Cited – Provides the references and literature cited in preparing the POD.

There are four appendices (A through D), organized as presented below:

Appendix A – Construction Considerations – This appendix provides detailed information about the specifics of construction, including the following:

- A1 Flagging, Fencing, and Signage Plan
- A2 Geotechnical Investigation
- A3 Project Construction
- A4 Special Construction Techniques
- A5 Construction Workforce
- A6 Environmental Compliance Management Plan

Appendix B – Environmental Protection / Framework Plans – This appendix includes the following:

- B1 Access Road Plan
- B2 Traffic and Transportation Management Plan
- B3 Stormwater Pollution Prevention Plan
- B4 Spill Prevention, Control, and Countermeasures Plan
- B5 Historic Properties Treatment Plan
- B6 Blasting Plan
- B7 Plant and Wildlife Species Conservation Measures Plan
- B8 Erosion, Dust Control, and Air Quality Plan
- B9 Hazardous Materials Management Plan (HMMP)
- B10 Emergency Preparedness and Response Plan
- B11 Noxious Weed Management Plan
- B12 Fire Protection Plan
- B13 Stream, Wetland, Well, and Spring Protection Plan
- B14 Soil Management Plan
- B15 Reclamation, Vegetation, and Monitoring Plan
- B16 Health and Safety Plan (HASP)
- B17 Avian Protection Plan (APP)

B18 Waste Management Plan
 B19 Helicopter Flight Plan/Flight and Safety Plan
 B20 Decommissioning Plan

Appendix C – Transmission Construction and Vegetation Management Standards – This appendix includes the following:

C1 Transmission Construction Standards
 C2 Vegetation Management Standards

1.4.2 Volume II

Three sets of maps form Volume II of the Final POD. These maps contain regional to detailed information, including site-specific instructions to guide the construction of the transmission line and associated facilities as described below. *Files to be included with Final POD (post Final EIS) – not included herein.*

1.5 RELATIONSHIP WITH OTHER ENVIRONMENTAL DOCUMENTS

This POD includes measures for avoidance, minimization, and mitigation of environmental impacts resulting from the implementation of this Project as identified in the EIS (called PCEMs) and approved in the BLM Record of Decision (ROD). This POD incorporates the various regulatory approvals, permits, and other authorizations that contain environmental requirements, including those measures stipulated in Resource Management Plans (RMPs) for the BLM Las Cruces District Office and the Safford and Tucson field offices. The relevant approved and proposed management plans (and plan amendments) are presented in table 1.

Table 1. Applicable BLM Land Use Plans and Planning Documents

Resource Management Plan	Plan Date	Lead Office	Project Applicability
Mimbres Resource Area*	December 1993	Las Cruces District Office	Afton–Apache
Safford District RMP	August 1991	Safford District Office	Apache–Saguaro
Las Cienegas RMP	July 2003	Tucson Field Office	Apache–Saguaro
Phoenix RMP	December 1988	Phoenix District Office, Tucson Field Office, Safford Field Office	Apache–Saguaro
Restoration Design Energy Project	January 2013	Arizona State Office	Arizona
Solar Programmatic EIS (PEIS)	October 2012	BLM Department of the Interior (DOI)	Arizona, New Mexico
West-wide Energy Corridor PEIS	November 2008	BLM DOI	Arizona, New Mexico

* The TriCounty RMP is in progress. When approved, the TriCounty RMP would amend the portion of the 1993 Mimbres RMP (BLM 1993) that covers Doña Ana County.

1.6 FEDERAL, STATE, AND LOCAL PERMITS

Table 2 provides a listing of the laws, regulations, and guidelines that are related to energy generation and development of transmission infrastructure and the associated permits and approvals.

Table 2. List of Required Federal and State Permits and Approvals

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Federal			
BLM	ROW grant, land use plan amendment	Request for ROW across BLM lands	43 United States Code (U.S.C.) 1761–1771
BLM	Permit for archaeological investigations	Federal undertaking with the potential to affect historic properties	Archaeological Resources Protection Act (ARPA), Antiquities Act of 1906, Federal Land Policy and Management Act (FLPMA)
BLM	Permit for collection of paleontological resources	Potential for disturbance of paleontological resources and need for collection	Paleontological Resources Preservation Act, FLPMA
BLM <i>In consultation with Western, State Historic Preservation Offices (SHPOs), Advisory Council on Historic Preservation, tribes, other Federal, State, and local agencies and consulting parties</i>	Compliance with Section 106 of the National Historic Preservation Act (NHPA)	Potential to disturb historic properties	NHPA (16 U.S.C. 470); 36 CFR 800
Western	Determine whether Southline can upgrade Western’s lines and use existing transmission easements as part of the Project; determine feasibility and impacts of Project; and determine the nature of Western’s participation in the Project	Proposal to upgrade a segment of Western’s transmission system and have Western obtain updated and new transmission line easements, and to use Western funding	Hoover Power Plant Act 98-381, as amended Reclamation Law, including but not limited to the Reclamation Act of 1902, 43 U.S.C. 391, Hayden O’Mahoney Amendment, 43 U.S.C. 391a-1 and 392a; the Reclamation Project Act of 1939, Section (c) 43 U.S.C. 485h(c); Flood Control Act of 1944, Section 5, 16 U.S.C. 825s; Department of Energy Organization Act, 42 U.S.C. 7152a; Energy Policy Act of 1992, 16 U.S.C. 796, 824j, 824k, and 824l; Energy Policy Act of 2005 Contributed Funds Act, 43 U.S.C. 395; Antideficiency Act, 31 U.S.C. 1341; and associated regulations, orders, and policies

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Federal, cont'd.			
Bureau of Reclamation	Easement or ROW use authorization	Substation expansion	The Reclamation Act of June 17, 1902, 32 Stat. 388, 43 U.S.C. 371, et seq., specifically 32 Stat. 389, 43 U.S.C. 421 and the Flood Control Act of 1944, 58 Stat. 887, 890, 16 U.S.C. 825s, as amended and supplemented by subsequent acts or enactments; the Reclamation Project Act of 1939, 53 Stat. 1187, 43 U.S.C. 485; the Rivers and Harbors Act of August 30, 1935, 49 Stat. 1028, 1039, 33 U.S.C. 540; the Act of May 28, 1954, Ch. 12, 68 Stat. 143, and other acts specifically applicable to this project; the Act of August 1, 1888, 25 Stat. 357, 40 U.S.C. 257, repealed and reenacted as 40 U.S.C. 3113; the Act of February 26, 1931, 46 Stat. 1421, 40 U.S.C. 3114; the Department of Energy Organization Act of August 4, 1977, 91 Stat. 565, 42 U.S.C. 7101, specifically 91 Stat. 578, 42 U.S.C. 7152; and the Omnibus Appropriations Bill of FY 2009, PL 111-8
Bureau of Indian Affairs	ROW Easement	Upgrade of existing Western line across tribal land	25 CFR 169
U.S. Forest Service	Special use permit (SUP)	Upgrade of existing Western line across Coronado National Forest	36 CFR 212.51(a)(8)
U.S. Forest Service – Coronado National Forest	SUP	Potential for disturbance of cultural resources on the Coronado National Forest	ARPA, FLPMA
U.S. Army Corps of Engineers	Section 404 permit	Impacts to jurisdictional waters of the U.S.	Clean Water Act, 33 U.S.C. 1251, et seq.
U.S. Fish and Wildlife Service	Biological opinion, concurrence, or incidental take permit	Potential impact to threatened or endangered species	Endangered Species Act, 16 U.S.C. 1531–1544
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System (New Mexico)	Stormwater management from potential discharges greater than 5 acres	40 CFR 122.26
Department of Defense (DOD)	Easement or ROW use authorization	Construction, operation, and decommissioning of transmission line across DOD-administered land	10 U.S.C. 2668
Federal Aviation Administration (FAA)	A “No-hazard Declaration” required if structure is more than 200 feet high	Location of structure relative to airports and airspace if structure is more than 200 feet high	FAA Act of 1958, 14 CFR 77

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
New Mexico			
New Mexico Public Regulation Commission	Application for approval of location of transmission line and certificate of public convenience and need	Construction of a transmission line greater than 230 kV	New Mexico Statutes Annotated (NMSA) 62-9-3; 17.9.592 New Mexico Administrative Code (NMAC), and NMSA 62-9-1; 17.1.2.9 NMAC
New Mexico Department of Transportation (DOT)	Access or public highway utility accommodation permit	Upgrading access roads, use of public highway to transport oversize loads, or installation of transmission lines within DOT ROW	18.31.6 NMAC, and 17.4.2 NMAC
New Mexico State Land Office	ROW or easement permit	Construction, operation of a transmission line on State lands	NMSA 19-7-57
New Mexico SHPO		Federal undertaking with the potential to affect historic properties	NHPA, Section 106 (36 CFR 800)
New Mexico State Historic Preservation Division	Permit for archaeological investigations	Potential for disturbance of cultural resources on State land	NMSA 18-6
New Mexico Department of Energy, Minerals, and Natural Resources Forestry Division	Collection permit	Displacement or removal of any State endangered plant species	NMSA 75-6-1; 19.21.2 NMAC
Arizona			
Arizona Corporation Commission	Certificate of Environmental Compatibility	Construction of a transmission line greater than 115 kV	Title 40 Arizona Revised Statutes (ARS) Chapter 2, Article 6.2 (40-360–40-360.13)
Arizona State Land Department	ROW/right-of-entry permit	Survey, construction, operation of a transmission line on State lands	ARS 37-461
Arizona DOT	Crossing or encroachment permit, permit for use of highway ROW	Construction, operation, abandonment of transmission lines within State highway ROW	ARS 28-7053, Arizona Administrative Code R17-3-501–509
Arizona SHPO		Federal undertaking with the potential to affect historic properties	NHPA, Section 106 (36 CFR 800)
Arizona State Museum (ASM)	Arizona Antiquities Act (AAA) blanket permit or Project-specific permit	Potential for disturbance of cultural resources on State land	AAA ARS 41-841 through 41-847
ASM	Permission to disturb human remains	Potential for disturbance of human or funerary objects remains on State or private land	AAA ARS 41-844 and ARS 41-865
ASM	AAA blanket permit	Potential for disturbance of paleontological resources on State land	AAA ARS 41-841

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Arizona, cont'd.			
Arizona Department of Environmental Quality	Arizona Pollutant Discharge Elimination System	Stormwater management from potential discharges greater than 5 acres	ARS 49-255.01
Tohono O’odham Nation	Permit to conduct archaeological work	Potential for disturbance of cultural resources on Tohono O’odham Nation land	Title 8, Chapter 1, “Archaeological Resources Protection” (Ordinance No. 06-84) of the Tohono O’odham Nation Tribal Code
Arizona Department of Agriculture	Application for Arizona native plant and wood removal	Displacement or removal of any listed native plant species	Native Plant Law, ARS Title 3 (Chapter 7)
Local*			
Development Services, Public Works, DOT	ROW use permit, encroachment permit	Potential encroachment onto County/City ROW	Varies; County/local ordinance or municipal code
Planning and Zoning, Community Development	Special use, conditional use permits	Change zoning or land use to allow construction of the transmission line and associated facilities	Varies; County/local ordinance or municipal code
Floodplain Departments	Floodplain use permit	Construction of project facilities in flood-prone areas as defined by Federal Emergency Management Agency	Varies; County ordinance
Public Works Department	Grading/excavation/building permit	Construction	Varies; County/local ordinance or municipal code
Department of Environmental Quality, Air Quality Districts	Fugitive dust control permits	Construction	Varies; County ordinance

Note: This list is not exhaustive.

* Local permits are only examples of permits that may be required by various local agencies (County/City).

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Chapter 2

ROLES AND RESPONSIBILITIES

2.1 INTRODUCTION

The various parties involved with the construction, operation, and maintenance of the Project include the Proponent (Southline), BLM, Western, BLM's third-party CIC, all of Southline's construction contractor(s), various environmental resource specialists/monitors, and transmission line operation and maintenance personnel. Other subcontractors may be engaged, as needed. As noted in section 1.3 of this POD, the POD is an enforceable stipulation of the BLM ROW grant for the portions of the Project on Federal lands administered by BLM. Where Western is involved in the Project, they may adopt the stipulations and measures in the POD, where appropriate.

2.1.1 The Proponent

Southline is responsible for requirements of the administration of the ROW and coordination between the Project engineer and construction contractor(s) on BLM-managed lands. Southline and their construction contractors will be responsible for the construction of the transmission line(s) and ancillary facilities in a manner that complies with the conditions outlined in the BLM ROW grant, and other required permits listed in table 2; Southline will be responsible for facility operation and maintenance. Western is responsible for administering the ROW where they are involved in the Project, which at a minimum includes the Upgrade Section of the project. Western and their construction contractor will be responsible for the construction, operation, and maintenance of the Upgrade Section of the transmission line(s) and ancillary facilities in a manner that complies with the conditions outlined in Western's construction contract.

Southline will be the ultimate authority for their contractors, and as the holder of the BLM ROW grant Southline will ultimately be responsible for all activities on BLM managed lands.. However, for the execution purposes of this document, it will refer specifically to the construction contractor(s) when needed to define their activities.

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 (e.g., biological, cultural, and paleontological resources, and dust (where applicable)). On BLM-managed lands these environmental inspectors will work jointly and cooperatively with the CIC (see Section 2.1.2.1 – Compliance Inspection Contractor and Appendix A6 – Environmental Compliance Management Plan). Each of Southline's environmental inspectors will provide copies of their daily reports to the CIC as described in Appendix A6 – Environmental Compliance Management Plan.

Construction Contractor(s)

The construction contractor(s) will be responsible for the construction, testing, and reclamation of the Project. The construction contractor(s) will be retained by Southline to construct the transmission line(s) and ancillary facilities, including construction of new or improved roads, a communication system, and temporary work areas associated with construction activities. The construction contractor(s) will also be responsible for addressing reclamation activities, as well as addressing all environmental protection stipulations.

The construction workforce may include, but is not limited to, the following:

- general contractor, specializing in transmission line construction
- substation construction contractor
- survey crews
- tree clearing crews
- road construction crews
- foundation and anchor installation crews
- structure steel haul crews
- structure assembly and erection crews
- wire installation crews
- cleanup crews
- restoration contractor/crews
- quality assurance inspectors
- drilling and blasting contractor
- restoration/reseeding subcontractor

The construction contractor's construction manager will be responsible for enforcing the contract requirements which are to include permit requirements and stipulations and PCEMs in this POD. The construction contractor(s), and their sub-contractors, will be contractually bound to comply with all laws, regulations, and permit requirements, including the stipulations and PCEMs set forth in this POD. The selected construction contractor(s) will attend preconstruction and regularly scheduled Project meetings with the BLM, Western, other agencies as appropriate, the CIC, and Southline following the award of the construction contract.

2.1.2 Federal Agencies

There are 104.4 miles of transmission line route that cross Federal land, including lands administered by the BLM (100.4 miles), the U.S. Forest Service (Forest Service) (0.5 mile), the Department of Defense (DOD) (0.2 mile), the Bureau of Reclamation (Reclamation) (0.4 mile), and the Bureau of Indian Affairs (BIA) (2.9 miles). Each agency has designated an officer who will provide oversight for the Project on the ROW they administer. The authorized officers for the BLM are the Las Cruces District Manager and the New Mexico State Director. Each of the authorized officers may designate certain responsibilities to their appropriate personnel, such as BLM project managers and resource specialists.

The Administrator and CEO for Western is Mark A. Gabriel, who is ultimately responsible for Western's participation in the Project. Western's designated Project Manager will provide oversight and direction for the Project as it moves from the environmental planning phase into the design and construction phase.

Each authorized officer/designated project manager will be responsible for administering and enforcing the right-of-way grant and permit provisions for their respective agencies. Each authorized officer/designated project manager will also ensure stipulations and PCEMs committed to in the EIS and included in this POD are adhered to during Project construction, operation, and maintenance, where appropriate. The authorized officer/designated project manager will also be responsible for reviewing stop-and-resume-work orders, as applicable, and resolving any conflicts that arise relating to the Project

on the lands they administer. Compliance will be managed by the appropriate designees of the authorized officer/designated project manager and resource specialists as needed, for their respective lands; on BLM-managed lands this will occur in conjunction with the CIC. The process by which the BLM, Western, and Southline's construction contractor(s) conduct environmental monitoring, compliance, and reporting activities on BLM managed lands is outlined in Appendix A6.

Compliance Inspection Contractor

The CIC will represent the BLM during the construction and reclamation phases of the Project on BLM-administered lands to ensure (1) compliance with the BLM ROW grant and (2) that environmental impacts associated with Project do not exceed estimates disclosed in the EIS and approved by the BLM in its ROD. The CIC may also coordinate with Western, if requested, on those portions of the Project where Western is involved in the Project.

The CIC shall work under the direct supervision and control of the BLM during the construction and reclamation phases of the Project on BLM-managed administered lands. The CIC shall not take any direction with respect to the manner of conducting monitoring from Southline or its construction contractor(s). The CIC's primary role is to observe work activities; verify, document, and monitor compliance; and bring noncompliant situations to the attention of the appropriate party and offer recommendations on how to prevent non-compliance prior to commencement of work.

The responsibilities of the CIC are outlined in detail in Appendix A6 – Environmental Compliance Management Plan.

However, the CIC and Southline's Project Manager shall work together to support the Project's timely and effective construction. All efforts shall be made to coordinate closely with Southline's Project Manager and its construction contractor(s) to report and document noncompliance concerns not otherwise identified by these parties, giving Southline's Project Manager, construction contractor(s), and CIC the opportunity to resolve the concerns. Through this collaboration, every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not otherwise, at any time or way, authorized to direct work undertaken by the construction contractor(s), with the exception of stop work orders. The role of the CIC is not to direct the work of either Southline or the construction contractor(s).

Prior to construction, the CIC will develop a Project Compliance Plan, to be reviewed by the BLM and Western. This plan will describe how the Project Proponent will uphold, document, and manage environmental compliance with the terms specified in the ROW grant, the POD, landowner agreements, and all Federal, State, and local permits. The Project Compliance Plan will include, but is not limited to, the following elements:

- the roles and responsibilities of participants necessary to facilitate environmental compliance with the terms and conditions of the ROW grant and the POD in the field during construction
- a comprehensive inspection and monitoring program
- corrective procedures in the event of non-compliance
- a standard protocol for variance requests
- a communication plan describing primary channels of routine communication between parties for Project updates and compliance-related issues
- a reporting process that includes forms and reports to be completed on a regular basis during the course of construction
- a comprehensive Project-specific environmental compliance training program that may include sections prepared by specific resource specialists

The CIC will report directly to the BLM, who will coordinate with Western or cooperating agencies, where appropriate. The duties of the CIC in support of the Project will include:

- preparation of a Project Compliance Plan
- coordination of Notice-to-Proceed meeting(s)
- preparation and maintenance of a Key Contacts List
- periodic meetings with the BLM authorized officer and resource specialists
- daily field inspection of the Project area
- coordination with Southline's Environmental Compliance Manager and environmental inspectors (see Appendix A6 – Environmental Compliance Management Plan)
- completion of a daily compliance inspection report and submittal of a weekly summary
- completion of reports with applicable photographs to the BLM and Proponent
- attendance at weekly construction meetings
- review of variance requests
- completion of an End of Construction Project Report

The Project has the potential to affect sensitive resources; thus, required stipulations and PCEMs have been developed to minimize potential impacts to these resources. These stipulations and PCEMs are specified in the POD. The proactive implementation of these terms and requirements will facilitate timely and efficient construction of the Project while protecting sensitive resources. The CIC shall be completely knowledgeable of the POD, its associated plans, and all environmental requirements on BLM-managed land.

2.1.3 Communication Procedures and Notification Protocols

Effective communication between the parties mentioned above is a critical component to the success of the Project. Communication protocols related to environmental compliance monitoring, reporting requirements, and Project variance requests are described further in Appendix A6 – Environmental Compliance Management Plan. Additional details regarding emergency agency notification (e.g., in case of wildfire, unanticipated discoveries of cultural resources, hazardous material spill, etc.) are presented in the various plans included as appendices to the POD. The selected construction contractor(s) will attend preconstruction conferences and regularly scheduled meetings with the BLM, Western as appropriate, and Proponent following award of the construction contract.

The CIC will develop a Project contact directory that will be updated by all parties, as needed, to provide a convenient reference during the construction phase of the Project. This contact list will include the name, agency, office phone number, cell phone number, and email address of those individuals working on the Project; this list will be updated as required.

The construction contractor will be responsible for maintaining a list of all emergency notification contacts and numbers (local law and fire officials, hospitals, etc.) for events such as wildfires, hazardous material spills, accidents, etc. Southline will be responsible for notifying private landowners of upcoming construction activities, where appropriate. After construction, Southline will be responsible for maintaining the key contacts list and for all notifications required during the operation and maintenance of the Project.

Chapter 3

PROJECT DESCRIPTION

3.1 INTRODUCTION

This section describes the Project and associated facilities, including transmission line, substation, and ancillary facilities. Specifically, this section includes descriptions of the transmission route and facility design, including tower and pole structures, foundations, hardware, communication facilities, other electrical and non-electrical hardware, substation equipment, and access roads. Also included in this section is information regarding induced currents on adjacent facilities, land requirements, and construction disturbance.

Southline proposes to construct a high-voltage electric transmission line and associated facilities in southern New Mexico and southern Arizona (see figures 1.1 through 1.9). The Project, as described in this document, is based on the Selected Alternative, which is the Agency Preferred Alternative in the Final EIS. The route will cross private, State, and public lands, including lands managed by the BLM (New Build and Upgrade sections), DOD (New Build Section only), Forest Service (Upgrade Section only), Reclamation (Upgrade Section only), New Mexico and Arizona State lands, (New Build and Upgrade sections), Arizona Game and Fish Department (AGFD) lands (New Build only), and the Tohono O’odham Nation (Upgrade Section only).

3.2 PROPOSED FACILITIES

This section describes the typical characteristics of the Project facilities, including the New Build Section 345-kV double-circuit transmission line, the Upgrade Section 230-kV double-circuit transmission line, and associated facilities, substation improvements, and ancillary facilities (e.g., access roads).

3.2.1 Transmission Structures

345-kV Structures – New Build Section

Two types of steel structures could be potentially used for the 345-kV transmission line. These include self-supporting lattice and monopole tubular structures, as shown in table 3 and figures 2 through 6.

Table 3. Typical Design Characteristics of the Proposed New Build Section 345-kV Transmission Line

Feature	Proposed (Description)	Option (Description)
General Description		
Structure type	Self-supporting steel lattice structures (see figures 2–4)	Tubular steel poles (see figures 5 and 6)
Structure height	110–170 feet	90–150 feet
Span length	1,000–1,400 feet	800–1,100 feet
Number of structures per mile*	4–5	4–6
ROW width [†]	200 feet	

Table 3. Typical Design Characteristics of the Proposed New Build Section 345-kV Transmission Line (Continued)

Feature	Proposed (Description)	Option (Description)
Electrical Properties		
Normal voltage	345,000 volts (345 kV)	
Capacity	1,000 MW (initial) 2,000 MW (ultimate)	
Circuit configuration	Double-circuit	
Conductor size [†]	792–1,272 kcmil ACSR (two subconductors per phase)	
Shield wire size [‡]	7/16-inch extra-high-strength steel wire	
Ground clearance of conductor [§]	30 feet	

Notes: ACSR = aluminum conductor steel reinforced; kcmil = a thousand circular mils (a unit used to express large conductor sizes).

* Variable, depending on structure type and terrain.

[†] During design, a wider temporary and/or permanent ROW may be needed only in specific locations to accommodate rough terrain or long spans.

[‡] Shield wire size: one shield wire position to be occupied by optical ground wire about 0.5 inch in diameter with 48 optical fibers.

[§] Design minimum at temperature of 100 degrees Celsius.

The use of either a lattice structure or tubular steel structure will be primarily based on site-specific engineering design needs, as well as economic and visual considerations, or delivery timing.

The lattice structures will be constructed of galvanized steel with a height ranging from 110 to 170 feet and a width at the base of approximately 25 feet. The exact height of the structure will be determined by topography and design requirements for conductor clearance. The distance between each structure will depend on site-specific characteristics but will generally be an average of 1,200 feet (or approximately 4 to 5 structures per mile). Spacing between structures will be designed to allow for the longest spans practical for this type of construction. Each lattice structure will have four legs, each set on concrete foundations placed in the ground. Foundations will be up to approximately 4 feet in diameter each, and will be from approximately 18 to 50 feet deep. Foundations will be designed for each structure site consistent with geotechnical conditions. See discussion below for temporary and permanent disturbance estimates for structure foundations.

To accommodate the 345-kV line, the tubular steel poles are expected to be constructed of galvanized or self-weathering steel and will range in height from 90 to 150 feet. The exact height of the structure will be determined by topography and design requirements for conductor clearance. The tubular steel poles will have an approximate diameter at the structure base of 7 to 8 feet and will range from approximately 18 feet deep up to 50 feet deep, depending on the structure type and geological conditions. Foundation depths will be consistent with geotechnical conditions at each structure site. The distance between each structure will depend on site-specific characteristics but is expected to be an average of approximately 900 feet (or approximately 5 to 6 structures per mile). Spacing between structures will be designed to allow for the longest spans practical for this type of construction. Tubular steel poles will be set on a concrete foundation placed in the ground. See discussion below for temporary and permanent disturbance estimates for structure foundations.

Structure selection and individual structure placement will be determined during the final design phase of the Project. The height and spacing of each structure will also be determined during the final design phase of the plan and profile drawings, will be based on detailed engineering, and will depend on the type of terrain. Aerial marker spheres or aircraft warning lighting may be required in certain locations in accordance with Federal Aviation Administration (FAA) requirements. Structure height and proximity to airports are the main factors in determining whether FAA regulations will apply.

Figure 1.1. Project overview 1.

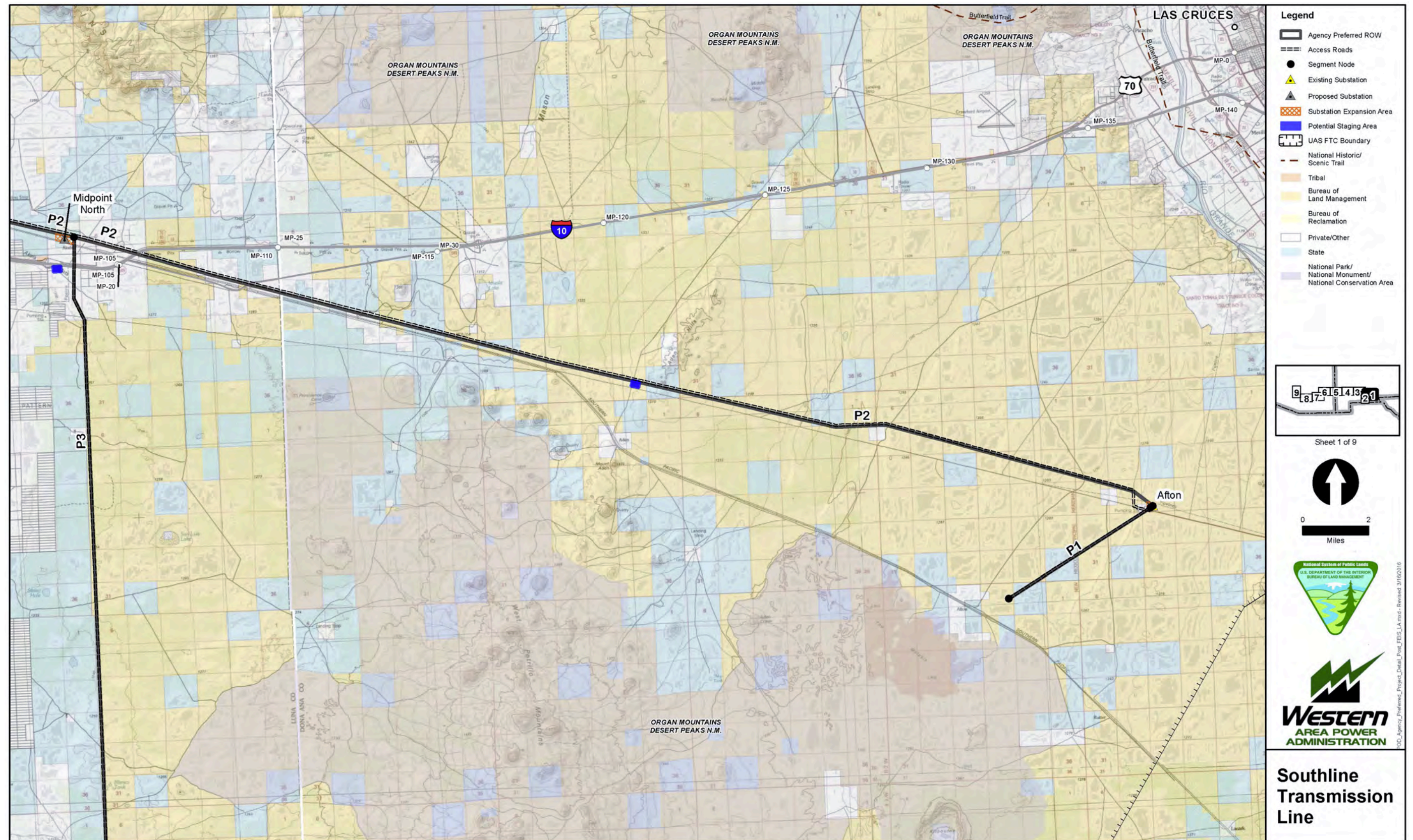


Figure 1.2. Project overview 2.

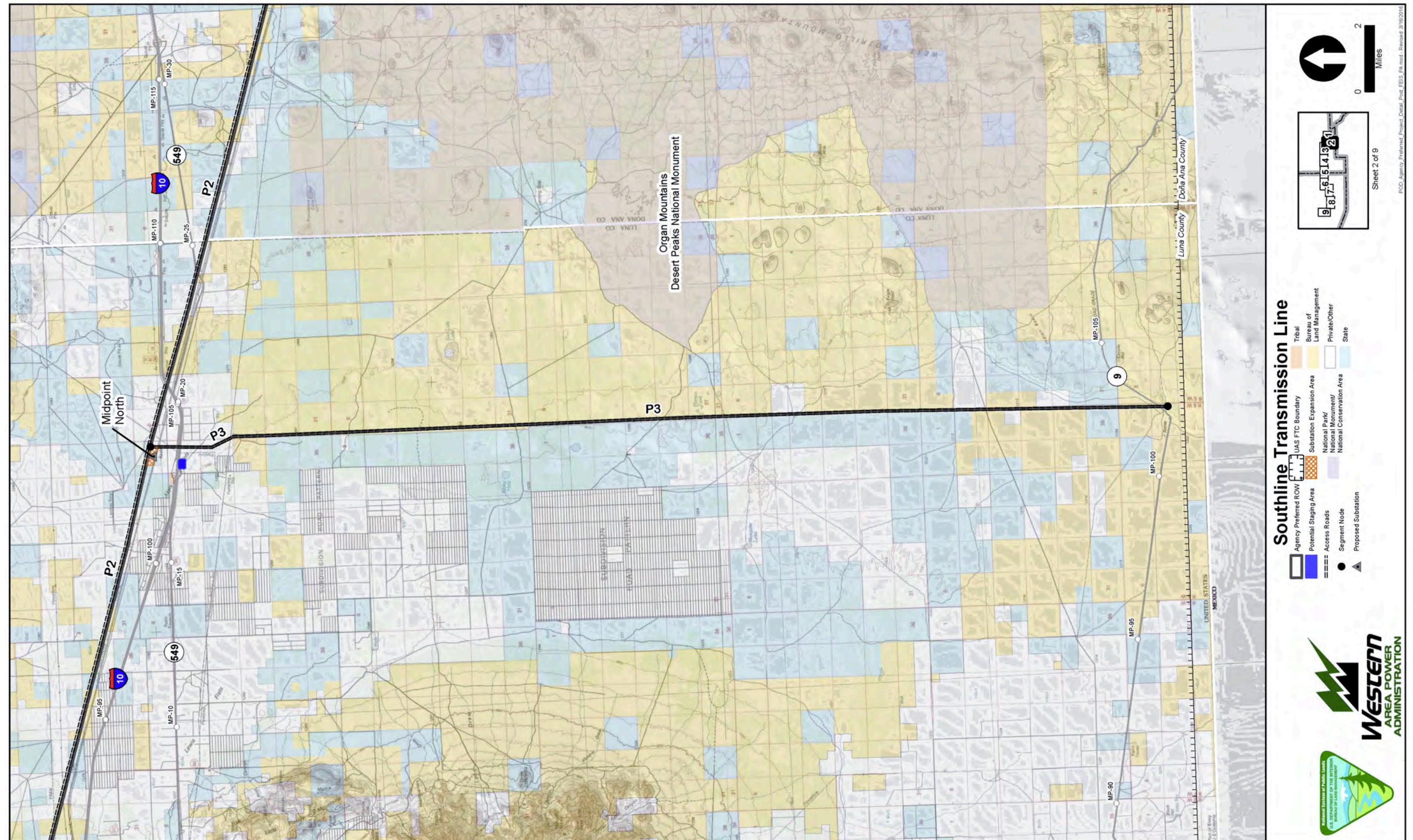


Figure 1.3. Project overview 3.

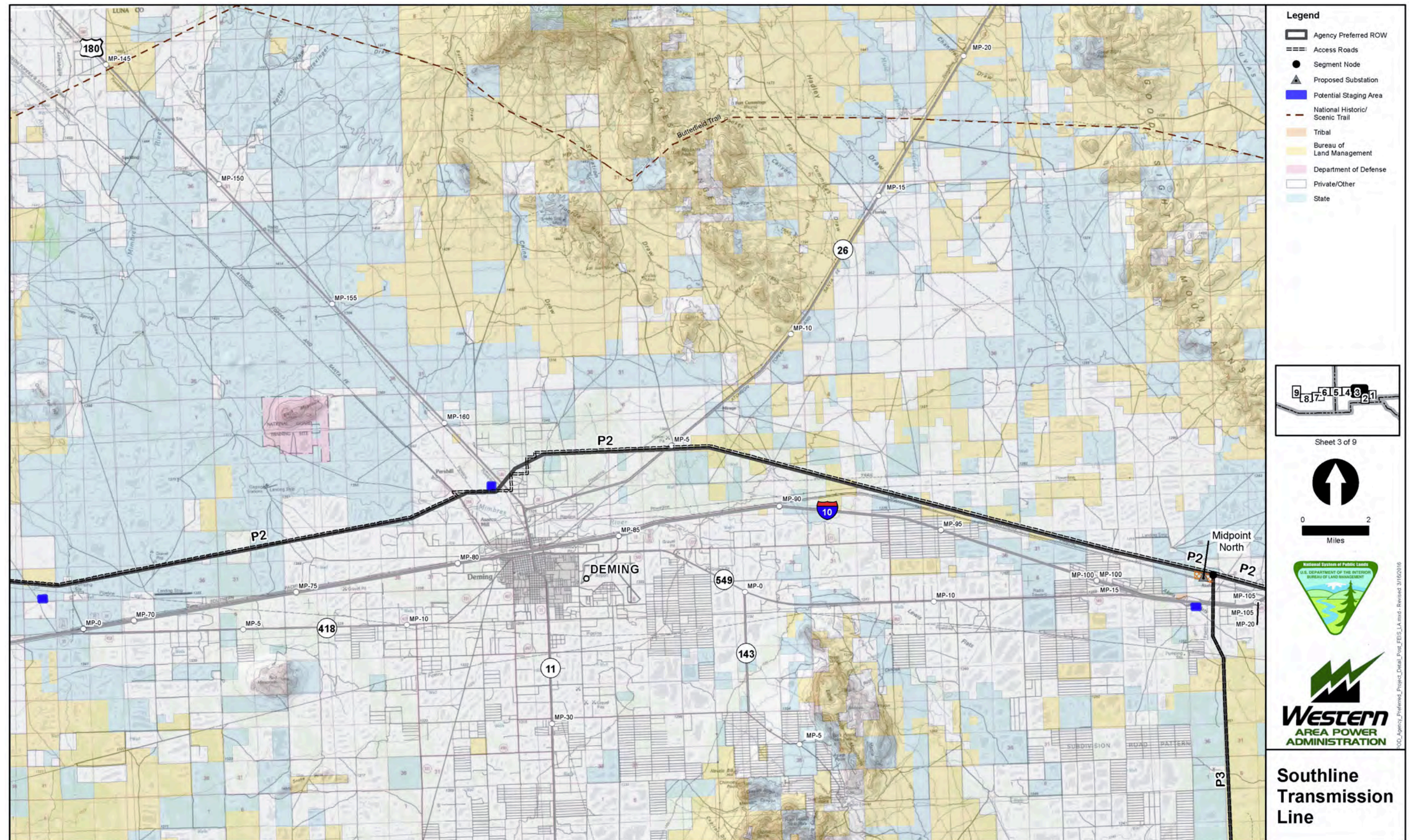


Figure 1.4. Project overview 4.

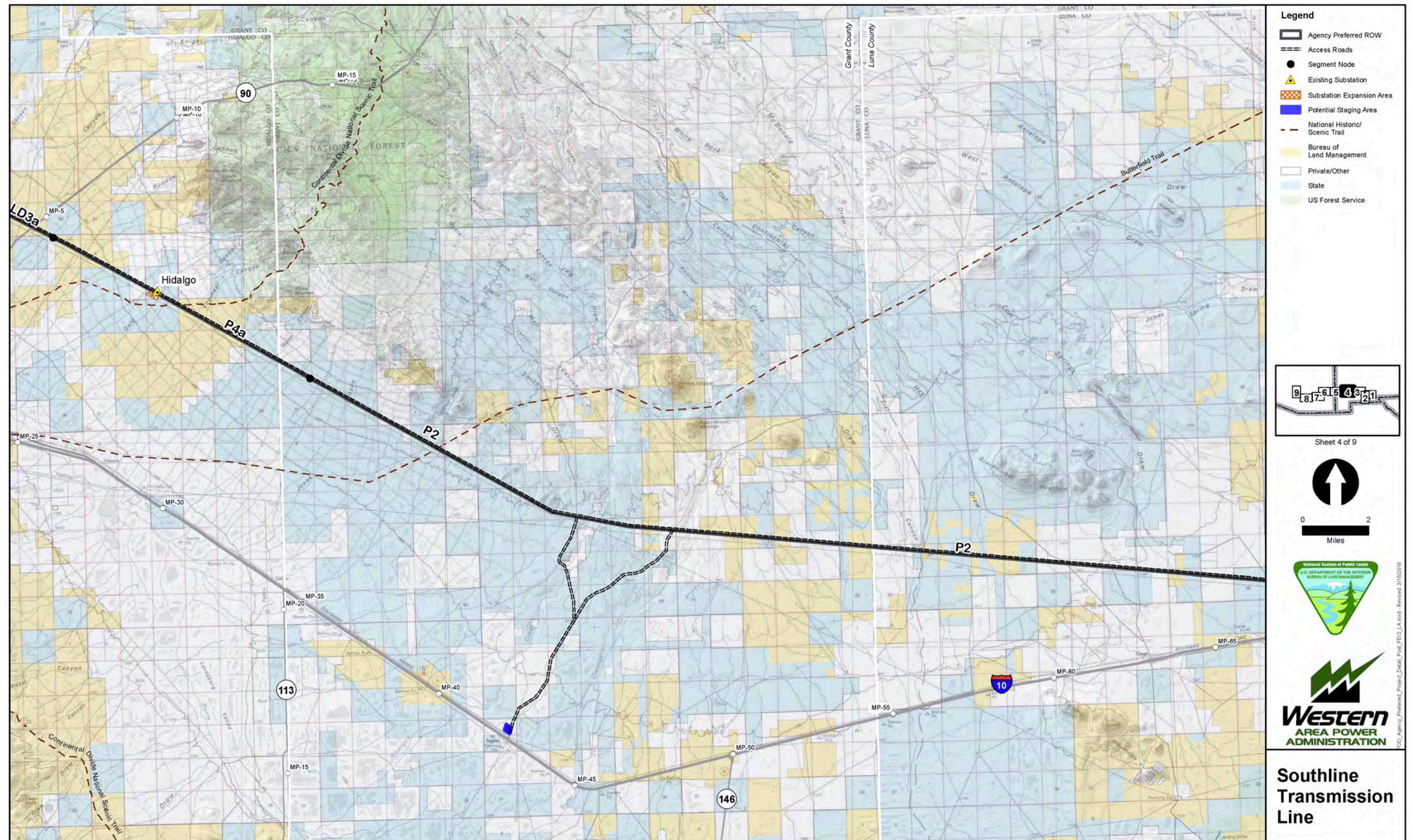


Figure 1.5. Project overview 5.

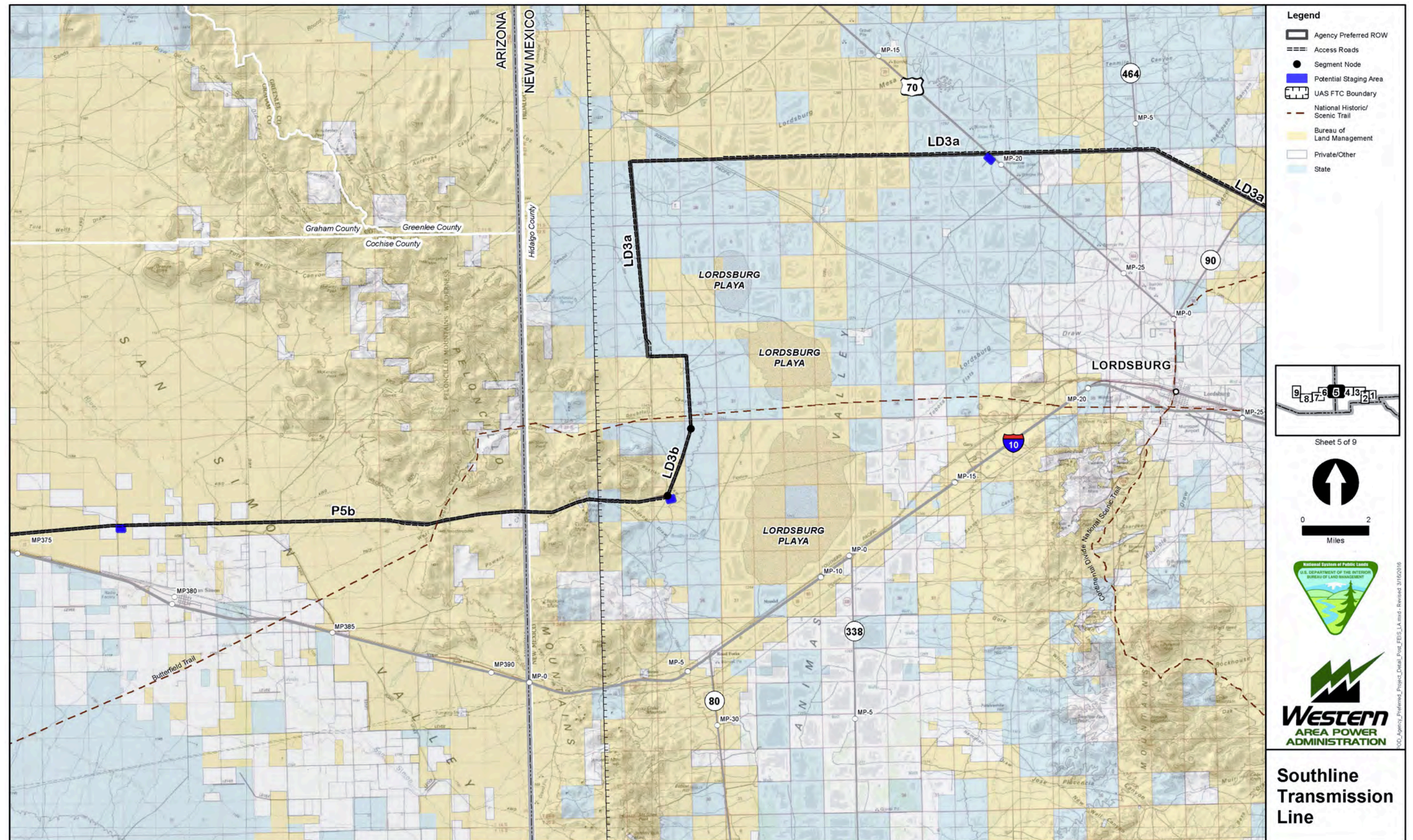


Figure 1.6. Project overview 6.

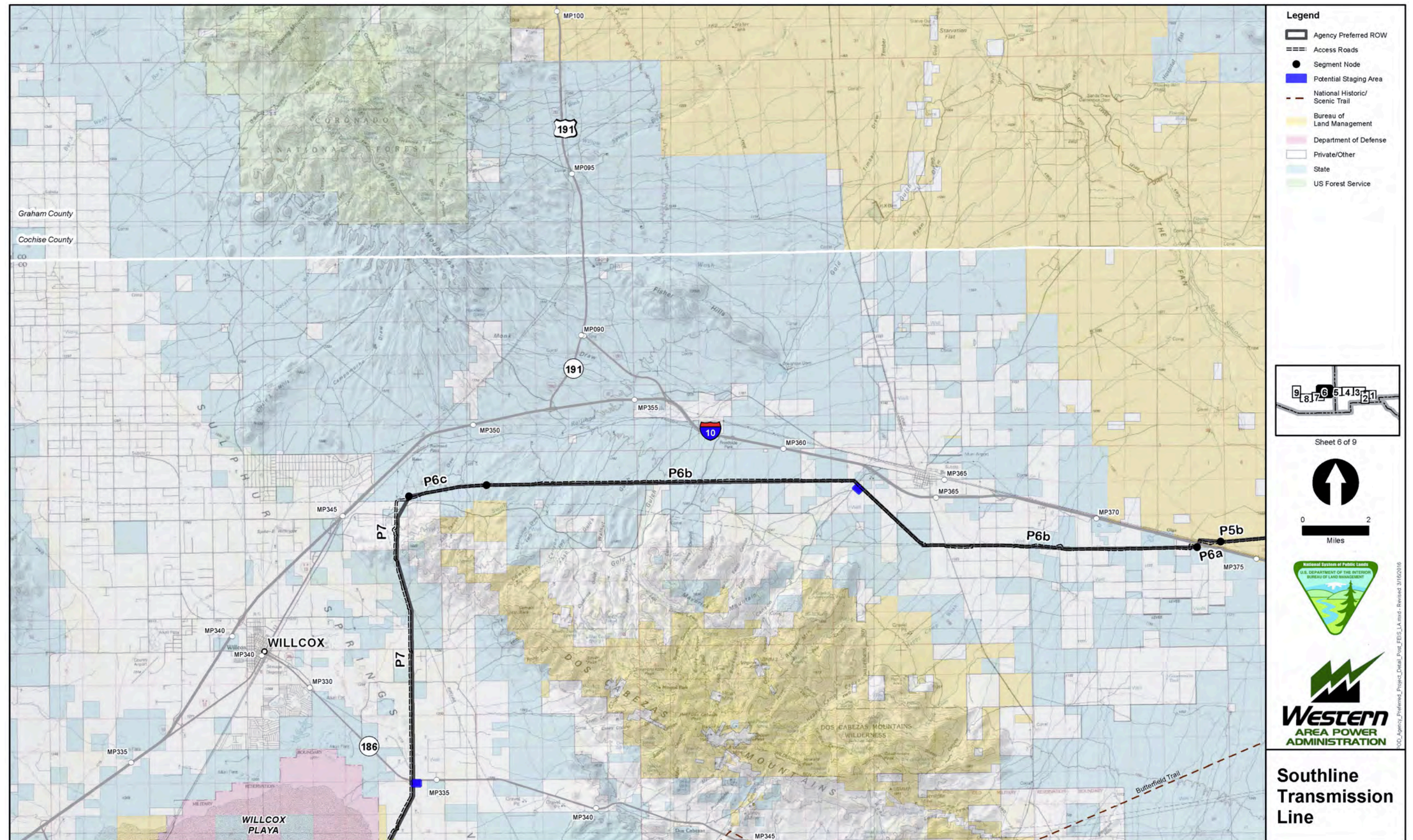


Figure 1.7. Project overview 7.

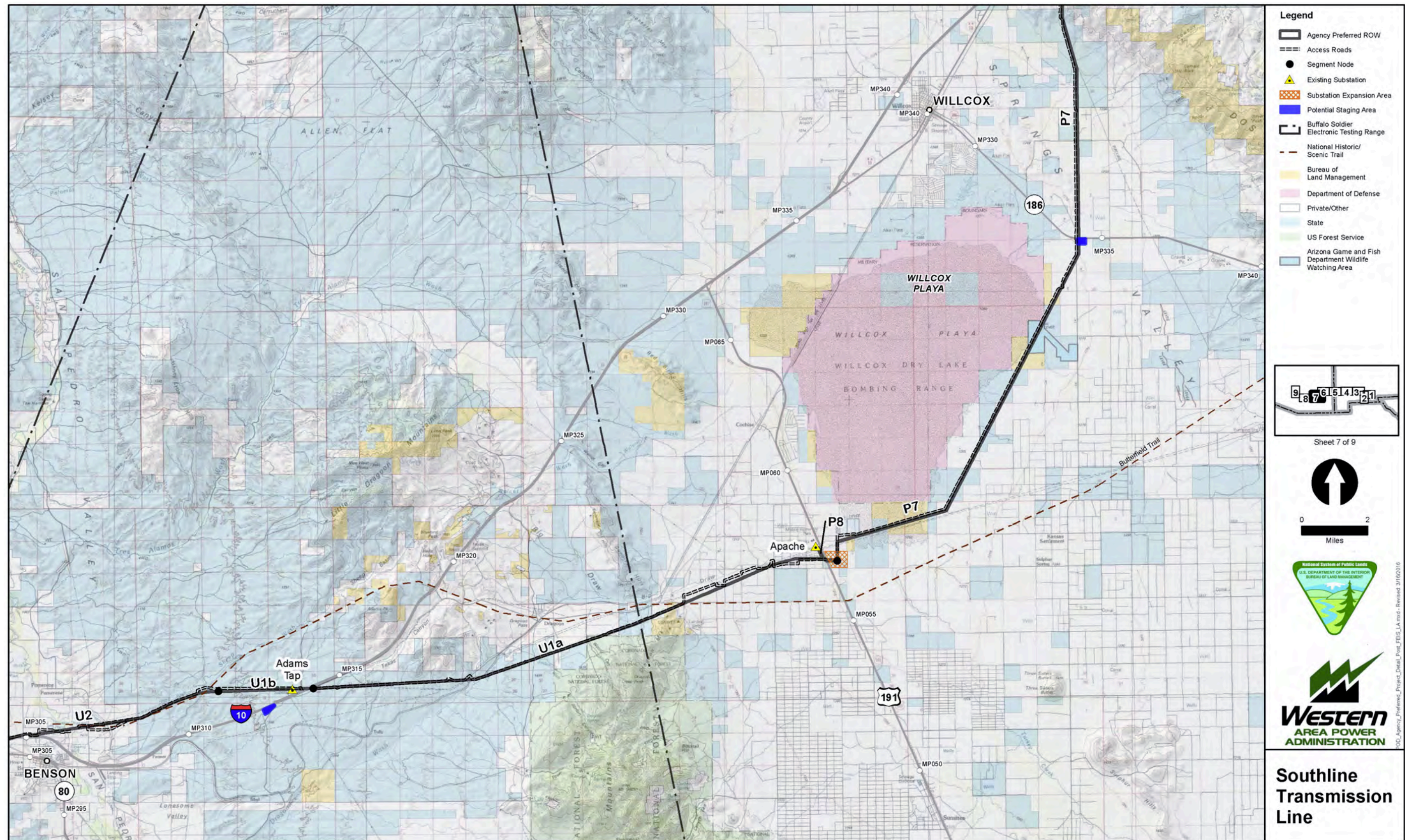


Figure 1.8. Project overview 8.

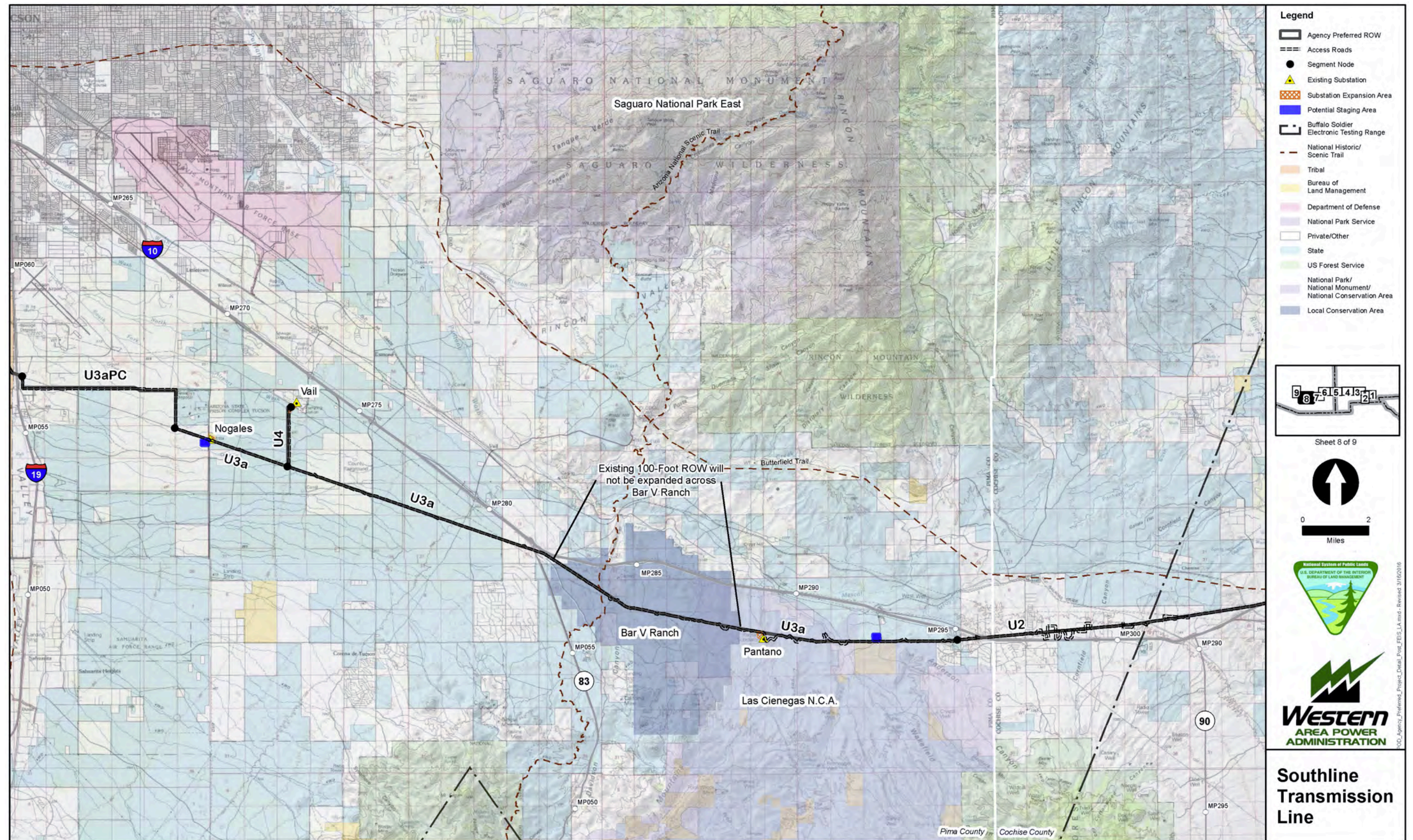
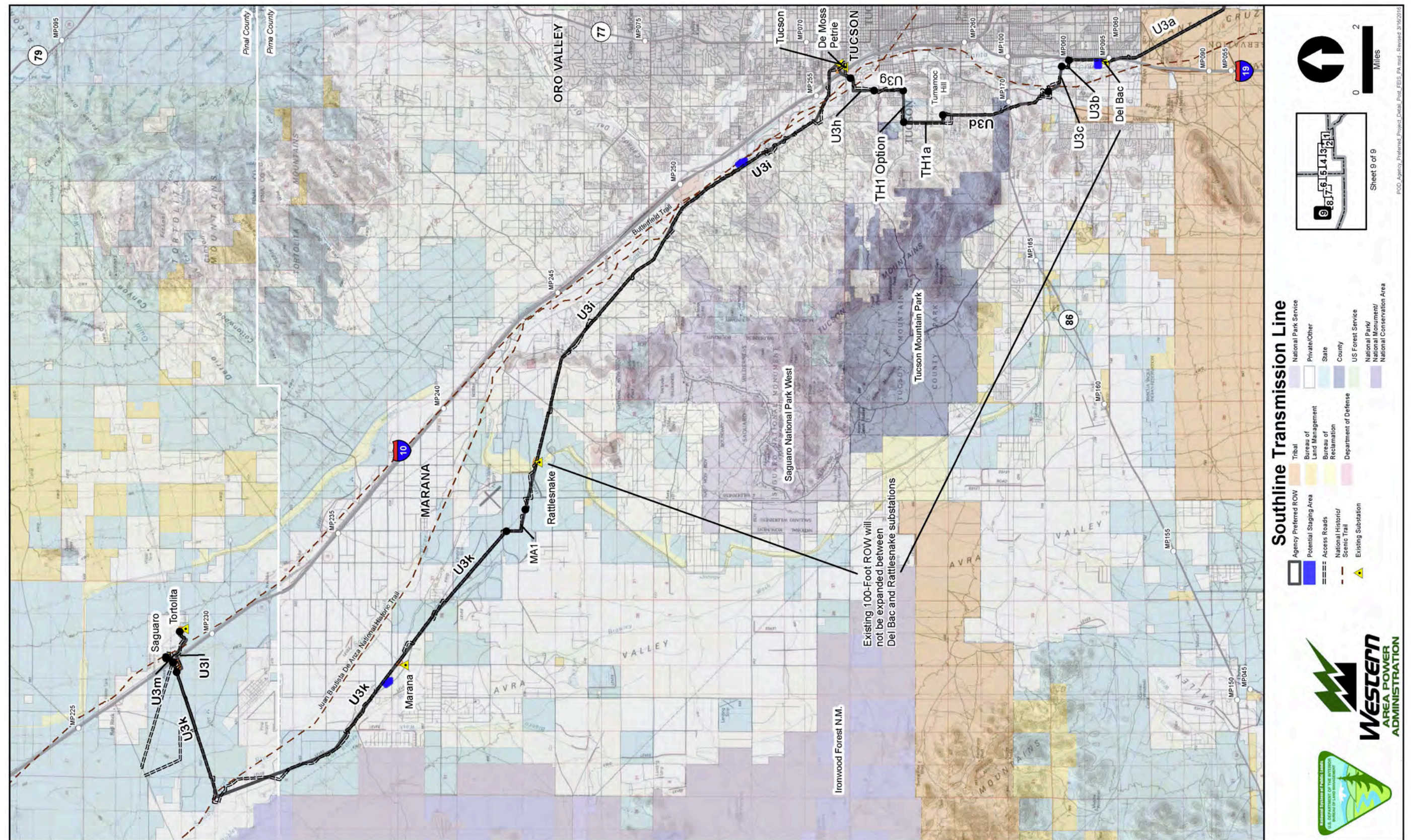


Figure 1.9. Project overview 9.



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Figure 2. Typical 345-kV tangent lattice structure diagram.

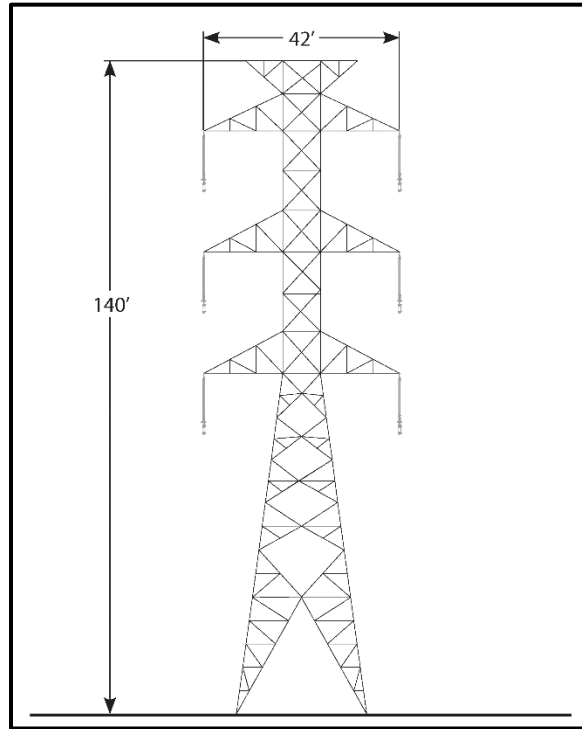


Figure 3. Typical 345-kV angle lattice structure diagram.

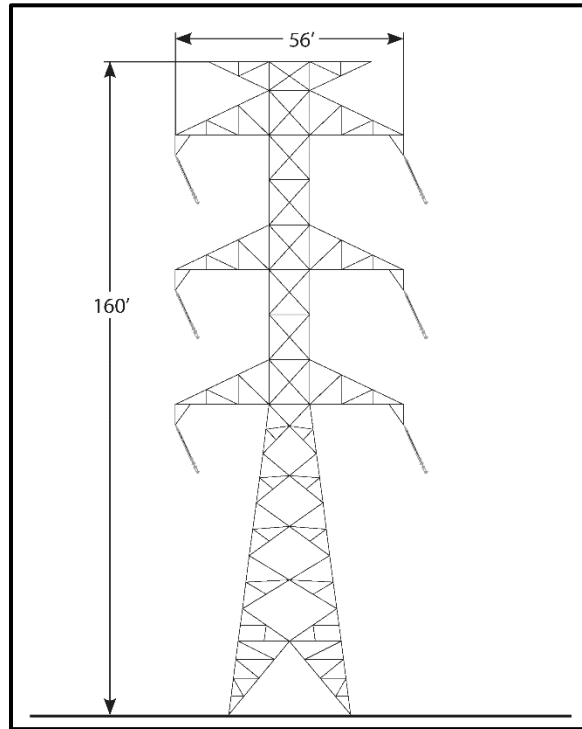


Figure 4. Typical 345-kV dead-end lattice structure diagram.

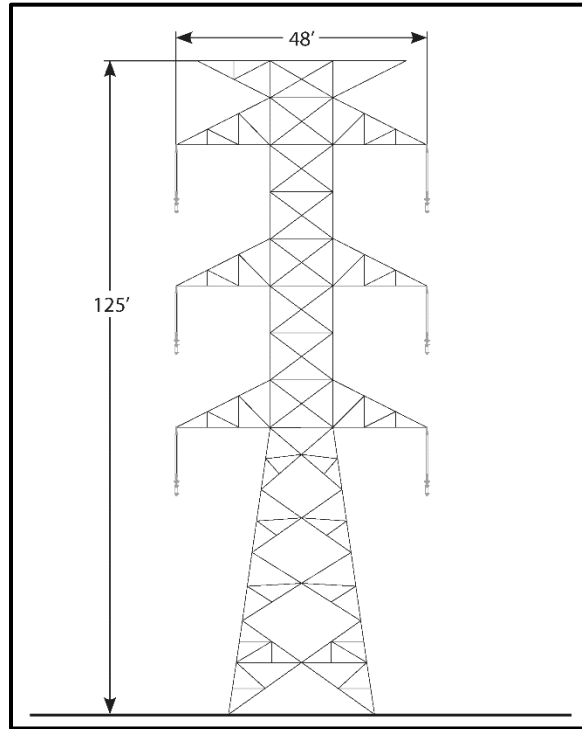


Figure 5. Typical 345-kV tangent tubular steel pole diagram.

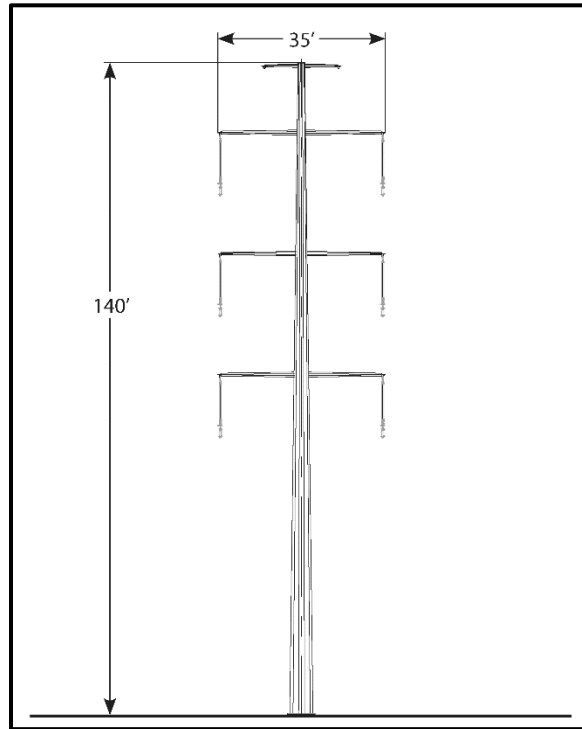
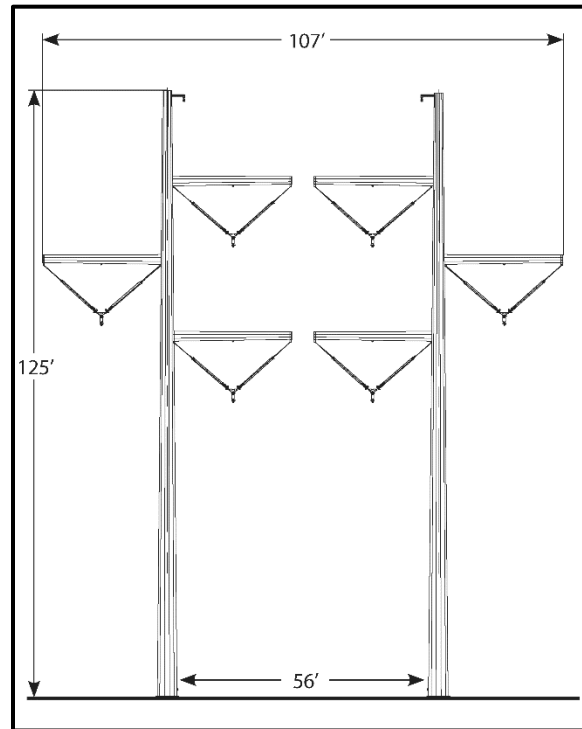


Figure 6. Typical 345-kV transposition tubular steel pole diagram.

It should be noted that the Department of Homeland Security, U.S. Customs and Border Protection, and/or DOD may have additional requirements beyond those described in chapter 5 below. Electrical properties, as described in table 3, indicate that the initial capacity on the New Build Section line will be 1,000 MW, but could ultimately be up to 2,000 MW. The Project has been designed to meet a proposed Western Electricity Coordinating Council (WECC) path rating of 1,000 MW in each direction. Studies conducted to date in support of the WECC path rating (WECC 2015) indicate that the Project will be limited to approximately 1,000 MW to ensure a high degree of reliability in the transmission system. If the existing system is improved and the elements limiting the Project's rating are upgraded, then the Project could potentially have a higher rating in the future based on its physical capacity, which would need to be confirmed with new WECC studies and additional National Environmental Policy Act (NEPA) review as appropriate.

230-kV Structures – Upgrade Section

The 230-kV double-circuit transmission line is proposed to be tubular steel structures (figures 7–10; see also table 4). To accommodate the 230-kV line, the tubular steel structures are expected to be constructed of galvanized or self-weathering steel, with a height ranging from 100 to 140 feet. The exact height of the structure will be determined by topography and safety requirements for conductor clearance. Most tubular steel poles will have an approximate diameter at the structure base of 6 feet or less.

The distance between structures will depend on site-specific characteristics but is expected to be an average of 900 feet (or approximately 5 to 6 structures per mile). By comparison, the distance between existing structures averages approximately 700 feet. Therefore, although the proposed new structures that will be replacing the old structures will be taller, there will be fewer structures per mile. Spacing between the proposed structures will be designed to allow for the longest spans practical for this type of construction. Each structure will be either directly embedded or foundation mounted in concrete. See discussion below for temporary and permanent disturbance estimates.

Figure 7. Typical 230-kV direct embedded tangent tubular steel pole diagram.

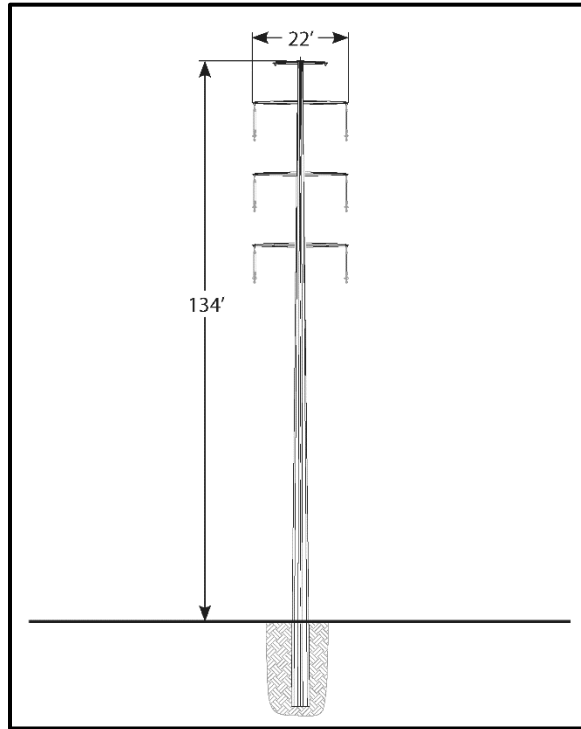


Figure 8. Typical 230-kV tangent tubular steel pole diagram (foundation type).

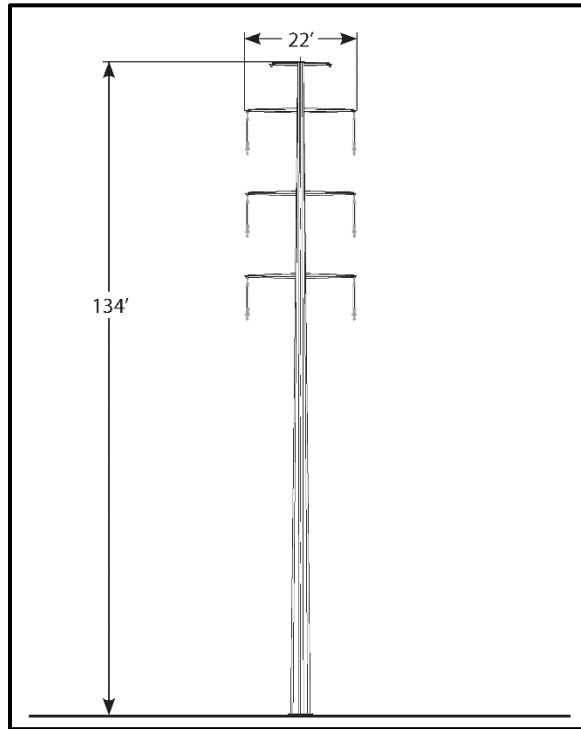


Figure 9. Typical 230-kV suspension angular tubular steel pole diagram.

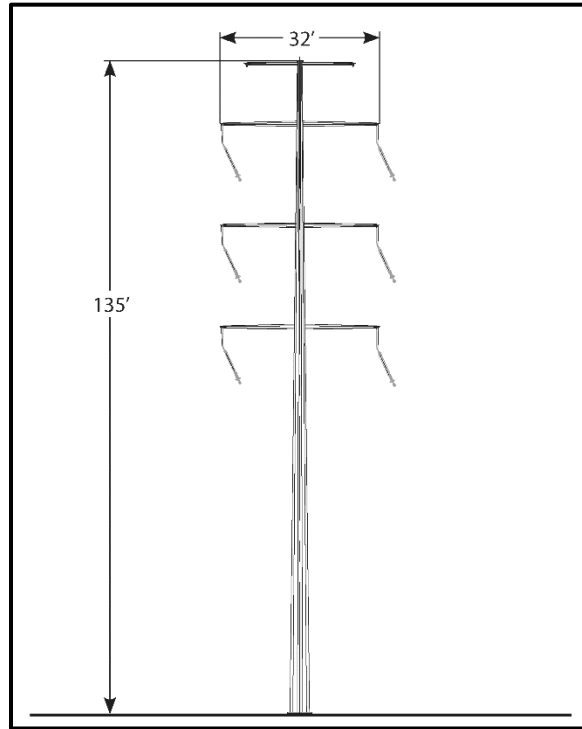


Figure 10. Typical 230-kV dead-end tubular steel pole diagram.

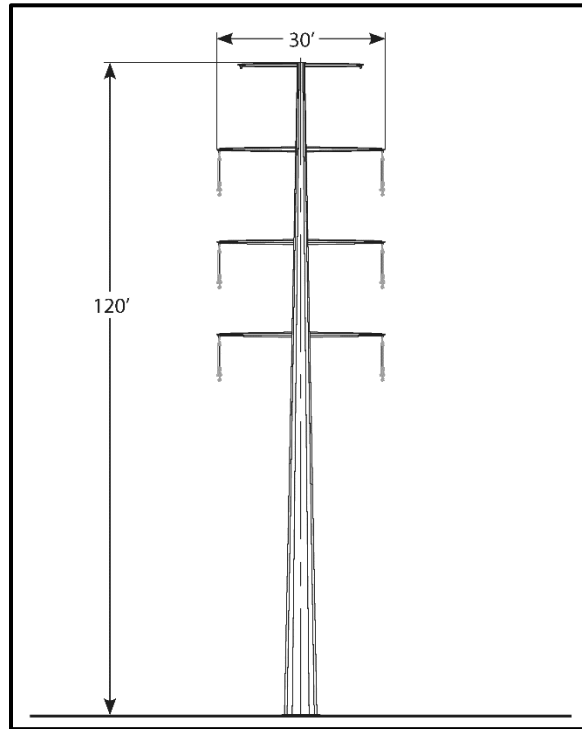


Table 4. Typical Design Characteristics of the Proposed Upgrade Section 230-kV Transmission Line

Feature	Proposed (Description)
General Description	
Structure type	Tubular steel poles (see figures 7–10)
Structure height	100–140 feet
Span length	700–1,100 feet
Number of structures per mile*	5–6
ROW width [†]	150 feet
Electrical Properties	
Normal voltage	230,000 volts (230 kV)
Capacity	1,000 MW (initial) 1,500 MW (ultimate)
Circuit configuration	Double-circuit
Conductor size	1,272–kcmil ACSR (1 subconductor per phase)
Shield wire size [‡]	7/16-inch extra-high-strength steel wire
Ground clearance of conductor [§]	28 feet

Notes: ACSR = aluminum conductor steel reinforced; kcmil = a thousand circular mils (a unit used to express large conductor sizes).

* Variable, depending on structure type and terrain.

[†] During design, a wider temporary and/or permanent ROW may be needed only in specific locations to accommodate rough terrain or long spans. Through urban Tucson, between Del Bac and Rattlesnake substations, the ROW will likely remain at the existing 100-foot width.

[‡] Shield wire size: one shield wire position to be occupied by optical ground wire about 0.5 inch in diameter with 48 optical fibers.

[§] Design minimum at temperature of 100 degrees Celsius.

Electrical properties, as described in table 4, indicate that the initial capacity on the Upgrade Section of the proposed line will be approximately 1,000 MW, but could ultimately be up to 1,500 MW. The Project has been designed to meet a proposed WECC path rating of 1,000 MW in each direction. If the existing system is improved and the elements limiting the Project's rating are upgraded, then the Project could potentially have a higher rating in the future based on its physical capacity, which would need to be confirmed with new WECC studies (WECC 2015).

3.2.2 Structure Foundations

Depending on soil and structure type, lattice structures and tubular steel structures are typically supported by cast-in-place drilled concrete pier foundations with detailed design to be completed once site-specific soil conditions can be evaluated. For lattice structures, steel reinforcing cages and stub angles will be installed. For tubular steel structures, either steel reinforcing cages with anchor bolts will be installed or the poles will be embedded directly into the ground. In rocky areas, foundation holes may be excavated by methods such as drilling or detonation of small charges in the drill holes used to break up the rock, or by installing special rock anchor or micro-pile type foundations. The rock anchoring or micro-pile system will be used in areas where site access is limited or where adjacent structures could be damaged as a result of rock breaking or hauling activities.

Each structure location will be evaluated individually during final engineering design to determine the recommended foundation dimensions and types. Anticipated structure type and associated foundation disturbance identified during final engineering will be accounted for in the Final POD.

Temporary and permanent land requirements for the foundations of the various types of both lattice structures and single-pole tubular steel structures for the 345-kV and 230-kV transmission lines are presented in table 5.

Table 5. Typical Structure Foundations – Temporary and Permanent Land Requirements

New Build Section	Disturbance Area
Temporary	
Structure work area	100 × 200 feet (20,000 square feet)
Wire pulling and tensioning (dead-end/angle)	200 × 500 feet (110,000 square feet)
Permanent	
Lattice (tangent)	1,225 square feet 35 × 35-foot structure base
Lattice (angle)	1,600 square feet 40 × 40-foot structure base
Lattice (dead-end)	2,025 square feet 45 × 45-foot structure base
Single-pole tubular steel pole (tangent)	40 square feet 7-foot-diameter foundation
Single-pole tubular steel pole (dead-end/angle)	100 square feet 2 poles × 8-foot-diameter foundation
Upgrade Section	
Temporary	
Structure work area	100 × 200 feet (20,000 square feet)
Wire pulling and tensioning (dead-end/angle)	150 × 500 feet (75,000 square feet)
Permanent	
Single-pole tubular steel pole (tangent)	30 square feet 6-foot-diameter foundation
Single-pole tubular steel pole (dead-end/angle)	50 square feet 8-foot-diameter foundation

3.2.3 Transmission Line Hardware

Conductors

Conductor is the wire cable strung between transmission line structures through which the electric current flows. The New Build Section 345-kV double-circuit transmission line will consist of a double-conductor bundle with two sub-conductors per phase; there will be three phases per circuit (six total).

The sub-conductors are typically spaced approximately 18 inches apart in a vertical or horizontal configuration. For the 230-kV transmission line Upgrade Section, it is anticipated that one conductor per phase will be used. The conductor will be sized to provide adequate current-carrying capacity.

To minimize wind vibration flowing over the conductors, vibration dampers will be used. The type and number of dampers needed will be determined during final design. Each conductor span is anticipated to have two Stockbridge-type vibration dampers per wire; each shield wire/optical ground wire is anticipated to have four spiral dampers per wire for the 345-kV lines and two spiral dampers per wire for the 230-kV lines.

The minimum design height of the conductor aboveground at the maximum operating temperature will be 30 feet on the New Build Section and 28 feet on the Upgrade Section. Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with National Electric Safety Code (NESC) American National Standards Institute (ANSI) C2. This code provides recommendations for the minimum distances between the conductors and ground, crossing points of other lines and the transmission support structure and other conductors, and minimum working clearances for personnel during energized operation and maintenance activities (Institute of Electrical and Electronics Engineers 2007).

Avian Power Line Interaction Committee (APLIC) standards will be used in final design to minimize avian conflicts. The configuration of the bundle will be designed to provide adequate current-carrying capacity while minimizing interference from audible noise and to radio operations.

Insulators and Associated Hardware

Insulators, which are made of an extremely low-conducting material, such as porcelain, glass, or polymer, are used to suspend the conductors from each structure. Insulators inhibit the flow of electrical current from the conductor to the structure. The assemblies of insulators are designed to maintain appropriate electrical clearances between the conductor, the ground, and the structure. The New Build Section will have insulator assemblies that consist of single string or two strings of insulators, predominantly in the form of a “V.” The Upgrade Section will have insulator assemblies that consist of suspension strings or braced post insulators.

Overhead Ground Wire

Overhead shield wires and optical ground wires will be installed between each structure for lightning protection. Current from lightning strikes would be transferred through the ground wires and structures into the ground.

Grounding

For the New Build and Upgrade sections, a grounding system will be installed at the base of each transmission structure that will consist of copper or copper-weld ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by buried copper or other suitable conductor.

3.2.4 Other System Facilities

Communication Systems

The Project will include a communications system consisting of a fiber-optic network necessary for control and protection of the transmission system (referred to as supervisory control and data acquisition). For redundancy purposes, a secondary communications path will be provided via a power line carrier or microwave system. The type of communication system will be determined during final design.

The communication system is needed to transfer data for operation of the line and substations. The system will be reserved for the operation of the power system only, and will not be made available for commercial use. Primary communications for relaying and control will be provided via one optical ground wire that will be installed on one of the shield wire positions on the transmission line structures.

As the optical data signal is passed through the optical fiber cable, the signal degrades with distance. Consequently, communication regeneration stations are required to amplify the signals if the distance along the cable exceeds approximately 50 miles.

Communication Regeneration Station

Approximately two new communication regeneration stations will be required along the New Build Section: one between Apache and Hidalgo substations, and one between Hidalgo Substation and a new substation facility proposed for Luna County, New Mexico (referred to as Midpoint Substation). The two new fiber-optic regeneration sites will be located next to or in the ROW such that they will be accessed by access roads already required for transmission line maintenance. The existing substations along the Upgrade Section of the Project are close enough together that required communication equipment will be located within the substation perimeter (either existing or proposed new yards, as described above).

New communication regeneration sites will typically be 100 × 100 feet, with a fenced-in area of 75 × 75 feet. A 12 × 12 × 9-foot tall building (metal or concrete) will be placed on the site, and access will be available from the transmission line access roads. Entrances above the door of each building will be lit to allow for safe entrance and exit, but the rest of the site will not be lit at night.

Microwave regeneration sites will be co-located with fiber-optic sites if possible along the Upgrade Section, and are only anticipated to be needed along the New Build Section of the Project. As above, the existing substations along the Upgrade Section of the Project are close enough together that required communication equipment will be located within the substation perimeter (either existing or proposed new yards, as described above). The two new microwave regeneration sites along the New Build Section will be located off the ROW and their final location will be determined based on line of sight between substations. These locations will be determined during final engineering but will be located such that they would be accessed by access roads already required for transmission line maintenance.

New microwave communication regeneration sites will typically be 100 × 100 feet, with a fenced-in area of 75 × 75 feet. A typical site consists of a microwave equipment building, which houses telecommunication and network equipment, backup batteries, and chargers. The building will be approximately 12 × 12 × 9 feet tall and, where possible, microwave regeneration sites will be co-located with the fiber-optic regeneration site buildings (i.e., all equipment will be housed in the same building). Buildings will be finished to minimize visual impact, and lighting at night will be limited to an entrance light above the door for security and to allow for safe entrance and exit. The site will also have a microwave antenna installed on a self-standing tower approximately 100 feet tall.

Communication Regeneration Station Distribution Supply Lines

Power will likely be provided from a local electric distribution line, located in proximity to the regeneration site. The voltage of the distribution supply line is typically 12 kV or lower and carried on wooden poles. For the estimated two new sites, it will be necessary to extend the electric distribution line from a take-off point on the existing distribution line to the new site. The location and routing of the existing distribution lines to the new sites will be determined during the final design process.

3.2.5 Other Electrical Hardware

In addition to the conductors, insulator, and overhead shield and optical ground wires, other associated hardware will be installed on the structure as part of the insulator assembly to support the conductors and shield wires. This hardware might include clamps, shackles, links, plates, and various other pieces composed of steel and aluminum.

3.2.6 Other Non-Electrical Hardware

Other hardware not associated with the transmission of electricity may be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting, which may be required for the conductor on certain spans in accordance with FAA guidelines.

3.2.7 Substations

The Project involves interconnection with and upgrades of 14 existing substations along the Project route in New Mexico and Arizona, and the potential construction of the proposed Midpoint Substation.

Project design has progressed resulting in a more refined Project description. As a result, at four substation locations within the Upgrade Section where the proposed Project was anticipated to include expansion of existing facilities, these expansions are more accurately be described as “new” substations. These four substation locations are Apache, Pantano, Marana, and Saguaro. Please note that these changes are only a refinement of the project description and do not change the disturbance areas and impact estimates.

A summary of substations associated with the Project, land ownership, and the respective owner/operator is provided in table 6. Of the existing substations, there are two on BLM lands (Afton and Nogales), three on State lands in Arizona (Adams Tap, Pantano, and Tortolita), one on Reclamation lands (Rattlesnake), and eight on private land (Hidalgo, Apache, Vail, Del Bac, Tucson, DeMoss Petrie, Marana, and Saguaro). The Midpoint North Substation will be on New Mexico State Land Office–administered State and private lands.

Table 6. Project Interconnection Substations (Existing and Proposed)

Interconnection Substation	Owner/Operator	Section	Land Status
Afton	El Paso Electric	New Build	BLM
Midpoint*	Southline (owner); operator TBD	New Build	New Mexico State Land Office and private
Hidalgo	El Paso Electric	New Build	New Mexico State Land Office and private
Apache*	Southwest Transmission Cooperative (SWTC) and Southline	Upgrade	Private
Adams Tap	Western	Upgrade	Arizona State Land Department
Pantano*	SWTC and Southline	Upgrade	Arizona State Land Department
Vail	TEP	Upgrade	Arizona State Land Department and private
Nogales	Western	Upgrade	BLM
Del Bac	Western	Upgrade	Arizona State Land Department
Tucson	Western	Upgrade	Private
DeMoss Petrie	TEP	Upgrade	Private
Rattlesnake	Western	Upgrade	Reclamation
Marana*	SWTC and Western	Upgrade	Private
Tortolita	TEP	Upgrade	Arizona State Land Department
Saguaro*	Arizona Public Service and Western	Upgrade	Arizona State Land Department and private

* Midpoint Substation is a new proposed substation that is not interconnected with an existing adjacent substation. Apache Southline, Marana Tap-Sawtooth, and Sasco substations are new substation yards proposed to interconnect with neighboring substations; all other substations in this table are existing substations.

As shown in table 6, substations along the New Build Section include the existing Afton and Hidalgo substations, as well as the proposed Midpoint Substation in New Mexico. Substations along the Upgrade Section include Apache/Apache (Southline), Adams Tap, Pantano/Pantano (Southline), Vail, Nogales, Del Bac, Tucson, DeMoss Petrie, Rattlesnake, Marana/Marana Tap-Sawtooth, Tortolita, and Saguaro/Sasco. Substation expansions and upgrades vary by substation.

3.2.8 Preliminary Access Road Information

Access roads will be required during construction for the movement of trucks, cranes, concrete trucks, bulldozers, and other light and heavy construction equipment to and along the ROW. Access roads will also serve as the primary means of movement for construction crews and Project materials. During operation, these roads will be needed to access transmission lines, substations, and ancillary facilities for period line inspections and scheduled and emergency maintenance over the life of the Project. As such, access roads must be sufficient to support the weight of construction equipment; upon completion of the Project, access roads will be used by operation and maintenance vehicles.

The Project will be designed, as feasible, to use existing access roads with minimal improvement. The level of construction for access roads will range from unimproved cross-country travel to completely bladed roads (see below for a description of access types A–E). For example, unimproved cross-country travel access (two-track) will be on flat, sparsely vegetated areas, and will be used to maintain the maximum amount of native vegetation and minimize overall disturbance instead of creating new roads, as appropriate. Improvements to existing roads that will be used as access roads will occur in areas where occasional blading will be needed on rough spots and will transition to more blading with other improvements on steep, rocky, or rough country. The intent is to do no more than is necessary to get equipment in and out safely and to prevent erosion. All roads will be within designated ROW, whether inside the main transmission line ROW, or outside in a 30-foot access road ROW.

In areas where improvements are required, access roads will be graded, as needed, to provide a smooth travel surface. Such improvements could include blading, widening of the road, or installing drainage structures, such as culverts. No graveling or paving is planned. Typically, Project access roads will have a travel surface width of 12 to 16 feet but could have a maximum width of 24 feet, depending on site-specific circumstances, such as steep terrain, and where needed to accommodate expanded turning areas for cranes and pole trucks. After construction, wider parts of the access roads will be revegetated. Access road types that could be used for this Project include existing roads that require no improvements, existing roads that require improvements, and new access roads.

Access roads will be designed to go directly from structure to structure, except in difficult terrain or where sensitive resources need to be avoided. In such cases, the road will follow suitable topography from structure to structure and will be built in areas that generally cause the least amount of overall disturbance, which may be outside the ROW in cases of difficult terrain. Typically, where the line spans a river channel, or large steep-sided wash, access may come from either side to avoid damage to riparian vegetation.

The Access Road Plan for the Project assumes that five primary types of access will be used:

- **Access Type A** – Access from adequate private roads. This type of access will be used when there is no existing road adjacent or parallel to the alignment, but where there is a patchwork of existing roads in the area that will be crossed by the Project ROW, and could be used to access the ROW and get close to the structure locations. Grading between the existing roads and each structure location will only be conducted where necessary and will depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically,

overall disturbance will be limited to a width of 16 feet or less. The purpose of using existing access from private roads will be to minimize overall disturbance.

- **Access Type B** – Parallel to maintained public roads. This type of access will be used when the alignment roughly parallels a nearby public road that is either paved or has gravel surfacing. Short spur roads will be used from the existing roads to each structure location as described below under access type E. Except in rare cases, the existing roads will not be upgraded, but any damage to public roads from construction activities will be repaired. The purpose of access roads parallel to a nearby public road will be to consolidate and minimize overall disturbance.
- **Access Type C** – Parallel to existing utility roads. This type of access will be used when the alignment roughly parallels an existing utility that already has an existing access road. Spur roads will be used from the existing utility roads to each structure location as described below under access type E. Generally, the existing utility roads will be improved. Grading between the existing utility roads and each structure location will only be conducted where necessary and will depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance will be limited to a width of 16 feet or less. The purpose of access roads parallel to a utility road will be to consolidate and minimize overall disturbance.
- **Access Type D** – New down-ROW primary access. This type of access will only be used when access types A–C are not feasible. It will consist of a 16-foot-wide road (12-foot travel surface plus 2 feet on either side for berms/ditches). As much as possible, new access will be entirely within the ROW. Typically, new down-ROW access will be used if any parallel roads are more than 700 feet from the alignment. This access type will also normally be used for alignments that parallel interstate highways and railroads because the owners of those facilities generally place restrictions on the use of their ROWs; these restrictions do not allow for the addition of spur roads or their related ROW crossings and gates in ROW fences.
- **Access Type E** – Spur roads–improved and unimproved access. Spur roads will be used to connect type A, B, and C access roads to the ROW and for temporary access to stringing and splicing sites. Spur roads will be unimproved (two-track) roads except in areas where grading may be required based on terrain, with an average of one new spur road per mile for temporary access and approximately five spur roads per mile in areas where type A, B, and C access roads are used for permanent access to structure locations. Only where necessary, spur roads will be improved, and the roads will be graded to 10 to 12 feet wide. Otherwise, spur roads will not be improved in areas with flat terrain and within grassland, desertscrub, sand scrub, and sand dune vegetation communities. Vegetation on unimproved roads may be crushed by driving, but cropping or blading vegetation will not be conducted. This will avoid removal of root mass and organics in the soil (no surface soil will be removed). The purpose of unimproved spur roads will be to preserve the maximum amount of native vegetation and minimize overall disturbance.

Once design is finalized, all access roads described above will be surveyed, appropriate ROW will be acquired, and ROW will be mapped and incorporated into the Access Road Plan and Management Plan.

3.3 INDUCED CURRENTS ON ADJACENT FACILITIES

Alternating current (AC) transmission lines have the potential to induce currents on adjacent metallic structures such as other transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. To address induced-current effects on metallic facilities or structures within 200 feet of the Project center line, these structures will be properly grounded as needed. This will eliminate the electric shock potential a person may experience when touching a metallic object

near the Project. Typically, the NESC determines what structures beyond 200 feet or more from the center line will require grounding. If grounding were required outside the ROW, a temporary use permit will be obtained, as needed.

3.4 LAND REQUIREMENTS AND CONSTRUCTION DISTURBANCE

The proposed ROW width for the New Build Section 345-kV double-circuit transmission line is 200 feet. The anticipated ROW width for the Upgrade Section 230-kV transmission line is 150 feet except in areas identified during final design such as urban Tucson between Del Bac and Rattlesnake substations, where the ROW will likely remain at the existing width of 100 feet. These ROW widths have been requested to allow for the safe movement and operation of construction, operation, and maintenance equipment and to allow for sufficient clearance between conductors and the ROW edge, as well as equipment like bucket trucks, as required by the NESC. Southline is also requesting ROWs for ancillary Project facilities and for access to the transmission line.

3.4.1 Right-of-Way / Special-use Authorization Acquisition

New permanent and temporary ROW land rights will be required for the New Build Section. The requested ROW width for the New Build Section 345-kV double-circuit transmission line is 200 feet. New and temporary ROW may be required in areas along the Upgrade Section, depending on the final design considerations. No new ROW is anticipated in the Upgrade Section across Bar V Ranch in Pima County, and between the Del Bac and Rattlesnake substations; in these areas, the tear-down and rebuild in place method of construction will be necessary because in these congested areas, an additional 50 feet of ROW is not available. Tearing the line out and rebuilding in place requires outages on the existing line while construction is accomplished.

Temporary ROWs are also being requested for construction of the Project facilities. These temporary use areas will include access to work areas at transmission line structure locations, material laydown yards, tensioning and pulling areas, splicing locations, and staging areas. Construction activities will be expected to occur over a 24-month period. Where access is needed outside the transmission line ROW, permanent ROWs for access roads to structure sites are also being requested in order to conduct maintenance throughout Project operation. Where ROW acquisitions are found to be necessary, Western or Southline will negotiate rights and compensate landowners. The landowner will retain the title and use of the easement with a few restrictions.

Before the start of construction of a project element, Southline will obtain a complete project element ROW through a combination of a ROW grant, special use permit, and easements from applicable Federal, State, and local governments, tribes, and private landowners. Close coordination with all property owners and land agencies during surveys and the construction phase of the Project will be important for successful completion of the Project. In the early stages of the Project, landowners will be contacted to obtain right-of-entry for surveys and for geotechnical drilling at selected locations. Additional landowners will be contacted as needed throughout the Project for additional surveys, including geotechnical work. Each landowner along the final centerline route will be contacted to explain the Project and to secure right-of-entry and access to the ROW. Geotechnical drilling on Federal lands may require additional environmental analysis and field clearance under NEPA.

All negotiations with landowners will be conducted in good faith, and the Project's effect on the parcel or other landowner concerns will be addressed. ROWs for transmission line facilities on private lands will be obtained as easements. Land for substation or regeneration stations will be obtained in fee simple where

located on private land. A good-faith effort will be made to purchase the land and/or obtain easements on private lands through reasonable negotiations with the landowners. If Southline is unable to negotiate an easement or obtain clear title for the land right, Western may negotiate the easement, or obtain the necessary rights through condemnation proceedings, in accordance with Federal law. Western's policy is to avoid condemnation if at all possible.

Additional ROW may be required, depending upon site geography and terrain. These areas are identified to the extent possible during the NEPA process; however, some needs might be identified during the final engineering, preconstruction, or construction phases of the Project. In some areas, longitudinal access roads will be sited within the transmission line ROW. In other areas, spur roads will connect existing roads to the transmission line ROW. Specific access road locations will be identified during design and subject to BLM approval via issuance of notice to proceed from the BLM. These areas will be subject to field surveys for cultural and biological resources, including native plant surveys and salvage prior to any disturbance. Planned access roads will be surveyed and specific ROW easements obtained from the landowners. All applicable PCEMs, as well as conditions in the Framework Plans, will apply.

3.4.2 Temporary and Permanent (Long-term) Construction Disturbance

Table 7 below includes a breakdown of potential temporary and permanent construction disturbance estimates, based on the Project as described above and in the EIS. The component descriptions precede this section.

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute and Segment

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)	
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Temporary Disturbance		Permanent Disturbance		Temp	Perm				
																	Acres	Acres/Mile	Acres	Acres/Mile						
New Build Route Group 1: Afton (New Mexico) to Hidalgo (New Mexico)																										
P1	5.1	3.0	0.0	0.0	0.0	0.0	1.9	0.0	0.2	0.0	0.0	0.0	5.1	0.0	5.1	9.9	28.7	5.6	0.5	0.1					28.7	10.4
P2	102.0	32.8	0.0	0.0	0.0	0.0	31.3	0.0	37.9	4.9	11.8	98.1	0.0	29.3	144.1	125.9	571.0	5.6	10.2	0.1			80.0	651.0	136.1	
P3	31.1	25.4	0.0	0.0	0.0	0.0	1.4	0.0	4.2	0.0	0.0	0.0	31.1	0.0	31.1	60.3	174.2	5.6	3.1	0.1			20.0	194.2	63.4	
P4a	8.9	4.2	0.0	0.0	0.0	0.0	3.7	0.0	1.1	0.0	0.0	8.8	0.0	1.9	10.7	10.2	50.0	5.6	0.9	0.1				503.0	11.1	
Total	147.1	65.5	0.0	0.0	0.0	0.0	38.3	0.0	43.4	4.9	11.8	106.9	36.2	31.2	206.3	206.3	824.0		14.7		20.0	35.0	100.0	944.0	256.0	
New Build Route Group 2: Hidalgo (New Mexico) to Apache (Arizona)																										
P5b	21.1	17.9	0.0	0.0	0.0	0.0	1.0	0.0	2.2	0.0	0.0	21.2	0.0	2.7	23.9	19.4	118.1	5.6	2.1	0.1			20.0	138.1	21.5	
P6a	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.8	0.6	4.9	5.6	0.1	0.1			20.0	24.9	0.7	
P6b	22.5	0.2	0.0	0.0	0.0	0.0	12.6	0.0	9.7	0.0	0.0	20.8	2.3	2.7	25.8	23.5	125.9	5.6	2.2	0.1				125.9	25.8	
P6c	2.4	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	2.8	0.0	0.4	3.2	2.9	13.4	5.6	0.2	0.1			20.0	33.4	3.2	
P7	22.1	2.3	0.0	0.2	0.0	0.0	10.2	0.0	9.4	0.0	0.5	22.1	0.0	3.8	26.4	21.6	123.8	5.6	2.2	0.1	0.0	0.0	20.0	143.8	23.8	
P8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.1	2.8	5.6	0.1	0.1	0.0	0.0	0.0	2.8	0.1	
LD3a	29.6	9.1	0.0	0.0	0.0	0.0	17.5	0.0	3.0	0.0	0.4	17.3	11.4	3.0	32.1	41.2	165.8	5.6	3.0	0.1			20.0	185.8	44.2	
LD3b	2.2	1.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	2.0	0.0	2.2	0.0	2.2	4.2	12.2	5.6	0.2	0.1			20.0	32.2	4.4	
Total	101.2	31.7	0.0	0.2	0.0	0.0	44.6	0.0	24.7	0.5	0.9	84.9	15.9	12.8	114.9	113.5	566.6		10.1		20.0	53.0	120.0	706.6	176.6	

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute and Segment (Continued)

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Temporary Disturbance		Permanent Disturbance		Temp	Perm			
																	Acres	Acres/Mile	Acres	Acres/Mile					
Upgrade Route Group 3: Apache (Arizona) to Pantano (Arizona)																									
U1a	16.7	0.4	0.0	0.0	0.5	0.0	9.2	0.0	6.6	4.9	0.0	11.9	0.0	7.0	23.9	18.9	85.1	5.1	0.2	0.01				85.1	19.1
U1b	2.9	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	2.7	0.0	0.1	2.8	2.5	14.8	5.1	0.0	0.01			20.0	34.8	2.5
U2	15.8	0.5	0.0	0.0	0.0	0.0	2.8	0.0	12.5	1.5	0.0	21.0	0.0	7.0	29.6	28.1	80.6	5.1	0.2	0.01				80.6	28.2
U3a	30.7	0.2	2.9	0.0	0.0	0.2	19.6	0.0	7.7	0.8	0.0	36.2	0.0	3.9	40.9	32.0	156.3	5.1	0.3	0.01			60.0	216.2	32.3
Total	66.1	1.1	2.9	0.0	0.5	0.2	34.5	0.0	26.8	7.2	0.0	71.9	0.0	18.1	97.1	81.4	336.8		0.7		0.0	5.7	80.0	416.8	87.8
Upgrade Route Group 4: Pantano (Arizona) to Saguaro (Arizona)																									
U3b	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.2	0.0	0.1	0.5	0.3	2.3	5.1	0.0	0.01				2.3	0.3
U3c	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.7	0.0	0.0	0.0	0.1	0.8	0.2	4.9	5.1	0.0	0.01				4.9	0.2
U3d	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.0	3.1	0.0	1.8	0.0	1.0	5.8	2.7	17.5	5.1	0.0	0.01				17.5	2.8
U3g	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.3	0.0	0.1	1.3	0.4	4.6	5.1	0.0	0.01				4.6	0.4
U3h	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.9	0.0	0.0	0.0	0.1	1.0	0.1	5.6	5.1	0.0	0.01				5.6	0.2
U3i	18.2	0.0	0.0	0.0	0.0	0.2	2.7	0.0	15.3	7.4	0.0	12.8	0.0	2.1	22.3	13.9	93.0	5.1	0.2	0.01			20.0	113.0	14.1
U3k	16.7	0.0	0.0	0.0	0.0	0.0	10.8	0.0	5.9	3.3	0.0	15.1	0.0	5.7	24.1	21.1	85.2	5.1	0.2	0.01			20.0	105.2	21.3
U3l	1.6	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.4	0.6	0.0	0.4	0.2	0.3	1.6	1.3	7.9	5.1	0.0	0.01				7.9	1.3
U3m	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.5	0.1	3.0	5.1	0.0	0.01				3.0	0.2
U4	1.9	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	1.8	0.0	0.5	2.3	1.6	9.8	5.1	0.0	0.01				9.8	1.6

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute and Segment (Continued)

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Temporary Disturbance		Permanent Disturbance		Temp	Perm			
																	Acres	Acres/Mile	Acres	Acres/Mile					
U3aPC	6.2	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	4.7	1.5	0.0	1.3	7.5	3.1	31.6	5.1	0.1	0.01				31.6	3.2	
MA1	1.1	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	0.2	1.2	0.3	5.6	5.1	0.0	0.01				5.6	0.3	
TH1a	1.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.2	0.0	1.5	0.0	0.2	1.7	0.3	7.2	5.1	0.0	0.01				7.2	0.3	
TH1-Option	1.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.0	0.4	0.0	0.1	0.5	0.1	5.0	5.1	0.0	0.01				5.0	0.1	
Total	55.5	0.0	0.0	0.0	0.0	0.2	18.9	0.4	36.0	18.5	6.6	33.9	0.2	11.9	71.2	47.3	283.07		0.6		36.0	45.4	40.0	359.1	93.3

Note: Segment information presented only for the Selected Alternative (Agency Preferred Alternative in the Final EIS).

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Chapter 4

OPERATION AND MAINTENANCE

4.1 INTRODUCTION

Regular inspection and maintenance of transmission lines, substations, and support systems is critical for safe, efficient, and economical operation of the Project. This section provides information describing operation and maintenance activities, including transmission line patrols, inspections, tower and wire maintenance, vegetation maintenance, maintenance of access roads, and emergency maintenance.

4.2 SYSTEM INSPECTION, MAINTENANCE, AND REPAIR

Responsibly conducted inspections and routine maintenance activities are anticipated to have minimal impacts and are usually authorized under the transmission line easements and ROW grant. While carrying out routine maintenance activities, field personnel and contractors will adhere to basic standards and guidelines contained in other sections of the Project POD, special use stipulations, and any additional requirements (such as periodic review of the implementation plans associated with operation and maintenance) identified in the decision documents that apply to the specific area where work is to be done. For instance, on lands not managed by BLM operation and maintenance activities will be governed by provisions in the Project-specific PA and in the Final biological opinion, and by requirements included in individual ROW agreements with the State or private landowners.

With the exception of emergency maintenance activities (refer to Section 4.2.3 – Emergency Maintenance Activities), Southline and Western will coordinate with the appropriate land management agency to review any new information or specific requirements concerning cultural, paleontological, and biological resources (e.g., federally listed species, special status species, seasonal restrictions, habitat concerns, etc.), prior to initiating inspection, maintenance (including vegetation management), and/or repair activities. BLM will coordinate with the operation and maintenance operator if any new BLM-specific information is received. PCEMs (refer to Chapter 5 – Environmental Mitigation Measures) apply to construction and operation and maintenance activities. If for any reason the operation or maintenance activities on BLM managed lands require deviation from the approved or basic standards and guidelines, field personnel and contractors will coordinate with the BLM prior to initiating the activity and/or during the activity if any unanticipated biological, cultural, or paleontological resource issues are encountered.

This section describes the typical activities involved in the inspection and maintenance of the transmission line. The different activities can be categorized in three groups: Routine Activities (Section 4.2.1), Major Maintenance Activities (Section 4.2.2), and Emergency Maintenance Activities (Section 4.2.3).

4.2.1 Routine Activities

Routine Inspection

Regular ground and aerial inspections will be performed in accordance with the applicable Western/Southline requirements, which are in turn based on regulations, industry standards, and best management practices (BMPs). The transmission lines and substations will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for

vegetation management will also be determined during inspection patrols. Annual maintenance activities are typically conducted by using helicopters, ground vehicles (4 × 4 trucks or all-terrain vehicles), or on foot. Visual or infrared inspections of the entire Project will be conducted annually. Typically, 10 percent of all structures will be inspected during annual structure-climbing inspections, so that each structure is inspected every 10 years. Aerial inspection will be conducted by helicopter, generally in the spring and fall.

Aerial inspection by helicopter is conducted during the spring and fall of each year based on weather conditions, helicopter availability, and statutory requirements of the states served by Southline. The aerial inspections are conducted in coordination with ground patrol to identify ROW encroachments and conditions that pose an immediate hazard to the public or employees, or that risk immediate loss of supply or damage to the electrical system. The aerial inspections use helicopters to get an observer in a position for observation above the transmission line. The observer assesses the condition of the transmission lines and hardware to determine whether any components need to be repaired or replaced or if other conditions exist that require maintenance or modification activities. Any conditions identified are to be resolved prior to peak demand in the summer and winter months. The aerial inspections are dependent on weather, flight-control restrictions, and the extent of damage assessment required.

Ground inspections will be done on approved access roads or along the transmission line ROW to each structure as appropriate and are anticipated to occur every 2 to 3 years. The inspector will access each of the structures and check all equipment and other components that could require repairs. Inspections assess the condition of the line and hardware to determine whether any component needs to be repaired or replaced and whether other conditions exist that may require maintenance or modification. Inspections also assess any unauthorized encroachments and/or trash dumping in the ROW that could constitute a safety hazard. Inspectors performing such inspections will use conventional four-wheel-drive trucks or four-wheel-drive all-terrain vehicles, or the inspector may walk the line. The annual 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. Southline may perform minor repairs during its ground inspections such as installing new numbers, installing/repairing ground wire, or performing other minor tasks that will not involve long duration, specialized equipment, or large work crews. Climbing inspections will be conducted to coincide with bolt checking and tightening on lattice structures.

In the event of an outage or interruption in the transmission of electricity or other failure, Southline or its contractor will perform detailed inspections of the transmission line to determine the cause. The extent of activities associated with outage inspections is explained in more detail below in section 4.2.3.

Routine Maintenance

Routine maintenance activities are ordinary maintenance tasks that have historically been performed on a routine basis. In the Upgrade Section these activities have been performed following Western's standard procedures. Routine maintenance will include the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, wear, or isolated damage such as lightning or gunshot, are in need of replacement or repair. The work performed is typically repair or replacement of individual components, performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days. Routine maintenance activities may consist of more immediate activities, where repairs must be made within a short period of time in order to ensure the line does not suffer an outage or cause safety concerns, or longer-term routine maintenance activities, where repairs may be made during regularly scheduled maintenance activities.

The type of equipment used to perform routine maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities include four-wheel-drive pickups, man-lifts, material flatbeds, line trucks, cranes, tractor trailer, high-reach boom trucks, and bulldozer/caterpillar.

Workers require access to the damaged portion of the line to allow for a safe and efficient repair of the facility. Equipment required for this work may include four-wheel-drive trucks, material (flatbed) trucks, low-reach boom trucks, high-reach boom trucks, bulldozer/caterpillar, or man lifts. Routine maintenance is scheduled and is typically required due to issues found during inspections. Typical items that may require periodic replacement on towers include conductors, insulators, shield wires, fiber-optic lines, and related equipment. It is expected these replacements will be required infrequently (every 5 to 10 years) or as determined by inspection.

Maintenance on transmission lines can often be completed safely using live-line techniques in order to avoid interruption of service to critical transmission line infrastructure. High-reach boom trucks, along with other equipment, are used to conduct these activities.

Typically, maintenance vehicles and equipment will remain within the permanent maintenance work area that surrounds the structure, and no new ground disturbance will be required. If maintenance activities and/or equipment are required beyond the permanent maintenance work area, maintenance crews will coordinate with the land management agency to obtain any required temporary use approval/permits to complete the work, and maintenance activities will be conducted within the previously disturbed temporary work areas from Project construction. In such cases, reapplication of reclamation treatments may be required after completion of maintenance activities, as determined by the appropriate land management agency. All PCEMs outlined in this POD apply to design, construction, and maintenance activities as reflected in Chapter 5 – Environmental Mitigation Measures.

Routine Vegetation Management

Work areas adjacent to electrical transmission structures and along the ROW will be maintained for vehicle and equipment access necessary for operations, maintenance, and repair. Vegetation management practices along the ROW will be in accordance with NESC ANSI A300 Part 7, “American Operations Integrated Vegetation Management” (BLM’s Integrated Vegetation Management Handbook – H 1740-02, March 25) (BLM 2008), Western Order 430.1A and Order 450.3A (see Appendix C2 – Vegetation Management Standards), electric utility ROWs, and International Society of Arboriculture BMPs (Kempter 2004).

At a minimum, trees and brush, when present, will be cleared within a 10-foot radius of the base or foundation of all electrical transmission structures. 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 North American Electric Reliability Corporation (NERC) and Department of Energy. Trees and other vegetation will be removed selectively to provide the required transmission line clearance. Vegetation management activities will focus on establishing sustainable native plant communities that are compatible with the electric facilities. Establishment of vegetation will also reduce the potential for noxious weeds to become established in the ROW. If there is a conflict between the requirements of the land management agency or landowner and Western’s standard procedures for vegetation management, the land management agency or landowner requirements will be followed unless they directly result in a violation of NERC standards. Where practicable, vegetation that does not pose a fire hazard or physical impedance will not be cleared.

Southline will create a Project-specific annual plan for vegetation management work that specifies the frequency of vegetation inspections taking into account local and environmental factors, as required by NERC Standard FAC-003-1. The Project primarily crosses areas of low-growing shrubs and grasses. Where needed, vegetation will be removed using mechanical equipment, such as chain saws, weed trimmers, rakes, shovels, mowers, and brush hooks. Shrubs and other obstructions will be removed regularly near structures to facilitate inspection and maintenance of equipment comply with NERC Reliability Standard FAC-003-1, and ensure system reliability. In limited areas, chain saws may be required for trimming larger trees. The duration of activities and the size of crew and equipment required will be dependent on the amount and size of the vegetation to be trimmed or removed. It is assumed that a crew size of four with a working foreman will be able to complete 2 miles a day of vegetation maintenance. Although unlikely to be necessary, species-dependent herbicide could be applied subsequent to vegetation clearing to prevent regrowth of that vegetation and/or noxious and invasive weeds. All pesticide and herbicide applications will be performed by a licensed applicator and in accordance with all label instructions and Federal, State, and local regulations, and in compliance with land management agency and/or landowner requirements, including obtaining a Pesticide Use Permit if herbicide is used on agency-administered lands. Aerial application of herbicide will not be performed.

Routine Right-of-Way and Access Road Maintenance

Repairs to access roads within the ROW will be scheduled as a result of line inspections or will occur in response to a significantly degraded condition or an emergency situation. Ground disturbance during maintenance activities will be approved by the BLM authorized officers or will be authorized at Western's Desert Southwest Region. Where access will be required for maintenance of the line, Southline/Western shall maintain the approved access roads in a safe, usable condition, as directed in consultation with the appropriate land management agency. Required maintenance equipment may include a small bulldozer, a backhoe, a four-wheel-drive pickup truck, a front-end loader, and, on rare occasion, a motor grader. The bulldozer and loader have steel tracks or large tires, whereas the grader, backhoe, and truck typically have rubber tires.

Access road repairs include grading or repair of existing maintenance access roads and work areas and spot repair of sites subject to flooding or scouring. In some cases, cut and/or fill of foreign material may be required to prevent erosion or to repair the access roads into suitable condition for safe travel of maintenance repair vehicles such as high-reach boom trucks. When an approved access route into a structure location will need improvement, heavy equipment appropriate for the required work will be used after notifying the appropriate land management agency. Any berms or boulders that were in place to limit access will also be reclaimed after completion of the maintenance work. Activities related to ROW repair are usually conducted outside of the rainy season.

Routine Substation and Communication Regeneration Site Maintenance

Substation and regeneration stations are unmanned stations. Monitoring and control are performed remotely. Unauthorized entry into facilities 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. Remotely monitored security systems will be installed. Several forms of security will be planned for each of the locations. Security measures may include fire detection in the control building via the remote monitoring system, alarming for forced entry, and a perimeter security system coupled with remote-sensing infrared camera equipment in the fenced area of the station to provide the system operator with visual observation of disturbances at the fence line. Minimal lighting for routine needs at the substation will be provided inside the substation fence. Maintenance crews will bring adequate lighting in

the event that emergency repair work is required. All lighting will be shielded downward to minimize contributions to sky glow.

Maintenance activities include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. It is anticipated that maintenance at each substation will require approximately six trips per year by a two- to four-person crew. Routine operations will require one or two workers in a light utility truck to visit the substations monthly. Typically, a major maintenance inspection will take place once per year, requiring up to 15 personnel for 1 to 3 weeks. Regeneration stations will be visited every 2 to 3 months by one individual in a light truck to inspect the facilities. Annual maintenance will be performed by a two-person crew in a light truck over a 2- to 5-day period.

4.2.2 Major Maintenance Activities

Major maintenance activities will be relatively large-scale efforts that occur on an infrequent basis. These activities require planning and budgeting in advance, as well as agency coordination. They may involve larger work crews than routine maintenance activities and a variety of equipment, including heavy equipment, and usually require several days or longer to complete. Examples of major maintenance activities include structure relocation, conductor replacement, or access route reconstruction and relocations. Generally, these types of activities will occur on approximately 1 percent of structures annually, but may also occur during emergency outage conditions to replace damaged infrastructure.

Southline will identify proposed major maintenance activities and notify the designated contact for the appropriate land management agency before initiating major maintenance activities. Southline and the land management agency will identify what, if any, special notification or additional clearance approvals are required prior to conducting the proposed major activities.

When Southline's field personnel and contractors carry out major maintenance activities on BLM-managed land, they will be required to adhere to all standards and guidelines contained in the approved POD, terms and conditions of the ROD, any site-specific activity or timing constraints, and the requirements of any mutually agreed-upon additional clearance or special notification requirements. On BLM-administered public land, all stipulations and PCEMs identified as applicable in any of the POD volumes should be adhered to for the life of the BLM ROW grant.

4.2.3 Emergency Maintenance Activities

During the operation and maintenance of the transmission line, Southline 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 may arise.

Examples of emergency maintenance include activities necessary to restore power due to a transmission structure or conductor failure due to natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the power line, or restore service if there is an outage. In an emergency, Southline must respond as quickly as possible to restore power.

In practice, as soon as an incident is detected, the control room 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, Southline will notify the designated contact from the appropriate land management agency concurrently with responding to the emergency. The land management agency may elect to have a representative present during emergency operations and/or to conduct a post-event

site visit to evaluate Southline's response, assess impacts, and propose remedial measures for discussion. Southline will adhere to the same constraints identified for routine and major maintenance activities to minimize impacts to resources, when possible.

The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs.

Southline's employees and contractors will be equipped with approved suppression tools and equipment. Southline or their construction contractor(s) will notify local fire authorities and the appropriate land management agency if a Project-related fire occurs within or adjacent to a construction area.

If Southline becomes aware of an emergency situation caused by a fire on or threatening agency-managed lands and that could damage the transmission lines or their operation, they will notify the appropriate agency contact (refer to Appendix B10 – Emergency Preparedness and Response Plan for a complete list of appropriate emergency contacts). Specific construction-related activities and safety measures will be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression if a fire occurs.

Emergencies are events requiring immediate response to a condition and may include fires, car-to-pole contact, downed poles, transformer outages, vandalism, etc. All applicable fire laws and regulations, including land management agency fire-safety standards, will be observed during the operation period. If extreme fire conditions occur, the land management agency representatives will be contacted and access could be restricted. Maintenance personnel will coordinate with the agency representatives and implement practical measures to report and suppress fires. Measures may include brush clearing, stationing a water truck at the site to keep ground vegetation moist in extreme fire conditions, enforcing red flag warnings, etc.

Chapter 5

ENVIRONMENTAL MITIGATION MEASURES

5.1 INTRODUCTION

This section briefly describes the environmental issues by resources and the framework plans to be included as appendices to this POD, when finalized. Environmental mitigation measures are referred to in the EIS as PCEMs. PCEMs and measures outlined within the framework plans are a required condition of both agencies' RODs. They will be applied to all impacted resources as specified in the PCEMs and framework plans.

5.2 SUMMARY OF ENVIRONMENTAL ISSUES BY ENVIRONMENTAL RESOURCE

The summary in this section is intended to provide an overview of the types of environmental impacts associated with the construction, operation, and maintenance of the Project and context for the design features for environmental protection in the Project description and site-specific PCEMs.

5.2.1 Air Quality

Construction of the transmission lines and substations will result in emissions of air pollutants from equipment exhaust, vehicle exhaust from travel to and from construction areas, and fugitive dust from soil disturbance. Overall, impacts on air quality from the Project construction will be temporary, localized to the vicinity of the activity, and will disperse quickly or settle. The overall level of impact will be minor.

5.2.2 Noise

Construction of the transmission line may result in audible noise from Project equipment and vehicles. Unmitigated noise levels could result as high as 83 A-weighted decibels (dBA) to sensitive receptors near Project construction activities (within 100 feet); however, construction noise will be major but temporary in areas where sensitive receptors are in close proximity to construction activity.

Corona-generated noise for both the New Build and Upgrade sections of the Project will be highest in areas where the new lines will be constructed in close proximity to existing transmission lines. Overall, because of the relatively dry nature of the area crossed by the Project, the overall level of operational noise will be minimal.

5.2.3 Geology and Mineral Resources

The only potential impacts identified for geology and mineral resources will be indirect impacts to mining districts during operation and maintenance of the transmission line. The New Build Section crosses small areas of active and inactive mining districts; however, no known mines, active or inactive, will be crossed. No metal or nonmetallic resources were specifically identified within the Upgrade Section. No known mines, active or inactive, will be crossed by the Upgrade Section. The Project will not produce obvious changes to the baseline conditions of the resource, and potential impacts will be minor.

5.2.4 Soil Resources

Potential impacts to the soil resources include accelerated rates of erosion and loss of soil productivity due to the removal of soils during construction of access roads, and at structure and substation sites. Clearing of vegetation and topsoil, as well as grading, will result in newly exposed, disturbed soils that could be subject to accelerated rates of erosion by wind or water. Construction may also cause disturbance to fragile biological crusts, increasing erosion and delaying reestablishment of plant communities. Indirect impacts associated with soil removal may include invasive plant colonization, soil erosion, and reduction in soil water retention due to compaction. Potential impacts have been reduced by the intentional efforts to co-locate the Project with existing linear development and maximizing the use of existing access. Overall impacts to soil resources will be minor.

5.2.5 Paleontological Resources

Potential negative impacts to paleontological resources could result from the loss of important fossils due to ground-disturbing activities during construction in sensitive geological deposits. Potential positive impacts to paleontological resources could result from the discovery of important fossils as an inadvertent result of ground-disturbing activities that will otherwise be unavailable for study. The New Build Section crosses through areas with High Sensitivity for paleontological resources, whereas the Upgrade Section is almost entirely classified as Low Sensitivity.

Overall impacts to paleontological resources will range from no impact to moderate impact. If fossils are present, adverse impacts to paleontological resources will be mitigated in accordance with applicable laws and regulations. PCEMs will include paleontological surveys of sensitive geological deposits, the development and implementation of a Paleontological Resources Treatment Plan, education of construction and maintenance personnel, construction monitoring, and preparation and curation of collected fossils.

5.2.6 Water Resources

Potential impacts to water resources include the potential for discharge of pollutants, including sediment, to groundwater or surface water, the placement of larger structures within floodplains, and potential disturbance of waters of the U.S. (WUS) or wetlands. Proper implementation of BMPs and controls will prevent discharge of pollutants. Avoidance measures during final siting will prevent most disturbances of WUS or wetlands, and impacts will be minor.

5.2.7 Biological Resources

The construction, operation, and maintenance of the Project will result in both direct and indirect effects on biological resources. Direct effects associated with construction activities will likely include (1) behavioral disturbance and the displacement of wildlife (temporary); (2) habitat loss, modification, and fragmentation, including increased potential for the establishment and spread of noxious weeds in disturbed areas (long-term); (3) the long-term displacement of individual animals; and (4) the potential for mortality, primarily for wildlife species with limited mobility (temporary).

Indirect effects associated with Project-related activities can result from the construction of permanent access roads, which can be used by the general public to access currently inaccessible habitats. This additional human presence and activity and vehicle noise can result in displacement, abandonment of habitat, behavioral disruption, and additional stress during critical periods. New access into previously

inaccessible habitats can increase displacement of wildlife and mortality by legal hunting or poaching. Public use of access roads can facilitate the spread of noxious weeds and increase the risk of human-caused wildfire. These indirect effects can be permanent.

Vegetation

The Project will involve the removal of vegetation during construction activities, resulting in the direct loss of plant communities. The primary direct and indirect impacts to vegetation and special status species during construction and operation of the proposed facilities will be associated with removal and/or crushing of vegetation communities from construction of the Project; decreased plant productivity from fugitive dust; and plant community fragmentation.

There will also be indirect effects resulting from the fragmentation of connected vegetation types. Edge areas have different microclimatic conditions and structure, which could lead to a different species composition than in the interior area. The possible introduction and colonization of disturbed areas by invasive exotic plant species also could lead to changes in vegetation communities, including the possible shift to a more wildfire-prone vegetation that favors invasive exotic species over native species.

Much of the Project is located in previously disturbed areas and with the application of PCEMs, impacts to vegetation resources will be minor. PCEMs will be applied to reduce, avoid, or otherwise provide compensation for impacts to sensitive vegetation: (1) vegetation disturbance will be minimized to the extent practicable; (2) a Reclamation, Vegetation, and Monitoring Plan will be developed and implemented; (3) a Plant and Wildlife Species Conservation Measures Plan will be developed and implemented; (4) clearing of riparian vegetation will be avoided where possible; (5) a Noxious Weed Management Plan will be developed and implemented; (6) construction equipment will be washed prior to moving onto the construction site to limit introduction and spread of noxious weeds.; and (7) additional mitigation will be installed around the Willcox Playa Wildlife Area.

Wildlife

Potential Project-related impacts on wildlife include the loss, degradation, and/or fragmentation of habitat; collisions with and crushing by construction vehicles; loss of burrowing animals in burrows in areas where grading will occur; increased invasive and noxious weed establishment and spread; increased noise/vibration levels; increased potential for migratory birds to strike transmission lines; and increased access for off-highway-vehicle (OHV) users.

The transmission line ROW will serve as a movement corridor for some species and act as a barrier to some species in areas where surrounding habitats have a higher vegetation density than the ROW. The Project will increase the amount of edge habitat along the ROW. Effects from increased amounts of edge will include decreased habitat block size. Decreased habitat block size may negatively impact those species that require large blocks of contiguous habitat and benefit other species that use edge habitats or have more general habitat requirements.

The following impacts to general wildlife and special status species may occur with construction and operation of the proposed transmission line:

- Habitat for the northern aplomado falcon (*Falco femoralis septentrionalis*), Sprague's pipit (*Anthus spragueii*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), and Mexican long-nosed bat (*Leptonycteris nivalis*), will be impacted. Restoration of disturbed areas, measures to minimize invasive plant establishment and spread, and closure of access roads to OHV use will reduce impacts on habitat for these species.

- Segment P7 will pass northwest of Crane Lake and through the AGFD-managed Willcox Playa Wildlife Area. Mitigation (PCEMs) requested by the AGFD includes (1) funding the relocation of Crane Lake away from P7, (2) funding riparian emergent wetlands along Kansas Settlement Road, and (3) funding the management of non-native vegetation; these will be implemented to reduce the intensity of impacts to habitat in the Willcox Playa Wildlife Area.
- Potential mortality of wintering sandhill cranes (*Grus canadensis*) could occur at Willcox Playa where the Project will intersect their daily migration flights to feed in agricultural fields to the south and east. There is the potential for sandhill crane collisions with the transmission line during daily migration, which could impact individual sandhill cranes. Implementing PCEMs such as the relocation of Crane Lake (see above), and installation of line marking devices, will decrease the potential for birds striking transmission lines near Willcox Playa.
- Impacts to northern Mexican gartersnake (*Thamnophis eques megalops*) proposed critical habitat at the Cienega Creek and San Pedro River crossings will be avoided through Project siting.
- Impacts on Gila chub (*Gila intermedia*) designated critical habitat downstream from the Cienega Creek crossing will be avoided through Project siting and erosion-control measures.
- Habitat for BLM Sensitive Species, New Mexico Wildlife Conservation Act Species, New Mexico Species of Greatest Conservation Need, Arizona Wildlife Species of Concern, Arizona Species of Greatest Conservation Need, and migratory birds will be lost, fragmented, and degraded. Measures to limit ground disturbance, avoid aquatic and riparian habitats, limit invasive plant establishment and spread, and restore disturbed areas will reduce impacts on habitat for these species.
- Habitat for the Sonoran desert tortoise (*Gopherus morafkai*) will be impacted.
- Habitat for the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) will be impacted near the Santa Cruz River crossing in segment U3k.

With the application of PCEMs, impacts to wildlife resources will be minor. PCEMs to minimize impacts to wildlife habitat could include limiting the area of disturbance and restoration of disturbed areas, and avoidance of aquatic and riparian areas. PCEMs could also include preconstruction surveys, erosion-control measures, a worker training program, and measures to limit invasive species establishment and spread.

5.2.8 Cultural Resources

Potential impacts to cultural resources such as archaeological sites, historic built environment resources, trails, and American Indian traditional use areas and sacred sites could result from construction, operation, and maintenance of the Project. Loss of integrity will be the primary adverse direct or indirect impact to cultural resources. In terms of historic properties, loss of integrity often stems from alterations of a resource's characteristics that make it eligible for the National Register of Historic Places (NRHP). During construction, direct impacts will result from ground disturbance if resources are present and will be long term; indirect impacts will result from visual encroachment on a resource's setting during structure and facility installation and will be long term. During operation and maintenance, long-term visual impacts will occur from the presence of the transmission line if resources are present.

Avoidance of resources through design and micro-siting will be the preferred mitigation measure (PCEMs). Even with the application of PCEMs, there will be some major impacts to cultural resources. If avoidance is not feasible, other types of mitigation such as monitoring or data recovery will be needed. A Historic Properties Treatment Plan (HPTP) will be developed to outline all non-avoidance mitigation. Consultation with agencies, the New Mexico and Arizona State Historic Preservation Officers, and

interested parties is ongoing, including the development of a Programmatic Agreement (PA). The PA outlines steps by the agencies, the Project proponent, and other consulting parties to be taken prior to construction and during operation and maintenance of the Project to comply with the National Historic Preservation Act (NHPA).

5.2.9 Visual Resources

Regional landscapes in the Project area range from developed urban and suburban landscapes to rural areas and areas of intact character. Features within the Project area include foothills, mountains, basins, playas, valleys, and agricultural development ranging across the Chihuahuan and Sonoran deserts.

The construction, operation, and maintenance of the Project will result in direct effects on visual resources where:

- Landscape scenery would be degraded by the presence of vertical elements in the landscape (transmission line structures), areas of cleared vegetation (ROW clearing), and exposed soil from the construction of new permanent access roads.
- Views from sensitive viewpoints would be adversely modified through the introduction of Project components into the landscape
- The Project would not comply with Federal agency visual management objectives where Project components would contrast with or modify the characteristic landscape to a level that would not be consistent with the established management objectives or applicable planning documents.

During Project siting and engineering and design, PCEMs, where feasible, will be applied to all areas of potential moderate/high and moderate initial impacts to reduce impact levels where necessary and effective. Even with the application of PCEMs some minor to major impacts to visual resources will remain.

5.2.10 Land Use, Including Farm and Range and Military Operations

Land Use

The Project will be constructed across lands owned and managed by Federal, State, private, or other entities, under a variety of RMPs, comprehensive plans, or other land use plans. The Project cross large tracts of undeveloped land, as well as urban and suburban areas. Federal and State-managed lands are generally used for grazing, farming, recreation, and open space. BLM and State lands are primarily used for grazing or recreation in open-space areas. Residential uses are located on private lands in rural areas and near small cities and towns.

Major portions of the Project parallel existing linear facilities in disturbed corridors, including transmission and distribution lines, roads, and abandoned railroad ROWs. The eastern portion (New Build Section) of the Project will be located in open range-type land uses, crossing mountain ranges (including the Continental Divide) and valley/basins. Farther west (Upgrade Section), the distance between the valley/basins and mountain ranges becomes less, and urban populations surround the Tucson metropolitan area.

In general, land use impacts will be minimized where linear utilities are constructed within established or designated corridors. The alignment of the transmission line route was sited to maximize the use

of established utility corridors, and to avoid conflicts with incompatible land uses such as wilderness, national parks and monuments, special management areas, conservation areas, densely populated areas, and military installations. Impacts to land uses will occur in some form along portions of the route that cross undeveloped lands, irrigated agricultural lands, residential subdivisions, and areas used for industrial or military testing and training. PCEMs will be effective in avoiding or minimizing direct impacts with land uses in most conditions. There will be no direct displacement of existing land use authorizations or ROWs, or residential, business, or industrial structures. Impacts to land use, including farm and range resources and military operations, will be minor.

Farm and Range Resources

Construction of the transmission line will have direct effects on farmlands and rangelands by removing land acreage from productivity. In the Upgrade Section, the existing transmission line has already resulted in conversion of Natural Resources Conservation Service–classified farmland to non-farmable condition. The Project of upgrading to monopoles may have less of an impact on farmland than the existing H-frame transmission line. Except under extraordinary circumstances, all operation and maintenance activities will occur within the transmission line ROW and access roads. These activities will not directly or indirectly impact adjacent farmlands or rangelands. Landowners will continue to have use of the land within the ROW, and no new fences will be constructed that will block access unless specifically requested by the landowner. No direct effect will occur on farmlands and rangelands during the operation and maintenance phase of the Project beyond the long-term loss of lands resulting from Project construction.

Military Operations

Impacts to military operations could occur from construction, operation, and maintenance of the Project where the transmission line, substations, and ancillary facilities intersect with military-owned, leased, or withdrawn (including Electronic Proving Ground) lands. These lands could include military training visual routes or areas where training is for electronics and communications. Impacts will be minimized through avoidance of military operations and by staying within the existing ROW across the electronic testing range. Impacts will be below thresholds since the sections that may intersect military training areas include existing transmission line facilities, and the military operations have operated in conjunction with these facilities previously.

5.2.11 Special Designations

BLM special designations include congressionally designated national wild and/or scenic rivers; national conservation areas; national byways; and national scenic, historic, or recreation trails. The BLM may also create special designations through administrative resource inventories or during the planning process, such as cooperative management areas and protection areas, outstanding natural areas, forest reserves, wilderness study areas, areas of critical environmental concern, research natural areas, special recreation management areas, special management areas, backcountry byways, and energy zones.

Impacts from construction activities will include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect or are adjacent to special designations. Overall impacts on special designations will be minor.

5.2.12 Wilderness Characteristics

The Project will not directly impact wilderness characteristics (naturalness and opportunities for solitude or primitive, unconfined recreation). Potential indirect impacts could result from construction activities

and temporary increases in ambient noise levels in areas where the Project is near lands with wilderness characteristics.

5.2.13 Recreation

The Project will result in minor changes to the recreation setting and desired recreation experiences during construction. The changes will be minor because the majority of the segments that form the Project will follow existing facilities; thus, the recreation setting and desired recreation experiences will already include/anticipate the presence of transmission lines or other linear infrastructure.

Where the Project does not follow existing ROWs, the recreation setting and desired recreation experiences will change from the existing conditions of undeveloped landscape to a developed landscape. This change to the recreation setting is not anticipated to preclude any desired recreation experiences since recreational opportunity for all recreational pursuits in the area will still be available within the area except within the footprints of the transmission line structures. During construction, disrupted hunting opportunities will not be a significant impact, since the areas within game management units that are outside of the Project footprint will remain available for hunting. No hunting opportunities will be displaced during operation and maintenance of the Project. Overall impacts from the Project on recreation will be minor.

5.2.14 Socioeconomics

In general, the Project will not have a significant impact on regional population or housing as a result of construction or operation. Construction of the transmission line will directly and indirectly create jobs, some of which will be filled by local workers. The addition of non-local construction workers has the potential to create isolated, short-term shortages in temporary housing, especially in the more remote portions of the project area. The Project will generate State and local tax revenues during both construction and operation/maintenance; overall impacts will be minor.

5.2.15 Environmental Justice

A high proportion of the census tracts crossed by the Project can be defined as environmental justice communities, meaning they either have higher minority populations or a greater proportion of residents living below the poverty line, or both. These communities may be adversely affected by localized impacts, including noise and other disruptions during the construction phase, and potentially diminished property values and visual characteristics during the operation and maintenance of the Project.

Environmental justice communities may also be positively affected by the benefits of the Project, including the short-term economic stimulus from construction activities and expenditures, short-term and longer-term increases in tax revenues, and added capacity and reduced congestion for electricity transmission. Because these benefits are likely to be more geographically dispersed than the localized adverse effects, however, it is uncertain whether or not low-income and minority populations will receive disproportionate benefits from the Project. Given the prevalence of low-income and minority residents throughout the area, impacts on these groups are likely inevitable from any feasible transmission line alignment. Overall impacts from the Project will be minor.

5.2.16 Public Health and Safety

Potential risks to public health and safety associated with construction and maintenance activities will include, but will not be limited to, electrocution, exposure to extreme weather, falling, exposure to hazardous materials, and injury from equipment and materials. The implementation of Occupational Safety and Health Administration (OSHA) safety requirements through the use of PCEMs, and other safety requirements will minimize the chance that an accident could occur. During operation, potential impacts could occur as a result of increase of electromagnetic fields in areas where they do not currently occur. However, with implementation of the PCEMs, the impacts to public health and safety will be expected to be minor.

5.2.17 Hazardous Materials and Hazardous and Solid Waste

All construction, operation, and maintenance activities will comply with all applicable Federal, State, and local regulations regarding the use of hazardous substance. Hazardous materials will not be drained into the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. Portable toilets will be located at designated construction sites. All construction waste, including trash, litter, garbage, and other solid waste, petroleum products, human waste, and other potentially hazardous materials will be removed and transported to a disposal facility authorized to accept such materials. During operation and maintenance, potentially hazardous materials within the ROW could include petroleum products and herbicides; other hazardous materials could potentially be at substation locations. PCEMs will be implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur; no impacts are anticipated.

5.2.18 Transportation

In general, the Project will cross a sparsely populated rural area in the New Build Section and in the Upgrade Section with the exception of the Tucson metropolitan area. Traffic will be generated primarily during the construction, but also minimally during the maintenance and operation phases. Continued coordination with Federal, State and local transportation agencies will ensure that the Project will not impact transportation plans in the New Build and Upgrade sections. Continued coordination with airports will ensure that the Project will not interfere with flight paths or airport plans adjacent to the Project area.

The Project in the New Build and Upgrade sections will impact BLM roads by increasing opportunities for illegal access to roads/areas currently closed to public access. This impact will most likely occur from the construction of new access roads. The impact of increasing access to BLM roads will be considered minor.

5.2.19 Intentional Acts of Destruction

Intentional acts of destruction could include sabotage or terrorism. Predicting the occurrence of intentional acts of sabotage or terrorism or the potential damage from these acts is not possible. By constructing and operating new transmission lines, saboteurs and terrorists will have a new potential target to carry out their acts. Historically, acts of sabotage and terrorism on transmission infrastructure have been rare, and the effects of events that have occurred have not had a significant impact to adjacent lands or public health and safety. Moreover, the addition of transmission lines and associated facilities generally strengthens the reliability of delivering electricity to the general public, because if one line is affected by an intentional act of destruction or any other disruption, other lines will be available to

continue the delivery of electricity. Therefore, the potential impacts from the unlikely event of an act of terrorism or sabotage will be considered minor, and no impacts are anticipated.

5.3 OVERVIEW OF PROPONENT COMMITTED ENVIRONMENTAL MEASURES (BY RESOURCE)

Activities under the Project will include PCEMs that are an integral part of the Project. These design features are measures included in the project design by the Proponent in order to reduce or avoid potential environmental impacts resulting from Project-related activities. The PCEMs are presented in table 8. In addition, the PCEMs also include agency mitigation measures developed by the BLM and Western, as well as based on feedback from cooperating agencies and the public. All PCEMs listed in table 8 will be followed on any route selected, as site-specific circumstances dictate. PCEMs are required as a stipulation of the ROD.

Table 8 presents a summary of the PCEMs required for the project. PCEMs are described in table 8 for the following:

- Standard mitigation
- Reclamation (site restoration, revegetation)
- Air quality and climate change
- Cultural resources
- Hazardous materials and waste
- Health and human safety
- Land use
- Farmlands and rangeland
- Geology and minerals
- Military operations
- Noise
- Paleontology
- Recreation
- Wilderness
- Trails
- Soils
- Socioeconomics
- Transportation
- Vegetation
- Visual resources
- Water resources
- Wildlife

BLM requires that a grant holder post a surety bond to ensure compliance with the terms, conditions, and stipulations of the grant, if issued, which will include PCEMs. The grant authorization, if issued, will be contingent upon Southline's complying with a list of terms, conditions, and stipulations.

Application of PCEMs will be considered and authorized, as part of detailed design and included in the final POD and associated Framework Plans, post-EIS. Because the final POD and Framework Plans are subject to approval by the BLM Authorized Officer, and the PCEMs found in table 8 are also included in the final POD, each PCEM is subject to review and approval by the BLM authorized officer.

5.4 OVERVIEW OF APPENDIX B

Southline and Western will ensure that their respective responsibilities and the requirements for each of the following Framework Plans are implemented. These plans have been developed to cover the entire Project, regardless of the responsible entity (e.g., landowner, ROW administrator, etc.) however some requirements outline in the plans (for example CIC reporting and variance requests) apply to BLM-managed lands only.

5.4.1 Access Road Plan

Access road planning will be finalized if the Project is approved. With the approved route known, the transmission line centerline will be determined and the exact location of all access roads will be refined through detailed engineering. Once road locations are known, cultural resource and biological surveys will be conducted and road locations adjusted to avoid sensitive resources discovered during the surveys. No field disturbance will occur before the completion of these surveys and the completion of any necessary mitigation or treatment measures. Although the exact locations of final access roads are not yet known, the general location of needed access is known and has been used to define the potential environmental impacts and expected environmental protection measures for purposes of the EIS. Access road construction and improvement will include erosion, stabilization/reclamation/revegetation, and dust control measures. Access roads will be designed to ensure that slopes do not cause erosion and that turning radii are sufficient. The road locations will also be georeferenced and the location recorded, and appropriate access rights will be obtained from the landowner.

As feasible, existing access roads will be used with minimal improvement and will include the use of unimproved cross-country travel access where practicable. All roads will be constructed and maintained in accordance with Western and BLM standards for access roads and specified in the Access Road Plan, to be included as a Framework Plan in the POD.

5.4.2 Traffic and Transportation Management Plan

The purpose of a Traffic and Transportation Management Plan is to describe how roads will be improved and maintained for construction of the Project; and to minimize the potential impacts of construction traffic at staging areas, work areas, and other places where traffic may increase. The plan will address equipment access to and from the Project ROW, drainage improvements, dust control and maintenance measures, and reclamation and abandonment of roads. This plan is generally required by the BLM as a condition of the ROW grant and is sometimes required by State or local departments of transportation.

5.4.3 Stormwater Pollution Prevention Plan

Stormwater discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb 1 or more acres are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program. Prior to discharging stormwater, construction operators must obtain coverage under an NPDES permit, which is administered by either the U.S. Environmental Protection Agency (EPA) (as is the case in New Mexico) or the State (as in Arizona). Construction stormwater discharges are normally permitted under the Construction General Permit, which requires compliance with effluent limits and other standard permit requirements, such as the development of a Stormwater Pollution Prevention Plan (SWPPP).

Table 8. Environmental Protection Measures by Resource

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Standard Mitigation						
	X	The boundaries of construction activities will be predetermined and staked or flagged prior to any construction activity. No permanent markings will be applied to rocks or vegetation.	X			
	X	Prior to construction, all construction personnel will be instructed on the protection of cultural and ecological resources.	X			
	X	All vehicle movement will be restricted to designated access, contracted acquired access, or public roads.	X	X	X	X
	X	To limit disturbance, existing access roads will be used to the extent practicable, provided that doing so does not additionally impact resource values. Widening and grading of roads will be kept to the minimum required for access by Project construction equipment.	X	X	X	X
	X	Structures and/or ground wire will be marked with high-visibility devices such as aerial marker balls, where required by government agencies such as the FAA.	X	X	X	
	X	Transmission line materials will be designed and tested to minimize audible noise, radio interference, electromagnetic interference (EMI), and television interference due to corona.	X	X	X	
	X	No widening or upgrading of existing roads will be undertaken in the area of construction and operations, except for repairs or modifications to make roads safely passable, where soils and vegetation are sensitive to disturbance, in areas of critical habitat for vegetation or wildlife, in areas of habitat for BLM special status species, or where such activities could harm historic properties.		X	X	
	X	During operation of the transmission lines, the ROW will be maintained free of non-biodegradable debris. Desert vegetation will be crushed in place to promote seeding and revegetation, and reduce erosion potential.			X	
	X	BLM and Western road construction specifications will be followed where unimproved spur roads cannot be employed.		X	X	
	X	Unimproved spur roads will be used to the extent practicable in areas where no grading will be warranted to access work areas, within the approved ROW. Unimproved spur roads will be used to access a site without specifically blading a road or significantly modifying the landscape. All vehicle movement will be restricted to designated access, even if that is unimproved access. Vegetation will be crushed where feasible, not cut. For all access types, soil will be compacted, but not removed, except when grading requires displacement of surface soil.		X	X	X
	X	Where new roads will be required, water bars and/or rolling dip cross-drains will be utilized to minimize erosion. Details of their use will be documented in the SWPPP.	X	X	X	
	X	Structures will be placed to avoid, and/or to allow conductors to span, sensitive features such as riparian areas, waterways, roads, trails, and cultural sites within limits of standard transmission line structure design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.	X	X	X	
	X	Clearing of trees in and adjacent to the ROW will be minimized to the extent practicable to satisfy conductor-clearance requirements (NESC and up to 10 years' timber growth). Trees and other vegetation will be selectively removed to blend the edge of the ROW into adjacent vegetation patterns, as appropriate.		X	X	
	X	Separation between transmission lines and existing utilities, roads, and railroads will be minimized to the extent practicable. Opportunities to share portions of adjacent ROWs will also be explored.	X			
	X	All construction vehicle movement will be restricted to predesignated access, contractor-acquired access, and public roads.		X		
	X	The width of construction and new temporary access roads will be sited to keep to the minimum needed to avoid sensitive areas and to limit ground disturbance.		X		
	X	Surface elevations will be returned to approximate pre-Project conditions, as practicable.		X		X
WILD-1		A Worker Environmental Awareness Program (WEAP) will be prepared. All construction crews and field contractors will be required to participate in WEAP training prior to starting work on the Project. The WEAP training will include instructions for crews to report any issues; a review of the special status species; WUS; riparian habitat; cultural, paleontological, and other sensitive resources that could be impacted by the proposed Project; the locations of sensitive biological resources and their legal status and protections; and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel will be maintained during the construction period.	X	X		
	X	The process by which the BLM, Western, and Southline and its construction contractor will conduct environmental monitoring, compliance, and reporting activities during construction will be described in a Project compliance plan that will be prepared by the CIC after the CIC has been selected and reviewed by BLM. After issuance of the notice to proceed, a CIC, designated by the BLM and Western, will provide environmental oversight and compliance monitoring on BLM-managed lands during Project construction to ensure compliance with all design features and mitigation measures.	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Reclamation						
	X	A Reclamation, Vegetation, and Monitoring Plan will be developed and implemented.		X	X	X
	X	Reclamation will be accomplished with native species unless otherwise approved.		X	X	X
	X	Seeding will occur between November and March to ensure a greater chance of success. This will be tied to replacement of conserved topsoil with its natural seed stock.		X	X	X
Air Quality and Climate Change						
	X	Project activities will be in compliance with all applicable Federal, State, and local laws and regulations concerning prevention and control of air pollution during construction and operation.		X	X	
	X	An Erosion, Dust Control, and Air Quality Plan will be prepared as part of the final POD. The plan will be developed and implemented to minimize and mitigate potential air quality and climate change impacts. The Erosion, Dust Control, and Air Quality Plan will include a section detailing the Construction Emissions Mitigation Plan (CEMP). See appendix A6 of this POD for an outline of the information in the Erosion, Dust Control, and Air Quality Plan, including the CEMP.	X	X	X	X
	X	All necessary air quality permits will be obtained prior to construction or operating equipment that will result in regulated atmospheric or fugitive dust emissions.	X			
	X	Trackout control devices such as grizzly bars, wheel washers, gravel pads, etc. will be located at all entrances and exits.		X		
	X	Where implementation of these measures will have a meaningful impact on air quality, haul-truck cargo beds will be covered with tarps and travel speeds will be limited to no more than 15 miles per hour (mph) on unpaved roads.		X		
	X	Combustion emissions from mobile sources will be minimized by proper maintenance of equipment.		X	X	
AIR-1		Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, will be implemented; these include the following reasonable precautions: (1) frequent watering (no new water sources developed), stabilization, or covering (as appropriate) of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; (2) reduction in the amount of disturbed area where possible; (3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended; and/or (4) treatment of actively disturbed areas with BLM-approved dust palliatives.		X		
AIR-2		To reduce the potential for greenhouse gas emissions, only properly trained Project personnel will handle sulfur hexafluoride, and a sulfur hexafluoride recovery and recycling program will be implemented.		X	X	X
Cultural Resources						
	X	Cultural resources will continue to be considered during post-EIS phases of work. Specific cultural resource inventory, protection, and mitigation measures to be employed will be outlined in the Project-specific PA, in accordance with Section 106 of the NHPA. The final POD will include the signed PA and the HPTP.	X	X	X	X
	X	A Native American Graves Protection and Repatriation Act (NAGPRA) Plan of Action will be developed to outline the procedures to be followed in the event that human remains are encountered during ground disturbance. The NAGPRA Plan of Action will be applicable to discoveries of human remains on Federal and Tribal land, and compatible with State laws from Arizona and New Mexico, which protect human remains on State or private lands. For State and private lands in Arizona, "burial agreements" are developed through the Arizona State Museum with each tribe that may claim cultural affiliation to possible human remains discoveries.	X	X	X	
CR-1	X	The area of potential effects will be defined in the PA and will consist of the approved alternative corridor and appropriate buffers; all areas and ancillary features that will sustain ground disturbance (access roads, construction yards, etc.) will be subjected to a Class III, 100 percent-coverage pedestrian inventory to identify all historic properties that may be affected by the proposed Project. Survey and reporting requirements will follow BLM Handbook 8110 requirements for a Class III Intensive Field Survey (BLM 2004).	X			
CR-2		Before construction, and as described in the WEAP, Southline and its construction contractor will provide cultural resources sensitivity training to all construction personnel so that Project personnel understand the procedures in the monitoring and discovery portion of the HPTP.	X	X		
CR-3		An HPTP will be developed and implemented to avoid, minimize, and mitigate the adverse effects of the Project on historic properties. Mitigation measures may range from avoidance and preservation in place to data recovery excavations conducted before the destruction of a site if avoidance is not feasible. The HPTP will include a Monitoring and Discovery Plan detailing procedures to be followed in the inadvertent discovery of a potentially significant archaeological site or human remains.	X	X	X	
CR-4		Ground-disturbing activities and other proposed Project components will be sited to avoid or minimize direct impacts on cultural resources listed as, or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.	X	X	X	
CR-5		Establish and maintain a protective buffer zone around each recorded archaeological site within or immediately adjacent to the ROW that will be treated as an "environmentally sensitive area" within which construction activities and personnel are not permitted.	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
CR-6		Evaluate the significance of archaeological resources, buildings, and structures in the area of potential effects in terms of their eligibility for inclusion in the NRHP.	X			
CR-7		Activities will minimize ground surface disturbance within the bounds of significant archaeological sites, historical resources, or historic properties.	X	X		
CR-8		During construction, it is possible that previously unknown archaeological or other cultural resources or human remains could be discovered. Prior to construction, the Proponent will prepare a Construction Monitoring and unanticipated cultural resources Discovery Plan to be implemented if an unanticipated discovery is made.		X		
Hazardous Materials and Waste						
	X	Framework Plans prepared as part of the final POD will be developed and implemented to minimize and mitigate potential hazardous materials and waste; plans include SWPPP; SPCC Plan; Soil Management Plan; and HMMP. These plans will include requirements by the EPA, OSHA, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.	X	X	X	X
	X	The SWPPP will include BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. The SWPPP is required by, and enforced by, the EPA in New Mexico, and the Arizona Department of Environmental Quality in Arizona.	X	X	X	
	X	Construction, operation, and maintenance crew members who handle oil or other hazardous substances described in the SPCC Plan will be properly trained to deal with a spill, and appropriate spill response or containment material will be available for use at applicable work sites. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in the SPCC Plan, will reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures will be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department will be notified as defined in the SPCC Plan.	X	X	X	X
	X	Personnel, contractors, and transporters involved with hazardous materials management will be required to comply with Federal and State regulations established for the transportation, storage, handling, and disposal of hazardous substances, materials, and wastes. "Hazardous substances" means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.		X	X	X
HAZ-1		The Project-specific HMMP and program will outline proper hazardous materials use, storage, and transport requirements and applicable handling procedures. EPA procedures for handling and storage of hazardous materials, OSHA requirements for proper storage and labeling on the job site, and New Mexico and Arizona Department of Transportation requirements for transportation of hazardous materials will be followed.	X	X	X	X
HAZ-2		If backfill material to be used is derived from a site that could possibly have contamination, it will be sampled and determined to be free of regulated contaminants before it is used to fill excavations. The results of any tested soils should be shared with the appropriate surface managing agency. No contaminated soils will be used as fill material for the Project.		X		
HAZ-3		New or expanded substation locations that involve the purchase or long-term leasing of land, purchased transmission line ROWs, and any other property to be acquired will be screened for environmental liabilities. The degree and level of screening will be based on knowledge or information available on the property to determine the probability of contaminants of concern or other environmental impairment. A Phase I Environmental Site Assessment will be conducted if preliminary screening indicates a reasonable risk that such environmental conditions may exist on the property and the property continues to be targeted for acquisition by the Project, consistent with American Society for Testing and Materials Standard E1527-13.	X			
HAZ-4		The Soil Management Plan will provide guidance for the proper handling, onsite management, and disposal of contaminated soil, if encountered during construction, operation, and maintenance activities. Appropriately trained personnel will be onsite during preparation, grading, and related earthwork activities to monitor the soil conditions encountered.	X	X	X	X
HAZ-5		In the event of a spill, workers in the immediate area will cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in the SPCC Plan. Southline and its construction contractor(s) are responsible for cleanup and assume liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline will immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.		X	X	X
HAZ-6		All construction and demolition waste, including trash and litter, garbage, and other solid waste, will be removed and transported to an appropriately permitted recycling or disposal facility. Southline and its construction contractor will prepare a Construction Waste Disposal Plan for all nonhazardous wastes generated during construction of the Project. The plan will contain a description of all nonhazardous solid and liquid construction wastes, recycling plans, and waste management methods to be used for each type of waste.		X		X
HAZ-7		Southline or the applicable contractors will maintain all vehicles in good working order. Equipment will be properly tuned and maintained to avoid leaks of fluids.		X	X	X
HAZ-8		Service and refueling procedures will not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment will not be done within the ROW.		X	X	X

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Health and Human Safety						
HEA-1 HEA-3		The HASP and Fire Protection Plan prepared as part of the Final POD will be developed and implemented to minimize and mitigate potential health and human safety impacts. Southline and its contractors will work with the appropriate surface-managing agencies to incorporate any fire restrictions that are put into effect during construction, operation, and decommissioning of the Project.	X	X	X	X
HEA-2		Southline and its construction contractor will locate overhead and underground utilities that may reasonably be expected to be encountered during construction. If a utility service interruption is known to be unavoidable, Southline and its construction contractor will coordinate with the service provider to notify members of the public, the jurisdiction, and the service providers affected by the interruption via letters and newspapers notices published no later than 7 days prior to the first interruption. Copies of the notices will be provided to the BLM and Western following notification.	X	X		
HEA-4		All permanent metallic objects within the Project's transmission line ROWs will be grounded in accordance with industry standards.	X	X	X	
		Southline and its construction contractor will provide a safety representative at all times with the construction crews, first aid kits stored in each construction vehicle, a worker trained in first aid included in each work group during construction, and the development and implementation of a HASP.		X		
	X	The HASP will address potential situations that workers could encounter during construction and maintenance. The purpose and goal of the worker safety and environmental training will be to communicate Project-related environmental and safety concerns and appropriate work practices to all field and construction personnel prior to the start of construction, including spill prevention, emergency response measures, accident prevention, use of protective equipment, medical care of injured employees, safety education, and fire protection. Training will encompass environmental training related to road designations and speed limits, promote "good neighbor" policies, and institute BMPs for construction. The training will emphasize site-specific physical conditions to improve hazard prevention in accordance with OSHA requirements (29 CFR 1910 and/or 1926, as applicable).	X	X	X	
Land Use						
		Although disturbance to Pima County Conservation Lands will primarily occur within the existing Western ROW for the existing line, every effort will be made to minimize and avoid impacts to these lands (such as Bar V Ranch, Tumamoc Hill, etc.), to the extent practicable.		X	X	
Farmlands and Rangeland						
FARM-1	X	Fences and gates will be repaired or replaced to their original, predisturbed condition (or better), as required by the landowner, BLM Authorized Officer, or other land managing entity if they are damaged or destroyed by construction activities. New temporary and/or permanent gates will be installed only with the permission of the landowner or the BLM. Temporary gates not required for post-construction access control will be removed following construction completion and in accordance with the POD.		X		X
	X	Water facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced to their predisturbed condition if they are damaged or destroyed by construction, operation, or maintenance activities, as required by the landowner of land management agency. Temporary watering facilities will be provided for wildlife and livestock until permanent repair or replacement is complete.		X	X	X
	X	Laydown areas and substation development will be located on previously disturbed land, where possible, to reduce the impact to farm operations and production in active farmlands. If laydown areas cannot avoid farmlands, Southline will receive approval from the landowner of the farmland to lease the land required for the laydown area.	X	X		
	X	Temporary gates will be installed to prevent livestock from escaping rangelands and accessing roadways. Fences and gates will be repaired or replaced to their original, predisturbed condition, as required by the landowner or the BLM Authorized Officer if they are damaged or destroyed by construction activities. Cattle guards will be installed at access points to prevent livestock from exiting unsecured gates onto roadways.	X	X		
	X	On agricultural land, ROWs will be aligned, in so far as practicable, to reduce the impact to farm operations and agricultural production. This will typically be done in conjunction with negotiating ROW agreements with landowners.	X	X		
Geology and Minerals						
GEO-1		Southline will prepare a geotechnical engineering study prior to the final project design to identify site-specific geological conditions and potential geological hazards. The data collected from the study will be used to guide sound engineering practices and mitigate potential geological hazards.	X			

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Military Operations						
DoD-1	X	The transmission line operator will work with Buffalo Soldier Electronic Testing Range (BSETR) to coordinate, and possibly limit, interconnections to the upgraded Tucson-Apache 230-kV transmission line to the extent allowed by Western's Open Access Transmission Service Tariff and Federal Energy Regulatory Commission (FERC) Orders. The transmission line operator will work with interconnection applicants to locate any future interconnection points on Western's upgraded Tucson-Apache 230-kV transmission line outside the BSETR and within 1 mile of its boundaries. New transmission facilities are defined to include substations, switchyards, and converter stations. Western's Open Access Transmission Service Tariff and the Federal Power Act, as amended, provide the framework, in accordance with Federal law, to consider interconnection requests. Western's Tariff substantively conforms with FERC Orders 888, 889, 890, 2003, and 2006, and ensures open access to Western's transmission system on an equal footing with regulated utilities.	X			
DoD-2	X	Southline and Western will work with BSETR to identify micro-siting opportunities during Project design.	X			
DoD-3	X	The transmission line operator will coordinate with BSETR during the design phase of the proposed Project to limit EMI. The proposed Project will be constructed using the best available construction techniques and technology (i.e., use of grounding, selective conductor type and arrangement, and conductor surface gradients), to the extent feasible and reasonably economical, in order to minimize EMI.	X			
DoD-4	X	The transmission line operator will coordinate with BSETR to allow for an updated measure of the "floor value" of the proposed Project over the first 6 months of operation once the proposed line is energized. Such cooperation could include provision of real-time operating and load information to BSETR to help calibrate the floor value of EMI.	X	X	X	
DoD-5	X	The transmission line operator will coordinate with BSETR to develop reporting standards, for potential inclusion in the transmission line maintenance and inspection program, to the extent allowable by FERC and NERC reliability standards. While normal inspection maintenance will take care of typical EMI issues, specific incidents such as storm damage or vandalism will need to be responded to outside of the normal maintenance cycle. If not detectable through transmission line monitoring, the operator will need to hear from someone experiencing interference in order to respond.	X	X	X	
DoD-6	X	The transmission line operator will coordinate planned outages (curtailment of power line operations for BSETR to implement testing) with BSETR to the extent feasible in order to meet necessary contractual commitments, utility mandates, laws and regulations, and power system requirements. The operator is very limited in the timing and duration of potential outages; outages stress the rest of the system, which can cause system failures.	X		X	
X		Use the optional structure height of 90 feet in areas intersecting the military training route (MTR) VR-263, which has a 100 feet above ground level flight altitude. Additionally, do not erect any structures exceeding 200 feet in height in areas intersecting MTRs VR-260 and VR-1233. Towers crossing the MTRs should also have anti-collision lighting to the maximum extent possible in order to make the hazard of transmission lines more apparent to pilots flying low altitude at night. These measures will mitigate impacts to military training and airspace usage, as well as contribute to the safe conduct of missions.	X	X		
X		Chart the transmission lines before they are erected.	X			
X		Identify transmission structures with high-visibility markers in areas where they intersect or parallel MTRs.	X	X		
MIL-1		The appropriate military scheduler(s) and U.S. Border Patrol representative(s) will be contacted to schedule airspace usage for any construction or maintenance activity on lands that could be used by the military and/or U.S. Border Patrol for training activities or other flights. Coordination will occur with the applicable scheduling office to schedule necessary airspace usage prior to maintenance activities.	X	X		
MIL-2		The proposed Project will comply with FAA regulations, including lighting regulations, to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.	X	X	X	
Noise						
	X	Schedule construction activities and route construction traffic to minimize disruption to nearby residents and existing operations surrounding the Project.		X		
	X	Noisy construction activities (including blasting) should be limited to the least noise-sensitive times of day (daytime only between 7 a.m. and 10 p.m.) and to weekdays. In sensitive wildlife areas, they should be limited to between 1.5 hours after sunrise and 1.5 hours before sunset.		X		
	X	If warranted, in extreme circumstances, erect temporary wooden noise barriers around areas where construction equipment will disturb sensitive receptors ¹ near substations. Barriers may reduce noise by 3 to 10 dBA (EPA 1971).		X		
	X	To the extent possible, locate noisy equipment away from sensitive receptors.		X		
	X	Whenever feasible, schedule noise-generating activities to occur at the same time, since additional sources of noise generally do not add noise. That is, less-frequent noise activities will be less annoying than frequent less-noisy activities.		X		
	X	If blasting or other activities that cause loud bursts of noise are required during the construction period, nearby residents will be notified in advance.		X		

¹ As identified in the EIS, noise sensitive receptors include residential areas, schools and day care facilities, hospitals, long-term care facilities, places of worship, libraries, parks, and recreational areas specifically known for their solitude and tranquility (such as wilderness areas).

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
	X	If possible, minimize trips for surveillance and monitoring of Project transmission lines.			X	
NOI-1		Construction will comply with local noise ordinances. There may be a need to work outside the local ordinances to perform work during available line outage windows in order to take advantage of low electrical draw periods during nighttime hours. The construction contractor will comply with variance procedures required by local authorities.		X		
NOI-2		Construction equipment will be maintained in good working order in accordance with manufacturer's recommendations.		X		X
NOI-3		Idling of construction equipment and vehicles will be minimized during construction.		X		
NOI-4		Workers will be provided with appropriate hearing protection, if necessary, as described in the HASP.		X	X	X
Paleontology						
	X	The Project will avoid Potential Fossil Yield Classification (PFYC) 3 and 4 geological units where possible by spanning resource areas.	X			
PAL-1	X	In consultation with the appropriate land management agencies, Southline and its contractor will develop a Paleontological Monitoring Plan to address paleontological resources within the project area. This plan will address personnel education, predisturbance surveys, monitoring of ground disturbance, and the deposition and curation of fossils in a qualified repository.	X	X		
PAL-2		If scientifically significant fossils are encountered during construction, construction activities will be temporarily diverted away from the discovery and the authorized officer of the BLM will be notified. BLM will then implement the appropriate measures to avoid, protect, and/or recover the fossil remains.		X		
Recreation						
REC-1		Southline will not site additional workspace areas, such as contractor yards, in recreation areas in order to minimize impacts on recreational users during construction.	X	X		
REC-2		Southline and its contractor will coordinate with the BLM to display appropriate "closed" signage at the entrance to new spur roads to structure locations and access roads located on BLM-managed lands. This includes temporary signs during the construction phase of the Project and permanent signs and/or vehicle barriers that will close the spur routes to public travel during the operational phase. Signs will be removed as appropriate upon decommissioning.	X	X	X	X
REC-3		If temporary short-term closures to recreational areas are necessary for construction activities, Southline and its contractor will coordinate those closures with recreational facility owners. To the extent practicable, Southline and its construction contractor will schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). Southline and its construction contractor will coordinate with the facility owner to post notice of the planned closure onsite 14 calendar days prior to the closure.	X	X	X	X
	X	Construction will be limited to certain areas of the ROW during specified hunting seasons (e.g., big-game hunting seasons) by sequencing construction activities along the ROW, in coordination with New Mexico Department of Game and Fish (NMDGF) and AGFD, in accordance with each agency's hunting regulations. Such coordination will allow the agencies to notify hunters of potential for T-line construction activities to affect their hunt. Where construction cannot avoid hunting seasons (e.g., mountain lion, "varmint," and other species with year-round hunting seasons) hunters will be required to avoid discharging firearms adjacent to the construction areas, in accordance with NMDGF and AGFD hunting regulations.	X	X		
	X	If the Arizona National Scenic Trail must be temporarily closed during construction, an alternate trail route (detour) will be provided during the closure. If it is necessary for trail users to leave the trail during the temporary closure, trail users will need to obtain permission from the Arizona State Land Department.	X	X		X
Wilderness						
	X	Notify Wilderness Inventory Unit users by publication of the construction schedule in local media, posting the schedule at administering agency offices, posting the schedule at trailheads or other recreation access points to Wilderness Inventory Units, or other means of reaching visitors. This notification process will alert wilderness users to the potential temporary impacts of presence and sound of construction on opportunities for experiences of solitude and primitive recreation settings, and allow visitors to decide whether they want to reschedule their visit.	X	X		X
	X	Feather the edges of the shrubs and trees adjacent to the ROW when recontouring and revegetating the construction ROW in vegetation communities with a large shrub or tree component, to reduce the line or edge that will be apparent between the shrubs and trees and the grass of the reclaimed ROW.	X	X		X
Trails						
	X	In accordance with the "Design Features and Best Management Practices for National Trails and Associated Resources" (see Appendix 1 in Manual 6280 (BLM 2012d)), proposed projects within a National Trail Management Corridor will be designed and located in a manner that is compatible with trail purposes.	X	X		
	X	Minimize visual contrast of Project through use of Project design such as using low profile buildings; siting using the natural topography to hide or screen development, reducing the aerial extent of impact by clustering developments, using vegetative screening; mimicking the line, form, and texture of the surrounding landscape; painting infrastructure, using colors that camouflage the development and prevent glare; and other techniques developed to address the site-specific conditions (BLM 2012d).	X	X		
	X	Avoid the use of dye, restrict administrative vehicle travel off of designated routes to minimize spread of exotic and invasive species with the National Trail Management Corridor, and consider alternative treatment methods such as use of backpacker sprayer (BLM 2012d).	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Soils						
SOIL-1		As appropriate and feasible, Southline and its construction contractor will implement topsoil segregation and conservation practices at substation sites and as directed by the BLM and Western.		X		
	X	In construction areas (i.e., temporary use areas, structure sites, access roads, etc.) where grading is required, surface restoration will be implemented as required by the landowner or BLM authorized officer. The method of restoration will normally consist of returning disturbed areas back to approximate their normal contour, replacing topsoil, reseeded (where required), installing cross drains for erosion control, placing water bars in the road, and/or filling ditches. The Reclamation, Vegetation, and Monitoring Plan will include final details on the details of restoration.		X		
Socioeconomics						
	X	Southline should maximize local hiring, to the extent feasible, during construction. Local hiring could both maximize local economic benefits from the proposed Project, and help reduce potential housing issues and new public service demands.	X	X		
	X	Southline will develop plans for housing the temporary construction workforce during the periods of time when construction will focus on the western portions of the New Build Section (e.g., Hidalgo County) and the eastern portion of the Upgrade Section (e.g., northeastern Cochise County). If the Proponent Alternative is selected, housing planning should also include southern Luna County. The plan should be developed with input and review from local authorities in those areas to both minimize potential impacts on housing and public services and inform the communities of potential challenges associated with construction.	X	X		
Transportation						
TRA-1		Prior to the start of construction, Southline and its construction contractor will prepare a Traffic and Transportation Management Plan for the Project to address the timing and routing of Project trips in an effort to minimize Project impacts on local streets, highways, and railroad operations.	X			
TRA-2		At least 90 days prior to any construction-related helicopter use on the Project, Southline and its construction contractor will coordinate with the FAA for review and approval of plans for any helicopter flights that will take place during construction and operation. Southline and its construction contractor will then provide information to the BLM and Western regarding the intended need and use of helicopters during construction and operation of the Project, including the Flight and Safety Plan; the estimated number of days and hours that the helicopter will operate; the type and number of helicopters that will be used; the location, size, and number of staging areas for helicopter takeoffs and landings; and written approval from property owners for use of helicopter staging areas.	X	X	X	
	X	If any existing roads were to be damaged by Southline or its construction contractor during construction activities and/or truck traffic, the road will be repaired.		X		
	X	In order to mitigate traffic impacts on primary roads in metropolitan areas, shift changes for construction crews will not occur during the peak hours for the road during construction. Oversize or overweight vehicle movements will be planned for nighttime hours, where practical and not detrimental to safety or evening residential noise levels, or those specified in permitting regulations in order to minimize traffic disruptions.	X	X		
	X	In order to reduce public access to BLM roads and adjacent lands that are not currently accessible by the public, the Proponent will fence off or place restricted access signage at new access roads, where appropriate.	X	X	X	
	X	Throughout the permitting and design phase, the Proponent will correspond with Federal, State, and local transportation agencies in order to avoid Project inconsistencies with current and future transportation plans.	X			
	X	Throughout the permitting and design phase, the Proponent will correspond with Federal, State, and local airports in order to ensure that the FAA criteria for structures near airports are met, and to avoid Project inconsistencies with identified airport plans.	X			
	X	Identify transmission structures with high-visibility markers in areas where they intersect or parallel MTRs.			X	
	X	Provide gates and fencing in areas where OHV use will be restricted due to military operations, or to protect sensitive resources.		X	X	X
Vegetation						
VEG-1	X	Efforts will be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access will not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations will be selected to avoid special status vegetation to the greatest extent feasible.		X		
VEG-2	X	Southline and its construction contractor have developed a Reclamation, Vegetation, and Monitoring Plan (Appendix B15) that will guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan addresses all land disturbances, regardless of ownership. It has been developed in consultation with appropriate agencies and landowners and will be provided to these entities for review and input. The plan provides details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.	X	X	X	X
VEG-3	X	Special-status plants, including the Pima pineapple cactus (<i>Coryphantha scheeri</i> var. <i>robustispina</i>), will be avoided. Where avoidance is not possible, special status plants will be conserved by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regrading in compliance with local ordinances (Pima County, Tohono O'odham Nation). Measures to conserve special status plants will be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
VEG-4	X	Removal of riparian scrubland vegetation will be avoided where possible. Natural regeneration of native plants will be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.		X	X	X
VEG-5	X	In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor will develop and implement a Noxious Weed Management Plan.	X	X	X	X
VEG-6	(see also PPC-3 and 4)	As required, equipment will be cleaned before ingress to minimize the potential for the spread of invasive species. These details will be described in the Noxious Weed Management Plan. Buffelgrass (<i>Pennisetum ciliare</i>) will be specifically addressed in the plan, which will outline efforts to control it within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.	X	X	X	X
	X	Preconstruction native plant inventories, including Chihuahuah scurfpea, and surveys for noxious weed species as stipulated by the appropriate land management agency will be conducted once transmission line center line, access road, and transmission line structure sites have been located.	X			
	X	Although the 150-foot ROW across the San Xavier District of the Tohono O'odham Nation was surveyed for Pima pineapple cactus in summer 2014, additional preconstruction species-specific surveys for the Pima pineapple cactus will be conducted once transmission line center line, access road, and transmission line structure sites have been located, as needed.	X			
	X	Preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups will be conducted to minimize impacts to Tumamoc globeberry (<i>Tumamoca macdougalii</i>) monitoring plots and plants on Tumamoc Hill. Measures to conserve this plant, as well as other special status plants, will be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X
	X	In construction areas where grading is not required, vegetation will be left in place wherever feasible, and original contours will be maintained to avoid excessive root damage and allow for regrowth. All existing roads will be left in a condition that is equal to or better than their condition before the construction of the transmission lines, as determined by the appropriate land management agency.		X		
		Field presence/absence surveys will be conducted for special status species in locations where such species are likely to occur within the Project ROW, and specifically locations where vegetation will be impacted, prior to any actual impacts. Surveys will be conducted following established protocols by qualified biologists approved by BLM.	X			
	X	Southline and its construction contractor will provide training to all appropriate field personnel working on the Project to identify noxious weeds and prevent spread. Training will discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course will be provided to the BLM and Western.		X		
	X	Invasive and noxious weed populations will be mapped and reported to BLM/Western. BLM and Western will determine which areas will necessitate vehicle washing, based on the results of the invasive/noxious weed surveys.	X	X		
	X	Noxious weeds and other exotic, invasive plant species will be inventoried by a qualified biologist in the immediate proximity to any sensitive plant communities and any special status species populations. This noxious weed inventory will then provide information to supplement mitigation plans for sensitive plant communities and/or special status species habitats, to prevent the expansion of any noxious weeds or other exotic invasive plant species into those locations. Mitigation planning shall be included as part of the Plant and Wildlife Species Conservation Measures Plan.	X			
	X	Southwest Regional Gap Analysis Project plant associations (communities) that are considered to be environmentally sensitive will be included in ground-truthing field surveys, such as wetlands, riparian areas, drainages, and special status species habitats, to confirm the presence and extent of such communities. If any such sensitive plant communities are identified and documented, the first response will be a determination regarding whether the sensitive community can be avoided. If avoidance is not possible, a mitigation plan (included as part of the Plant and Wildlife Species Conservation Measures Plan) will be developed as needed for those vegetation communities, including options to reduce impacts to those communities. Exclusion zones (at least 10 feet around the perimeter of the plant community) will be delineated around any such plant communities and marked with flagging. Construction monitoring shall be employed around any such sensitive plant communities, and the biological monitor shall have the authority to halt any construction activity deemed intrusive and causing impacts beyond those stated in the mitigation plan. Any changes in construction plans that occur after the Project approval will require additional field presence/absence surveys for such sensitive plant communities and will require a variance request from the BLM if such communities are found, and the above mitigation measures will apply.	X			
	X	A compensation plan will be developed as part of the Plant and Wildlife Species Conservation Measures Plan, to meet BLM requirements and approval. The compensation plan will include calculations of compensation ratios and mitigation acreages for special status plant species requiring additional mitigation. Compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; or a combination of the two.	X			
	PPC-1	For Pima pineapple cactus that cannot be avoided, Southline will purchase credits in a U. S. Fish and Wildlife Service (FWS)-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied Pima pineapple cactus habitat. Alternatively, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus Priority Conservation Areas.	X			
	PPC-2	In compliance with Executive Order 13112 regarding invasive species, all disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.		X		
	PPC-3	Also in compliance with Executive Order 13112 regarding invasive species, all earthmoving and hauling equipment shall be washed at the contractor's storage facility prior to arriving onsite to prevent the introduction of invasive species.		X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
	PPC-4	To prevent invasive species propagules from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris identified prior to leaving the construction site.		X		
	PPC-5	Any Pima pineapple cactus that are not within the area of permanent disturbance, but are present within the Project vicinity, shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction. Flagging will be removed following construction. Flagging will consist of flagging the area around the Pima pineapple cactus, not flagging the plant itself, and signage will label it as an "Environmentally Sensitive Area". Flagging will be removed following construction.	X	X		
	PPC-6	Any Pima pineapple cactus that cannot be avoided will be conserved by relocating plants within the existing ROW, but outside of the area of any ongoing disturbance.	X	X		
	BO-CM (Biological Opinion-Conservation Measures)	BLM and Western will coordinate with the Arizona-Sonoran Desert Museum in salvaging for the museum's collection if individual Pima pineapple cactus cannot be relocated for some reason.	X	X		
		Pre-construction surveys for Chihuahua scurfpea and other special status plant species will occur in suitable habitat and ground disturbance in occupied habitat will be avoided to the extent practicable. FWS shall be contacted prior to disturbance if an Chihuahua scurfpea are located.	X	X		
	X	Prickly Russian thistle (<i>Salsola tragus</i>), Sahara mustard (<i>Brassica tournefortii</i>), and fountain grass (<i>Pennisetum setaceum</i>) are not identified as noxious weeds in Arizona. However, if these species are present in the ROW and not present in adjacent areas, thus indicating that project activities caused the introduction and spread of these species, then measures will be taken to treat these invasive species in the ROW.				
	X	If noxious weed species on the 2006 list, which currently have small and limited distributions in the state and/or are identified as "alert" species in AZ-WPIG are identified in and/or adjacent to the ROW, the BLM/Southline will attempt to coordinate with the adjacent landowner to treat and eradicate, if possible, these uncommon noxious weeds.				
	X	The responsible Project operator will comply with agency requirements regarding management of noxious weeds within the ROW, along access roads, and at temporary use areas (e.g., cleaning equipment to prevent spread of noxious weeds). Chemical treatment within or adjacent to the ROW generally would be limited only to areas with noxious weeds, and only if absolutely necessary.				
Visual Resources						
	VIS-1	In order to restore disturbed areas to an appearance that will blend back into the overall landscape, seeding and/or planting will be conducted in any area that has been cleared or disturbed during construction. Seed mix will be tailored to an area's soil type, existing vegetation, and native species.				X
	VIS-2	X	The alignment of any new access roads (including unimproved spur roads) will stay within the designated access ROW and will follow the designated area's landform contours and avoid steep areas as much as feasible, provided that such alignment does not additionally impact resource values. This will minimize ground disturbance and/or reduce scarring (visual contrast).	X	X	
	VIS-3		During the construction period, dust suppression measures will be used to minimize the creation of dust clouds potentially associated with the use of access roads.		X	
	VIS-4	X	The Project will incorporate nonspecular conductors into the Project design to decrease reflectivity and visibility of Project features.	X	X	
		X	Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures will be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures will be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by the authorized officer based on a field evaluation of color choices that will demonstrate better measurable performance over Shadow Gray. BLM Visual Resource Management staff shall be consulted and shall approve color selection relative to site-specific structures to be painted.		X	X
		X	All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated (BLM Environmental Color Chart "Shadow Gray").	X	X	
		X	Aerial markers or warning lights will be installed on conductors or structures if required by FAA, U. S. Customs and Border Protection, and DOD regulations for structures over 130 feet. The use of red strobe lighting will reduce potential impacts from artificial night lighting and will reduce impacts from night brightness and viewing of night skies. The minimum number and intensity of lights will be used, given that the tallest structures are under the 200-foot FAA requirement (FAA Advisory Circular 70/7460-1K (FAA 2007)). Exterior lights installed on conductors or other facilities will be aviation warning lights, or FAA L-864 aviation red-colored flashing lights with 20 to 40 flashes per minute standard flashing range.		X	X
		X	The alignment of new access roads or cross-country routes will follow the landform contours where practicable to minimize ground disturbance and reduce visual scarring of the landscape, provided that the alignment does not affect other resource values.	X	X	X
		X	Clearing of trees in and adjacent to the ROW will be minimized to reduce visual contrast to the extent practicable to satisfy conductor-clearance requirements. Trees and other vegetation will be removed selectively to blend the edge of the ROW into adjacent vegetation patterns, as practicable and appropriate.	X	X	X
		X	All new or improved access that will not be required for maintenance will be closed or rehabilitated to make it less visually apparent.	X	X	X
			Tower design may be modified, or an alternative tower type may be selected, to minimize visual contrast as appropriate (BLM 2013o).	X	X	X
		X	Standard tower design will be modified to correspond to spacing of existing transmission structures, where feasible and within the limits of standard tower design, to reduce visual contrast (BLM 2013).	X	X	
		X	At highway, canyon, and trail crossings, towers will be placed at the maximum feasible distance from the crossing within the limits of standard tower design to reduce visual impacts.	X	X	

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water Resources						
WAT-1		A Project-specific construction SWPPP will be prepared prior to the start of construction of the transmission line and substations in compliance with Clean Water Act (CWA) Section 402, if required. The SWPPP will use BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads will be the minimum necessary for construction and will be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A U.S. Army Corps of Engineers permit will be obtained prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404, if required. Activities in and around streams and wetlands will be designed to avoid, minimize, and mitigate impacts to WUS.	X	X		
WAT-2		Construction equipment will be kept out of flowing stream channels, unless feasible alternatives are not available. Structures will be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.	X	X		X
WAT-3		Flood-control devices will be located where required to protect structures from flooding or erosion. Appropriate design of structure foundations will be used to prevent scour or inundation by a 100-year flood and to avoid disturbed areas. The locations of transmission structures will be designed to avoid steep, disturbed, or otherwise unstable slopes. If drainages cannot be avoided by structure placement, Southline and its construction contractor will design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon post-construction restoration.	X	X		
	X	Roads will be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges will be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.		X		
	X	If a route is approved near the internal border, construction activities should be accomplished in a manner that does not change historic surface runoff characteristics at the international border. Copies of any hydrologic or hydraulic studies and site-specific drawings for work proposed in the vicinity of the international boundary will be submitted to the U.S. International Boundary and Water Commission.	X	X	X	X
	X	To the extent practicable, structures will be sited with a minimum distance of 200 feet from streams.	X			
Wildlife						
WILD-2		In consultation with the BLM and Western, Southline and its construction contractor will prepare and implement a Construction Biological Monitoring Plan prior to issuance of a notice to proceed and prior to construction that will specify the level of biological monitoring to be provided throughout construction activities in all construction zones with the potential for presence of sensitive biological resources. The number of monitors and monitoring frequency will be specified for each work zone.	X	X		
WILD-3		Preconstruction surveys will be required in areas where Sonoran desert tortoise (now a separate species: Morafka's desert tortoise (<i>Gopherus morafkai</i>)), and Gila monster (<i>Heloderma suspectum</i>) are expected to occur. In consultation with the BLM and Western, Southline and its construction contractor will hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species.	X			
WILD-4		To reduce impacts on the Sonoran (Morafka's) desert tortoise, known to exist in the western portion of the project area, only authorized biologists with a valid AGFD permit will handle desert tortoises if encountered within the Project area, following the most current desert tortoise handling guidelines published by the AGFD.		X		X
WILD-5		To reduce impacts on all species protected by the Migratory Bird Treaty Act (MBTA), (1) Southline and its construction contractor will conduct preconstruction surveys for active nests, and consult with the appropriate agencies (BLM, FWS, or AGFD) on a case-by-case basis when active nests are found in Project areas, unless directed to do otherwise by these same agencies; (2) a buffer will be placed around active bird nests, and nests will not be moved during breeding season, in compliance with the MBTA, unless the Project is expressly permitted to do so by the FWS or BLM, depending on the location of the nest; (3) all active nests and disturbance or harm to active nests will be reported to the FWS or BLM, upon detection; and (4) work will halt if it is determined that active nests will be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.	X	X		
WILD-6		To reduce impacts on golden eagles and other raptors, Southline and its construction contractor will develop and implement an APP, in coordination with AGFD and the BLM and Western for approval. The plan will be prepared in accordance with guidance provided by the FWS and in consultation with best practices such as the "Reducing Avian Collisions with Power Lines" (APLIC 2012).	X	X	X	X
WILD-7		Southline and its construction contractor will follow Pima County guidelines for surveys prior to disturbance located in Pima County for western burrowing owls (<i>Athene cunicularia</i>). Surveys for western burrowing owl will also be conducted in Cochise County near agricultural fields surrounding the Willcox Playa, and anywhere else throughout the Project where suitable habitat occurs. Surveys for western burrowing owls in Arizona will follow the "Burrowing Owl Project Clearance Guidance for Landowners" (AGFD 2009).	X	X		
		Surveys for western burrowing owl in New Mexico will follow the NMDGF "Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation" (NMDGF 2007).	X	X		
WILD-8		Final structure and spur road locations will be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.	X	X	X	

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
AGFD-1	X	Preconstruction surveys for non-game sensitive species such as ornate box turtle (<i>Terrapene ornata</i>), western burrowing owl (<i>Athene cunicularia</i>), Texas horned lizard (<i>Phrynosoma cornutum</i>), kit fox (<i>Vulpes macrotis</i>), etc. Timing of the surveys will be determined through consultation with AGFD and NMDGF.	X			
		Preconstruction surveys for species listed under the Endangered Species Act or specified by the appropriate land management agency as sensitive or of concern will be conducted in areas of known occurrences or suitable habitat. Timing of the surveys will be determined by FWS-approved, species-specific survey protocol.	X			
	X	Monitoring of construction activities will be required in some areas to ensure that effects on these species are avoided during construction. If bald eagle (<i>Haliaeetus leucocephalus</i>) or golden eagle (<i>Aquila chrysaetos</i>) nests are identified during preconstruction surveys, seasonal restrictions on construction within a specified buffer will be implemented where applicable, according to FWS protocols, to comply with the Bald and Golden Eagle Protection Act. Preconstruction nesting-season surveys for migratory birds and surveys for burrowing owls in suitable habitat will be conducted as needed to comply with the MBTA.		X		
	X	Surveys for bat roosts will be conducted within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts will be avoided.	X			
	X	Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas will be conducted outside the breeding season for most desert-nesting migratory birds.	X	X		
	X	Construction holes left open overnight will be appropriately fenced or covered to prevent damage to wildlife or livestock. They will be inspected daily until filled to ensure no wildlife has become entrapped.			X	
	X	Except where otherwise posted or allowed, a Project speed limit of 25 mph will be designated for all construction areas, spur roads, and new access roads to minimize the potential for construction equipment collisions with wildlife. In areas with mountainous terrain and/or poor site distances, the Project speed limit will be 15 mph.			X	
	X	In construction areas where recontouring is not required, vegetation will be left in place wherever possible, to avoid excessive root damage and allow for resprouting.			X	
	X	If designated suitable bighorn sheep (<i>Ovis canadensis</i>) habitat along subroute 1.2 in segment S2 were to become occupied by bighorn sheep, then no Project facilities except transmission lines will be built in that area, if that route is selected.			X	
	X	To avoid impacting roosting bats at the Ina Road bridge, blasting activities will be restricted to less than 130 decibels (dB) if possible, and if that is not possible, then blasting activities will occur at night after most bats have left their roost. No blasting will occur in April or May when the maternity colony is present.			X	
AGFD-2	X	Southline will fund the relocation of Crane Lake, including acquisition of land if necessary, construction of the lake and associated infrastructure, revegetation, and visitor facilities. This will include operation and maintenance costs of the lake and infrastructure for the life of the Project, with the renewal of commitment upon future renewal of the Project permit.	X	X	X	
AGFD-3	X	Southline will provide funding to improve riparian emergent wetlands on three historic ponds near Kansas Settlement Road. Wetlands will be constructed to AGFD specifications and adequately equipped with pumps, liners, and drains to ensure that wildlife values are maintained.	X	X	X	
AGFD-4	X	Southline will fund the removal of non-native flora and revegetation with native flora on the Willcox Playa Wildlife Area.	X	X	X	
LNB-1	LNB-1	All paniculate agaves (<i>Agave palmeri</i> , <i>A. parryi</i> , and <i>A. chrysantha</i>) and saguaros (<i>Carnegiea gigantea</i>) will be inventoried within the proposed ROW, and the potential to avoid or salvage each plant will be assessed. The priority will be avoidance when feasible.	X	X		
		All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that cannot be avoided will be salvaged using methods approved by the BLM/Western and FWS, but mature agaves will be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.	X	X		
		Other species of agaves such as <i>A. schottii</i> that are not primary food plants for nectar-feeding bats will be salvaged and used for reclamation in accordance with the Reclamation, Vegetation, and Monitoring Plan.	X	X		
		Saguaros less than 15 feet in height will be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros will be avoided whenever feasible, but will be topped or removed if necessary.	X	X		
		Agave and saguaro salvage will be augmented, as necessary within 3 years after completion of initial restoration activities. Augmentation will occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants will be used.	X	X		
		Salvaged plants will be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water will be provided, if monitoring indicates that rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period will be reported annually to the BLM/Western and FWS	X	X		
WF-1		All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River will take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers (<i>Empidonax traillii extimus</i>).		X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
	WF-2 YBC-2	Line marking devices will be placed at the proposed crossings of the San Pedro River, Cienega Creek, Santa Cruz River, and the Willcox Playa Wildlife Area, to minimize the potential for avian collisions with transmission lines.		X		
	YBC-1	All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and Santa Cruz River will take place between September 15 and March 1, to avoid disturbance of breeding or nesting yellow-billed cuckoos (<i>Coccyzus americanus</i>).		X		
	BAT-1	Construction activities that create sudden and sporadic loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex will be restricted in the Spring (April 1 to May 31), depending on the presence of bats to protect maternity roosts and potential hibernacula.		X		
	BO-CM	BLM and Western will work with FWS, AGFD, and NMDGF to implement recovery actions for lesser long-nosed bat (<i>Leptonycteris yerbabuena</i>), Mexican long-nosed bat (<i>Leptonycteris curasoae</i>), southwestern willow flycatcher, and yellow-billed cuckoo.	X			
	BO-CM	BLM and Western will work with FWS, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for northern Mexican gartersnake (<i>Thamnophis eques megalops</i>), particularly on efforts to remove harmful nonnative species from occupied northern Mexican gartersnake habitat.	X			
	BO-CM	BLM, Western, and Southline will use the smallest mesh size possible (<0.5 inch) for erosion-control products, or products that do not contain any mesh- or net-like attributes near occupied northern Mexican gartersnake habitat. BLM, Western, and Southline will refrain from using erosion-control products (such as wattles), that contain a mesh size of 0.5 inch (or 1.27 cm) within proposed critical habitat for the northern Mexican gartersnake.		X		
	BO-CM (appendix B)	Preconstruction surveys will take place in habitat classified as moderate or high suitability for the northern aplomado falcon (<i>Falco femoralis septentrionalis</i>) within the proposed ROW and a 1-mile buffer. Surveys should be conducted several times from January 15 to June 30 in order to detect breeding activity.	X			
	BO-CM (appendix B)	All existing raptor nests or other large nests found during preconstruction surveys will be preserved in place, if possible, or relocated if necessary. No relocation of active nests will occur, and no nests will be relocated until after consultation with the Federal action agencies, State agencies, and FWS.	X	X		
	BO-CM (appendix B)	Construction will not take place within 1 mile of occupied northern aplomado falcon nests between January 15 and September 1. Aplomado falcons are frequently observed on their breeding territories in southern New Mexico in January. Therefore, January 15 is the start date for seasonal restrictions.		X		
	BO-CM (appendix C)	Preconstruction desert tortoise surveys will be conducted in suitable habitat. A WEAP that includes information on desert tortoises will be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities will be handled in accordance with the AGFD "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects" (AGFD 2007).	X			

A SWPPP for the Project will identify sources of pollutants associated with construction activity that may affect the quality of stormwater, as well as stormwater management practices to abate pollutants in stormwater discharges from the construction site both during and after construction. The SWPPP will detail structural and non-structural controls that will be put in place to minimize negative impacts caused by offsite stormwater discharges to the environment. BMPs in the plan will include specific stabilization measures and structural controls, spill prevention containment and controls, final stabilization measures to be implemented after construction, and requirements for maintenance and inspection, subject to approval by an Erosion Control Coordinator.

5.4.4 Spill Prevention, Control, and Countermeasures Plan

The Spill Prevention, Control, and Countermeasures (SPCC) Plan will address requirements for petroleum spill prevention, preparedness, response, and notification to prevent oil discharges to waters and adjoining shorelines. The EPA's SPCC rule 40 CFR 112 is part of the Oil Pollution Prevention regulation, which requires specific facilities to prepare, amend, and implement SPCC Plans. The plan will address prevention and remediation of oil, hydraulic fluid, and petroleum fuel spills, including spills that could enter WUS.

5.4.5 Historic Properties Treatment Plan

Section 106 of the NHPA requires Federal agencies to consider the effects of their undertakings on historic properties (those cultural resources presently listed or determined to be eligible for listing in the NRHP). Due to the scope and complexity of the Project, and because the effects on historic properties cannot be fully determined prior to the approval of an undertaking, the BLM and Western determined early in the process that the undertaking will have an "adverse effect" on historic properties. To resolve the adverse effects, a Project-specific PA is being developed among the consulting parties.

The PA, an HPTP, and a Monitoring and Discovery Plan will be developed pursuant to the PA, and will be incorporated into the POD. The HPTP provides a framework for conducting historic resource testing and data recovery for the Project. It will describe measures that will be implemented to address the avoidance of impacts, minimization of impacts, and mitigation of possible impacts to historic properties. As noted in the PA, for the purposes of Section 106 of the NHPA, decommissioning would be a new action for Section 106 review and historic properties potentially affected by decommissioning would be considered in the BLM-approved Termination and Reclamation Plan in accordance with the pertinent laws, regulations, and policies extant at the time.

5.4.6 Blasting Plan

A Blasting Plan will outline the procedures and safety measures that the Project contractor will adhere to while implementing blasting activities during construction. It will identify proposed blasting techniques, as well as blasting requirements and procedures such as proposed notification of agencies and affected landowners, safety, use, storage, and transportation of explosives. These procedures must be consistent with the minimum safety requirements defined by Federal, State, and local regulations. This plan will also identify and address areas of potential environmental concern as related to blasting along the Project route. The Blasting Plan will be circulated to the appropriate Federal, State, and local agencies, as appropriate.

5.4.7 Plant and Wildlife Species Conservation Measures Plan

Federal agencies are required to consider the effects of their activities on protected species. The Plant and Wildlife Species Conservation Measures Plan will outline the avoidance and minimization of impacts to special-status plant and wildlife species as related to Project construction activities. It will describe specific measures to be implemented in the event that State or federally listed species, BLM sensitive species, or Forest Service special-status species or their habitats are identified within or adjacent to the Project ROW. The Plant and Wildlife Species Conservation Plan will incorporate appropriate Federal, State, and local agency guidance and regulation, such as the Pima County Regional Flood District Regulated Riparian Habitat Mitigation Standards. To the extent practicable, final siting of the transmission line, access roads, and other areas of Project disturbance will avoid sensitive species and their habitats.

5.4.8 Erosion, Dust Control, and Air Quality Plan

In order to maintain air quality in the vicinity of construction areas, the Erosion, Dust Control, and Air Quality Plan will identify sources of fugitive dust, such as grading activities, driving on dirt roads, or wind-driven dust from exposed soil; and then provide appropriate dust mitigation measures (PCEMs) such as application of water or soil additives, control of vehicle access, vehicle speed restrictions, or even work stoppage during extreme wind. The plan will also identify sensitive receptors that could be affected by dust from work areas, and outline dust monitoring and recordkeeping responsibilities. The Erosion, Dust Control, and Air Quality Plan will incorporate appropriate Federal, State, and local agency guidance and regulation and be circulated to the appropriate agencies to verify that the Project is complying with the applicable air quality rules and regulations. Applicable County Plans, Laws, Ordinances, Regulations, and Standards Related to Air Quality are discussed in chapter 3 of the EIS.

Additionally, the Erosion, Dust Control, and Air Quality Plan will include a Construction Emission Mitigation Plan (CEMP) that will include fugitive dust source controls such as:

- stabilization of open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;
- installation of wind fencing and phased grading operations where appropriate;
- operation of water trucks for stabilization of surfaces under windy conditions; and
- prevention of spillage when hauling material and operating non-earthmoving equipment and limiting speeds to 15 miles per hour. Limiting speed of earth-moving equipment to 10 miles per hour.

The CEMP will also include mobile and stationary source controls such as:

- planning construction scheduling to minimize vehicle trips;
- limiting idling of heavy equipment to less than 5 minutes and verification through unscheduled inspections;
- maintenance and tuning of engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed; and

- where practicable, use new, clean equipment meeting the most current of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for Project construction equipment to the maximum extent feasible. Lacking availability of non-road construction equipment that meets Tier 4 engine standards, the responsible agency should commit to using EPA-verified particulate traps, oxidation catalysts, and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site.

The CEMP will also include administrative controls such as:

- preparation of an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking; and
- development of a construction traffic management plan that maintains traffic flow and plan construction to minimize vehicle trips.

5.4.9 Hazardous Materials Management Plan

The purpose of the HMMP will be to reduce the risks associated with the storage, use, transportation, and disposal of hazardous materials anticipated to be used during the construction phase of the Project. The HMMP will be required to meet BLM ROW grant conditions to provide a basic understanding of the hazards and techniques associated with the handling of hazardous materials so that the Project personnel will be better able to protect their personal health, prevent damage to the environment, and comply with applicable laws, regulations, and policies.

5.4.10 Emergency Preparedness and Response Plan

The purpose of the Emergency Preparedness and Response Plan will be to help prevent emergencies, to ensure preparedness in the event emergencies do occur, and to provide a systematic and orderly response to emergencies. Emergencies may include be medical, fire, hazardous materials, extreme weather, or acts of sabotage. The plan will provide project-specific details regarding steps for various types of emergencies, including emergency notification and evacuation procedures, and will take into account the level of severity of each event.

5.4.11 Noxious Weed Management Plan

The primary focus of the Noxious Weed Management Plan will be to minimize the introduction of any noxious weed infestations, as well as the spread of weeds, during construction of the Project and to eradicate noxious weeds following construction. Regulatory authority and requirements are provided by Federal regulations, including the Executive Order on Invasive Species and the Plant Protection Act, plus State regulations on noxious weeds. The plan will outline that invasive weeds are not controlled to the same standards as noxious weeds and will specifically address the elimination of buffelgrass (*Pennisetum ciliare*) from areas disturbed by the Project to ensure that it does not spread to adjoining lands.

5.4.12 Fire Protection Plan

A Fire Protection Plan will help reduce the risk of fires and minimize the dangers posed by fires during construction and operation phases of the Project. Because the Project will be located in remote and isolated locations, the dangers posed by fire may be increased. The objective of this plan will be to eliminate causes of fire, minimize the potential loss of life and property by fire, and comply with OSHA

standards on fire prevention. It also will provide information and guidelines to assist in recognizing, reporting, and controlling fire hazards.

5.4.13 Stream, Wetland, Well, and Spring Protection Plan

General water quality is protected under the Federal Clean Water Act, and a permit may be required if a project will result in discharges to regulated WUS. The purpose of a Stream, Wetland, Well, and Spring Protection Plan will be to describe measures to protect those resources from potential impacts during construction, operation, and maintenance activities. The plan will describe avoidance, minimization, and mitigation measures (PCEMs) and will be intended for use as a guide to determine the appropriate site-specific measures to be implemented during construction activities. The goals of the plan will be to prevent and control the Project-related erosion and sedimentation into streams and wetlands, minimize disturbance and erosion of streambeds and banks, and protect springs and wells from Project impacts due to blasting and hazardous materials contamination. The Stream, Wetland, Well, and Spring Protection Plan will incorporate appropriate Federal, State, and local agency guidance and regulations, such as the Pima County Regional Flood Control District Regulated Riparian Habitat Mitigation Standards.

5.4.14 Soil Management Plan

A Soil Management Plan will define procedures for managing soils that are excavated during construction, along with plans for their storage and later reuse. This plan is often an appendix to a SWPPP. In addition to clean soil excavation, the plan will outline procedures for segregation of potentially contaminated soils, sampling and analysis of those soils, and disposal options if that becomes necessary. It also will define how topsoil would be segregated and stored, how stockpiles will be managed and protected, and used in site restoration. Use of topsoil for restoration activities will be described in the Reclamation, Vegetation, and Monitoring Plan. Erosion and sediment controls for excavated soil will also be discussed.

5.4.15 Reclamation, Vegetation, and Monitoring Plan

The Reclamation, Vegetation, and Monitoring Plan will be prepared to address the reconstruction of disturbed ecosystems by returning the land to a stable and productive condition. It will describe reclamation, revegetation, native plant management, and noxious and invasive weed control, with the purpose of restoring areas impacted by construction, operation and maintenance, and decommissioning. The plan will distinguish between Interim Reclamation Activities and Final Reclamation Activities with corresponding goals and objectives. Such plans typically include predisturbance site characterization, waste material management, site preparation and seeding, the use of native seeds, invasive species management, and compliance and effectiveness monitoring. Plan elements will help protect subsurface integrity and eliminate sources of ground and surface water contamination. Implementation of these elements will also maintain the biological, chemical, and physical integrity of the topsoil and subsoil, and reestablish slope stability and surface stability. The Reclamation, Vegetation, and Monitoring Plan will incorporate appropriate Federal, State, and local agency guidance and regulations, such as the Pima County Regional Flood Control District Regulated Riparian Habitat Mitigation Standards.

5.4.16 Health and Safety Plan

A HASP is not typically required by Federal law; however, section 18 of the Occupational Safety and Health Act of 1970 encourages States to develop and operate their own safety and health programs in the

workplace. In New Mexico, the Occupational Health and Safety Bureau, part of the New Mexico Environment Department, has the responsibility of enforcing Occupational Health and Safety Regulations. In Arizona, the Arizona Division of Occupational Safety and Health is responsible for enforcement and voluntary compliance.

The purpose of a HASP will be to ensure the safety of the Project employees, construction personnel, and the public. The HASP will be tailored specifically for the Project, and will include a description of hazards that may be encountered during the life of the Project. The HASP will detail employee safety training procedures that will be used, structural and non-structural safety controls that will be put in place, personal protective equipment that will be required, emergency response procedures, protocols for Project-specific procedures such as confined space entry, and applicable standards, practices, and procedures specified by OSHA (29 CFR 1910).

5.4.17 Avian Protection Plan

An APP will be a Project-tailored plan designed to reduce avian electrocution and collision mortality that result from avian interactions with electric utility facilities. The overall goal of an APP is to reduce avian mortality. The 2005 APLIC and FWS APP Guidelines (APLIC 2005) provide a framework, along with principles and examples of APPs.

The APP will be designed as a living document to be continually evaluated and refined over the life of the Project. The elements of the APP will include training, permit compliance, construction design and siting standards, nest management, a reporting system, risk assessment for evaluating the risks posed to migratory birds. The plan will also identify areas and issues of concern, mortality reduction measures, and avian enhancement options.

Examples of avian protection measures that *could* be included in the APP are:

- Marking wires (bird diverters) and/or using special structure design to increase visibility to birds;
- Applying special structural design to decrease the heights of ground wires and conductors;
- Monitoring to ensure that mitigation measures (PCEMs) are implemented; and/or
- Conducting additional avian studies, surveys, and/or monitoring to record the presence of birds and incidence of avian collisions, and provide data that could be useful to minimize the potential for collisions with the Project, as well as with existing and future power lines in other locations.

Southline, BLM and Western will collaborate with agencies such as the FWS, AGFD, and NMDGF and other cooperating agencies on development of the APP, the goal of which is mitigate the collision risk and loss of productivity for all birds.

5.4.18 Waste Management Plan

The purpose of the Waste Management Plan will be to outline non-hazardous waste handling procedures to be used during the construction, operation, and maintenance phases of the Project and to identify expectations for minimizing waste and recycling processes. Waste addressed in this plan will include all non-hazardous waste resulting from construction and land clearing, as well as material that is recycled, reused, salvaged, or disposed of as garbage.

The Waste Management Plan will attempt to predict the quantities and types of waste that will be generated during the construction, operation, and maintenances phases of the Project, identify the final destination of that waste, and estimate waste management costs. The Waste Management Plan will consider waste diversion goals and objectives, and will explore recycling and reuse alternatives.

5.4.19 Helicopter Flight Plan/Flight and Safety Plan

The Helicopter Flight and Safety Plan will describe the hours and estimated number of days that a helicopter will operate for construction of the Project, the type and number of helicopters that will be used, and the kind of work to be performed. Additional information presented in this plan will include the location, size, and number of staging areas for helicopter takeoffs and landings, and safety measures to be implemented during helicopter operations. This plan will be reviewed and approved by the FAA prior to the commencement of helicopter operations.

5.4.20 Decommissioning Plan

The Decommissioning Plan will detail how the structures and facilities of the Project would be removed after the useful life of the Project is reached, and how the affected properties would be reasonably restored in accordance with the BLM ROW grant. This plan will be a general outline of how the Project will be decommissioned and how land would be restored to its original condition. Decommissioning procedures described will include the removal of structures, disposal of waste, and identification of what, if anything, may remain on the land upon completion. Restoration will include the stabilization and revegetation of the disturbance area to minimize erosion and return the land to productive use.

5.5 SELECTIVE MITIGATION BY MILEPOST

Files to be included with Final POD (post Final EIS) - not included herein.

Chapter 6

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Appendix A

CONSTRUCTION CONSIDERATIONS

Full text to be included with Final POD (post Final EIS) – text in the following section not fully developed.

APPENDIX A1

FLAGGING, FENCING, AND SIGNAGE PLAN

A1.1 Introduction

This Flagging, Fencing, and Signage Plan describes the methods that will be used in the field to delineate Southline Transmission Line Project (Project) limits of disturbance and protect sensitive environmental and cultural resources during Project construction. These methods are intended to ensure Southline Transmission, LLC (Southline, or the Proponent) personnel, the construction contractor(s), Bureau of Land Management (BLM), Western Area Power Administration (Western), compliance inspection contractor(s) (CIC), and other monitors and visitors to the Project construction sites stay on approved access routes and within approved work areas.

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate and as agreed to by the affected landowner. The measures described in this plan are an integral part of the environmental compliance program for avoiding and minimizing impacts on sensitive resources. The objective of this plan is to provide information on the field markings (i.e., flagging, fencing, and signage) that will be used to identify approved Project travel and work areas, as well as sensitive resource areas where construction or travel is to be excluded.

A1.2 Regulatory Requirements

No Federal, State, or local laws, rules, or regulations specifically address flagging, fencing, and signage protocols for construction projects. However, some of the Proponent Committed Environmental Measures (PCEMs) identified in the Environmental Impact Statement (EIS) for the Project (and also in table 8 in the POD), hinge on adequate field marking of work areas and/or of sensitive resource areas to avoid or reduce impacts. These PCEMs include flagging or fencing requirements to help protect vegetative cover, water quality, cultural resources, and special-status species and minimize the spread of invasive weeds.

A1.3 Methods

A1.3.1 Demarcating Project Facilities

Standard survey flags and stakes will be installed before the start of Project construction to demarcate the limits of the right-of-way (ROW), the centerline of the transmission line, construction areas, and access roads. The construction contractor(s) will demarcate the ROW (i.e., the limit of disturbance) and the transmission line centerline. Structure sites (i.e., structure locations and footprints), substation construction areas, and ancillary facility locations, will be marked by the construction contractor(s). Structures will be either self-supporting lattice or tubular monopole structures. The lattice structures will have a base width of 25 feet with four 4-foot-diameter concrete footings; the monopole will have a single 7- to 8-foot-diameter concrete structure base. Designated Project access roads, spur roads, parking areas, and pullout areas will be marked to facilitate travel to and from the ROW. Wire tensioning and pulling sites, splicing locations, staging areas, and material yards will be demarcated as necessary to indicate the limits of approved work areas. Substation construction areas will be demarcated as well. Prior to the flagging installation, the construction contractor(s) will stake the boundaries of the maximum area needed

for all work areas and will provide the dimensions to BLM's and Western's CIC. During construction, if a larger work area than the approved dimensions for Project facilities is needed the construction contractor(s) will coordinate with the CICs for approval, and consultation with the BLM, Western, and other agencies may be required.

A1.3.2 Environmental Exclusions

Signs, flagging, and/or fencing will be used to establish exclusion areas to protect sensitive environmental resources (e.g., biological, cultural, wetland, and paleontological resources) in the vicinity of construction activities. A system of standardized and simplified exclusion markings will be used to reduce potential confusion during construction and minimize the risk of highlighting types of sensitive resources that could be targeted by vandals (e.g., if exclusion areas protecting archaeological sites were marked differently than those protecting sensitive natural resource areas, the sites would be at a higher risk of unauthorized artifact collecting and other disturbances). Exclusion areas will be set up to protect these areas. Exclusion areas will be provided to the construction contractor(s) and their environmental monitors via geographic information system (GIS) files; however, the construction contractor(s) will not necessarily be told if the exclusion area is for the protection of biological, cultural, wetland, or paleontological resources. The marking of exclusion areas will be done under the guidance of the construction contractor(s) environmental monitors and will be closely coordinated with and verified by the CIC.

A1.3.3 Signing, Flagging, and Fencing Materials and Methods

Table A1-1 provides some standards for marking Project features using signing and flagging that will be needed during Project construction. Fencing will be used in locations where flagging and signing are not sufficient to demarcate exclusion areas. No permanent markings will be placed on rocks or non-deciduous vegetation.

Table A1-1. Signing and Flagging Scheme

Feature	Flagging or Sign Colors	Sign Text	What to Do
Project access road	To be decided by construction contractor(s)	Project Access Road – Road # – Southline Transmission Line Project	To be located at points of intersection, additional intermittent flagging along the routes may be required. Construction contractor(s) to verify that right of entry has been obtained before marking these areas and verify what type of road (A – E) has been specified for each access point (e.g. unimproved, bladed, etc).
Temporary work areas (tensioning and pulling sites, material yards, etc.)	To be decided by construction contractor(s)	Not applicable	Construction contractor(s) to verify that right of entry has been obtained before marking these areas.
Public access	To be decided by construction contractor(s)	No Public Access	To be located at points of intersection with private land or roads closed to the public.
Sensitive environmental areas	Yellow or orange (same as for wetlands)	Sensitive Resource Area – Keep Out	Avoid these areas – do not drive vehicles or equipment near flagged or within flagged areas.
Reclamation project areas	Black	Restoration in Progress – No Vehicle Traffic Allowed	Avoid these areas – do not drive vehicles or equipment near flagged or within flagged areas.

Table A1-1. Signing and Flagging Scheme (Continued)

Feature	Flagging or Sign Colors	Sign Text	What to Do
Wetlands	Yellow or orange (same as for sensitive environmental areas)	No Refueling within 500 feet of Streams and Washes	
Invasive weed cleaning stations	Blue	Weed Cleaning Station # – Southline Transmission Line Project	Signs will be posted at entry points into weed cleaning stations.
Noxious weed problem areas	Blue	No Entry Without Vehicle Cleaning	Signs to be posted at areas identified by Weed Management Specialist
Proposed structure locations	To be decided by construction contractor(s)	Not applicable	Do not disturb the survey stakes.
Structure offsets	To be decided by construction contractor(s)	Not applicable	Do not disturb the survey stakes.
Substation and communication regeneration station locations	To be decided by construction contractor(s)	Not applicable	Do not disturb the survey stakes.
Outside edge of permitted ROW or centerline	To be decided by construction contractor(s)	Not applicable	Do not drive vehicles or equipment outside of designated corridor.
Cadastral survey monument	To be decided by construction contractor(s)	Not applicable	Protect in place.
Non-authorized access road	To be decided by construction contractor(s)	Do Not Enter Not an Authorized Access Road – Southline Transmission Project	Do not drive vehicles or equipment on unauthorized roads.

NOTES:

- Staking and flagging will be done by construction contractor(s) and verified by CIC, including sensitive resource exclusion zones.
- Construction contractor(s) shall stake all proposed structure center hub and footing locations, structure locations, and associated reference points and mark the centerline with intervisible stakes not to exceed 500 feet and at all road crossings.
- Construction contractor(s) shall use staking intervals appropriate to the conditions observed in the field. For example, areas of rough terrain or dense vegetation may require staking at intervals less than 500 feet. In all cases, field staking intervals shall be done at a frequency such that each adjacent stake can be easily discernible.
- Maintain (refurbish as necessary) staking over time as conditions require.

A1.3.3.1 SIGNING

Signs will be used to help identify Project features and work areas such as approved access roads and wire tensioning and pulling areas, as well as certain Project facilities or exclusion areas such as “Sensitive Resource Area.” Sign will be a minimum of 8.5 inches by 11 inches on laminated (7-millimeter or greater) color paper or similar material. Signs will be installed on metal or plastic posts and/or wooden stakes or attached to exclusion fencing/roping, as appropriate. Background colors will vary and will be chosen to best enhance sign recognition from a distance. Signs for sensitive resource exclusion areas will be placed and oriented to be visible from both directions of likely travel.

Figures A1-1, A1-2, A1-3, A1-4, A1-5, and A1-6 (included at the end of this appendix) show the size and configuration of typical sign layouts.

A1.3.3.2 FLAGGING

Survey flagging (i.e., surveyor’s ribbon tied to wooden stakes, metal posts, or vegetation) will be used to delineate the overall disturbance limits (i.e., boundaries of the ROW) and centerline, as well as the limits of work areas, material yards, wire tension and pulling areas, access roads, parking areas, etc., unless existing fencing or other features clearly indicate the limits of the area. Survey flagging may be used to demarcate sensitive resource exclusion areas situated at safe distance from planned construction activities

but generally will not be used to define sensitive resource exclusion areas close to planned construction activities because of flagging visibility and stability issues during construction activities. Instead, resource exclusion areas near construction will be fenced prior to construction activities (see section A1.3.3.3 Fencing).

The BLM, Western, 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 A1-1.

A1.3.3.3 FENCING

To delineate sensitive resource exclusion areas near construction activities, a combination of one or more of the following fencing materials will be installed by the construction contractor(s):

- rope (minimum 1/4-inch in diameter in yellow or orange coloring);
- plastic or fabric tape in yellow or orange; and/or
- safety fencing (plastic orange or yellow mesh at least 24 inches wide and at least 18 inches off the ground to facilitate travel by small animals).

Roping will be the primary fencing devices used for sensitive resource exclusion areas where flagging is not appropriate. Roping with periodic marking with signs or lengths of flagging tape is a highly visible and effective exclusion device. Roping, tape, and safety fence will be installed using metal posts for increased durability, especially in areas with compact or rocky soils. In most cases, the exclusion device will be installed at the boundaries of the sensitive resource exclusion area which includes any required buffers, rather than at the edge of the work area. If a sensitive resource buffer zone encroaches into the work area, the portions that overlap with the work area will be delineated with fencing and signed as an exclusion zone. However, if necessary, roping, tape, or fencing can be used to demarcate the limits of a work area if multiple sensitive resource exclusion areas are present. In addition, if construction within a wetland is necessary, the boundaries of the approved disturbance area will be demarcated with fencing so impacts are limited to the authorized area.

A1.4 Installation, Monitoring, and Maintenance of Fencing, Flagging, and Signage

The purpose of this Flagging, Fencing, and Signage Plan is to ensure that all personnel, including construction crew, monitors, the CIC, Southline and Western representatives, etc., associated with the Project stay on approved access routes and within approved work areas. The achievement of this goal depends on the proper installation, monitoring, and maintenance of protective devices such as flagging, signage, and fencing. The construction contractor(s) will be responsible for the installation and maintenance of the field markings of construction features (e.g., structures, wire pulling sites, substations, etc.). These markings will be installed in advance of construction activities in the area, maintained during the course of construction (as necessary), and removed after Project cleanup and reclamation activities. Sensitive resource exclusion area markings (e.g., signs, flagging, and fencing) will be installed by the construction contractor(s) in coordination with the CIC along with the assistance of appropriate resource monitors (e.g., botanists, biologists, archaeologists) as needed. These sensitive resource exclusion area markings will be installed prior to the start of construction within and near Project work areas. The CIC will be consulted if there is uncertainty as to the type or location of needed sensitive resource exclusion area markings for botanical, wildlife, wetlands, streams, or archaeological sites.

Routine Project monitoring by the CIC and construction contractor's resource monitors will include an on-going assessment of the need for replacement or repair of exclusionary flagging or fencing. Flagging and fencing maintenance needs will either be corrected at the time of the observation by the CIC, or will be documented as a future maintenance need. If maintenance of flagging or fencing is needed within an active construction area, corrective action will be taken within one workday. Maintenance of signs, flagging, and fencing within inactive work areas will be implemented as necessary. All signs, flagging, and fencing will be removed after Project cleanup and reclamation activities by the construction contractor(s).



Figure A1-1. Typical Sign – PROJECT ACCESS ROAD

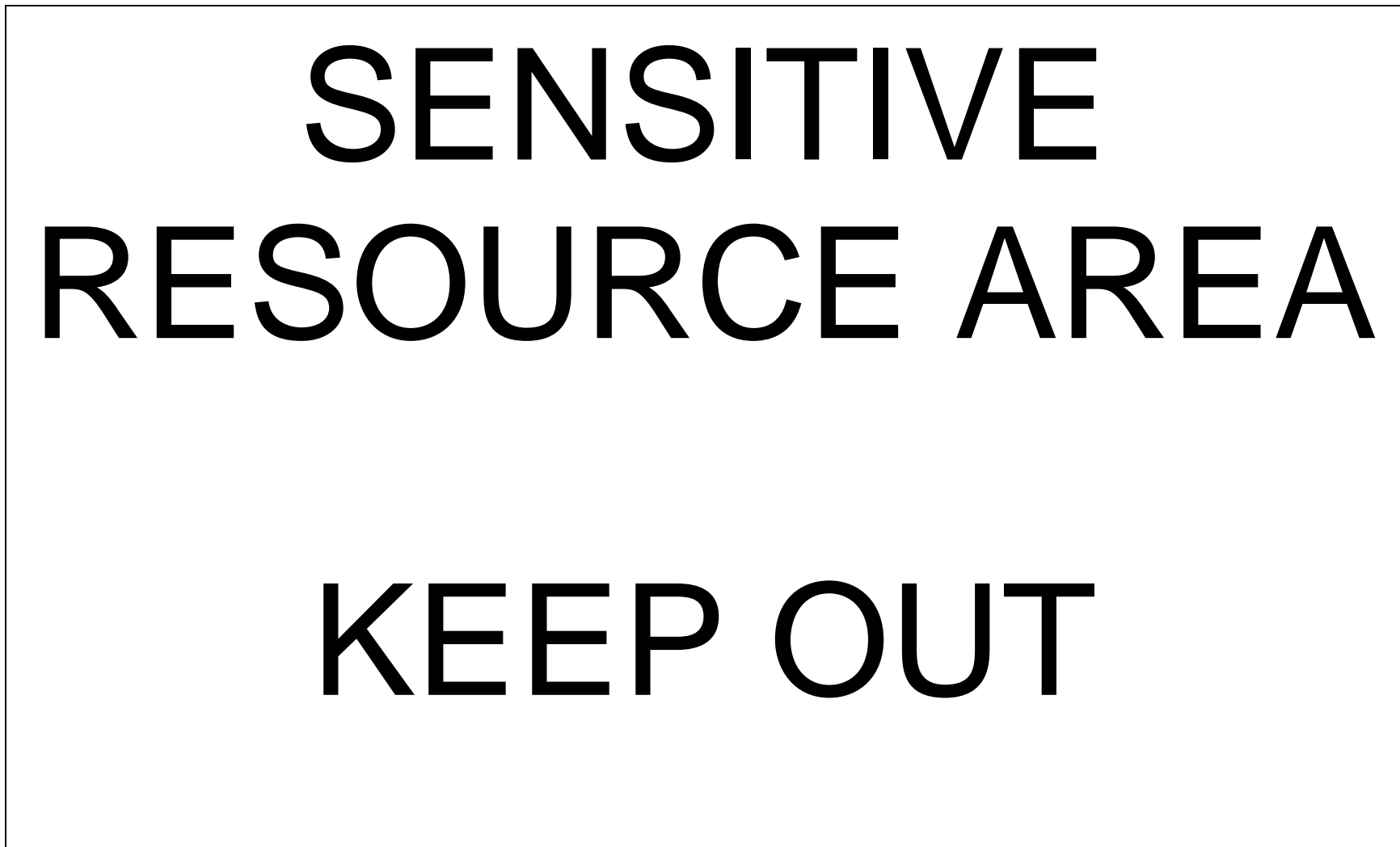


Figure A1-2. Typical Sign – SENSITIVE RESOURCE AREA KEEP OUT



Figure A1-3. Typical Sign – RESTORATION IN PROGRESS No Vehicle Traffic Allowed



Figure A1-4. Typical Sign – NO REFUELING



Figure A1-5. Typical Sign – DO NOT ENTER

APPENDIX A2 GEOTECHNICAL INVESTIGATION

The Plan of Development (POD) for the geotechnical investigation includes detailed information on the geotechnical exploration program, including procedures the Proponent implemented during geotechnical exploration activities, and outlines the stipulations and Proponent Committed Environmental Measures (PCEMs) adopted by the Proponent to minimize potential impacts on resources and to ensure regulatory compliance. As indicated in the POD, stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

Information to be developed.

APPENDIX A3 PROJECT CONSTRUCTION

This section contains an overview of construction activities associated with the transmission line facilities. As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

Map Sets 1 and 2 of the POD will identify the transmission line route and environmental resources located within or adjacent to the transmission line corridor based on preconstruction surveys conducted prior to issuance of the ROW grant. POD Map Set 3 will identify, in more detail, access roads that will be used to access the construction ROW.

A3.1 Construction Schedule

A3.1.1 Preconstruction Activities

A3.1.1.1 SURVEYING AND STAKING

A3.1.1.2 PRECONSTRUCTION RESOURCE SURVEYS

Table A3-1. Preconstruction Resource Surveys

Survey Type and Resources	Plan Reference	Date Completed	Additional Surveys to be completed
Vegetation and Wetlands			
Special-status plants			
Wetland delineation			
Noxious weeds			
Water Resources			
Watercourse crossing inventory			
Springs/wells			
Wildlife Resources			
Bat roosts ²			
Sonoran desert tortoise ³			
Raptors and nests			
Migratory bird nests			
Cultural Resources			

² There would be surveys of bat roosts within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts would be avoided

³ Preconstruction desert tortoise surveys would be conducted in suitable habitat. A worker education program including information on desert tortoises would be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities would be handled in accordance with the AGFD *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (AGFD 2007).

Survey Type and Resources	Plan Reference	Date Completed	Additional Surveys to be completed
Literature search and Class III inventory			
Paleontological Resources			
Paleontological resources			

A3.1.1.3 RIGHT-OF-WAY PREPARATION

A3.1.1.4 PRECONSTRUCTION MEETING

A3.1.1.5 NOTICE TO PROCEED (BLM-ADMINISTERED LANDS ONLY)

A3.1.1.6 SPECIAL-USE AUTHORIZATION⁴

A3.2 Equipment Staging and Construction Yards

A3.3 Access Roads

A3.3.1 Snow Removal

A3.3.2 Agency Access Road Requirements

A3.3.3 Ground Disturbance/Access Levels

Table A3-2. Ground Disturbance/Access Levels

Access Levels	Description	Access Type
Level 1	Details on use of existing roads	
Level 2	Details on improvements to existing roads	
Level 3	Construct new access, flat to rolling terrain (0–8 percent slopes)	
Level 4	Construct new access, rolling terrain (8–5 percent slopes)	
Level 5	Construct new access, steep terrain (greater than 15 percent slopes)	

Table A3-3. Summary of Ground Disturbance and Vegetation Clearing

	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)	ROW Vegetation Clearing (acres)
Total for Selected Route				

⁴ Authorization would be required for other federal lands as well.

A3.4 Transmission Line Construction

A3.4.1 Geotechnical Investigations and Soil Boring

A3.4.2 Site Access and Preparation

A3.4.2.1 AGENCY SITE PREPARATION REQUIREMENTS

A3.4.3 Install Structure Foundations

A3.4.4 Erect Support Structures

A3.4.5 String Conductors, Shield Wire, and Fiber-Optic Ground Wire

A3.4.6 Sagging and Clipping

A3.4.7 Cleanup and Site Reclamation

A3.5 Substation Construction

A3.5.1 Access Roads

A3.5.2 Clearing and Grading

A3.5.3 Foundation Installation

A3.5.4 Oil Containment

A3.5.5 Structure and Equipment Erection/Installation

A3.5.6 Conduit and Control Cable Installation

A3.5.7 Landscaping and Construction Cleanup

Attachment A: Construction Schedule⁵

⁵ Gantt Chart–type schedule

APPENDIX A4 SPECIAL CONSTRUCTION TECHNIQUES

This section provides an overview of special construction techniques that may be used on the Project depending on location and construction contractor's determination. As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

A4.1 Blasting

A4.1.1 Bat Roost Avoidance

Construction activities that create loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex will be limited to Spring (preferably April 1 to May 31) depending on the presence of bats, to protect maternity roosts and potential hibernacula.

To avoid impacting roosting bats at the Ina Road bridge, blasting activities will be restricted to less than 130 decibels (dB) if possible, and if that is not possible, then blasting activities will occur at night after most bats have left their roost. No blasting will occur in April or May when the maternity colony is present.

A4.2 Helicopter Activities

A4.2.1 Typical Helicopter Construction Description

A4.3 Temporary Water Use During Construction

A4.4 Shipping and Handling Guidelines for Sulfur Hexafluoride

A4.5 Literature Cited

APPENDIX A5 CONSTRUCTION WORKFORCE

A5.1 Introduction

As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

The Project will be constructed primarily by contract personnel with Southline (Proponent). The Proponent will be responsible for Project administration. The Project will consist of several phases of construction at varying locations along the Project ROW. The construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel who will perform the construction tasks. Construction activities will consist of surveys, road construction, foundation installation, structure steel haul, structure assembly, structure erection, wire installation, cleanup, and road rehabilitation.

The construction contractor(s) will hold daily field meetings with their environmental monitors and the compliance inspection contractor (CIC) to review applicable environmental regulations and stipulations as well as potential environmental issues. The estimated number of workers and types of equipment required to construct the proposed transmission line are shown in tables A5-1 and A5-2.

Table A5-1. Anticipated Construction Workforce and Equipment, New Build Section

Activity	Equipment		Crew
ROW Survey	1 helicopter 2 all-terrain vehicles (ATVs)	2 pickup trucks	6
Geotechnical Investigations	1 (2-ton) drill truck 1 ATV	1 pickup truck	4
Access Road Construction	2 bulldozers (D-6 or D-8) 2 motor graders	2 pickup trucks 2 water trucks	8
Foundation Installation	3 augers 2 wagon drills 2 flatbed trucks w/ booms 2 (15-ton) hydro cranes 1 batch plant 4 concrete trucks 1 water truck	1 bulldozer (D-6) 1 front-end loader 2 dump trucks 2 (2-ton) trucks 3 pickup trucks 1 carry-all	32
Laydown Yard / Receiving	2 (40-ton) cranes 4 forklifts	2 pickup trucks	8
Structure Hauling	6 flatbed trailers 2 boom trucks	1 pickup truck 2 forklifts	10
Structure Assembly	3 (40-ton) cranes 3 carry-alls	3 (2-ton) trucks 3 pickup trucks	24
Structure Erection	2 (100-ton) cranes 2 boom trucks	2 (2-ton) trucks 2 pickup trucks	20

Table A5-1. Anticipated Construction Workforce and Equipment, New Build Section (Continued)

Activity	Equipment	Crew	
Wire Stringing	1 light helicopter 3 drum pullers 3 double-wheeled tensioners 6 wire reel trailers 2 D-8 Cats with sag winches 2 splicing trucks	2 diesel tractors 2 haul trailers 2 (30-ton) cranes 6 boom trucks 4 (2-ton) trucks 6 pickup trucks	40
Road/ROW Restoration	1 bulldozer (D-6 or D-8) 1 front-end loader with bucket 1 tractor with seeding equipment 1 motor grader	1 pickup truck 1 dump truck 1 water truck	8
Clean-up	1 flatbed truck with bucket	2 pickup trucks	6

Table A5-2. Anticipated Construction Workforce and Equipment, Upgrade Section

Activity	Equipment	Crew	
ROW Survey	1 helicopter 2 all-terrain vehicles (ATVs)	2 pickup trucks	6
Geotechnical Investigations	1 (2-ton) drill truck 1 ATV	1 pickup truck	4
Access Road Construction	1 bulldozer (D-6 or D-8) 1 motor grader	1 pickup truck 1 water truck	4
Foundation Installation	3 augers 2 wagon drills 2 flatbed trucks w/ booms 2 (15-ton) hydro cranes 1 batch plant 4 concrete trucks 1 water truck	1 bulldozer (D-6) 1 front-end loader 2 dump trucks 2 (2-ton) trucks 3 pickup trucks 1 carry-all	32
Laydown Yard / Receiving	2 (40-ton) cranes 4 forklifts	2 pickup trucks	8
Structure Hauling	6 flatbed trailers 2 boom trucks	1 pickup truck 2 forklifts	10
Structure Erection	2 (100-ton) cranes 2 boom trucks	2 (2-ton) trucks 2 pickup trucks	20
Wire Stringing	1 light helicopter 3 drum pullers 3 double-wheeled tensioners 6 wire reel trailers 2 D-8 Cats with sag winches 2 splicing trucks	2 diesel tractors 2 haul trailers 2 (30-ton) cranes 6 boom trucks 4 (2-ton) trucks 6 pickup trucks	40
Road/ROW Restoration	1 bulldozer (D-6 or D-8) 1 front-end loader with bucket 1 tractor with seeding equipment 1 motor grader	1 pickup truck 1 dump truck 1 water truck	8
Clean-up	1 flatbed truck with bucket	2 pickup trucks	6

A5.2 Construction Equipment and Traffic

A5.3 Environmental and Safety Training

APPENDIX A6 ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN

A6.1 Introduction

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) Western is involved in the Project, they may adopt this plan, where appropriate.

The BLM will be responsible for enforcement of the terms and conditions of the BLM ROW grant on BLM-administered lands (BLM lands). Western will be responsible for enforcing other landowner agreements across Federal, State, and private lands during the term of the grant for the Southline Transmission Line Project (Project). As joint Federal agencies under the National Environmental Policy Act (NEPA), the BLM and Western will approve a third-party Compliance Inspection Contractor (CIC) to act on behalf of the BLM. The CIC may also coordinate with Western and other agencies on those portions of the Project where Western is involved in the Project and oversees relevant portions of the POD.

The CIC will inspect and monitor preconstruction and construction activities, enforce the terms and conditions of the ROW or easement grants, and enforce requirements related to BLM responsibilities under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA). In addition, the Project will adhere to any terms and conditions of State and local permits, as well as private landowner agreements.

Southline Transmission, LLC (Southline, or the Proponent), has developed Proponent Committed Environmental Measures (PCEMs) to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential adverse impacts to sensitive environmental resources (see the Environmental Impact Statement (EIS), and table 8 of the Plan of Development (POD)) in compliance with the terms and conditions of the ROW grant, landowner agreements, and Federal, State, and local permits. The Project ROW grant, landowner agreements, and permitting requirements are specified in the POD chapter 1 – Introduction and Appendix B – Environmental Protection Framework Plans.

A6.2 Environmental Compliance Management Plan Elements and Authority

This Environmental Compliance Management Plan (ECMP) provides guidance and procedures for upholding, documenting, and managing compliance with the ROW grant authorization on BLM-managed lands. Similar procedures with other ROW or easement authorizations on non-BLM lands would be accomplished within Western's own project management framework. It describes the following essential elements:

- Roles and responsibilities of the participants
- Comprehensive inspection and monitoring procedures
- Documentation and corrective procedures in the event of noncompliance
- Protocols and procedures for variance requests

- Communication between participants
- Reporting requirements
- Comprehensive Project-specific environmental compliance training program

Southline's commitment to environmental compliance will be demonstrated by activities prior to, during, and following construction. The ECMP is intended to be a controlled document and may be revised as needed throughout the construction process. As previously stated, this ECMP is required as part of the BLM ROW grant and Western may adopt relevant portions of the ECMP where appropriate. However; because the Project will cross private, State, and Federal lands under the jurisdiction of several agencies as well as BLM-managed land, the ECMP is written as a comprehensive document that where appropriate, can be partially applicable for all non-BLM permitting entities and landowners as well.

Authority for implementation of this ECMP originates from the terms, conditions, and stipulations of the BLM's ROW grant, the POD, the EIS, the BLM Record of Decision (ROD), BLM Notices to Proceed (NTPs), and other conditions associated with Federal or non-Federal agency permits. As part of the Proponent's environmental compliance commitment, the construction contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the PCEMs and other specific stipulations and methods set forth in the POD.

All Project specific permits and associated documents will be reviewed by the Project participants prior to the commencement of construction activities in order to identify all Project-wide and location specific requirements and PCEMs. These documents will be distributed by the CIC to Southline, the BLM and Western, and the construction contractor(s) for their review prior to the initial construction kickoff meeting. At the kickoff meeting, a document control system to manage Project environmental documents and their revisions will be presented by the CIC.

Southline, the BLM, and Western have agreed to use a third-party CIC to act on the BLM's behalf on BLM-managed lands, and to assist Western where appropriate, to ensure adequate environmental oversight during construction. The CIC will be hired by Southline prior to the BLM authorization of the ROW grant to allow adequate time for the CIC to review documents and develop on-the-ground familiarity with the Project prior to the start of construction. The CIC will be authorized to enforce the PCEMs and the POD; the CIC will also ensure that BLM and Western responsibilities under the NHPA and ESA are met and will have the authority to stop work at a given location in cases where NHPA and ESA conditions are not met (see Section A6.4.1.3 Noncompliance).

The construction contractor(s) will hire an environmental team consisting of an Environmental Reporting Coordinator, inspectors and support staff. The environmental team will report to the Environmental Reporting Coordinator, who will support and take direction on environmental matters from Southline's Environmental Compliance Manager, who will then coordinate with the BLM and/or Western through the CIC (as shown in the organizational chart in figure A6.1 in Section A6.3 – Roles and Responsibilities).

The environmental inspectors will ensure that all Project construction activities are conducted in accordance with the environmental commitments set forth in the POD, PCEMs, permits, and landowner agreements. The CIC will be the primary documenter of environmental compliance-related construction activities and disturbances; however, if the CIC is not present, the environmental inspectors will document all relevant construction activities and disturbance in each work area. Information collected by the CIC and the environmental inspectors will be included in the total Project disturbance tracking maintained by the CIC and presented in the End of Construction Project Report (Section A6.3.2.3 – Compliance Inspection Contractor Project Manager).

The CIC will provide direct oversight of each construction contractor's environmental compliance performance for the BLM/Western and Southline. The CIC will not direct any work of the construction contractor(s). All work direction to the construction contractor(s) will come from the Proponent. Additional information about the construction contractor(s)' role in the ECMP is explained in Section A6.3.3 – Construction Contractor(s).

A6.3 Roles and Responsibilities

This section outlines the roles and responsibilities of Southline, persons, and agencies involved in the Project in executing the ECMP on BLM-managed lands, as well as detailing their reporting relationships (figure A6.1). If additional participants become involved in the Project, they will also be required to adhere to the protocols, terms, and conditions outlined in this ECMP. Their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of their input but would follow the structure presented in figure A6.1. Each environmental support title depicted under the construction contractor(s) environmental team in Figure A6.1 does not necessarily have to be a separate person/position, for example the environmental trainer may also serve as the reporting coordinator.

This section also briefly discusses the variance request procedure for changes on BLM lands. However, a more detailed discussion of this process is found in Section A6.4.2 – Variance Procedures (Unforeseen Circumstances).

A6.3.1 Project Proponent

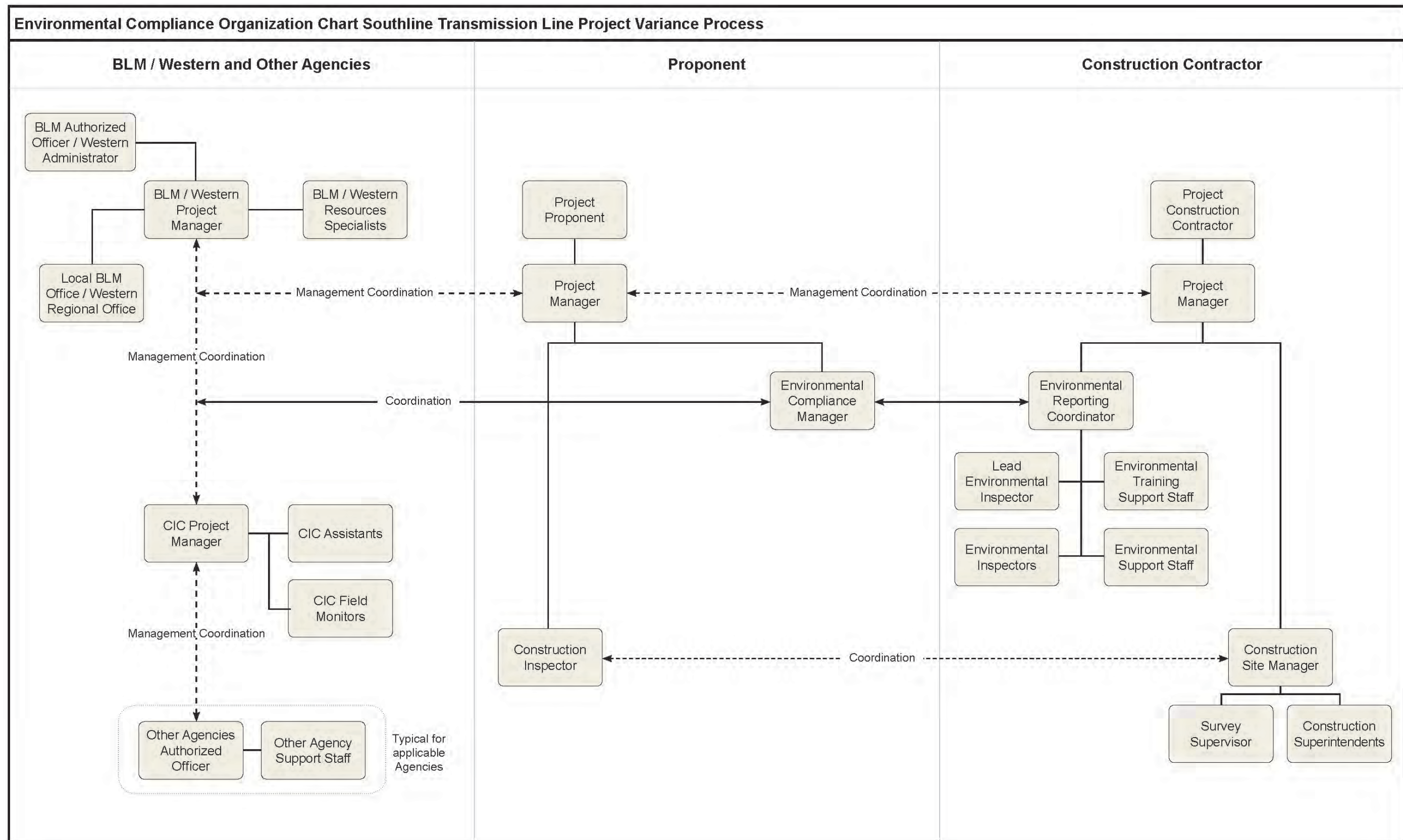
As the Proponent and grant holder, Southline is responsible for administration of the BLM ROW. Western is responsible for administering the ROW where Western is involved in the Project. As such, the Proponent is ultimately accountable for adherence to the environmental permit requirements specified in its agreements on BLM lands. The Proponent is also responsible for ensuring that any adverse environmental impacts do not exceed those described in the Final EIS and approved in the POD. The Proponent and Western are accountable for adherence to the environmental permit requirements where Western is involved. To manage this responsibility, the Proponent will maintain regular and consistent communication with the CIC and the construction contractor(s) to track the success of the implementation of the PCEMs and other compliance efforts prior to, during, and post-construction and will communicate its findings to the BLM and Western. In addition, the Proponent, as the grant holder, is responsible for ensuring that all noncompliance incidents are corrected.

The following describes the roles and responsibilities of Proponent personnel.

A6.3.1.1 PROJECT PROPONENT

- Responsible for Project delivery. Ensures effective coordination and communication occurs between the Proponent Project Manager and Environmental Compliance Manager, BLM's and/or Western's authorized officer or his/her designated representative, the CIC, and the construction contractor's Project Manager to verify that Project environmental compliance meets the applicable environmental requirements.
- Informs the construction contractor(s) that they are contractually bound to comply with all of the Project's environmental requirements, including the implementation of this ECMP and PCEMs. All environmental commitments will be appended to contracts as terms and conditions, with penalties for non-compliance.

Figure A6.1. Project staff organizational chart.



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A6.3.1.2 PROPONENT'S PROJECT MANAGER

- Responsible for Project execution and completion.
- Enforces construction contractor(s) compliance with all environmental laws and regulations, including the ROW grant, POD, permits (Federal, State, and local), and landowner agreements during the construction of the Project. Enforces implementation of the PCEMs and other agreed-upon mitigation measures.
- Manages Proponent's Construction Inspector and Environmental Compliance Manager.
- Coordinates submittal of all Work Authorizations associated with the BLM NTP.

Reporting

- Reviews and evaluates weekly reports.
- Reports environmental noncompliance incidents to the Project Proponent Southline as needed.

Variations

- Reviews and approves construction contractor's written variance requests prior to their submittal to the CIC and/or BLM/Western.
- Delegates authority to approve the submittal of construction contractor's variance requests to the BLM/Western as needed.

A6.3.1.3 PROPONENT'S ENVIRONMENTAL COMPLIANCE MANAGER

- Facilitates oversight and coordination of construction contractor's compliance with all applicable environmental laws and regulations, including the terms of the ROW grant, POD, PCEMs, permits (Federal, State, and local), and landowner agreements, during Project construction.
- Coordinates with Proponent's Project Manager and Construction Inspector (refer to section A6.3.1.4 – Proponent's Construction Inspector), the construction contractor's Environmental Reporting Coordinator (refer to Section A6.3.3.7 – Construction Contractor's Environmental Reporting Coordinator), and the CIC (refer to Section A6.3.2.3 – Compliance Inspection Contractor Project Manager) on a regular basis to evaluate the environmental compliance of Project construction and other activities.
- Monitors completion of all preconstruction and post-construction environmental commitments, including those outlined in the PCEMs and POD.
- Serves as the primary Proponent contact regarding environmental issues.
- Communicates environmental compliance issues to the CIC and tracks resolution of issues, including instances of noncompliance, to completion.
- Coordinates field inspection visits with the construction contractor(s).
- Maintains coordination with the Proponent's environmental department throughout the life of the Project.

Reporting

- Provides updates regarding the environmental compliance of the Project, including corrective actions for incidents of noncompliance, to the Proponent's Project Manager.
- Compiles and distributes environmental permit and plan updates to Proponent's staff and the construction contractor's Environmental Reporting Coordinator in coordination with the CIC.

- Reviews all construction contractors' environmental compliance documentation including, but not limited to, site specific environmental plans, environmental plans, variance requests, daily reports, and weekly reports.

Variances

- Provides review of and comment on construction contractor's written variance requests.
- Submits completed variance request packages to the Proponent's Project Manager for review, approval, and submission to the CIC.

A6.3.1.4 PROPONENT'S CONSTRUCTION INSPECTOR

- Observes, witnesses, and monitors the construction activities of the construction contractor(s) in order to confirm that all engineering contract documents, plans, standards, and specifications are followed and to ensure construction quality.
- Understands the Project's environmental compliance requirements, especially as they relate to specific construction activities.
- Coordinates with Proponent's Environmental Compliance Manager regarding specific construction and other work activities occurring in or near sensitive resource areas that will or may require environmental compliance oversight.
- Provide technical explanations of construction process to Proponent's Environmental Compliance Manager as needed.
- Attends environmental training class.

Reporting

- Review for accuracy and adequacy regarding Project construction activities certain environmental compliance documents prepared by the construction contractor(s) that could include, but are not limited to, Spill Prevention Control and Countermeasures Plan; Stormwater Pollution Prevention Plan(s); and emergency communications contact list.
- Brings to the attention of the construction contractor's Environmental Reporting Coordinator any observations regarding environmental noncompliance.

A6.3.2 Agency Responsibilities

During preconstruction, construction, post-construction, operation, and maintenance of the Project:

- BLM is responsible for ensuring compliance with the PCEMs and terms of the ROW grant on BLM lands, and
- Western is responsible on non-BLM lands for ensuring compliance with the PCEMs, the environmental conditions in construction contracts, and relevant portions of the POD.

The CIC shall represent the BLM and assist Western where appropriate during the construction and reclamation phases of the Project. As their representative, the CIC will assist the BLM in ensuring the Proponent's compliance with the terms of the ROW grant and in making certain that any adverse environmental impacts do not exceed those described in the EIS and approved in the POD. The CIC will assist the BLM and Western by providing regular and consistent field observations, documenting and reporting his/her findings, and/or other deviations for which authority has been delegated to the CIC, and working with the Proponent and construction contractor(s) to identify environmental compliance issues and maintain compliance during construction of the project.

The CIC shall work under the direct supervision and control of the BLM on BLM-managed lands. The Proponent or construction contractor(s) have no authority to direct the CIC as to where, when, or how monitoring will be conducted. If the CIC finds that an activity is in noncompliance, the CIC has the authority to issue an immediate work stoppage order (WSO) for that specific work activity. However, the CIC will coordinate closely with the Proponent and construction contractor(s) to report and document compliance issues observed during monitoring and to allow them the opportunity to resolve the issues (see figure A6.2). As much as possible, WSOs will be limited to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not otherwise authorized to direct work undertaken by the construction contractor(s) with the exception of a WSO. The CIC's primary role is to observe work activities, bring noncompliant situations to the attention of the appropriate party, offer recommendations on how to prevent noncompliance, and ensure noncompliance situations are resolved.

A6.3.2.1 BLM

Authorized Officer

- Ultimate authority and decision maker for issues pertaining to the ROW grant.
- Supervises BLM Project Manager to verify the Project's environmental compliance meets the requirements as specified in the ROW grant, the POD, permits, and landowner agreements.
- Determines, in coordination with others, if any environmental noncompliance events for which the Proponent is accountable qualify as violations to the terms and conditions of the ROW grant.
- In accordance with 43 CFR 2807.17(a), has the authority to suspend or terminate the ROW grant if the Proponent and/or its construction contractor(s) do not comply with applicable laws and regulations or any terms, conditions, or stipulations of the ROW grant.
- Issues BLM decisions unless otherwise designated to the BLM Project Manager.

Project Manager

- Oversees the Proponent's compliance with all environmental laws and regulations, including, but not limited to, the terms of the ROW grant, POD, and permits during construction of the Project.
- Ensures that the environmental compliance of the Project is conducted in a way that allows timely and efficient construction while protecting the public interests and the environment.
- Responsible for ensuring that adverse environmental impacts do not exceed those described in the EIS and ROD.
- Manages third-party CIC where appropriate.
- Solicits BLM resource specialists for their technical expertise and input when needed.
- Acts proactively to prevent ROW violations due to environmental noncompliance. If violations occur, informs the Proponent of environmental noncompliance and enforces their resolution.
- Reports major environmental compliance violations to the BLM authorized officer or his/her designated representative.

Reporting

- Responsible for ensuring that the Project administrative record is maintained accurately.

Variances

- If delegated by the BLM authorized officer, authorizes approval of Level 2 Variances.

A6.3.2.2 WESTERN

Administrator

- Ultimate authority and decision maker for issues pertaining to the Western ROD.
- Ultimate authority for verification that Project's environmental compliance meets the requirements as specified in the ROD, permits, contracts, and landowner agreements.

Project Manager

- Coordinates with and oversees the Proponent's compliance with all environmental laws and regulations, including, but not limited to, the terms of the POD, construction contract, ROD, and permits during construction of the Project.
- Ensures that the environmental compliance of the Project is conducted in a way that allows timely and efficient construction while protecting the public interests and the environment.
- Responsible for ensuring that adverse environmental impacts do not exceed those described in the EIS and ROD.
- Manages third-party CIC where appropriate.
- Solicits BLM or Western resource specialists for their technical expertise and input when needed.
- Acts proactively to prevent environmental noncompliance violations. If violations occur, informs the Proponent of environmental noncompliance and enforces their resolution.
- Determines, in coordination with others, if any environmental noncompliance events for which the Proponent is accountable qualify as violations to the terms and conditions of contract.
- Reports major environmental compliance violations to the Western Administrator or his/her designated representative.

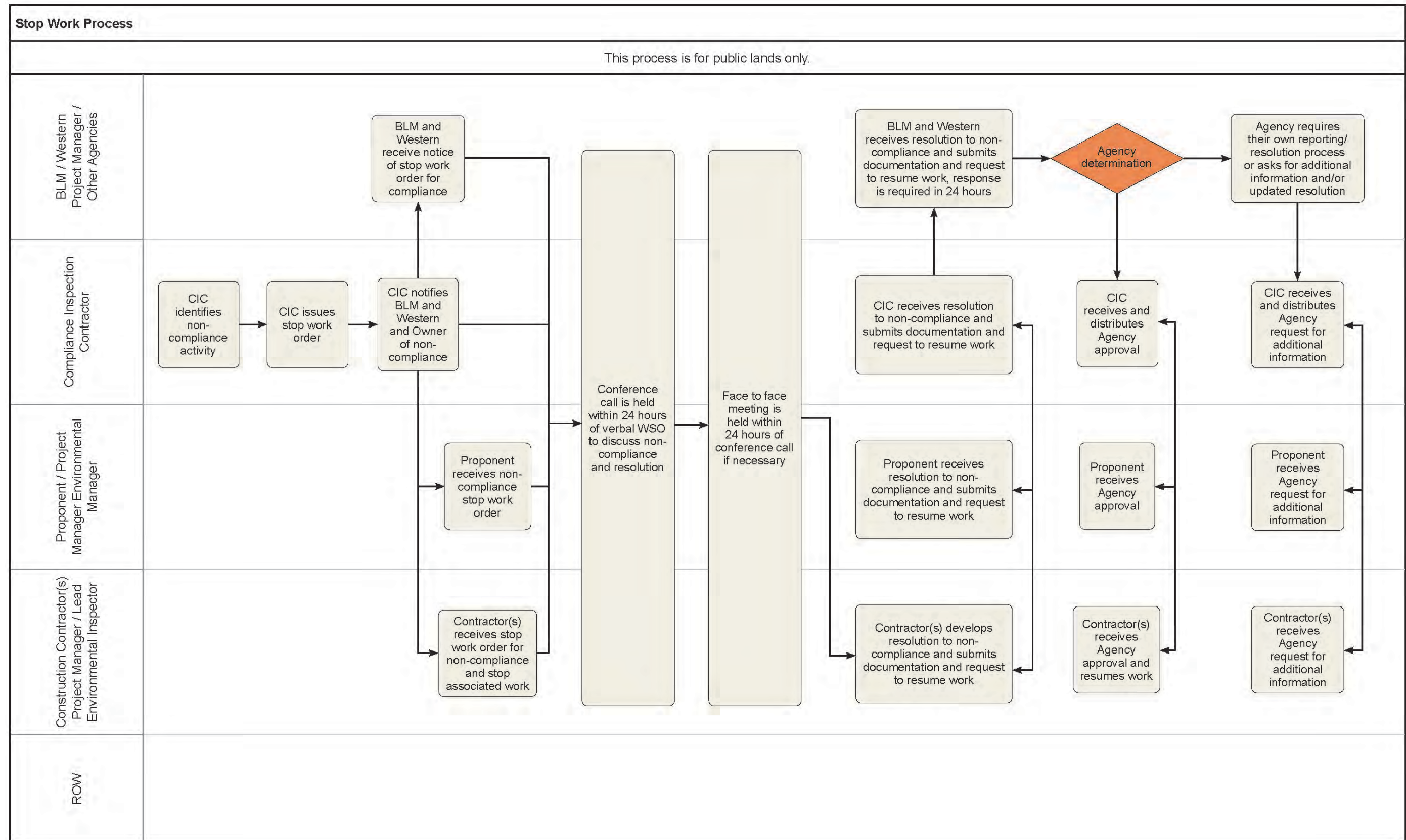
Reporting

- Responsible for ensuring that the Project administrative record is maintained accurately.

A6.3.2.3 COMPLIANCE INSPECTION CONTRACTOR PROJECT MANAGER

- Acts as the BLM representative in the field for environmental compliance activities but maintains a dual reporting/consultation relationship with the Proponent.
- Verifies and reports construction contractor's compliance with all environmental requirements and tracks all reported environmental noncompliance events and their resolution.
- Tracks all Project construction disturbances for inclusion in an End of Construction Project Report (section A6.8.2 – End of Construction Project Report).
- Reports directly to the BLM Project Manager or to Western Project Manager as appropriate (or designated representative). Does not report to the Proponent or construction contractor(s) but keeps Proponent informed of all field issues as they are discovered.
- Works on the Project from preconstruction through completion of reclamation and initial revegetation on termination of the Project unless otherwise directed by the BLM or Western.
- Reviews and understands the ROW grant, EIS, PCEMs, BLM and Western's RODs, POD, and all other Project-specific environmental documents and conditions.

Figure A6.2. Stop work process.



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- Maintains copies of the ROW grant, PCEMs, and POD and possesses a copy of each document for reference while on the ROW.
- Develops post-construction reclamation monitoring protocols, to be approved by the BLM's or Western, per the procedures and requirements identified in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan of the POD.
- Verifies construction occurs within the limits of disturbance analyzed in the EIS as outlined in the POD, ROD, ROW grant, or agreements with other landowners.
- Performs compliance monitoring work in the field and supervises field monitors. The CIC or their designated field monitors are required to be on the ROW when construction activities may cause significant ground disturbance or may harm sensitive resources. Exceptions can be made if the CIC determines that reductions in monitoring would not adversely impact compliance oversight.
- Understand each party's understanding of how and with what result site-specific PCEMs and other specific stipulations and methods will be implemented. If discrepancies in this understanding are found between parties, the CIC is responsible for collaborating with the Proponent and construction contractor(s) to work toward a shared understanding. In some cases, approval from the BLM Project Manager may also be required.
- Coordinates compliance monitoring by CIC field monitors during construction.
- Acts proactively to prevent violations before they occur by being alert to situations in the ROW or exclusion areas that could lead to violations (for example degradation of flagging).
- Discusses any potential compliance issues observed during construction with the construction contractor's environmental inspection staff as soon as possible and informs the BLM/Western Project Manager(s) and Proponent's Project Manager.
- Provides recommendations to the BLM/Western Project Manager(s) on ways to resolve or prevent noncompliance situations.
- Has the authority to stop work when there is a significant noncompliant situation or other violation of the environmental conditions of the ROW grant, permits, or landowner agreements. Initiates the resolution process with notification to BLM, Western, and the owner of non-compliance.
- Attends, either in person or by telephone, a weekly meeting with BLM/Western Project Manager(s) (or designees), to review construction activities and the status of compliance of the previous week.
- Communicates and coordinates regularly with Proponent's Project Manager and Environmental Compliance Manager.
- Coordinates the review variance requests with the BLM/Western Project Manager(s) and Proponent's Project Manager and Environmental Compliance Manager.
- Participates in meetings with BLM/Western Project Manager(s) and Proponent's Project Manager.
- Responsible for tracking total acres of disturbance through construction completion to be presented in the End-of-Construction Report.
- Conducts the final route review and develops End-of-Construction Report, which documents the final status of the ROW and the total amount of construction disturbance.

- Monitors post-construction reclamation as described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan of the POD, and as directed by the BLM/Western and/or Proponent.

Reporting

- Documents all noncompliance situations or activities and other issues that may result in adverse impacts to sensitive resources. Documentation may include staking, flagging, or photographing problem areas, verifying locations with a global positioning system, and comparing them with the ROW grant and POD maps. Document potential violations that were prevented by the inspector acting proactively.
- Provides weekly summary reports of compliance inspections conducted by the CIC and CIC field monitors to BLM/Western and the Proponent via a secure, but mutually exclusive, website. Reports are due by Tuesday of each week. In the event that the CIC, BLM, or Western temporarily cannot obtain reports through the secure website, reports will be transmitted by mail, e-mail, fax, USB flash drive, or compact disc. Weekly reports shall summarize the prior week's construction activities, compliance issues, planned disturbed acreage, any additional disturbance resulting from variances and/or corrective actions taken, and any foreseeable issues.
- Review CIC field monitor's daily reports for completeness and accuracy.
- Participates in all preconstruction meetings, safety meetings, safety training, environmental training, and other meetings called by the BLM or Western, Proponent, or construction contactor(s) that involve environmental compliance aspects of the Project. The CIC is responsible for preparing meeting notes that highlight all decisions concerning environmental compliance made during these meetings.
- Provides an End of Construction Report within 60 days of the completion of all construction (see Section A6.8.2 – End of Construction Project Report).
- Submits post-construction reclamation monitoring reports to the BLM/Western and Proponent throughout the post-construction monitoring period.

Variations

- Coordinates with BLM Project Managers to review and approve variance requests.
- Issues approval or denial of Level 1 variations involving minor field adjustments within the approved ROW that conforms to the POD, or designates this authority to others.

A6.3.2.4 ASSISTANT COMPLIANCE INSPECTION CONTRACTOR

- Performs the same duties as the CIC when the CIC is not available.
- Works on the Project from preconstruction through completion of reclamation and initial revegetation on termination of the Project unless otherwise directed by the BLM.

A6.3.2.5 COMPLIANCE INSPECTION CONTRACTOR FIELD MONITORS

- Conducts monitoring of construction activities within environmental sensitive areas as needed for biological, cultural, paleontological, or other resources.
- When the CIC is not on-site, represents the BLM in the field for compliance activities.
- Assist the CIC to verify that construction activities and PCEMs occur as outlined in the POD, Final EIS, PCEM, ROD, and ROW grant.

- Verifies construction crews are provided with proper environmental and compliance training appropriate to their tasks.
- In consultation with the CIC, discusses any potential compliance issues with the construction contractor(s)' environmental inspection staff (refer to Section A6.3.3.5 – Construction Contractor's Lead Environmental Inspector and Section A6.3.3.6 – Construction Contractor's Environmental Inspector) as soon as possible.
- Coordinates with the CIC, construction contractor(s)' lead environmental inspector (LEI), and the Proponent's Environmental Compliance Manager.
- Coordinates solutions for correction action on noncompliant situations in consultation with the CIC.
- Verifies corrective action is taken to remedy a potentially noncompliant or noncompliant situation.
- Has authority to temporarily stop activities that may harm sensitive resources and/or where those resources were intended to be avoided or protected, as well as for instances of noncompliance with potentially significant impacts on the environment.
- Conducts daily compliance inspection activities and develops daily reports documenting the results of those inspections.
- Attends safety and environmental coordination meetings when needed.

Reporting

- Submits daily reports to the CIC to document results of inspection and monitoring.

A6.3.3 Construction Contractor(s)

The construction contractor(s) will be contractually bound to comply with all laws, regulations, and other requirements, including the PCEMs and other specific stipulations and methods set forth in the ROW grant, POD, EIS, ROD, and permits (Federal, State, and local) throughout all phases of the Project. Construction personnel are required to attend environmental training prior to work on the Project. The construction contractor(s) will coordinate with the BLM/Western, the Proponent, the CIC, and construction contractor's environmental inspectors to build the Project safely and in compliance with all Project terms and conditions. If a noncompliant incident occurs, the construction contractor(s) will remedy the situation as soon as possible.

A6.3.3.1 PROJECT CONSTRUCTION CONTRACTOR

- Constructs and completes the Project while adhering to all applicable environmental laws and regulations and the construction contract which will include the terms, conditions, stipulations, and/or work authorizations related to the ROW grant, POD, permits (Federal, State, and local), and landowner agreements.
- Facilitates coordination between his/her Project Manager and/or Environmental Reporting Coordinator with the Proponent's Project Manager, Environmental Compliance Manager, and/or LEI, and the BLM and Western Project Manager and/or CIC to verify environmental compliance meets the requirements of all applicable laws, permits, and agreements.
- Oversees the remedy of any environmental compliance issues by the Construction Contractor's Project Manager.

- Ensures all environmental noncompliance situations are remedied in a timely fashion to the satisfaction of the Proponent's Environmental Compliance Manager and the CIC.

A6.3.3.2 CONSTRUCTION CONTRACTOR'S PROJECT MANAGER

- Responsible for the execution and completion of the Project or a portion of the Project.
- Ensure that all construction personnel comply with applicable environmental laws and regulations and the construction contract which will include the ROW grant, POD, permits (Federal, State, and local), and landowner agreements.
- Stays current with all environmental laws and regulations with regard to the Project through regular coordination with his/her superintendent(s), and Environmental Reporting Coordinator, the Proponent's Project Manager, and the Proponent's Environmental Compliance Manager.
- Ensures that all superintendent(s) and foremen implement noncompliance remedies in a timely fashion.
- Assigns the construction contractor(s)' Environmental Reporting Coordinator.
- Ensures that all appropriate construction personnel attend environmental training classes.
- Ensures that environmental factors (such as exclusion areas located in the day's work area) are covered in tailgate meetings at the start of every workday to avoid noncompliance.
- Removes noncompliant personnel from the Project, as necessary.
- Manages construction contractor(s)' superintendent(s), foremen, environmental crew foremen, and Environmental Reporting Coordinator.
- Develops and distributes weekly schedules of construction activities.
- Immediately informs Proponent's Environmental Compliance Manager and CIC of any noncompliance.
- Responsible for resolving noncompliance situations.
- Responsible for environmental compliance of all subcontractors and ensuring that they have received any required training prior to starting work on the project.
- Develops variance requests when needed with the assistance of the construction contractor's environmental inspectors.
- Receives and reviews daily environmental compliance inspection reports from construction contractor(s)' environmental staff.

Reporting

- Ensures that the Proponent is provided with all reports in a timely fashion.
- Reviews and approves environmental compliance reports prior to submittal to Proponent.

Variations

- Develops written variances requests for submittal to Proponent, CIC, and BLM/Western.
- Can delegate to others the authority to submit written variance requests to Proponent, CIC, and BLM.

A6.3.3.3 CONSTRUCTION CONTRACTOR'S SUPERINTENDENT(S)

- Manages construction activities in the field for a segment or portion of the Project.
- Ensures that all contractor and subcontractor personnel adhere to the instructions of the construction contractor(s)' environmental compliance staff on maintaining compliance with all environmental laws and regulations and the construction contract which will include the ROW grant, POD, permits (Federal, State, and local), and landowner agreements during the construction of the Project.
- Ensures that all personnel under their management adhere to all applicable laws, permits, and regulations through coordination with the LEI, and the construction contractor's Environmental Training Coordinator and environmental inspectors.
- Attends environmental training programs developed by the CIC.
- Reviews safety and environmental compliance measures with personnel on a regular basis through meetings and training.
- Communicates noncompliance situation remedies to personnel in a timely fashion.
- Immediately informs construction contractor(s)' Project Manager of any noncompliant situations.

Reporting

- Develops report detailing the resolution of any noncompliance situations and submits them to the construction contractor's Environmental Reporting Coordinator.

Variances

- Develops written variance requests with the construction contractor's Project Manager for submittal to Proponent, CIC, and the BLM.
- Can delegate authority to others for the preparation of written variance requests.

A6.3.3.4 CONTRACTOR'S CIVIL SURVEY SUPERVISOR

- Sets initial and maintains ROW boundary stakes and flagging with agreed on Project flagging scheme (see Appendix A1 – Flagging, Fencing, and Signage Plan).
- Works with environmental inspectors to adjust the boundaries of work areas to comply with environmental avoidance areas and PCEMs.
- Communicates any changes to ROW boundaries to the Proponent's Construction Inspector and Environmental Compliance Manager.
- Maintains a master set of alignment sheets for each spread in the appropriate spread office that reflects all restricted areas/avoidance areas due to ROW status, environmental restrictions, etc.
- Installs signs indicating approved and non-approved Project roads.

Reports and Variances

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

A6.3.3.5 CONSTRUCTION CONTRACTOR'S LEAD ENVIRONMENTAL INSPECTOR

- Responsible for inspection by him-/herself or staff of construction activities to ensure compliance with all environmental laws and regulations and the construction contract which will include the

ROW grant, POD, permits (Federal, State, and local), and landowner agreements, during the construction life of the Project.

- Has authority to stop work in instances of noncompliance.
- Reviews the location of sensitive resources and areas of concern prior to upcoming construction activities and coordinates the appropriate PCEMs with construction personnel.
- Serves as the resource and technical lead for the environmental inspectors.
- Serves as an environmental compliance expert to construction personnel; explains environmental laws and regulations, and how to apply them in the field.
- Acts as the primary point of contact on the construction crew for the CIC field monitors.
- Coordinates the resolution of noncompliant situations.
- Discusses daily upcoming construction activities, potential problem areas, and areas of concern with environmental inspectors.
- Coordinates the assignments of field inspections by environmental inspectors.
- Ensures effective communication about environmental compliance with construction personnel and environmental inspectors.
- Inspects areas of concern identified by environmental inspectors and makes appropriate recommendations regarding corrective action of problems to construction personnel.
- Inspects erosion control devices/measures as defined by the PCEMs to ensure functionality and communicates erosion control devices/measures maintenance needs to the construction contractor(s)' crew foreman.
- Discusses problems that need resolution with the environmental crew foreman.

Reporting

- Receives and evaluates the thoroughness of daily field inspection reports and communicates action items or follow-up items to appropriate parties.
- Compiles daily field inspection reports into weekly summary report.
- Submits daily and weekly reports to construction contractor's Environmental Reporting Coordinator for storage and agency distribution if needed.

Variances

- Reviews written variance requests from the construction contractor(s).
- Informs environmental inspectors and construction personnel about the status of variance requests.

A6.3.3.6 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL INSPECTOR

- Inspects construction activities on a daily basis for compliance with all applicable environmental laws and regulations and the construction contract with will include the ROW grant, POD, permits (Federal, State, and local), and landowner agreements, during the construction of the Project under the supervision of the LEI.
- Reviews the location of sensitive resources and areas of concern prior to upcoming construction activities and coordinates the appropriate PCEMs with construction personnel.

- Serves as a resource for the construction personnel.
- Verifies construction work areas, access roads, and avoidance areas are properly marked and flagged prior to construction activities in the area.
- Identifies erosion, sediment control, and soil stabilization needs and communicates them to construction personnel.
- Conducts regular inspections of erosion control devices/measures, communicates maintenance needs to the environmental crew foreman, and follows up on repair and maintenance of erosion control devices/measures.
- Ensures that erosion control or other measures do not inadvertently cause impact to sensitive resources.
- Acts proactively to prevent unanticipated environmental impacts or violations before they occur by being alert to situations in the ROW or exclusion areas that could lead to violations (for example degradation of flagging).
- Informs construction contractor(s) Project Manager of all potential and existing environmental compliance issues or problems and coordinates with LEI to determine appropriate remedial actions.
- Identifies, documents, and oversees the remediation and resolution of noncompliant situations.
- Inspects and documents approved reclamation and revegetation activities after construction is complete.

Reporting

- Documents Project construction activities, compliance status, and compliance issue resolutions in daily reports to be submitted to the LEI.

A6.3.3.7 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL REPORTING COORDINATOR

- Manages documents tracking Project compliance with environmental laws and regulations, including the ROW grant, POD, permits (Federal, State, and local), and landowner agreements, during the construction of the Project.
- Regularly coordinates with Proponent's Project Manager, the construction contractor(s), and BLM/Western to manage and track Project activities and compliance.
- Communicates with the Proponent and all Federal, State, and local agencies regarding the status of Project compliance.

Reporting

- Receives daily/weekly reports from construction contractor's environmental inspectors and the LEI.
- Manages the storage of daily/weekly environmental inspection reports and submits reports to the BLM/Western Project Manager(s) when requested.
- Reviews field reports for consistency and accuracy.
- Tracks problem areas and associated noncompliance reports (including hazardous materials spill reports) and ensures that follow-up and resolution reports are filed.

Variances

- Tracks variance requests and communicates variance request status with construction contractor's Project Manager, superintendent(s), and LEI.
- Coordinates processing and archiving of variance requests and associated documentation.
- Tracks status of any required field surveys (biological, archaeological, etc.) and technical reports in support of variance requests.
- Ensures variance requests and associated documentation are complete prior to submission to the BLM.

A6.3.3.8 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL TRAINING COORDINATOR

- Develops training program to instruct personnel in proper compliance with all environmental laws and regulations, including the ROW grant, POD, permits (Federal, State, and local), and landowner agreements, during the construction of the Project.
- Provides CIC and Proponent's Environmental Compliance Manager with a course outline and all training materials at least 30 days prior to any training for approval.
- Supports environmental inspectors and other environmental staff in providing routine trainings in the field.
- Maintains records of trainings for construction personnel and submits them to the Proponent on a weekly basis.
- Updates training curriculum as needed.
- Through comprehensive training, facilitates compliance with all environmental laws and regulations applicable to Project.
- Conducts training session for all appropriate Project personnel at least 30 days prior to construction.
- Conducts preconstruction, refresher, and remedial training for Project personnel.
- Provides environmental compliance training to new personnel as they join the Project.
- Prepares and provides field reference guides to Project personnel to aid in the identification of sensitive resources and how to avoid impacting them.

A6.3.3.9 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL REPORTING COORDINATOR

- Makes certain that work is conducted in compliance with all applicable environmental laws and regulations, including the ROW grant, POD, permits (Federal, State, and local), and landowner agreements, during the construction of the Project.
- References environmental compliance documents to identify and prepare a catalog of all avoidance areas where sensitive resources may occur (biological, archaeological, etc.) and coordinates implementation of avoidance measures with the superintendent(s), and the Proponent's environmental inspection staff.
- Identifies any topics or crews that require further environmental training, or re-training.
- Coordinates with the Proponent's environmental inspection staff regarding daily construction activities and locations.

- Communicates with the LEI and environmental staff on any potential or existing environmental concerns, compliance issues, or staffing needs and training.
- Communicates environmental issues to the appropriate Project staff.
- Assists the environmental crew foreman and the environmental inspection staff to ensure that all erosion control measures and all standard PCEMs are installed properly and maintained.

Reporting

- Coordinates with the LEI to prepare, review, and submit regular reports to the Proponent.

Variations

- Works with the construction contractor's Project Manager and Environmental Compliance Manager to prepare and submit written variance requests and associated documentation for approval.

A6.3.3.10 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL CREW FOREMAN

- Supervises the installation and maintenance of erosion control devices/measures, PCEMs, and all other design features of the Project for environmental protection.
- Ensures the repair and maintenance of erosion control devices/measures.
- Ensures that all areas of the ROW are in compliance with all environmental requirements/permits for which the construction contractor(s) are responsible.
- Works with the construction contractor's environmental inspection staff to remedy any problem areas.
- Oversees revegetation and restoration post-construction activities (see Appendix B15-Reclamation, Vegetation, and Monitoring Plan).

A6.4 Procedures

A6.4.1 Compliance Levels

Project activities that are inspected and documented in a daily report will each be assigned a compliance level as defined below. During such daily inspections, the environmental inspectors are to be alert to situations in the ROW or exclusion areas that could potentially lead to unintentional noncompliance issues and proactively take steps to avoid or halt further damage.

Environmental inspectors will evaluate potential noncompliant situations based on the following criteria: the extent and nature of impacts on a resource, the potential for additional impacts on that resource, the intent behind the action, and the history of the situation.

A6.4.1.1 ACCEPTABLE

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

A6.4.1.2 PROBLEM AREA

A problem area is a location or activity that does not meet the definition of acceptable but is not yet a noncompliant situation (refer to Section A.6.4.1.3 – Noncompliance). The problem area category can be used in several instances, including, but not limited to, the following:

- A minor accidental or unforeseeable incident that is corrected in a timely manner.
- An activity or location that is not in direct noncompliance but where the inspector or monitor determines damage to a resource could occur if corrective actions are not taken in a timely fashion.
- An isolated and unintentional activity that does not directly damage a resource.

The environmental inspector is to proactively take steps to avoid or halt further damage and the problem area will not be considered a noncompliant situation if the issue is resolved or corrected immediately. If the issue at the problem area has happened at multiple locations or time periods and/or is not corrected in a timely manner, the problem area may be documented as a noncompliant situation by the environmental inspectors or monitors. In the event a problem area is documented, the construction contractor(s)' environmental inspector will inform the construction contractor(s)' foreman onsite of the problem area and discuss and agree on an acceptable time frame for its correction. The construction contractor(s)' environmental inspectors and CIC field monitors will document problem areas and their resolutions in daily reports.

A6.4.1.3 NONCOMPLIANCE

A report of noncompliance will be issued by the CIC when construction activities flagrantly violate the Project's environmental requirements, result in damage to a sensitive resource, or place sensitive resources at unnecessary and avoidable risk. Contributing to a noncompliance are issues such as the extent of the damage to sensitive resources, the intent of the action, and whether or not the action is a repeat occurrence. A noncompliance report may also be issued for direct disregard for Project requirements that do not, but may, damage sensitive resources such as the use of an unapproved access road.

If the CIC or CIC field monitor observes a noncompliant activity, they will notify the Proponent's Environmental Compliance Manager and the construction contractor's LEI and superintendent or foreman immediately to discuss the situation prior to issuing a noncompliance report. The noncompliance report will include the name of the construction contractor's superintendent or foreman contacted and the time of the notification, and if applicable, the immediate resolution of the noncompliance. If immediate resolution is not possible, a follow-up report will be filed documenting the noncompliance resolution. If the construction contractor's superintendent is not immediately available or the severity of the situation requires immediate action, the monitor will inform the construction contractor's Project Manager and the Proponent of the noncompliance. The CIC will submit all noncompliance reports and reports documenting their resolution to the BLM/Western Project Manager(s), Proponent, and construction contractor(s).

If the construction contractor's environmental inspection staff observes a noncompliance, they will notify the superintendent or foreman onsite immediately. The noncompliance will be resolved immediately or within an agreed time frame that has been established by the environmental inspector and the superintendent or foreman. The construction contractor's environmental inspector will also notify the CIC field monitor or CIC and document the noncompliance in a daily report that will be filed with the construction contractor's Environmental Reporting Coordinator and the Proponent's Environmental Compliance Manager. The CIC or CIC field monitors will also file a report as described above

The construction contractor's environmental inspectors and the Proponent's Environmental Compliance Manager and the CIC 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 action to the foreman onsite. If necessary, the Proponent's Environmental Compliance Manager and the construction contractor's LEI and Superintendent will determine the level of retraining for the crew involved. Following a serious or repeat noncompliance, the CIC, the construction contractor's Project Manager and Environmental Compliance Manager will discuss the situation and how best to implement measures to prevent it from recurring.

A6.4.1.4 RESPONSE TO NONCOMPLIANT ACTIVITIES

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

Temporary Suspension

If noncompliant situations remain unresolved after the process described under Section A6.4.1.3 – Noncompliance, the CIC or BLM/Western Project Manager may issue a temporary suspension to halt specific activities or all activities in the noncompliant work area. The temporary suspension shall be issued orally and in writing to the Proponent's Project Manager or designee, and the Proponent shall immediately provide notice of the temporary suspension to the construction contractor's Project Manager.

Work Stoppage Order

If necessary, a WSO to suspend all construction activities may be issued orally or in writing by the CIC or BLM/Western Project Manager to the Proponent's Project Manager. A WSO would be appropriate in the event of serious noncompliance that could reasonably be expected to result in a risk of death or other harm to personnel or repeated or flagrant violations of environmental requirements.

A conference call will be held with the CIC and BLM/Western Project Manager, the Proponent's Project Manager and Environmental Compliance Manager, and the construction contractor's Project Manager and LEI within 24 hours to discuss the WSO and noncompliance incident and its resolution. If necessary, a face-to-face meeting will be scheduled within 24 hours of the initial conference call (excluding weekends and Federal holidays). After conclusion of the conference call and/or meeting, the Proponent and construction contractor(s) will need to resolve the issue(s) identified by the CIC and BLM/Western. Once the issue is resolved and the methods documented, the Proponent may file a written request with the BLM/Western to resume activities. No construction activities shall be undertaken (except emergency or safety-related) until formal approval is provided by the BLM/Western's CIC or Project Manager. The BLM/Western shall review and respond to the Proponent's written request to resume activities within 24 hours after receipt. The BLM's response shall either approve the request or provide additional criteria citing applicable law(s), agreement(s), and/or permit requirement(s) that must be met prior to approval.

Grant Suspension or Termination

In accordance with 43 CFR 2807.17(a), BLM may suspend or terminate the ROW grant on BLM lands if the Proponent and/or its construction contractor(s) does not comply with applicable laws and regulations and any terms, conditions, or stipulations of the grant (e.g., excessive or continuous noncompliance activities that demonstrate a willful disregard for the terms and conditions of the ROW grant). Prior to suspension or termination, the Proponent will be notified in writing and allowed a reasonable opportunity to correct any noncompliance pursuant to 43 CFR 2807.18(a), and if applicable, provide a hearing pursuant to 43 CFR 2870.18(b).

A6.4.2 Variance Procedures (Unforeseen Circumstances)

This section's intent is to inform all parties (Proponent, BLM, Western, construction contractor(s), and any other Project personnel) about the process for ROW grant variance requests on BLM-managed lands and to minimize potential costly construction delays. BLM, Western, and the Proponent understand that unforeseen circumstances will occur during construction such as realignments to the proposed route, access roads, and/or work area not within the permitted Project ROW and not analyzed in the EIS. In addition, the need to make changes to construction procedures, schedule, and/or PCEMs and other specific stipulations and methods may be required. Under these or similar circumstances, a variance request will need to be filed and approved by the BLM and/or Western to remain in compliance.

The BLM will review all variance requests to ensure compliance with the EIS analysis, NHPA, and ESA (refer to table A6.1). In addition, written approval of the Project change must be obtained from agencies or landowners and provided to the Proponent who will provide it to the CIC for inclusion in the Project Record and End of Construction Project Report (Section A6.8.2 – End of Construction Project Report).

Variance requests will be generated by the construction contractor(s) and provided in writing to the Proponent, who will then review the request. The Proponent will evaluate the variance request and submit it to the CIC to be processed according to the process outlined herein. The Proponent may also initiate variance requests for cause.

The Proponent will be required to submit the variance request and supporting documentation to the CIC. The CIC is responsible for an on-the-ground perspective of the requested variance to the BLM Project Manager or designee. The BLM has authorized the CIC to approve a Level 1 variance (refer to Section A.6.4.2.1 – Level 1 Variance – Variances Accomplished through Field Resolution) in the field. In addition, on consulting with the BLM Project Manager, the BLM has authorized the CIC to approve a Level 2 variance (refer to Section A6.4.2.2 – Level 2 Variance – Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-Way Grant or Special-Use Authorization). The BLM Project Manager has the authority to approve or deny Level 3 variance requests (refer to Section A6.4.2.3 – Level 3 Variance – Variances Requiring an Amendment to the Right-of-Way Grant).

A variance request form will be developed by the construction contractor(s), reviewed and approved by the Proponent and the CIC, and then reviewed and approved by the BLM prior to the start of construction. The variance request form will be incorporated into the preconstruction environmental training program. The variance request form will describe the variance request in detail, provide justification and documentation for the variance (including maps and photos), calculate the proposed permanent or temporary acreage affected, describe the original disturbance acreage analyzed in the EIS, and indicate the difference in acreage between the proposed variance and the original disturbance. It will also describe any potentially impacted resources and identify whether additional resource surveys will be required.

The CIC will communicate with the Proponent regarding variance status; and the Proponent will communicate that status with the construction contractor(s). Once the approved variance request is given to the construction contractor(s), it may be implemented.

Table A6.1 summarizes the different variance procedures.

Table A6.1. Variance Procedures and Approval Authority to Be Used during the Project

Variance Level	Potential Use	Approval
Level 1	Minor changes that conform to the POD	CIC
Level 2	Changes outside the POD	BLM Project Manager (may be delegated to others)
Level 3	ROW grant amendment	BLM authorized officer (or designee)

A6.4.2.1 LEVEL 1 VARIANCE – VARIANCES ACCOMPLISHED THROUGH FIELD RESOLUTION

A Level 1 variance is a minor field adjustment within the approved ROW that conforms to the POD. A Level 1 variance must meet the following criteria:

- The area of activity or change lies within the approved ROW, including temporary use areas.
- The area of activity or change is within the area analyzed by the EIS.
- There will be no increase in the total amount of disturbance analyzed in the EIS.
- Impacts to resources will equal or be less than the original location and activity (e.g., does not impact any new cultural resource sites).

The Level 1 variance request process is shown in figure A6.3.

A Level 1 variance request will be developed by the construction contractor(s) and submitted to the Proponent for review. The variance request form will include all attached supporting documentation. On the Proponent's review and approval, the Proponent's Environmental Compliance Manager will submit the variance request package to the CIC for their review. The BLM has delegated authority to the CIC to approve Level 1 variances in the field in consultation with the Proponent's Environmental Compliance Manager. However, the changes must still be documented in a variance request form for inclusion in the Project record and the CIC must include them in that week's progress report.

Examples of minor field adjustments include, but are not limited to, the following:

- Relocation of erosion control devices (Note: this could also require modification to the Stormwater Pollution Prevention Plan);
- Relocating temporary fences inside authorized work areas;
- Allowing rubber-tired vehicles to use additional access roads (in addition to those approved by BLM/Western) where no road improvement will be needed and if the roads are not to be used as additional haul roads for equipment and materials; and
- Temporarily (for not more than seven days) placing parts or other assemblies outside areas designated in the POD but within the authorized ROW provided the materials storage does not create unauthorized surface disturbance.

Level 1 Variance Approval or Denial

The CIC has the authority to approve or deny Level 1 variance requests in the field. In some cases, the CIC may consult with the BLM Project Manager. Level 1 variance requests may be approved if the results of implementing the changes are not significant and will occur within the granted ROW. A Level 1 variance request can be implemented in the field as soon as it is approved and signed by the CIC. In some cases a verbal approval can be given, and followed up with a written, signed variance document. The CIC will document the approved variance in the daily reports.

If a Level 1 variance is denied, the CIC will inform the Proponent's Project Manager within 24 hours and include an explanation for the denial. The Proponent's Project Manager may choose to resubmit the request as a revised Level 1 variance, Level 2 variance, or discontinue pursuit of the request.

Level 1 Variance Distribution

The CIC will give/send the approved Level 1 variance request to the Proponent's Project Manager, who will then distribute the approved variance to the appropriate construction personnel. The CIC will submit

to the BLM/Western Project Manager and the Proponent daily copies of approved Level 1 variances. The CIC will include all Level 1 variances approved during the previous week in their weekly report.

A6.4.2.2 LEVEL 2 VARIANCE – VARIANCES BEYOND FIELD RESOLUTION, NOT REQUIRING AN AMENDMENT TO THE RIGHT-OF-WAY GRANT OR SPECIAL-USE AUTHORIZATION

Level 2 variances are requests for changes that exceed the field decision authority of the CIC. Level 2 variances require approval by the BLM Project Manager (delegated authority from the authorized officers) and may require further review or field studies by agency staff. Level 2 variances generally involve Project changes affecting an area outside of the ROW, but within the area previously surveyed and/or analyzed for cultural resources, Section 404 of the Clean Water Act, paleontological resources, and biological resources. Level 2 variance requests typically require additional supporting or supplemental documents, correspondence, and records. Examples include, but are not limited to, the following:

- Moving a work area outside the approved construction corridor a short distance but within the area previously surveyed where overall disturbance type and acreage remains approximately the same and no additional cultural, paleontological, biological resources or invasive weed populations could be affected;
- Using additional workspace outside of the previously approved work areas (outside the Project ROW);
- Allowing construction or maintenance activities to be conducted in Project areas when seasonal restrictions are in place (refer to PCEMs);
- Relocating proposed culvert location(s) to better accommodate natural drainages (Note: this could also require modification to the Stormwater Pollution Prevention Plan);
- Moving a range fence a specified distance laterally and permanently installing it to avoid proposed construction;
- Modifying an access road due to safety hazards.

The level 2 variance request process is shown in figure A6.4.

Level 2 variance requests may also cover minor changes that would extend beyond the previously surveyed corridor for sensitive resources. In these situations, additional cultural, biological, and/or invasive weed surveys and reports would be required to be submitted with the variance request. If sensitive resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. For the variance to be approved, it must adhere to all BLM -approved stipulations and Federal, State, and local regulations.

A Level 2 variance request will be prepared by the construction contractor(s) and submitted to the Proponent for review. The variance request form will include all attached supporting documentation. On the Proponent's review and approval, the Proponent's Environmental Compliance Manager will submit the variance request package to the CIC for review. Following the review the CIC will submit the request package to the BLM Project Manager. The BLM Project Manager, after consulting the appropriate resource specialists, if necessary, will provide the Proponent's Project Manager through the CIC written approval or denial (including an explanation) of the request. The BLM Project Manager may request additional information, or a modification of the request, before approval of the variance request. The Proponent may also initiate variance requests for cause.

Figure A6.3. Level 1 variance process.

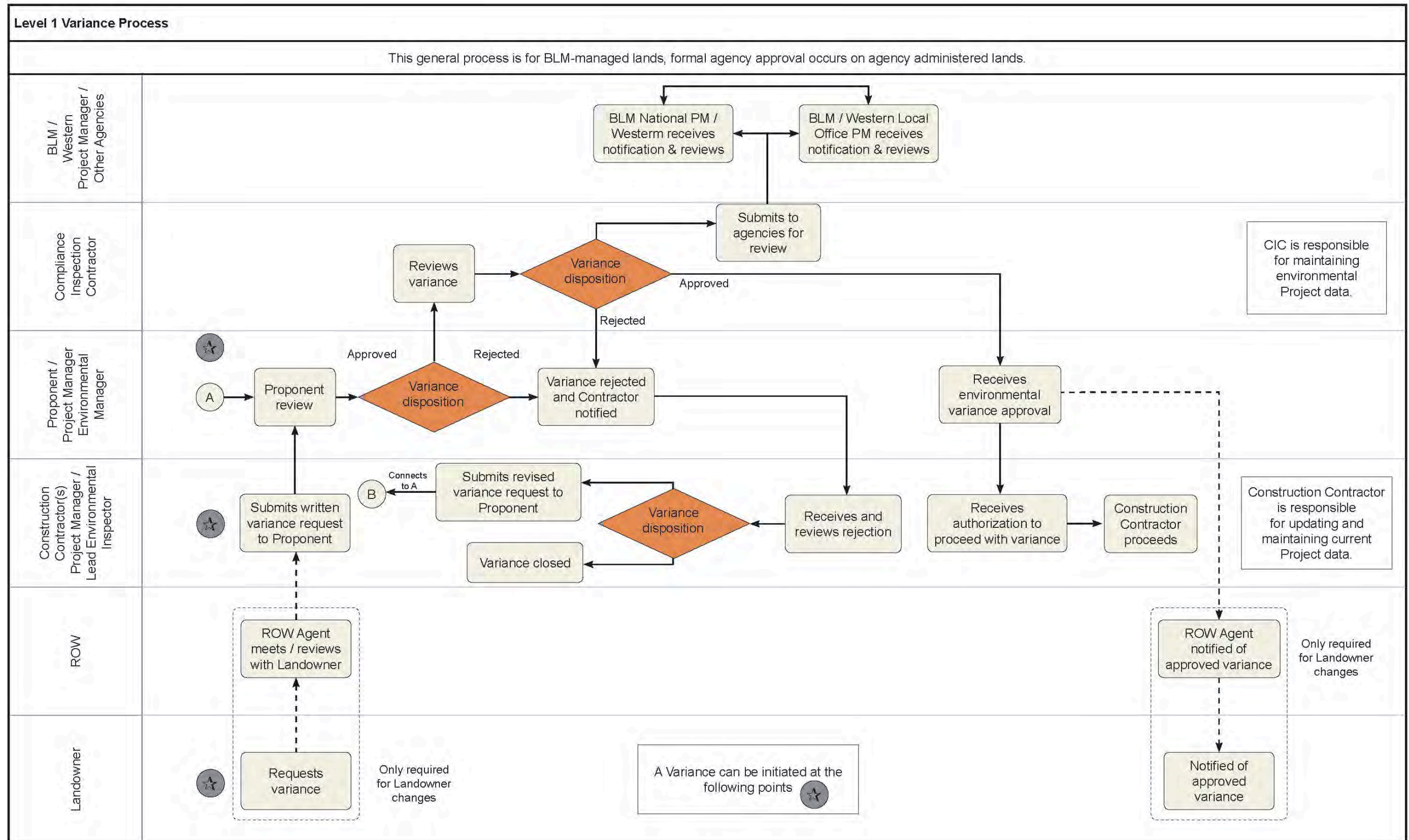
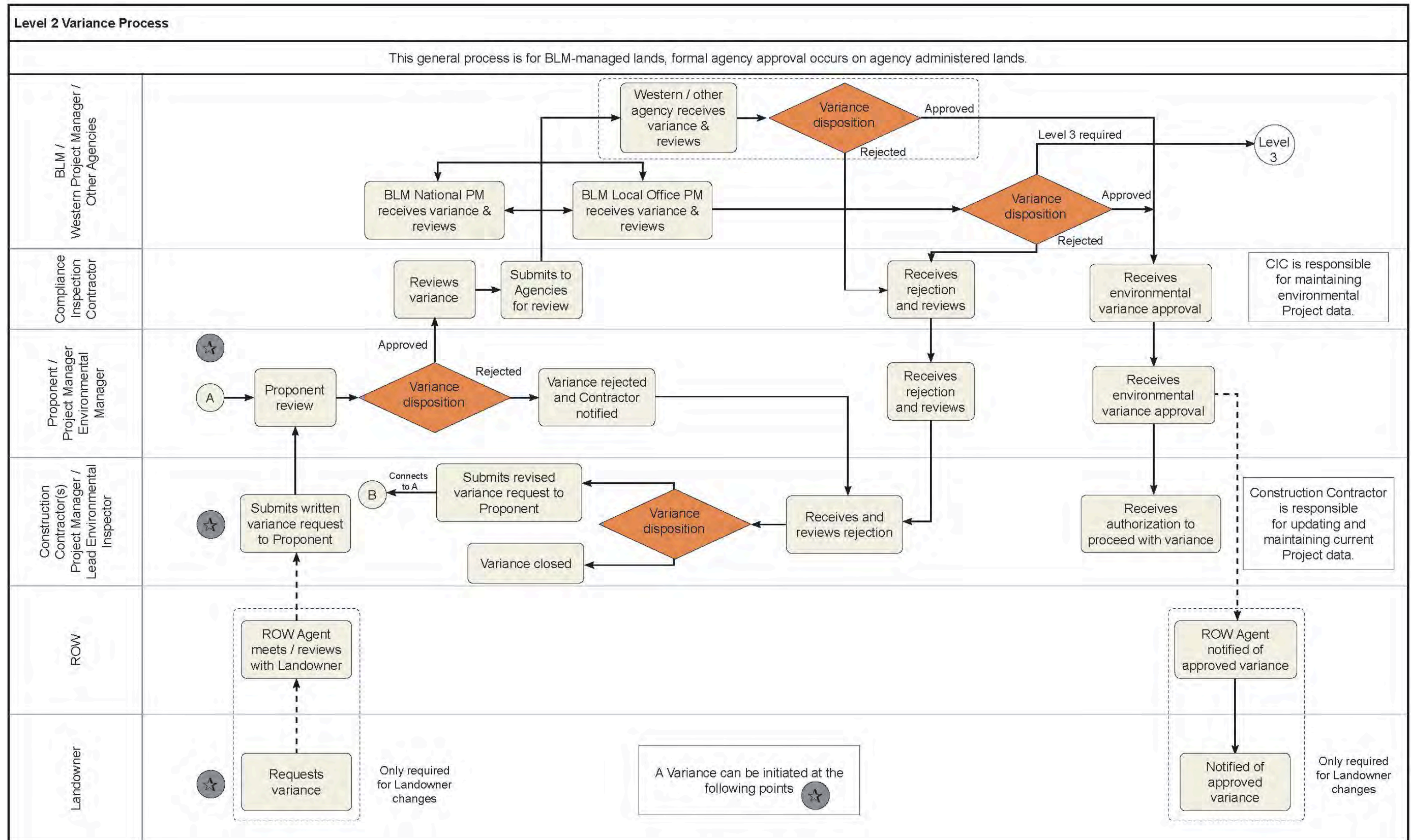


Figure A6.4. Level 2 variance process.



Level 2 Variance Approval or Denial

The BLM Project Manager has the authority to approve or deny a Level 2 variance request. The BLM Project Manager(s) will review the Level 2 variance request form and supporting documentation and will consult with BLM resource specialists as needed. Requests for additional information or a modification of the request will be given to the Proponent's Project Manager who will submit the requested information within 5 business days. The BLM Project Managers will provide the Proponent's Project Manager written approval or denial of the request within 5 business days from receipt of a complete request package including additional requested information.

If a Level 2 variance is denied, the BLM Project Manager will provide the Proponent's Project Manager with a written denial (including an explanation) of the request. The Proponent's Project Manager may choose to resubmit the request as a revised Level 2 variance request, Level 3 variance request, or to discontinue pursuit of the request.

Level 2 Variance Distribution

The CIC will provide the approved Level 2 variance request to the Proponent's Project Manager, who will then distribute the approved variance to the appropriate construction staff. The CIC will submit to the BLM Project Manager and the Proponent daily copies of approved Level 2 variances. The CIC will include all Level 2 variances approved during the previous week in their weekly report.

A6.4.2.3 LEVEL 3 VARIANCE – VARIANCES REQUIRING AN AMENDMENT TO THE RIGHT-OF-WAY GRANT

The BLM Project Manager, the CIC, and Proponent's Environmental Compliance Manager may determine that proposed change which is significant and outside the approved ROW will necessitate submittal of an amendment.

If a proposed change has been determined to be a significant deviation from the ROW grant, the change will require a grant amendment in accordance with 43 CFR 2807.20. An amendment to the ROW grant requires completion of an application on a Standard Form 299. The BLM authorized officer must approve the amendment. The Proponent or its construction contractor(s) will prepare the Standard Form 299 along with the variance request and applicable supporting documentation. The completed package will be submitted to the CIC, who will forward it to the appropriate BLM office. The BLM will process the amendment application pursuant to 43 CFR 2800. The BLM may request additional information, or a modification of the request, prior to approval of the amendment.

Grant amendment approvals or denials will come directly from the BLM. The grant amendment approval may also require issuance of an NTP addressing the amendment, if an NTP is a requirement of the original ROW grant. Examples of grant amendment requests include, but are not limited to, the following:

- Route realignments or facility relocations onto BLM land not analyzed in the EIS and/or included in the ROW grant.
- Certain Project-wide changes to PCEMs.
- Additions to the Project area as defined in the ROW grant and POD.
- Requests affecting sites that are or may be eligible for the National Register of Historic Places or involving State or federally protected species or habitat.
- Modifications of an existing access road to be used by the Project.

The Level 3 variance request process is shown in figure A6.5.

A6.5 Communications

Effective communication between all parties involved in the Project is vital to maintain environmental compliance. Onsite personnel will remain in contact through the use of two-way radios and cellular telephones, allowing for real-time coordination between parties. Ongoing, effective communication will enable timely resolution of questions, monitoring requirements, and compliance issues prior and during construction activities. However, oral communication will not substitute for written approvals when written approvals are necessary.

A6.5.1 Primary Inter-Party Communication Channels

The following relationships are not intended to limit communication on the Project, but demonstrate the primary channels of routine communication between parties for compliance related issues.

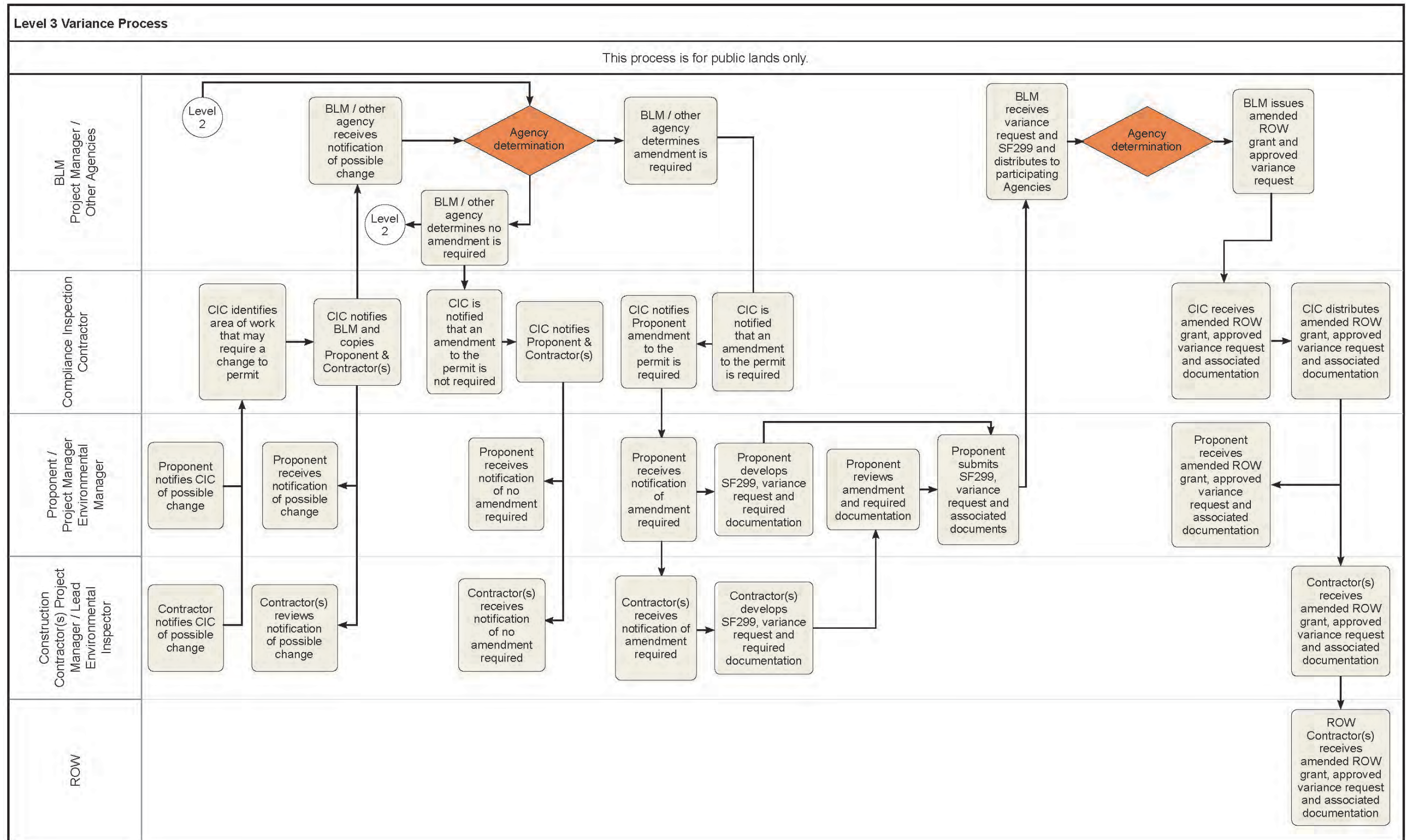
- BLM/Western Project Manager – Proponent’s Project Manager and Environmental Compliance Manager
- CIC – CIC Field Monitors, Proponent’s Project Manager, Environmental Compliance Manager, and construction contractor’s LEI
- Proponent’s Project Manager – construction contractor’s Project Manager, CIC, and Proponent’s Environmental Compliance Manager
- Proponent’s Environmental Compliance Manager – construction contractor’s LEI, construction contractor’s Environmental Reporting Coordinator, and the CIC
- Construction contractor’s Environmental Reporting Coordinator – Proponent’s Environmental Compliance Manager, CIC or designee and construction contractor’s LEI
- Construction contractor’s LEI – CIC, Proponent’s Environmental Compliance Manager, construction contractor’s Environmental Reporting Coordinator and construction contractor’s environmental inspectors
- Construction contractor’s Project Manager – Proponent’s Project Manager and construction contractor’s superintendents

A6.5.2 Daily Communications

The construction contractor(s) will host a meeting each morning to review the location and extent of each day’s construction activities, safety and environmental issues, and a summary of activities that require monitoring by environmental inspectors and coordination with the CIC. Attendees should include the CIC (or designee); the construction contractor’s LEI, Construction Inspector, and Environmental Compliance Manager (or designee); and the construction contractor’s superintendent(s) and foreman(s). Meeting topics should include:

- Safety review
- Planned construction activities and locations for the day
- ROW restrictions for those particular areas
- Available access roads
- Reminders of PCCEMs specific to the day’s construction activities and required for work in proximity to sensitive resources

Figure A6.5. Level 3 variance process.



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- Review of avoidance areas near planned construction activities
- Upcoming potential environmental issues

If needed, the superintendents, foremen, and environmental inspectors will conduct tailgate meetings with construction crew to also address those issues discussed above.

A6.6 Training

A6.6.1 Preconstruction

Prior to working on the Project, contractor personnel are required to attend environmental training classes. Training will focus on how to comply in the field with applicable environmental laws and regulations, the stipulations in the ROW grant, PCEMs, and POD. Overall Project and site specific requirements will be discussed, as well as the roles and responsibilities of the environmental compliance staff such as the environmental inspectors and third-party CIC field monitors. Other topics to be covered include the flagging and signage methodology, PCEMs, and approved areas of disturbance. A master list of all personnel who have completed training will be maintained by the construction contractor's Environmental Training Coordinator for the Proponent and the CIC. Hard hat stickers, cards, badges, or other means of demonstrating attendance of the training will be issued to attendees of the training classes.

A6.6.2 During Construction

Contractor personnel who join the Project after construction has commenced will be required to attend environmental compliance training. A master list of all personnel who have completed training will be maintained by the construction contractor's Environmental Training Coordinator for the Proponent and the CIC. In addition, if needed, environmental compliance training will be held in the field as specific issues occur which need immediate attention. Remedial trainings for specific crews or work area locations may also be held. These trainings will include the construction inspectors and environmental inspectors, as well as the appropriate crew and supervisors.

A6.7 Reporting and Documentation

Several forms and reports will be completed on a daily or weekly basis during construction. The reports and forms will include:

- **Daily Inspection Reports.** Environmental inspectors and CIC will develop a Daily Inspection Report Form to be filled out daily to record site visits. The reports will document the environmental compliance of observed construction activities observed and will include Problem Area Report Forms and Noncompliance Report Forms if needed. Environmental inspector reports will be submitted to the Proponent and the CIC Project Manager; CIC Field Monitor reports will be submitted to the CIC's Project Manager. All reports and forms will be available to the BLM and Western on request.
- **Problem Area Report Forms.** This section of the daily report will document and describe a problem area that was observed that day. Photo documentation is required. If the problem is not resolved that day, a follow-up resolution report will be required.
- **Noncompliance Report Form.** Environmental inspectors and CIC will develop a Noncompliance Report Form to document and describe a noncompliance that was observed that day. Photo documentation may be included. If the noncompliant situation is not resolved within one working

day or within the time agreed for effective corrective action, a follow-up resolution report will be required.

- **Variance Request Forms.** Environmental inspectors and CIC will develop a Variance Request Form. Variance requests will be produced by the construction contractor(s), produced or reviewed by the Proponent, and submitted to the CIC for review before submittal to BLM and Western, if required, for approval. Variance Request Forms must include the proper accompanying documentation (photos, maps, alignment sheets, drawings, etc.). The construction contractor's Environmental Reporting Coordinator will track, distribute, and archive all approved or denied variances.
- **Weekly Compliance Reports.** The CIC will submit a weekly compliance report summarizing all observed construction activity with regard to environmental compliance to the BLM/Western and the Proponent. The construction contractor's LEI will submit to the Proponent and the CIC a weekly report documenting the week's compliance activities. The LEI's report will be available to the BLM and Western on request.
- **Weekly Training Log.** The construction contractor's Environmental Training Coordinator will submit a weekly training log of all personnel who attended training that week to the construction contractor's Environmental Reporting Coordinator, who will provide a copy to the Proponent's Environmental Compliance Coordinator.

A6.8 Project Closeout

A6.8.1 Reclamation and Post-Construction

Once construction of the Project is complete, the CIC will coordinate with the BLM and Western Project Managers and resource staff to conduct final on-the-ground inspections on BLM-managed lands. Similar inspections will occur between Western and their inspectors outside of BLM-managed lands. Inspections will take place within 30 days of construction completion and will focus on ensuring that all construction work was completed in accordance with the ROW grant, POD, PCEMs, and the ROW construction reclamation activities as described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan.

After the inspections are complete, the BLM and Western will meet with the CIC to determine whether further actions are needed to be in compliance with the construction contract, ROW grant, POD, PCEMs, and the ROW construction reclamation activities. If no further action is required, the post-construction reclamation monitoring period will begin, as described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan of the POD. Reclamation and post-construction monitoring activities will be conducted by the CIC and in accordance with the Reclamation, Vegetation, and Monitoring Framework Plan (see appendix B15).

A6.8.2 End of Construction Project Report

The CIC will submit to the Proponent, BLM, and Western an End of Construction Project Report within 60 days of construction completion. The End of Construction Report will include the following:

- Summary of overall construction and associated compliance activities;
- The number of special status animals or plants taken, including the capture, displacement, mortality, injury, and/or harassment by other means, during the Project activities;
- The amount of actual temporary and permanent acreage in comparison with the temporary and permanent disturbance acreage as estimated in the EIS and POD;

- An electronic and hard copy compilation of all daily compliance reports (including digital pictures), variance requests (including approval/denial), temporary suspensions, and WSOs (including documentation of resolution).

The construction contractor(s) will ensure that the CIC is provided all the necessary documents for the End of Construction Project Report.

A6.8.3 Construction Closeout Meeting

As required by the BLM and Western, the CIC will coordinate a construction closeout meeting with the BLM, Western, Proponent, construction contractor(s), other field monitors and affected agencies to document all agency requirements have been met and to ensure all issues (problem areas and noncompliant situations) have been satisfactorily resolved. This may include any noncompliant situations that are in the process of being resolved.

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Appendix B

ENVIRONMENTAL PROTECTION / FRAMEWORK PLANS

Full text to be included with Final POD (post Final EIS) — not included herein.

APPENDIX B1 ACCESS ROAD PLAN

Access road planning will be finalized when the Southline Transmission Line Project (the Project) is approved. With the approved route known, the exact location of all access roads will be refined through detailed engineering. Once road locations are known, cultural resource and biological surveys will be conducted and road locations adjusted to avoid sensitive resources discovered during the surveys. No field disturbance will occur before the completion of these surveys and the completion of any necessary mitigation or treatment measures.

All roads will be constructed in accordance with Western Area Power Administration (Western) and Bureau of Land Management (BLM) standards for access roads and specified in the Access Road Plan, to be included as a framework plan in the Plan of Development (POD). As indicated in the POD, framework plans are applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. This framework plan pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

APPENDIX B2 TRAFFIC AND TRANSPORTATION MANAGEMENT PLAN

B2.1 Introduction

This Traffic and Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of right-of-way (ROW) access, and Proponent Committed Environmental Measures (PCEMs) to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the Southline Transmission Line Project (Project). As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B2.2 Purpose

The purpose of this plan is to provide the Bureau of Land Management (BLM), Western Area Power Administration (Western), and other public agencies; the compliance inspection contractor (CIC); and the construction contractor(s) with a description of the type of access associated with the construction, operation, and maintenance of this Project and make evident the potential impacts that could be created by construction and operation of the Project. The goal of this plan is to ensure impacts from construction of the transmission line and any associated access are kept to a minimum through the use of management practices and PCEMs described throughout this appendix. These practices and measures are intended to mitigate the effects of transportation on environmental resources, roads, traffic, travel, and road safety.

B2.3 Regulatory

A number of agencies have jurisdiction over the transportation-related components of the Project. These include the BLM; New Mexico Department of Transportation; Arizona Department of Transportation; Federal Highway Administration; and local law enforcement and road departments. Encroachment permit applications will need to be filed with appropriate road agencies for those areas where the transmission line crosses public roads (e.g., Interstate 10) prior to construction.

Other permits and approvals not directly related to transportation could affect the construction, use, and/or maintenance of roads in certain areas. Persons responsible for Project transportation activities must be familiar with all relevant sections of Project's Plan of Development (POD).

B2.4 Traffic Management Practices

Ground travel will be the primary means of transporting construction and maintenance crews and equipment during Project construction. Helicopters will be used if deemed necessary. All vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. On roads where speed limits are not posted, the speed limit is assumed to be 25 miles per hour (mph), unless otherwise directed by the CIC. Speeds along access roads and spur roads within the ROW may be limited to 15 mph in some areas to prevent excessive amounts of construction related dust or disruption, as necessary (see appendix B8 – Erosion, Dust Control, and Air Quality Plan).

Before construction, authorized access routes will be clearly marked in the field with signs or flagging (see appendix A1 – Flagging, Fencing, and Signage Plan). The construction contractor(s) will review the location of permitted access and will be responsible for ensuring construction travel is limited to designated areas that clearly identify the limits of disturbance.

All field personnel will attend an environmental training program. Through this program, field personnel will be instructed to use only approved access roads, how to identify the access road type, drive within the delineated road limits, and obey jurisdictional and posted speed limits to minimize potential impacts to biological, paleontological, and cultural resources.

Every effort will be made to minimize the effects of the Project construction activities on public transportation and to provide for public safety. The construction contractor(s) and environmental monitors will maintain a communications network using two-way radios or cellular phones. This will allow for coordination of equipment traffic and large trucks delivering structure components along existing access and/or public roads so public safety, traffic impacts, and resource impacts are minimized. In addition, any necessary permits for the movement of equipment and materials will be obtained and complied with.

In general, the number of construction vehicles needed for the Project is not expected to substantially increase traffic volumes. Similarly, road and lane closures are anticipated to be minimal, and will most likely occur during conductor stringing activities, during delivery of structure or substation components, or during blasting, if necessary. If road and lane closures are needed, the appropriate regulatory agencies, affected parties, and emergency service providers will be notified in advance.

Although construction traffic is not expected to disrupt access to residences along the ROW, adjacent landowners will be notified of the construction schedule (where appropriate). Signs will be posted in the Project area to notify landowners and others of the construction activity. Flagging will be maintained until final cleanup and/or reclamation is completed, after which they will be removed.

A flagging scheme will be included in the final plan covering:

- Project access road;
- road access types (private, public, existing utility, new down-ROW access, or overland spur);
- temporary work areas (pulling sites, material yards, etc.);
- protected animals/plants or sensitive environmental areas;
- reclamation project areas;
- invasive weed cleaning stations;
- proposed structure locations;
- structure offsets;
- outside edge of permitted ROW or centerline; and
- cadastral survey monument.

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

B.2.5 Types of Right-of-Way Access

The Project ROW and other areas needed for construction such as staging areas will require access for Project construction, operation, and maintenance activities. Listed below are five types of access categories that will be used for this Project.

B.2.5.1 Access Type A

Access from adequate private roads. This type of access will be used when there is no existing road adjacent or parallel to the alignment, but where there is a patchwork of existing roads in the area that will be crossed by the proposed Project ROW, and could be used to access the ROW and get close to the structure locations. Grading between the existing roads and each structure location will only be conducted where necessary and will depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance will be limited to a width of 16 feet or less. The purpose of using existing access from private roads will be to minimize overall disturbance.

B.2.5.2 Access Type B

Parallel to maintained public roads. This type of access will be used when the alignment roughly parallels a nearby public road that is either paved or has gravel surfacing. Short spur roads will be used from the existing roads to each structure location, as described below under Access Type E. Except in rare cases, the existing roads will not be upgraded, but any damage to public roads from construction activities will be repaired. The purpose of access roads parallel to a nearby public road will be to consolidate and minimize overall disturbance.

B.2.5.3 Access Type C

Parallel to existing utility roads. This type of access will be used when the alignment roughly parallels an existing utility that already has an existing access road. Spur roads will be used from the existing utility roads to each structure location as described below under Access Type E. Generally, the existing utility roads will be improved. Grading between the existing utility roads and each structure location will only be conducted where necessary and will depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance will be limited to a width of 16 feet or less. The purpose of access roads parallel to a utility road will be to consolidate and minimize overall disturbance.

B.2.5.4 Access Type D

New down-ROW primary access. This type of access will only be used when access types A–C are not feasible. It will consist of a 16-foot-wide road (12-foot travel surface plus 2 feet on either side for berms/ditches). As much as possible, new access will be entirely within the ROW. Typically, new down-ROW access will be used if any parallel roads are more than 700 feet from the alignment. This access type will also normally be used for alignments that parallel interstate highways and railroads because the owners of those facilities generally place restrictions on the use of their ROWs; these restrictions do not allow for the addition of spur roads or their related ROW crossings and gates in ROW fences.

B2.5.5 Access Type E

Spur roads—improved and unimproved access. Spur roads will be used to connect type A, B, and C access roads to the ROW and for temporary access to stringing and splicing sites. Spur roads will be unimproved (two-track) roads except in areas where grading may be required based on terrain, with an average of one new spur road per mile for temporary access and approximately five spur roads per mile in areas where type A, B, and C access roads are used for permanent access to structure locations. Only where necessary, spur roads will be improved, and the roads will be graded to 10 to 12 feet wide. Otherwise, spur roads will not be improved in areas with flat terrain and within grassland, desertscrub, sand scrub, and sand dune vegetation communities. Vegetation on unimproved roads may be crushed by driving, but cropping or blading vegetation will not be conducted. This will avoid removal of root mass and organics in the soil (no surface soil will be removed). The purpose of unimproved spur roads will be to preserve the maximum amount of native vegetation, minimize overall disturbance, and reduce erosion.

B2.6 Proponent Committed Environmental Measures

Southline Transmission, LLC (Southline, or the Proponent) has developed environmental protection measures to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities and are to be applied to all affected Project areas. The following PCEMs were identified in the Environmental Impact Statement (EIS), and are included in table 8 of the POD. These PCEMs will be implemented by the construction contractor(s) with the Traffic and Transportation Management Plan.

B2.6.1 Transportation PCEMs:

- TRA-1 Prior to the start of construction, Southline and its construction contractor will prepare a Traffic and Transportation Management Plan for the Project to address the timing and routing of Project trips in an effort to minimize Project impacts on local streets, highways, and railroad operations.
- TRA-2 At least 90 days prior to any construction-related helicopter use on the Project, Southline and its construction contractor will coordinate with the Federal Aviation Administration (FAA) for review and approval of plans for any helicopter flights that will take place during construction and operation. Southline and its construction contractor will then provide information to the BLM and Western regarding the intended need and use of helicopters during construction and operation of the Project, including the Flight and Safety Plan; the estimated number of days and hours that the helicopter will operate; the type and number of helicopters that will be used; the location, size, and number of staging areas for helicopter takeoffs and landings; and written approval from property owners for use of helicopter staging areas.
- If any existing roads were to be damaged by Southline or its construction contractor during construction activities and/or truck traffic, the road will be repaired.
- In order to mitigate traffic impacts on primary roads in metropolitan areas, shift changes for construction crews will not occur during the peak hours for the road during construction. Oversize or overweight vehicle movements will be planned for nighttime hours, where practical and not detrimental to safety or evening residential noise levels, or those specified in permitting regulations in order to minimize traffic disruptions.
- In order to reduce public access to BLM roads and adjacent lands that are not currently accessible by the public, the Proponent will fence off or place restricted access signage at new access roads, where appropriate.

- Throughout the permitting and design phase, the Proponent will correspond with Federal, State, and local transportation agencies in order to avoid Project inconsistencies with current and future transportation plans.
- Throughout the permitting and design phase, the Proponent will correspond with Federal, State, and local airports in order to ensure that the FAA criteria for structures near airports are met, and to avoid Project inconsistencies with identified airport plans.
- Identify transmission structures with high-visibility markers in areas where they intersect or parallel military training routes.
- Provide gates and fencing in areas where off-highway vehicle use will be restricted due to military operations, or to protect sensitive resources.

B2.6.2 Other PCEMs:

B2.6.2.1 STANDARD MEASURES

- All vehicle movement will be restricted to designated access, contracted acquired access, or public roads.
- The boundaries of construction activities will be predetermined and staked or flagged prior to any construction activity. No permanent markings will be applied to rocks or vegetation.
- VIS-2 To limit disturbance, existing access roads will be used to the extent practicable, provided that doing so does not additionally impact resource values. Widening and grading of roads will be kept to the minimum required for access by Project construction equipment.
- No widening or upgrading of existing roads will be undertaken in the area of construction and operations, except for repairs or modifications to make roads safely passable, where soils and vegetation are sensitive to disturbance, in areas of critical habitat for vegetation or wildlife, in areas of habitat for BLM special status species, or where such activities could harm historic properties.
- During operation of the transmission lines, the ROW will be maintained free of non-biodegradable debris. Desert vegetation will be crushed in place to promote seeding and revegetation, and reduce erosion potential.
- BLM and Western road construction specifications will be followed where unimproved spur roads cannot be employed.
- Unimproved spur roads will be used to the extent practicable in areas where no grading will be warranted to access work areas, within the approved ROW. Unimproved spur roads will be used to access a site without specifically blading a road or significantly modifying the landscape. All vehicle movement will be restricted to designated access, even if that is unimproved access. Vegetation will be crushed where feasible, not cut. For all access types, soil will be compacted, but not removed, except when grading requires displacement of surface soil.
- Where new roads will be required, water bars and/or rolling dip cross-drains will be utilized to minimize erosion. Details of their use will be documented in Appendix B3, the Stormwater Pollution Prevention Plan.
- All construction vehicle movement will be restricted to predesignated access, contractor-acquired access, and public roads.
- The width of construction and new temporary access roads will be sited to keep to the minimum needed to avoid sensitive areas and to limit ground disturbance.

B2.6.2.2 AIR QUALITY

- Trackout control devices such as grizzly bars, wheel washers, and gravel pads will be located at all entrances and exits.
- AIR-1 Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, will be implemented; these include the following reasonable precautions: (1) frequent watering (no new water sources developed) or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; (2) reduction in the amount of disturbed area where possible; (3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended; and/or (4) treatment of actively disturbed areas with BLM-approved dust palliatives.

B2.6.2.3 HAZARDOUS MATERIALS AND WASTE

- HAZ-8 Service and refueling procedures will not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment will not be done within the ROW.

B2.6.2.4 FARMLANDS AND RANGELAND

- FARM-1 Fences and gates will be repaired or replaced to their original, predisturbed condition (or better), as required by the landowner, BLM authorized officer, or other land-managing entity if they are damaged or destroyed by construction activities. New temporary and/or permanent gates will be installed only with the permission of the landowner or the BLM. Temporary gates not required for post-construction access control will be removed following construction completion and in accordance with the POD.
- Temporary gates will be installed to prevent livestock from escaping rangelands and accessing roadways. Fences and gates will be repaired or replaced to their original, predisturbed condition, as required by the landowner or the BLM authorized officer if they are damaged or destroyed by construction activities. Cattle guards will be installed at access points to prevent livestock from exiting unsecured gates onto roadways.

B2.6.2.5 RECREATION

- Southline and its contractor will coordinate with the BLM to display appropriate “closed” signage at the entrance to new spur roads to structure locations and access roads located on BLM-managed lands. This includes temporary signs during the construction phase of the Project and permanent signs and/or vehicle barriers that will close the spur routes to public travel during the operational phase. Signs will be removed as appropriate upon decommissioning.

B2.6.2.6 VEGETATION

- VEG-1 Every effort will be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access will not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations will be selected to avoid special status vegetation to the greatest extent feasible.
- In construction areas where grading is not required, vegetation will be left in place wherever possible, and original contours will be maintained to avoid excessive root damage and allow for regrowth. All existing roads will be left in a condition that is equal to or better than their condition before the construction of the transmission lines, as determined by the appropriate land-management agency.

B2.6.2.7 VISUAL RESOURCES

- VIS-2 The alignment of any new access roads (including unimproved spur roads) will stay within the designated access ROW and will follow the designated area's landform contours and avoid steep areas as much as feasible, provided that such alignment does not additionally impact resource values. This will minimize ground disturbance and/or reduce scarring (visual contrast).
- All new or improved access that will not be required for maintenance will be closed or rehabilitated to make it less visually apparent.

B2.6.2.8 WATER RESOURCES

- Roads will be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges will be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.

B2.6.2.9 WILDLIFE

- WILD-8 Final structure and spur road locations will be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.
- Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas will be conducted outside the breeding season for most desert-nesting migratory birds. Southline and its construction contractor would conduct preconstruction surveys for active nests and consult with the appropriate agencies on a case-by-case-basis when active nests are found (see Appendix B7-Plant and Wildlife Species Conservation Measures Plan).
- Except where otherwise posted or allowed, a Project speed limit of 25 mph will be designated for all construction areas, spur roads, and new access roads to minimize the potential for construction equipment collisions with wildlife. In areas with mountainous terrain and/or poor site distances, the Project speed limit will be 15 mph.

B2.6.3 Other Specific Stipulations and Methods

Design features and selective environmental measures for environmental protection are to be applied to all affected Project areas to help reduce potential access and transportation related impacts. Listed below are transportation-related (TR) design features and selective environmental measures beyond the PCEMs identified in the EIS and POD, for environmental protection to be implemented by the construction contractor(s):

- TR 1 A Fire Protection Plan will be developed and incorporated into the POD, which will be approved by the BLM prior to the issuance of a ROW grant.
- (FP23): The construction contractor(s) will ensure continuous access will be provided to emergency vehicles along all access roads. Access roads will be maintained in a manner that they may be used as fire breaks in the event of a fire start.
- TR 2 Grading will be minimized by driving overland within pre-designated work areas whenever possible.
- TR 3 All requirements of those entities having jurisdiction over air quality matters will be adhered to. Any necessary dust control plans will be developed and permits for construction activities will be obtained. Open burning of construction trash will not be allowed, unless permitted by

- appropriate authorities. Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance.
- TR 4 Hazardous material will not be drained onto the ground or into streams or drainage areas. Refuse and other wastes will be stored in a manner to protect against animal intrusion and contamination of stormwater. . Construction waste, including trash and litter, garbage, other solid waste, petroleum products, concrete curing fluid, and potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.
- TR 5 Refueling and storing potentially hazardous materials will not occur within a 500-foot radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. If surface disturbance is required to store potentially hazardous materials or refuel equipment, these activities will not occur within a 500-foot radius of any riparian area or water body. Spill preventive and containment measures or practices will be incorporated as needed.
- TR 6 There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction (or maintenance). Existing crossings will be used at perennial streams, national recreational trails, and irrigation channels. Existing or overland access routes are to be used for construction and maintenance in these select areas. Every crossing must be identified and a crossing plan developed. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or BLM.
- TR 7 To limit unauthorized or unwanted access into the Project area, all new or improved access (e.g., blading, widening existing access) not required for operation or maintenance, and with landowner or land-management agency approval, will be closed or rehabilitated using the most effective and least environmentally damaging methods appropriate to that area and developed through consultation with the landowner or land-management agency. Methods for road closure or management include installing and locking gates, obstructing the path (e.g., earthen berms, boulders, pocking), revegetating the surface of the roadbed to make it less apparent, or restoring the road to its natural contour in combination with vegetation.
- TR 8 The construction contractor(s) will use overland access to the greatest extent possible in areas where no grading will be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. 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. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment. Methods for removal of vegetation will include mowing (brush hog flail type mower), 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. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a minimum width as specified in the POD. Rutting and other similar damage to overland access shall not exceed 4 inches in depth and shall be repaired and reseeded with the approved seed mixes as soon as ground conditions permit.
- TR 9 To reduce visual contrast, soil amendments, mineral emulsions, or asphalt emulsions (i.e., Permeon™ or approved equivalent) will be applied, or grading techniques such as slope rounding and slope scarification will be used to blend road and pad cuts into the landscape in areas of steep terrain where grading is necessary, in rocky areas, or where newly exposed rock color will create strong landscape contrasts.

- TR 10 Dust suppression techniques will be applied (such as watering construction areas) to prevent powdering of soils on roads, maintain firm working surfaces, limit fugitive dust, protect topsoil for reclamation, and prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates. In addition, dirt tracked onto paved roads will be removed as needed.
- TR 11 If the Project proposes to obtain water from wells or surface water sources to suppress dust, written approval from the landowner or land-management agency will be obtained prior to appropriation.
- TR 12 If a construction method requires the closure of a state- or county-maintained road for more than one hour, a plan will be developed to accommodate traffic as required by a county or state permit.
- TR 13 On county and state maintained roads, caution signs will be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures, such as traffic control personnel, warning signs, lights, and barriers, will be used during construction to ensure safety and to minimize traffic congestion.
- TR 14 To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for employee personal vehicles.
- TR 15 Unauthorized vehicles will not be allowed within the construction ROW or along roadsides near ROW.
- TR 16 All temporary culverts and associated fill material will be removed from stream crossings after construction.
- TR 17 Landowners will be notified at least 48 hours prior to the start of construction within 0.25 mile of a residence.
- TR 18 Emergency vehicle access to private property will be maintained.
- TR 19 Roads in residential areas will be reclaimed as soon as possible, and construction areas near residences will be fenced off at the end of the construction day.
- TR 20 Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.
- TR 21 Roads identified by Southline or Western as no longer necessary will be reclaimed as specified in the Reclamation, Vegetation, and Monitoring Plan (see appendix B15).
- TR 22 Roads or highway within the ROW corridor shall be used to the maximum extent possible for construction and maintenance of the new ROW.
- TR 23 To help set public expectations for when temporary access roads are decommissioned, signs shall be posted on all temporary roads and overland access routes identifying them as reclamation areas. Signs will state "Restoration in Progress – No Vehicle Traffic Allowed."
- TR 24 The transportation of explosive materials, if needed, will be addressed in the Blasting Plan (see appendix B6)

APPENDIX B3

STORMWATER POLLUTION PREVENTION PLAN

FRAMEWORK

B3.1 Introduction

In compliance with criteria in the U.S. Environmental Protection Agency's (EPA's) Clean Water Act (CWA), 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) permit for stormwater discharges (40 Code of Federal Regulations 122 and 123).

NPDES Construction General Permits are issued by the EPA in New Mexico, while Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permits are issued by the Arizona Department of Environmental Quality (ADEQ). The general permits are issued only after submittal of a Notice of Intent (NOI) for construction activities, and preparation of a Stormwater Pollution Prevention Plan (SWPPP) that describes how erosion and sediment transport will be minimized to adjacent water bodies. Measures to ensure construction activities comply with State and EPA requirements for stormwater management to be incorporated into the SWPPP are outlined in this plan framework.

The construction Plan of Development (POD) will identify the party responsible for developing a Project-specific SWPPP and for obtaining coverage under the appropriate Construction General Permit by filing a NOI and appropriate fee in accordance with the NOI instructions.

B3.2 Purpose

The purpose of a SWPPP for the proposed Southline Transmission Line Project (Project) is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner minimizing environmental impacts during construction of the Project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement Proponent Committed Environmental Measures (PCEMs) in a manner minimizing environmental impacts. The SWPPP will also spell out design features for environmental protection specific to storing and handling fuel and oil, cement mix, and other materials that may contaminate stormwater. Temporary stabilization methods (silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout construction activities. In addition to conventional methods of erosion control there are numerous new and improved products and the construction contractor(s) is encouraged to review these progressive or improved materials in the development and implementation of a SWPPP. The proper implementation of PCEMs associated with a SWPPP is imperative during all construction activities.

Development and implementation of the SWPPP, and maintenance of the PCEMs and other stipulations presented in the SWPPP will provide the construction contractor(s) with the mechanisms for reducing soil erosion and minimizing pollutants in stormwater during construction. These activities will be conducted in an environmentally sensitive and responsible manner so no discharge of sediment or contaminants may be conveyed directly or indirectly to wetlands, waters of the U.S., or to waters of New Mexico or Arizona.

B3.3 Notification Requirements and Implementation

Before construction begins, the responsible party will develop a SWPPP and will obtain coverage under either the NPDES 2012 Construction General Permit, or the AZPDES 2013 Construction General Permit (Permit Number AZG2013-001) by filing a NOI and appropriate fee with the EPA Region 6 for New Mexico or ADEQ, respectively, in accordance with NOI instructions. The construction contractor(s) will be responsible for implementing a site-specific SWPPP and will be required to perform routine inspections, recordkeeping, and any reporting throughout the duration of construction activities.

For the Project, the main source of potential stormwater contamination will be erosion of soils from construction activities. The primary intent of the erosion and sediment control measures identified in the SWPPP is to control and minimize erosion at the source. The primary means to avoid erosion of soil from a construction site is to keep the amount of disturbed area to an absolute minimum. It will be the responsibility of the construction contractor(s) to implement erosion control measures where necessary to minimize pollutants in stormwater and to keep the Project in compliance with EPA, ADEQ, and New Mexico Environment Department regulations.

Impaired or outstanding waters in the Project area include the San Pedro River and Cienega Creek in Arizona; both crossings will utilize existing crossing points to minimize any impact. For construction sites located within ¼ mile of an impaired or outstanding receiving water, the SWPPP must be submitted to ADEQ for review and approval and must include a sampling and analysis plan for analytical monitoring, unless the construction contractor(s) can clearly demonstrate there is no reasonable potential for construction activities to be a source of the identified pollutant.

A copy of the SWPPP shall remain at the construction site, and be readily available while the transmission line and substations are under construction, from the start of construction activities until completion of final stabilization for the Project. The SWPPP is meant to be a controlled document that identifies potential impacts through inspections and maintenance and also serves as a measure of final site stabilization as part of the general permit requirements. Once construction is complete and final stabilization has been accomplished, the responsible party must file a notice of termination with EPA and ADEQ.

The identified responsible party must retain a copy of the SWPPP with copies of all inspections performed over the duration of Project construction, and a set of construction site maps for the duration of Project construction and for three years after the Notice of Termination, that delineate the following items:

- Areas of soil disturbance that have been stabilized
- Areas to be graded along with a time schedule
- Areas of potential soil erosion where control practices will be implemented
- Types of control practices and time schedule for implementation
- Locations of any post-construction projects

B3.4 Project Modifications

The identified responsible party shall maintain an up-to-date SWPPP and shall amend the SWPPP whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters. The SWPPP shall also be amended if it is in violation of the Construction General Permit, or has not achieved the general objective of eliminating pollutants in stormwater discharges, or if the EPA

or ADEQ requires amendments. The SWPPP shall be amended, implemented, and changes communicated to relevant on-site construction personnel in a timely manner, but in no case more than 14 days after it has been determined the SWPPP is inadequate. All amendments will be dated and directly attached to the SWPPP.

B3.5 Proponent Committed Environmental Measures

Southline has developed environmental protection measures to be incorporated as part of the Project. The goal of these PCEMs, as identified in the Environmental Impact Statement (EIS) and in table 8 of the Plan of Development (POD), is to reduce or avoid potential environmental impacts resulting from Project-related activities. The following PCEMs will be followed in the development of a SWPPP.

- WAT-1 A Project-specific construction SWPPP will be prepared prior to the start of construction of the transmission line and substations in compliance with CWA Section 402. The SWPPP will use best management practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads will be the minimum necessary for construction and will be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A U.S. Army Corps of Engineers permit will be obtained prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404, if required. Activities in and around streams and wetlands will be designed to avoid, minimize, and mitigate impacts to waters of the U.S.
- WAT-2 Construction equipment will be kept out of flowing stream channels, unless feasible alternatives are not available. Structures will be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.
- Trackout control devices such as grizzly bars, wheel washers, and gravel pads, etc. would be located at all entrances and exits.
- AIR-1 Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, would be implemented; these include the following reasonable precautions: (1) frequent watering (trucked in, no new water sources developed), or stabilization, or covering (as appropriate) of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; (2) reduction in the amount of disturbed area where possible; (3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended; and/or (4) treatment of actively disturbed areas with BLM-approved dust palliatives.
- Roads will be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges will be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.
- To the extent practicable, structures will be sited with a minimum distance of 200 feet from streams.
- Where new roads will be required, water bars and/or rolling dip cross-drains will be utilized to minimize erosion. Details of their use will be documented in the SWPPP.

B3.5.1 Other Specific Stipulations and Methods

Listed below are stormwater protection measures (SW) beyond the PCEMs identified in the EIS and POD. These SW measures will be incorporated into the SWPPP to ensure construction activities comply with State and EPA requirements for stormwater management:

- SW 1 The appropriate NPDES Construction General Permit for construction activities that disturb 1 acre or more of land will be obtained from EPA and ADEQ.
- SW 2 The NPDES Construction General Permit requirements will be met. This includes implementing and maintaining appropriate industry standards for minimizing impacts to surface water.
- SW 3 One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the NPDES Construction General Permit.
- SW 4 The SWPPP will be modified as necessary to account for changing construction conditions.
- SW 5 The SWPPP will identify areas with critical erosion conditions that may require special construction activities or additional industry standards to minimize soil erosion.
- SW 6 The SWPPP will identify any impaired or outstanding waters, and if construction is to occur within ¼ mile, provide sampling and analysis plans for discharges from the site.
- SW 7 Migration of construction-related sediment to all adjacent surface water bodies will be prevented.
- SW 8 Stormwater industry standards will be maintained on all disturbed lands during construction activities as described in the SWPPP.
- SW 9 Approved sediment and erosion control meeting industry standards will be installed and maintained until disturbed areas meet final stabilization criteria.
- SW 10 Temporary erosion and sediment controls meeting industry standards will be used at multi-use construction yards (equipment storage yards, fly yards, multi-use construction areas) and substations.
- SW 11 The construction schedule may be modified to minimize construction activities in rain soaked or muddy conditions. Existing roads and trails will be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than 4 inches remaining on the roads from the Project will be repaired at the landowner's discretion.
- SW 12 Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.
- SW 13 Upon completion of construction, disturbed areas along the transmission line within the ROW, at substations, and at related facilities will be revegetated with approved vegetation (refer to appendix B15 – Reclamation, Revegetation, and Monitoring Framework Plan) as required by the NPDES Construction General Permit and in accordance with the SWPPP. The specific areas to be revegetated will be coordinated with and approved by the landowner.

SW 14 In areas of drought-susceptible soils, the soil surfaces will be mulched or otherwise stabilized to minimize wind erosion and to conserve soil moisture.

B3.6 Mitigation Maintenance, Inspection, Repair, and Monitoring

The construction contractor(s) will be required to conduct routine maintenance and emergency repair on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. As part of the SWPPP, the construction contractor will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or sediment. Schedules will be established for regular inspections of equipment and areas. Inspections of the construction site shall occur in accordance with the general permit applicable to each state to identify areas contributing to a stormwater discharge and to evaluate whether erosion control measures and BMPs are in place and functioning properly. During inspections, the construction contractor will also determine if erosion control measures and BMPs identified in the SWPPP are adequate and whether additional control practices are needed. All monitoring and inspection records produced in association with this SWPPP will be retained for a period of at least 3 years.

B3.7 Training

The construction contractor(s) will be responsible for the SWPPP implementation. The construction contractor(s) and/or the identified responsible party shall be responsible for amendments and revisions to the SWPPP. On-site construction personnel will be responsible for installation and maintenance of on-site erosion control measures and BMPs. Properly trained personnel are more capable of preventing spills, responding safely and effectively to accidents, and recognizing situations that could lead to stormwater contamination. The construction contractor will be responsible for familiarizing their personnel with the information contained within the SWPPP. Training meetings will need to be held for new personnel who join the Project after the initial training has been provided. The purpose of these meetings will be to review the proper installation methods and maintenance of all erosion control measures to be used for the Project. The monitoring/inspection program and all required maintenance and repair will be conducted by trained personnel.

B3.8 Post-Construction Stormwater Management

PCEMs used to reduce pollutants in stormwater discharges after all construction phases have been completed at the sites will take into account local post-construction storm water management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. Post-construction PCEMs will be assessed during future line maintenance. During line maintenance, any areas disturbed by the line installation that are observed to be eroding sediment into drainages will be assessed for the appropriate permanent mitigation measure to control sediment movement off the disturbed area. Disturbed areas will also be reclaimed per appendix B15 – Reclamation, Revegetation, and Monitoring Plan.

APPENDIX B4

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

B4.1 Purpose

Southline Transmission, LLC (Southline), has developed this Spill Prevention, Control, and Countermeasures (SPCC) Plan for the Southline Transmission Line Project (Project). This SPCC Plan is not a complete Plan, but rather serves as the framework document for the development of a complete SPCC Plan and will lay the foundation for both the construction and the operation and maintenance phases of the Project. The party responsible for completing the final SPCC Plan will be detailed in the construction Plan of Development (POD).

A SPCC Plan addresses prevention and control of oil, hydraulic fluid, and petroleum fuel spills, primarily spills that could enter navigable waters of the United States. This SPCC Plan addresses four basic issues:

- design, operation, and maintenance procedures to prevent and control oil spills
- measures designed for the prevention of operational error and equipment failure involving oil, which are the causes of most spills
- control and recovery of oil spills by containment structures to prevent a spill from entering navigable waters
- oil discharge response procedures for project personnel: this encompasses countermeasures (a contingency plan) to contain, clean up, and mitigate the effects of an oil spill at or from the project

This SPCC Plan is required in defined circumstances by the U.S. Environmental Protection Agency (EPA) regulations contained in Title 40, Code of Federal Regulations, Part 112 (40 CFR 112), titled “Oil Pollution Prevention.” This SPCC Plan provides preventive procedural actions associated with spills or releases of oil, including fuel, lubricant, or heat transfer media, during construction refueling activities and during operation and maintenance. This SPCC Plan also presents applicable Proponent Committed Environmental Measures (PCEMs) that were identified in the Environmental Impact Statement (EIS) and are included in table 8 of the Plan of Development (POD) as methods to minimize the environmental impact.

B4.2 Responsibility of Implementation

The SPCC Rule, administered by the EPA, is a rule that includes requirements for oil spill prevention, preparedness, and response to prevent discharges to navigable waters and adjoining shorelines. Specifically, the rule requires facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if the total aboveground storage capacity of oil and oil products exceeds 1,320 gallons; or if the underground storage capacity exceeds 42,000 gallons; and if, because of its location, the facility could reasonably be expected to discharge oil into navigable waters of the United States. Containers with a capacity of less than 55 gallons of oil or oil products are exempted from the requirements under the Oil Pollution Prevention regulations.

Southline, its construction contractor(s), and their inspectors shall be responsible for the implementation of the procedural actions, PCEMs, and other specific stipulations and methods of any and all applicable SPCC Plans. The construction contractor(s) will implement the SPCC Plan to ensure compliance with

applicable Federal, State, and local regulations applicable to the location of refueling, storage, waste removal, and other activities involving fuels and petroleum products in coordination with Southline. The final plan(s) shall be reviewed by Southline as appropriate.

A key component of SPCC implementation is training. All oil-handling personnel including construction contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment will be required to complete spill training before they commence work on the project. Spill training will also be required for all contractor and subcontractor personnel before beginning work on the project.

Spill training programs will be conducted by the construction contractor and the site safety coordinator and will accomplish the following:

- Provide information concerning pollution control laws, regulations, and rules
- Inform personnel of the proper operation and maintenance of fueling equipment
- Inform personnel of spill prevention and response requirements, including the operation and maintenance of equipment to prevent discharges
- Describe the measures and provisions of the SPCC Plan and discharge procedure protocols
- Assign roles and responsibilities for implementing the SPCC Plan

Measures, responsibilities, and provisions of this SPCC Plan and spill training will be provided through ongoing safety briefings, which will discuss safety and spill prevention and response, including personal responsibility to initiate appropriate procedures.

B4.3 Spill Prevention

It is anticipated that fuel and petroleum products will be stored and used in the Project area in various quantities. Therefore, PCEMs are to be used to minimize the potential for spills and for pollutants to enter the environment. The most economical and effective control for pollutants generated on construction sites is the exercise of “good housekeeping” practices and an awareness by construction workers, planners, engineers, and developers of the need for and purpose of compliance with Federal, State, and local regulations. The following general “good housekeeping” practices will be used:

- Designate areas for equipment refueling, maintenance, and repair. These areas must have provisions to contain any pollutants in an area that can be regularly removed and disposed of.
- Provide appropriate waste receptacles at convenient locations and provide regular collection of used oil, if generated on-site.
- Locate equipment washdown areas on-site and provide appropriate control of washwaters.
- Provide protected storage areas for petroleum products. These storage areas will be enclosed with temporary fencing where practicable. Where required, curbing will be installed to minimize oil spills from reaching navigable waterways.
- Contractors/subcontractors will be provided with a storage yard in which to park vehicles during off-hours.
- Properly cover and store materials, minimize contact of materials with rainfall and runoff, minimize waste, properly dispose of waste, and recycle where possible.

- Each contractor and subcontractor will be encouraged to bring to the job site only the material to be used that day as practicable. Large quantities will be placed adjacent to their installation locations so as to minimize handling.
- Retain sediments that contain oil on the construction site. Soil erosion and sediment control practices can effectively accomplish this.

Petroleum products are widely used during construction activities. These products are used as fuels and lubricants for vehicular operations and power tools. For general operation and equipment maintenance, these products include oils and fuels such as gasoline, diesel oil, kerosene, lubricating oils, and grease. Most of these pollutants adhere to soil particles and other surfaces easily. Oil and oily wastes, such as crankcase oil, cans, rags, and paper dropped in oil and lubricants, can be best disposed of in proper receptacles or recycled. Used oil for recycling will not be mixed with degreasers, solvents, antifreeze, or brake fluid. A further source of these pollutants is leaky vehicles. Proper refueling and maintenance of equipment will further reduce pollution by this source.

General practices for storing petroleum products and solvents include:

- Store products in weather-resistant sheds, where practical.
- Line the storage area with a durable impervious material.
- Create an impervious berm around the perimeter or appropriate parts of the perimeter to contain any spills.
- Capacity of bermed area will be at a minimum 110 percent of the capacity of the largest container.
- Clearly label all products.
- Keep tanks off the ground, where feasible, and keep lids securely fastened.
- Locate the storage area where it is protected from vehicle traffic.
- Post or provide access to information for procedures in case of spills. Persons trained in handling spills will be onsite or on-call at all times.
- Materials for cleaning up spills will be kept onsite and easily available. Spills will be cleaned up immediately and the contaminated material properly disposed of.
- Specify a staging area for all vehicle refueling and maintenance activities. This area will be located away from all drainage courses.
- All storage facilities will be regularly monitored for leaks and repaired as necessary. Workers will be reminded during subcontractor or safety meetings about proper storage and handling of materials.
- Construction activity accumulating dangerous wastes that do not contain free liquids will be protected from stormwater run-on.
- Where material is temporarily stored in drums, a containment system can be used.
- Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage, or any unauthorized use.
- An employee trained in emergency spill cleanup procedures will be present when dangerous wastes, liquid chemicals, or other wastes are loaded or unloaded.
- No material, liquid or otherwise, is to be discharged through any storm drain system.
- Cleaning agents that can be recycled will be chosen where practical.

B4.4 Petroleum Spills and Emergency Response

While each spill, leak, or response is unique, standard procedures generally apply. These may include the following steps:

1. First response/assessment and initiation of action (internal and agency notification may be required)
2. Spill control and containment
3. Cleanup
4. Disposal
5. Documentation and reporting
6. Agency notification/external reporting
7. Assessment

These steps are covered in detail below.

B4.4.1 First Response / Assessment and Initiation of Action

When a leak or spill is detected, human health and safety is paramount. Once the situation is deemed safe, the priority will become preventing further damage. The responsibility of the first responder is to first determine the immediate threat to human health and safety, and to the environment, then to evaluate the extent of the spill, its source, whether the release can be stopped, and whether available resources are sufficient to mitigate it. Additional personnel and resources should be requested if needed.

B4.4.2 Spill Control and Containment

All releases will be stopped as soon as possible. The spill will be contained as soon as possible to minimize damage to human health and the environment. This could involve placement of absorbent socks or booms, constructing an earthen dike, spreading absorbent materials on the affected area in the event of small spills, or simply shoveling all contaminated soil into a plastic bag or drum that are carried on vehicles specifically available for the purpose.

B4.4.3 Cleanup

Cleanup operations will begin as soon as possible after the active spill has been stopped and the spread of spilled materials has been contained. Cleanup could be as simple as placing absorbent socks in a bin for proper disposal, or as complex as excavation and hauling of contaminated soil followed by confirmatory soil and water testing.

B4.4.4 Disposal

The correct method of waste disposal varies with the material. Contaminated soils, liquids, and cleanup materials will be managed through a licensed waste management firm or treatment, storage, and disposal company. Copies of shipping/disposal manifests will be filed with the documentation of the event.

B4.4.5 Documentation and Reporting

Appropriate forms documenting the release and cleanup must be completed and signed, and stored along with any sample results, manifests, chains of custody, photographs, and other relevant materials.

B4.4.6 Agency Notification/External Reporting

If a spill occurs on Federal or State land, the appropriate agency office or landowner will be notified, and a copy of the manifest for disposal of the affected materials will be provided to the appropriate agency if required. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

The EPA has determined that discharges of oil into navigable waters of the United States in quantities that may be harmful to public health or the environment include those that:

- Violate applicable water quality standards;
- Cause a film or “sheen” upon, or discoloration of the surface of the water or adjoining shorelines;
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The National Response Center (NRC) shall immediately be notified of such discharges, as shall any required state and/or municipal agencies. This notification will be documented by the SPCC Coordinator. Information on the notification will follow the requirements described in the beginning of this subsection.

For discharges more than 1,000 gallons in a single event; or discharges more than 42 U.S. gallons of oil in each of two discharges occurring within any 12-month period, the final SPCC Plan, with the site-specific information listed in 40 CFR 112.4(a), will be submitted within 60 days to the EPA Regional Administrator.

The written report will contain the following information:

- Name, telephone number, and address of facility where spill occurred
- Name of owner/operator
- Name, title, telephone number, and address of reporter
- Name and telephone number of the person responsible for facility operations at the spill site
- Date and time of the spill or release
- Maximum storage or handling capacity of oil on the site and normal daily throughput
- Corrective action taken, with description of equipment repairs and replacements
- Facility description with maps, flow diagrams, and topographical information
- Estimated quantity of material released or spilled and the time/duration
- Exact spill location, including the name of the waters threatened or other affected media
- Source of the release or spill

- Cause of accident/spill
- Steps being taken or proposed to contain/clean up the spill, and precautions taken to minimize impacts
- SPCC Plan and failure analysis
- Cause of spill, with failure analysis
- Additional preventive measures taken or contemplated to minimize recurrence
- Other information pertinent to the SPCC Plan or spill event

Additionally, States often have their own reporting requirements for spills. Both New Mexico and Arizona have their own reporting requirements detailed below:

B4.4.6.1 NEW MEXICO REPORTING REQUIREMENTS

- According to the New Mexico Environment Department (NMED), a discharge of any material in a quantity that may, with reasonable probability, injure or be detrimental to human health, animal/plant life, or property; or may unreasonably interfere with the public welfare or the use of the property must be reported. This includes chemicals, biohazard materials, petroleum products, and sewage. In addition to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or groundwater, also must be reported.
- Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535 or (505) 476-6000
- Website: <http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm>
- Oral notification must be provided to NMED as soon as possible after learning of a discharge, but in no event more than twenty-four (24) hours thereafter.

B4.4.6.2 ARIZONA REPORTING REQUIREMENTS

- According to the Arizona Department of Environmental Quality, Federal reportable quantities apply. However, a spill of any quantity that impacts a waterway within the state of Arizona must be reported.
- Emergency: (602) 390-7894, Non-Emergency: (800) 234-5677 or (602) 771-2330
- Website: <http://www.azdeq.gov/er.html>

B4.4.7 Assessment

This is time to reflect on the cause of the spill, the response, and how the situation could have been improved. The assessment will include:

- Evaluation of what caused the spill, how it could have been prevented, and what other locations this may apply to.
- Evaluation of the emergency response and how it could be improved.
- Evaluation of the availability and utility of the equipment that was necessary to mitigate the spill.
- Implementation of changes to the facility, this SPCC Plan, and personnel training as appropriate.

B4.5 Proponent Committed Environmental Measures

The following PCEMs, which were identified in the EIS and are included in table 8 of the POD, will be implemented in conjunction with this SPCC Plan:

- Construction, operation, and maintenance crew members who handle oil or other hazardous substances described in the SPCC Plan will be properly trained to deal with a spill, and appropriate spill response or containment material will be available for use at applicable work sites. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in this SPCC Plan, will reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures will be taken to control the spill, and the EPA, BLM, NRC, and/or Arizona Department of Environmental Quality or NMED will be notified as defined in this SPCC Plan.
- HAZ-5: In the event of a spill, workers in the immediate area will cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in this SPCC Plan. Southline and its construction contractor are responsible for cleanup and assume liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline will immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.
- HAZ-7: Southline or the applicable contractors will maintain all vehicles in good working order. Equipment will be properly tuned and maintained to avoid leaks of fluids.
- HAZ-8: Service and refueling procedures will not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment will not be done within the right-of-way.
- Several Framework Plans prepared as part of the final POD will be developed and implemented to minimize and mitigate potential hazardous materials and waste; plans include a Stormwater Pollution Prevention Plan (refer to appendix B3); Soil Management Plan (refer to appendix B14); and Hazardous Materials Management Plan (refer to appendix B9). These plans will include requirements by the EPA, Occupational Safety and Health Administration, NMED, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.

B4.6 Emergency Contacts

National Response Center (Washington, D.C.)

The NRC is the sole Federal point of contact for reporting all hazardous substances releases and oil spills. The NRC receives all reports of releases involving hazardous substances and oil that trigger Federal notification requirements under several laws.

Phone: (800) 424-8802

Website: <http://www.nrc.uscg.mil/>

U.S. Environmental Protection Agency

Superfund, Toxic Release Inventory, Emergency Planning and Community Right-to-Know Act, Risk Management Program, and Oil Information Center:

Phone: (800) 424-9346

Type of Coverage: Staffed by live Information Specialists. Assistance is also available through the Emergency Management Frequently Asked Question Database, which provides answers to frequently asked questions and an option to submit questions electronically to the Information Center.

Description: A publicly accessible service that provides up-to-date information on the regulatory requirements of the Oil Pollution Prevention Program, including Spill Prevention, Control, and Countermeasures (SPCC) Plans, Facility Response Plans (FRPs), and oil discharges. The Information Center does not provide regulatory interpretations. It does, however, maintain up-to-date information on the availability and distribution of publications and other resources pertaining to its program areas.

Additional Notes: This hotline is shared and managed by the following EPA Programs: the Toxics Release Inventory, EPCRA, Risk Management Plans, Superfund, and Oil Spill Prevention.

EPA Region 6 Customer Service Line:

Phone: (800) 887-6063; Outside Region 6 call 214-665-6444
Serving Region 6 (AR, LA, NM, OK, and TX).

EPA Region 9 Customer Service Line:

Phone: (866) 372-9378; Outside EPA Region 9 call 415-947-8000.
Serving Region 9 (AZ, CA, HI, NV, and Pacific Islands).

BLM, Las Cruces District Office:

1800 Marquess Street, Las Cruces, NM 88005
(575) 525-4300
District Manager: Bill Childress

BLM, Safford Field Office

711 14th Avenue, Safford, AZ 85546
(928) 348-4400
District Manager: Tim Shannon
Field Manager: Scott Cooke

BLM, Tucson Field Office

3201 East Universal Way, Tucson, AZ 85756
(520) 258-7200
District Manager: Tim Shannon
Field Manager: Vi Hillman

New Mexico Environment Department

Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535 or (505) 476-6000
Website: <http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm>

Arizona Department of Environmental Quality

Emergency: (602) 390-7894, Non-Emergency: (800) 234-5677 or (602) 771-2330
Website: <http://www.azdeq.gov/er.html>

APPENDIX B5 HISTORIC PROPERTIES TREATMENT PLAN

Appendix B5 is a confidential appendix that will contain the Historic Properties Treatment Plan (HPTP) that is being developed for the Project. As identified in the Programmatic Agreement, the HPTP will provide information on the following:

- A brief description of the proposed action
- A list of the properties where data recovery is to be carried out
- A list of properties that will require archaeological monitoring during construction
- An archaeological construction monitoring plan
- 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

Content to be developed.

APPENDIX B6 BLASTING PLAN

B6.1 Introduction

A blasting plan is needed if blasting will be required on the Southline Transmission Line Project (Project) to ensure human health and safety during construction blasting operations. The blasting plan also mitigates the effects of noise and vibration, impacts to flora and fauna, and ensures compliance with myriad rules and regulations regarding the transportation, storage, handling, and use of explosives. This Blasting Plan Framework is not a complete blasting plan, but rather serves as the baseline document for the development of a complete Blasting Plan to be developed by the construction and blasting contractor(s).

This Blasting Plan is a framework that outlines methods to mitigate risks and potential impacts associated with blasting procedures that may be required for construction of the Project. Also included in this section is a preliminary outline for the Blasting Plan and Proponent Committed Environmental Measures (PCEMs), as identified in the Environmental Impact Statement (EIS) and table 8 of the Plan of Development (POD). These measures are developed to reduce or avoid potential environmental impacts resulting from Project-related blasting activities. The Blasting Plan is to be prepared by the construction contractor(s) and submitted to Southline Transmission, LLC (Southline, or the Proponent), the Bureau of Land Management (BLM), and Western Area Power Administration (Western), if blasting is required. Blasting on State lands or other relevant jurisdictions may require additional approval. As indicated in the POD, this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B6.2 Purpose

Once completed, the Blasting Plan will provide construction crews, the compliance inspection contractor (CIC), and environmental monitors with Project-specific information concerning blasting procedures, including the safe use and storage of explosives. The objective of the Blasting Plan is to prevent adverse impacts on human health and safety, property, and the environment that could potentially result from the use of explosives during Project construction.

B6.3 Regulatory Compliance and Procedures

The construction and blasting contractor(s) will be responsible for preparing and implementing the Blasting Plan and must comply with all applicable Federal, State, and local laws and regulations that pertain to explosives. No blasting operations will be undertaken until approval and appropriate permits have been obtained from the applicable agencies. Failure to comply with such laws could result in severe consequences.

The construction and blasting contractor(s) will comply with rules and regulations set forth by the U.S. Department of Transportation; Federal Bureau of Alcohol, Tobacco, Firearms and Explosives; Occupational Safety and Health Administration (OSHA); and all federal, state, county, and local rules and regulations relating to the transportation, storage, handling, and use of explosives. The construction and blasting contractor(s) will use experienced and qualified blasting personnel that will use current and professionally appropriate blasting methods and implement appropriate safety precautions. Blasting

procedures will be closely monitored by the CIC. Any damages that result solely from the blasting activity will be repaired by the construction and blasting contractor(s), or the owner will otherwise be fairly compensated.

B6.4 Blasting Plan Outline

The Blasting Plan prepared by the construction and blasting contractor(s) shall contain the information necessary to, and shall be presented in a format to meet or exceed the industry standard and meet regulatory approval. Although the Blasting Plan will provide some general specifications and procedures for blasting on the Project, site-specific plans or amendments may be necessary in some circumstances and must first be approved by Southline and any applicable governmental authority that is required.

The following is a suggested outline for the Blasting Plan:

- Purpose and Scope of Blasting
- Personnel and Chain of Command, Including:
 - Blast officer and other personnel who will be present
 - Site Safety Officer
- Site, Location, and Date(s) of planned blasting
 - Description of blasting area
 - Description of bedrock and geological problems
 - Description of adjacent utility facilities
- Explosives and blast design:
 - Type, quantity, and detonator device
 - Details of subsurface strata
 - Drilling pattern and spacing
 - Other, as required
- Means of transporting, storing, securing explosives:
- Procedures:
 - Handling explosive charges
 - Setting explosive charges
 - Wiring explosive charges
 - Firing explosive charges
 - Packaging and transportation of explosive materials
- Safety Considerations:
 - General
 - Procedures
 - Traffic control
 - Fire prevention
 - Emergency and first aid
 - Required personal protective equipment (PPE)
 - Minimum standoff distances
 - Clearing and controlling access to blast danger

- Warning signs and signals
- Minimum acceptable weather conditions
- Stray current, static electricity, and lightning
- Other, as required
- Mitigation measures for:
 - Protection of structures and utilities
 - Flying rock and debris
 - Ground vibration
 - Other, as required
- Procedures for handling misfires or other unusual occurrences
- Environmental Considerations
- Notifications for:
 - Nearby residences and businesses
 - Posted warning signs at Project entry points
 - Coordination with pipeline operators in the vicinity
 - Police, fire, and rescue
- Emergency action plan:
 - Phone numbers for ambulance, fire department, police
 - Location and phone number of nearest medical services facility
- Health and Safety Plan
- Attach a copy of Safety Data Sheet (SDS) for each explosive or other hazardous material expected to be used.
- Attach blast records, safety forms, approvals, and other relevant documents

B6.5 Safety Procedures

Due to the nature of working with explosives, a framework plan could not possibly encompass the array of specific safety procedures that must be in place. Specific explosives safety protocols will be described in detail in the blasting plan and/or health and safety plan. The following is an overview of safety procedures for transportation, storage, handling, and use of explosives on the Project and is intended as general guidelines.

B6.5.1 Transportation

Transportation of explosive materials must comply with federal and state departments of transportation rules and regulations. These laws relate to packaging, labeling, materials compatibility, driver qualifications, and safety of transported explosives. Vehicles must be well-maintained and properly marked with placards. Specific rules apply regarding what may be carried in the vehicle and cargo area of the vehicle, and vehicles carrying explosives may not be left unattended.

B6.5.2 Storage

Explosives must be stored in an approved structure (magazine) that is properly labeled and is resistant to bullets, weather, theft, and fire. The storage area must be in a remote (out of sight and isolated or protected from construction activities) location with restricted access. Detonators will be stored separately from explosives, and the quantity of stored explosives will be the minimum necessary. A log of all explosive stored shall be maintained by the blasting contractor and made available upon request.

B6.5.3 Handling

Personnel who handle explosives must be trained to understand the potential hazards and risks associated with each operation. Supervisors must be trained to recognize and abate hazards associated with their operations. Handling precautions include the following:

- Detonators, blasting caps, and other initiating devices will be carried separately in protective containers.
- The containers must prevent item-to-item contact and be marked to identify the contents.
- Containers will not be tumbled, dragged, dropped, thrown, rolled, or walked.
- Carts, hand trucks, and forklifts may be used when appropriate and necessary, where the circumstances allow and their use would not create additional risk.
- Construction and blasting contractor(s) will handle and dispose of dynamite storage boxes in accordance with relevant federal, state, and local laws.

B6.5.4 Use

At least one person who is thoroughly familiar with accepted firing procedures, knowledgeable of static electricity, hazards of electromagnetic radiation to ordinance, grounding procedures, and overall safety procedures shall be present at any firing site. Two-way radios will not be used when working with explosives, and safety precautions against fire and unintended explosions will be taken. Approved distances will be maintained, and appropriate notifications will be served to personnel on the site. Protocols to be followed will be detailed in the final Blasting Plan and health and safety plan.

B6.6 Proponent Committed Environmental Measures

As noted in the EIS, and in table 8 of the POD, Southline has developed environmental protection measures to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities. The following PCEMs will be used in the development of the blasting plan and will be adhered to by the construction and blasting contractor(s):

- Noisy construction activities (including blasting) will be limited to the least noise-sensitive times of day (daytime only between 7 a.m. and 10 p.m.) and to weekdays. In sensitive wildlife areas, they will be limited to between 1.5 hours after sunrise and 1.5 hours before sunset.
- If blasting or other activities that cause loud bursts of noise are required during the construction period, nearby residents will be notified in advance.
- To avoid impacting roosting bats at the Ina Road bridge, blasting activities will be restricted to less than 130 decibels (dB) if possible, and if that is not possible, then blasting activities will

occur at night after most bats have left their roost., No blasting will occur in April or May when the maternity colony is present.

- BAT-1 Construction activities that create sudden and sporadic loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex will be restricted in the Spring (April 1 to May 31), depending on the presence of bats to protect maternity roosts and potential hibernacula.

B6.7 Other Specific Stipulations and Methods

Additional stipulations, procedures, protocols, and methods may be required by federal, state, or local agencies. These may relate to safety, storage, and use of explosives, or they may be provisions for protecting sensitive species or habitats. The blasting contractor will adhere to the below specific stipulation and any other additional stipulations placed on the blasting plan.

- FP 14: No blasting will be allowed without the notification of the CIC and Fire Marshal. All blasting operations will adhere to guidelines outlined in the Fire Protection Plan (appendix B12). The blasting contractor's vehicles will be equipped with appropriate fire suppression equipment and all crew members will be trained in emergency response.

APPENDIX B7

PLANT AND WILDLIFE SPECIES CONSERVATION MEASURES PLAN

B7.1 Introduction

The purpose of the Plant and Wildlife Species Conservation Measures Plan for the Southline Transmission Line Project (Project) is to assist the Bureau of Land Management (BLM), Western Area Power Administration (Western), Southline Transmission, LLC (Southline, or the Proponent), the construction contractor(s), compliance inspection contractor (CIC), and other monitors in meeting their obligations to protect biological resources during the planning, design, and implementation of the proposed Project. This plan includes information on (1) regulatory requirements and agency considerations pertaining to biological resources, and (2) specific plant and wildlife species conservation Proponent Committed Environmental Measures (PCEMs) developed to reduce Project-related impacts on biological resources.

This plan provides information on anticipated impacts on plant and wildlife resources associated with the Project and identifies the PCEMs (as presented in the Environmental Impact Statement (EIS) for the Project and also in table 8 in the Plan of Development [POD]), along with stipulations, protocols, and/or techniques required to reduce these impacts. This plan does not identify PCEMs for aquatic biological resources. Protection for water resources, including PCEMs identified in Appendix B13 – Stream, Wetland, Well, and Spring Protection Plan, have met agency requirements to protect aquatic species. The plan is not intended to provide comprehensive, location-specific restrictions within the Project area.

As indicated in the POD, this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate. While neither BLM nor Western has the authority to enforce the POD and its PCEMs on State or private lands, BLM expects that most landowners would want the same protections afforded resources on BLM administered lands to be extended to their properties as well. Therefore, the agencies anticipate that the PCEMs and other specific stipulations and methods identified in the POD will largely be implemented over the entire length of the Project, regardless of jurisdiction.

B7.2 Regulatory Framework

B7.2.1 Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) of 1973, the U.S. Fish and Wildlife Service (FWS) has authority over actions that may affect the continued existence of a species federally listed as Threatened or Endangered. Take of federally listed species is prohibited without specific exceptions or permits issued under Sections 7 or 10 of 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. FWS 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. Federal agencies must consult with the FWS under Section 7 of the ESA on actions they authorize, fund, or carry out to ensure these actions are not likely to jeopardize the continued

existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

BLM and Western, as the lead Federal agencies in preparation of an EIS for the Project, consulted with FWS on the potential effects of the Project on federally listed species. The FWS concurred on December 30, 2014, that the Project may affect, and is likely to adversely affect, the lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), the Mexican long-nosed bat (*Leptonycteris nivalis*), Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), and southwestern willow flycatcher (*Empidonax traillii extimus*). The Project may affect, but is not likely to adversely affect, the Gila chub (*Gila intermedia*) and its critical habitat; Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*); northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat; and the yellow-billed cuckoo (*Coccyzus americanus*) and its proposed critical habitat. The biological assessment was amended on July 27, 2015, and consultation re-initiated due to a change in the proposed route. FWS in their Final biological opinion (BO), dated November 10, 2015, concurred with the determination that the changes to the proposed route would not change the effects determination for any of the listed species as given in the December 30, 2014, BO.

B7.2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 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 U.S.C. 668).

B7.2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 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 (USSR). 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.

B7.2.4 Bureau of Land Management – Land Use Plans

The BLM Resource Management Plans provide management guidance and desired population and habitat conditions for wildlife on BLM-administered lands. BLM Field Offices monitor habitat conditions and manage crucial wildlife habitat jointly with the Arizona Game and Fish Department (AGFD) and New Mexico Game and Fish Department (NMGFD). The BLM manages habitat for wildlife species by assessing the ability of a land area to supply the forage, cover, water, and space requirements of wildlife. Trend studies determine the directional change of a habitat from or toward desired conditions. These habitat and trend studies (BLM Manuals 6630.2, 6630.3, and 6630.4) allow the BLM to adjust management prescriptions through grazing or other public uses to improve habitat.

B7.2.5 Bureau of Land Management – Special Status Species Management Policy

BLM Manual 6840, “Special Status Species Management Policy,” authorizes each BLM State Director to designate and protect sensitive species on lands managed by the BLM. In New Mexico, the BLM list of

special status species is adopted from the Biota Information System of New Mexico (BISON-M) list of sensitive wildlife species, and the New Mexico Rare Plant Technical Council's list of New Mexico rare plants. In Arizona, the BLM State Director has issued a list of species designated as BLM Sensitive. As stated in Instruction Memorandum No. AZ-2006-002 (BLM 2005), "BLM Sensitive species are not covered by any other 'safety net' of status designation. Therefore, the Arizona BLM Sensitive Species List does not include species that are already Federally-listed or State-listed."

The BLM affords its designated sensitive species the same level of protection as ESA Candidate Species. BLM Sensitive Species are those for which population viability is a concern, which is warranted by a downward trend in population numbers, density, or habitat conditions that would reduce a species' existing distribution. The BLM is responsible for ensuring that its actions do not further contribute to the need for Sensitive Species to become listed as threatened or endangered.

B7.2.6 Coronado National Forest – Management Indicator Species Policy

Forest Service Manual (FSM) 2670 directs each Regional Forester to designate sensitive species on public lands administered by the U.S. Forest Service. According to 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 would reduce an existing distribution of the species."

The FSM 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 lands.
- Review programs and activities as part of the National Environmental Policy Act of 1969 process, through a biological evaluation, 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 within the area of concern and on the species as a whole.

The PCEMs described in this Plant and Wildlife Species Conservation Measures Plan will ensure that the Project is constructed, operated, and maintained in compliance with FSM 2670.

FSM 2620.5 defines Management Indicator Species (MIS) as "plant and animal species, communities or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (Forest Service 1991:6). These regulations require that certain vertebrate and/or invertebrate species present in the area be identified as MIS within the planning area (i.e., Coronado National Forest lands) and that these species be monitored, as "their population changes are believed to indicate the effects of management activities" (36 CFR 219.19(a)(1)). Standard and Guideline No. 1 for Wildlife and Fish within the Coronado National Forest Plan (Forest Service 1986:31-1) directs the Coronado National Forest to "maintain or improve occupied habitat of . . . listed threatened and endangered species, and MIS through mitigation of Forest activities." The Coronado National Forest also maintains a list of sensitive species that are known to occupy Coronado National Forest lands.

B7.2.7 Bureau of Land Management – Executive Order 13112

Executive Order (EO) 13112 (Invasive Species) requires Federal agencies prevent the introduction and spread of invasive species and “not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species.”

B7.2.8 Bureau of Land Management – Executive Order 11990

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.

B7.2.9 Sections 401, 402, and 404 of the Clean Water Act

Sections 401, 402, and 404 of the Clean Water Act regulate drainage and discharge of dredged or fill materials into waters of the U.S., including wetlands.

B7.2.10 Bureau of Land Management - Terms and Conditions of Right-of-Way Grants and Temporary Use Permits, 43 CFR 2881.2

“The authorized officer shall impose stipulations which shall include, but not be limited to requirements for reclamation, revegetation, and curtailment of erosion of the surface of the land [and] requirements designed to control or prevent damage to the environment (including damage to fish and wildlife habitat).”

B7.2.11 Federal Land Policy Management Act of 1976

In accordance with the Federal Land Policy Management Act (FLPMA), BLM must make land-use decisions based on principles of multiple use and sustained yield. As such, a grant of ROW must be limited to its necessary use and must contain terms and conditions that reflect BLM’s management responsibilities under the FLPMA, including minimizing impacts on fish and wildlife habitat.

B7.2.12 Wild Free-Roaming Horses and Burros Act of 1971

Wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; they contribute to the diversity of life forms within the Nation and enrich the lives of the American people. It is the policy of the Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this, they are to be considered in the area where presently found as an integral part of the natural system of the public lands.

B7.2.13 New Mexico State Requirements

The NMDGF, in accordance with the New Mexico Wildlife Conservation Act of 1978 (NMSA 1978, 17-2-37, et seq.), established a list of animal species considered threatened or endangered within the state of New Mexico. The Forestry Division of the New Mexico Energy, Minerals, and Natural Resources Department administers plant resources listed under the New Mexico Endangered Plant Species Act of 1985 (NMSA 1985, 75-6-1). ESA-listed species may be included as state-listed species, as appropriate.

B7.2.14 Arizona State Requirements

The state of Arizona has no legislated protection for individual threatened and endangered species. Legislation pertaining to wildlife resources is contained in chapter 17 of the Arizona Revised Statutes (ARS), and administered by the AGFD. Some protection for species of conservation concern is provided by the Arizona Game and Fish Commission through bag limits and regulation of hunting seasons, including permanent hunting season closure for some sensitive species.

The Arizona Native Plant Law (ARS 3-901-907), administered by the Arizona Department of Agriculture, establishes a list of native plants afforded legal protection under the law, and defines four categories of protected native plants. Highly Safeguarded and Salvage Restricted plant species, the two highest protection categories, are included in this review of sensitive resources within the study corridor. The other two categories of protected native plants are not included as they are not considered to be in jeopardy, and regulatory permitting and compensation measures are in place for these categories. Compensation for these native plants is discussed in section B7.5 below.

B7.2.15 Tribal

The Tohono O'odham Nation maintains a list of tribally sensitive species. At the request of the tribe, tribally sensitive species for the Tohono O'odham Nation were considered in the EIS and in the development of this Framework Plan when they were also protected under a Federal, State, or county law. For those species that are not specifically addressed in the EIS or herein, Western will coordinate with the Tohono O'odham Nation to determine appropriate mitigation. B7.2.14 Pima County Requirements

B7.2.16 Pima County – Sonoran Desert Conservation Plan

The Pima County Board of Supervisors initiated the development of the Sonoran Desert Conservation Plan (SDCP), a region-wide plan to address the long-term conservation needs of cultural and natural resources in Pima County. Through the development of the SDCP, a goal of developing a conservation plan and obtaining an ESA Section 10 permit was established. Thus, to avoid, minimize, and mitigate the effects of future growth of the human-built environment, Pima County developed the Multi-Species Conservation Plan (MSCP), which is part of the SDCP, to apply for a 30-year Section 10 permit under the ESA (Pima County 2010). The MSCP identifies 49 covered Priority Vulnerable Species for the forthcoming Section 10 permit, including 4 plants, 8 mammals, 8 birds, 6 fish, 2 amphibians, 7 reptiles, and 14 invertebrates.

In 2001, the Pima County Board of Supervisors adopted the Conservation Lands System regional plan policy, which applies the science-based policies and principles of conservation developed in the SDCP (Pima County 2010). Riparian areas are one of the five elements considered for conservation in the plan. As such, the Pima County Board of Supervisors has adopted maps of Regulated Riparian Habitat (RRH) throughout the county. As part of the floodplain use permit process, proposed developments are subject to review for impacts to mapped RRH if more than 0.3 acre of a property's RRH is disturbed. In some instances where disturbed RRH is classified as Hydroriparian, Mesoriparian, and/or Important Riparian Area (IRA), a mitigation plan needs to be approved by the Pima County Board of Supervisors.

Once final Project design is complete, and if the Project impacts RRH outside the existing ROW, Pima County Regional Flood Control District (PCRFC) approval is required. If impacts greater than 0.3 acre (14,520 square feet) occur outside the existing ROW and within an RRH classified as Hydroriparian, Mesoriparian, and/or IRA then a mitigation plan will be required for either onsite or offsite mitigation, including in-lieu fee (PCRFC 2011a).

ONSITE MITIGATION

The purpose of onsite mitigation is to replace habitat of similar value to RRH that will be disturbed as a result of site development. The Ordinance requires that replacement habitat (mitigation area) be of similar or equal value to removed habitat within 5 years of installation. Onsite mitigation is required when greater than 0.3 acre (14,520 square feet) of RRH is disturbed. A Riparian Habitat Mitigation Plan is required for onsite mitigation (PCRFCD 2011a).

Onsite mitigation needs to include the location of the mitigation area(s); planting and seeding of trees, shrubs, and understory; irrigation to facilitate the establishment of plants; maintenance for a period of 5 years to ensure reestablishment of riparian plants; and monitoring for 5 years to ensure that the Riparian Habitat Mitigation Plan is implemented and successful. The Riparian Habitat Mitigation Plan shall be considered successful if 80% of the plants are living and actively growing without supplemental irrigation or significant die back or loss at the end of the 5-year monitoring period. (PCRFCD 2011a).

OFFSITE MITIGATION

Three offsite mitigation options are available: “(1) Restoration of disturbed or degraded RRH on another parcel of land that provides comparable or superior biological function similar to the RRH proposed for disturbance, with appropriate long-term protection measures; (2) Land transfer proposals; and (3) Payment of an in-lieu fee” (PCRFCD 2011b).

Restoration

Restoration may be implemented to enhance or restore riparian habitat function and may include hydroseeding, water harvesting, check dams, and/or other low-cost methods at an offsite parcel using onsite mitigation requirements. Additional details on restoration requirements can be found in the “Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines” (PCRFCD 2011a) and “Regulated Riparian Habitat Offsite Mitigation Guidelines for Unincorporated Pima County” (PCRFCD 2011b).

Land Transfer Proposals

Applicants may propose transfer of land in Pima County that provides multiple benefits such as “preservation of valuable habitat corridors, providing habitat connectivity and augmenting habitat preserved on public land, parks, preserves and habitat restoration projects” (PCRFCD 2011b). PCRFCD has a land acquisition map with the location of lands that may qualify for land transfer. Lands proposed for transfer must have biological and hydrological value that is of comparable or higher quality than the disturbed RRH. Values considered include biological productivity, water availability, and vegetation density (PCRFCD 2011b).

Considerations for land transfer include the following:

- Land within the same watershed as the RRH area to be disturbed will be given preference;
- Land proposed for transfer must have equal or higher quality riparian habitat to the disturbed RRH;
- A biological evaluation of land proposed for transfer must be completed;
- Mechanisms to protect resources and conservation values in perpetuity; and
- All land transfer proposals are subject to PCRFCD review and approval (PCRFCD 2011b).

Additional details on requirements can be found in the “Regulated Riparian Habitat Offsite Mitigation Guidelines for Unincorporated Pima County” (PCRFCFCD 2011b).

In-Lieu Fee

The following costs for mitigation components are considered to determine in-lieu fee costs:

- Plant material;
- Labor for plant installation;
- Hydroseed materials and labor;
- Irrigation system materials and labor;
- Five years of maintenance; and
- Five years of monitoring (PCRFCFCD 2011b).

Additional details on requirements and cost determinations can be found in the “Regulated Riparian Habitat Offsite Mitigation Guidelines for Unincorporated Pima County” (PCRFCFCD 2011b).

B7.3 Plant and Wildlife Concerns and Issues

Biological resource concerns and issues were identified throughout the planning stages of the Project. Several sensitive biological resources that potentially occur within the Project area were identified through discussions with biologists from the BLM, Western, NMDGF, AGFD, and FWS. These included:

- Federally listed, candidate, and proposed species
- State of New Mexico threatened and endangered species
- Big-game species, primarily pronghorn (*Antilocapra americana*) and desert bighorn sheep (*Ovis canadensis nelsoni*)
- Migratory birds, including impacts to nesting birds, raptors, and the collision risk associated with transmission lines in areas of high bird use
- Loss and fragmentation of terrestrial habitats, and erosion or other potential effects on aquatic habitats
- Other special status wildlife and rare plants
- Noxious weeds (addressed in Appendix B11 – Noxious Weed Management Plan)

Details for each of these resources, including their known distribution or potential for occurring within the Project area of influence, are found in the Project EIS and its appendices, the biological assessment, and in this Plant and Wildlife Conservation Measures Plan, as appropriate.

This plan identifies mitigation measures that will be implemented to protect specific plants and wildlife in the Project area. Mitigation measures, including stipulations to minimize disturbance levels and reclamation practices, can also be found below in Section 4 – Proponent Committed Environmental Measures and in Appendix B15 – Reclamation, Vegetation, and Monitoring Framework Plan of the POD.

B7.3.1 Plan Priorities and Goals

Mitigation measures for the Project were designed to reduce three types of Project-related impacts on plant and wildlife resources: (1) disturbance and displacement, (2) habitat loss and fragmentation, and

(3) plant and wildlife mortality. This section describes the impact types evaluated for each resource and identifies mitigation goals used to develop and apply mitigation measures. General mitigation measures are described in section 5 of the POD – Environmental Mitigation Measures.

B7.3.1.1 DISTURBANCE AND DISPLACEMENT

The Project will result in disturbance and displacement of plants and wildlife within and adjacent to the ROW. Disturbance and displacement of wildlife includes temporary changes in habitat use related to construction activities and long-term changes related to the presence of Project features and increased human activity associated with operation and maintenance of the Project and new public access.

Disturbance and displacement of plant species includes effects related to increases in erosion and dust associated with the Project, the creation of temporary work areas during construction, maintenance, and physical disturbance associated with new public access.

Mitigation Goal

Implement measures compatible with Project design standards to minimize disturbance and displacement of wildlife as a result of construction, operation, and maintenance activities in the Project area.

B7.3.1.2 HABITAT LOSS AND FRAGMENTATION

The Project will result in the permanent loss and fragmentation of plant and wildlife habitat due to clearing and grading for access roads, work areas, and substation sites; installation of transmission structures; and vegetation management within the ROW. These actions will remove or alter plant and wildlife habitat within the ROW to accommodate Project features. Habitats outside the ROW could experience reduced suitability for plant and wildlife species as the linear Project may fragment previously connected populations. The Project may also impact plant and wildlife habitat by increasing the potential for the establishment and spread of noxious weeds and the frequency of human-caused wild fire.

Mitigation Goal

Implement measures compatible with Project design standards to address potential impacts associated with habitat loss and fragmentation. As stated in Table 8 of the POD, a compensation plan will be developed and include calculations of compensation ratios and mitigation acreages for special status plant species requiring additional mitigation. Compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; or a combination of the two. Development of a fire protection plan to reduce frequency of human-caused fires (see appendix B12).

B7.3.1.3 PLANT AND WILDLIFE MORTALITY

Implementation of the Project will result in mortality of plants and wildlife in the Project area. Plant and wildlife species with limited mobility will experience mortality during vegetation management, clearing, and grading operations associated with construction, operations, and maintenance of the Project. Wildlife species that occupy burrows may experience mortality if burrows are damaged by heavy machinery.

The Project will also result in increased potential for avian mortality due to collisions with shield wires/fiber-optic ground wire and/or conductors. The presence of transmission line structures will increase perching and roosting habitat for raptors and ravens, and may lead to increased predation of wildlife that are prey to these species. Use of herbicides for vegetation management within the ROW will result in plant mortality. Additionally, the creation of new access roads will increase public accessibility and associated plant mortality from trampling and vehicle trespass and may increase wildlife mortality from hunting, poaching, and vehicle collisions.

Mitigation Goal

Implement measures compatible with Project design features for environmental protection to reduce the potential for increased plant and wildlife mortality.

B7.4 Biological Resource Proponent Committed Environmental Measures

This section of the plan describes PCEMs designed to achieve the goals for plant and wildlife resources previously identified in section B7.3.1 above. This discussion includes (1) an overview of each resource's presence in the Project area, (2) resource-specific agency concerns and impacts for which mitigation was identified, and (3) PCEMs to address concerns and reduce resource impacts during the design, construction, operation, and maintenance of the Project.

The Project construction contractor(s) shall adhere to the PCEMs applicable to the engineering/design phase of the Project, as well as those measures that address construction and reclamation activities. The CIC is responsible for the oversight of the implementation of these measures, to ensure that Southline and their construction contractor(s) meet the intent of the PCEMs.

An adequate number of biological monitors will be present to cover each construction front to ensure impacts on plant and wildlife resources are minimized and PCEMs are used. The number of monitors will depend on the resource being impacted and the BLM's determination of a sufficient monitoring level. Activities that occur in biologically sensitive areas or during periods of heightened sensitivity (e.g., occupied sensitive species habitat, migratory bird nesting seasons, brood-rearing seasons, fawning seasons, etc.) are likely to require additional monitoring.

The responsibilities of the biological monitor during construction would include, but not be limited to, the following:

- Preconstruction wildlife surveys.
- Identification of resource presence/absence in biologically sensitive areas.
- Daily briefing of construction crews outlining restrictions associated with biologically sensitive areas.
- Daily contact with the environmental inspectors.
- Preparation of regular (at least monthly) progress reports.
- Immediate notification of the CIC and authorized agency (BLM, Forest Service, NMDGF, AGFD, and/or FWS) in the event construction operations violate terms and conditions of the POD and/or Project Record of Decision.
- A summary of plan compliance given to BLM, NMDGF, AGFD, and/or FWS biologists on completion of the construction phase of the Project.

B7.4.1 Resources of Concern

B7.4.1.1 MIGRATORY BIRDS

Background

Migratory birds protected under the MBTA occur in every habitat throughout the Project area. Several hundred species may winter in the Project area, migrate through the region, or occur infrequently as “accidentals.” Fewer species are year-round residents or migrate into the Project area to nest, given the high temperatures and low humidity at lower elevations during the nesting season. PCEMs will assist in reducing impacts to migratory birds.

Concerns

Project-related impacts to migratory birds identified as significant concerns of the agencies include (1) loss of habitat associated with construction of the transmission line, substations, and access roads and vegetation management operations; (2) mortality and loss of production due to destruction of eggs and occupied nests during construction or maintenance activities; and (3) loss of production due to occupied nest disturbance during construction or maintenance activities.

B7.4.1.2 RAPTORS

Background

A variety of raptor species are known to nest and forage in the Project area. All raptors are protected under the MBTA. In addition to protection under the MBTA, several raptor species occurring in the Project area are also designated as BLM Sensitive Species, including bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), American peregrine falcon (*Falco peregrinus anatum*), ferruginous hawk (*Buteo regalis*), cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), and western burrowing owl (*Athene cunicularia hypugaea*). Eagles are afforded additional protections under the Bald and Golden Eagle Protection Act.

PCEMs will be applied to protect active raptor nests during construction and maintenance activities. 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. The location of active nests and the species that occupy each nest may or may not change from year to year. The construction contractor(s) will be required to conduct raptor nest surveys prior to conducting ground-disturbing activities if construction occurs within the raptor nesting season (December 1 to September 30).

If a nest site within a territory is deemed unoccupied after sufficient surveys have been conducted, human activity could be allowed within the nesting area in the current breeding season and prior to the beginning of the next year's breeding season. This period varies, depending on raptor species. BLM concurrence is required before raptor nests or territories can be deemed unoccupied.

Concerns

Project-related impacts to raptors identified as significant concerns of federal and State agencies include (1) destruction of nests and loss of nesting habitat associated with construction of the transmission line, substations, and access roads, and vegetation management operations; (2) disruptions to nesting activities and loss of raptor productivity due to Project-related increases in human activity and new public access;

(3) increased mortality due to poaching associated with increased public access; and (4) fragmentation and loss of high-quality raptor habitat.

B7.4.1.3 BIG-GAME HABITAT

Background

Big-game animals occurring in the Project area that were identified by the BLM, Forest Service, NMDGF, and AGFD are black bear (*Ursus americanus*), mountain lion (*Puma concolor*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), bighorn sheep, javelina (*Pecari tajacu*), and pronghorn. PCEMs will assist in reducing impacts to all big-game species.

Concerns

Project related impacts to big-game species identified as significant concerns of federal and State agencies include (1) loss of habitat associated with construction of access roads, the transmission line, and substations; (2) disturbance and displacement of animals during sensitive periods due to increases in Project-related human activity and new public access; and (3) mortality due to increases in hunting and poaching associated with increased public access.

B7.4.1.4 SPECIAL STATUS WILDLIFE SPECIES

Background

As analyzed in the EIS, special status wildlife species listed in table B7-1 have the potential to occur in the Project area. Special status wildlife species include species listed as threatened, endangered, or candidates under the ESA or classified as sensitive by the BLM, NMDGF, or AGFD.

There are numerous special status species that have the potential to occur in the Project area. These include 10 ESA-listed, candidate, and proposed species. The Project may affect, and is likely to adversely affect the lesser long-nosed bat, Mexican long-nosed bat, and southwestern willow flycatcher. The Project may affect, but is not likely to adversely affect the Gila chub and its critical habitat and the Huachuca water umbel. There will be no impact on the Chiricahua leopard frog or its designated critical habitat. Impacts will be unlikely to jeopardize the *continued existence to the 10 (j) experimental, non-essential population of the northern aplomado falcon (Falco femoralis septentrionalis)*. For the Sonoran desert tortoise (*Gopherus morafkai*) and Sprague's pipit (*Anthus spragueii*) there will be no effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Table B7-1. Special Status Wildlife Species with Potential to Occur in the Project Area

Common name	Scientific Name
Federally Listed Species	
Lesser long-nosed bat	<i>Leptonycteris yerbabuenae</i>
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>
Sprague's pipit	<i>Anthus spragueii</i>

Table B7-1. Special Status Wildlife Species with Potential to Occur in the Project Area (Continued)

Common name	Scientific Name
Western yellow-billed cuckoo	<i>Coccyzus americanus</i>
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>
Gila chub	<i>Gila intermedia</i>
Northern Mexican gartersnake	<i>Thamnophis eques megalops</i>
Sonoran desert tortoise	<i>Gopherus morafkai</i>
BLM Sensitive Species	
Allen's big-eared bat	<i>Idionycteris phyllotis</i>
Banner-tailed kangaroo rat	<i>Dipodomys spectabilis</i>
Big free-tailed bat	<i>Nyctinomops macrotis</i>
California leaf-nosed bat	<i>Macrotus californicus</i>
Cave myotis	<i>Myotis velifer</i>
Fringed myotis	<i>Myotis thysanodes</i>
Greater western mastiff bat	<i>Eumops perotis</i>
Little brown myotis	<i>Myotis lucifugus</i>
Long-legged myotis	<i>Myotis volans</i>
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>
Pale Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
Spotted bat	<i>Euderma maculatum</i>
Western small-footed myotis	<i>Myotis ciliolabrum</i>
Yuma myotis	<i>Myotis yumanensis</i>
American peregrine falcon	<i>Falco peregrinus anatum</i>
Arizona grasshopper sparrow	<i>Ammodramus savannarum ammolegus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Cactus ferruginous pygmy-owl	<i>Glaucidium brasilianum cactorum</i>
Desert purple martin	<i>Progne subis</i>
Gilded flicker	<i>Colaptes chrysoides</i>
Golden eagle	<i>Aquila chrysaetos</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Western burrowing owl	<i>Athene cunicularia</i>
White-faced ibis	<i>Plegadis chihi</i>
Arizona striped whiptail	<i>Aspidoscelis arizonae</i>
Colorado River toad (aka Sonoran desert toad)	<i>Incilius alvarius</i>
Desert ornate box turtle	<i>Terrapene ornata luteola</i>
Great Plains narrow-mouthed toad	<i>Gastrophryne olivacea</i>
Lowland leopard frog	<i>Lithobates yavapaiensis</i>
Ornate box turtle	<i>Terrapene ornata ornata</i>
Plains leopard frog	<i>Lithobates blairi</i>
Sonoran green toad	<i>Bufo retiformis</i>

Table B7-1. Special Status Wildlife Species with Potential to Occur in the Project Area (Continued)

Common name	Scientific Name
Sonoran mud turtle	<i>Kinosternon sonoriense sonoriense</i>
Texas horned lizard	<i>Phrynosoma cornutum</i>
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>
New Mexico Wildlife Conservation Act Species	
Desert bighorn sheep	<i>Ovis canadensis mexicana</i>
Abert's towhee	<i>Melospiza aberti</i>
American peregrine falcon	<i>Falco peregrinus</i>
Bell's vireo	<i>Vireo bellii</i>
Gila woodpecker	<i>Melanerpes uropygialis</i>
Lucifer hummingbird	<i>Calothorax lucifer</i>
Varied bunting	<i>Passerina versicolor</i>
Gila monster	<i>Heloderma suspectum</i>
Great Plains narrow-mouthed toad	<i>Gastrophryne olivacea</i>
State of New Mexico Species of Greatest Conservation Need	
Pocketed free-tailed bat	<i>Nyctinomops femorosacca</i>
Western red bat	<i>Lasiurus blossevillii</i>
American bittern	<i>Botaurus lentiginosus</i>
Bank swallow	<i>Riparia riparia</i>
Bendire's thrasher	<i>Toxostoma bendirei</i>
Common black hawk	<i>Buteogallus anthracinus</i>
Eared grebe	<i>Podiceps nigricollis</i>
Northern harrier	<i>Circus cyaneus</i>
Northern pintail	<i>Anas acuta</i>
Painted bunting	<i>Passerina ciris</i>
Sandhill crane	<i>Grus canadensis</i>
Yellow warbler	<i>Setophaga petechia</i>
State of Arizona Wildlife Species of Concern	
Abert's towhee	<i>Melospiza aberti</i>
Antelope jackrabbit	<i>Lepus alleni</i>
Arizona pocket mouse	<i>Perognathus amplus</i>
Harris' antelope squirrel	<i>Ammospermophilus harrisi</i>
Kit fox	<i>Vulpes macrotis</i>
Little pocket mouse	<i>Perognathus longimembris</i>
Mexican free-tailed bat	<i>Tadarida brasiliensis</i>
Pocketed free-tailed bat	<i>Nyctinomops femorosacca</i>
Bank swallow	<i>Riparia riparia</i>
Bell's vireo	<i>Vireo bellii</i>

Table B7-1. Special Status Wildlife Species with Potential to Occur in the Project Area (Continued)

Common name	Scientific Name
Common nighthawk	<i>Chordeiles minor</i>
Crested caracara	<i>Caracara cheriway</i>
Dusky-capped flycatcher	<i>Myiarchus tuberculifer</i>
Gila woodpecker	<i>Melanerpes uropygialis</i>
Northern harrier	<i>Circus cyaneus</i>
Rufous-winged sparrow	<i>Aimophila carpalis</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Yellow warbler	<i>Setophaga petechia</i>
Canyon spotted whiptail	<i>Aspidoscelis burti</i>
Colorado River toad (aka Sonoran desert toad)	<i>Anaxyrus alvarius</i>
Desert ornate box turtle	<i>Terrapene ornate</i>
Gila monster	<i>Heloderma suspectum</i>
Hooded nightsnake	<i>Hypsiglena sp. nov</i>
Regal horned lizard	<i>Phrynosoma solare</i>
Saddled leaf-nosed snake	<i>Phyllorhynchus browni</i>
Sonora mud turtle	<i>Kinostemon sonoriense sonoriense</i>
Sonoran collared lizard	<i>Crotaphytus nebrius</i>
Sonoran coral snake	<i>Micruroides euryxanthus</i>
Sonoran whipsnake	<i>Coluber bilineatus</i>
Tiger rattlesnake	<i>Crotalus willardi obscurus</i>
Variable sandsnake	<i>Chilomeniscus stramineus</i>
State of Arizona Species of Greatest Conservation Need	
Desert bighorn sheep	<i>Ovis canadensis mexicana</i>
Mexican free-tailed bat	<i>Tadarida brasiliensis</i>
Western yellow bat	<i>Lasiurus xanthinus</i>
American bittern	<i>Botaurus lentiginosus</i>
American peregrine falcon	<i>Falco peregrinus</i>
Buff-collared nightjar	<i>Caprimulgus ridgwayi</i>
Eared grebe	<i>Podiceps nigricollis</i>
Northern harrier	<i>Circus cyaneus</i>
Northern pintail	<i>Anas acuta</i>
Sandhill crane	<i>Grus canadensis</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Lincoln's sparrow	<i>Melospiza lincolnii</i>
Mississippi kite	<i>Ictinia mississippiensis</i>
Western grasshopper sparrow	<i>Ammodramus savannarum perpallidus</i>
Wood duck	<i>Aix sponsa</i>
Goode's horned lizard	<i>Phrynosoma goodei</i>

Table B7-1. Special Status Wildlife Species with Potential to Occur in the Project Area (Continued)

Common name	Scientific Name
Coronado National Forest Sensitive Species	
Cockrum's desert shrew	<i>Notiosorex cockrumi</i>
Greater western mastiff bat	<i>Eumops perotis californicus</i>
Hooded skunk	<i>Mephitis macroura milleri</i>
Northern pygmy mouse	<i>Baiomys taylori ater</i>
Pale Townsend's big-eared bat	<i>Plecotus townsendii pallescens</i>
Plains harvest mouse	<i>Reithrodontomys montanus</i>
Yellow-nosed cotton rat	<i>Sigmodon ochrognathus</i>
Abert's towhee	<i>Melospiza aberti</i>
American peregrine falcon	<i>Falco peregrinus</i>
Arizona grasshopper sparrow	<i>Ammodramus savannarum ammoregus</i>
Western burrowing owl	<i>Athene cunicularia</i>
Reticulate Gila monster	<i>Heloderma suspectum suspectum</i>
Coronado National Forest Management Indicator Species	
White-tailed deer	<i>Odocoileus virginianus couesi</i>
American peregrine falcon	<i>Falco peregrinus</i>
Bell's vireo	<i>Vireo bellii</i>
Pima County Species	
Merriam's mesquite mouse	<i>Peromyscus merriami</i>
Western red bat	<i>Lasiurus blossevillii</i>
Rufous-winged sparrow	<i>Aimophila carpalis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Ground snake	<i>Sonora semiannulata</i>

Concerns

Project-related impacts to special status wildlife species identified as significant concerns of Federal and State agencies include (1) habitat loss and fragmentation associated with construction of access roads, the transmission line, and substations; vegetation management operations; and spread of non-native species; (2) loss of production due to disturbance and displacement of wildlife during breeding periods as a result of increased Project-related human activity and new public access; and (3) mortality due to vehicle collisions and destruction of occupied nests and burrows with heavy machinery.

B7.4.1.5 SPECIAL STATUS PLANT SPECIES

Background

The following special status plant species include those known or expected to occur in the Project area. Special status wildlife species include species listed as threatened, endangered, or candidates under the ESA or classified as sensitive by the BLM, NMDGF, or AGFD.

No ESA-listed species have the potential to occur within the New Build Section of the Project. However, the following sensitive species have potential to occur along the New Build Section of the Project; dune pricklypear (*Opuntia arenaria*), Gregg night-blooming cereus (*Peniocereus greggii*), slender needle corycactus (*Coryphantha scheeri* var. *valida*), devilthorn hedgehog cactus (*Echinocereus pseudopectinatus*), Wilcox pincushion cactus (*Mammillaria wrightii* var. *wilcoxii*), San Carlos wild-buckwheat (*Eriogonum capillare*), varied fishhook cactus (*Mammillaria viridiflora*), playa spider plant (*Cleome multicaulis*), Chihuahuan scurfpea (*Pediomelum pentaphyllum*), and Parish's alkali grass (*Puccinellia parishii*). In the Project BO, the FWS (2014) concurred that the Project may affect, and is not likely to adversely affect the Huachuca water umbel.

The Pima pineapple cactus, listed as endangered under the ESA, has potential to be present on the southern portions of the Upgrade Section and is known to be present in this vicinity. In the BO, the FWS (2014d) found that the Project was “not likely to jeopardize the continued existence of the Pima pineapple cactus” due to PCEMs.

Of the other sensitive plant species considered, the following have some potential to occur in the Upgrade Section of the Project; broadleaf groundcherry (*Physalis latiphysa*), button cactus (*Epithelantha micromeris*), Chihuahuan scurfpea, devilthorn hedgehog cactus, desert barrel cactus (*Ferocactus cylindraceus*), Engelmann pricklypear (*Opuntia engelmannii* var. *flavispina*), magenta-flowered hedgehog cactus (*Echinocereus fasciculatus*), giant sedge (*Carex gigantea*), littleleaf false tamarind (*Lysiloma watsonii*), needle-spined pineapple cactus (*Echinomastus erectocentrus* var. *erectocentrus*), Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), San Carlos wild-buckwheat, San Pedro River wild-buckwheat (*Eriogonum terrenatum*), staghorn cholla (*Opuntia versicolor*), Thornber fishhook cactus (*Mammillaria thornberi*), Tumamoc globeberry (*Tumamoca macdougalii*), varied fishhook cactus, night-blooming cereus (*Peniocereus greggii* var. *transmontanus*), Pima Indian mallow (*Abutilon parishii*), hybrid Kelvin cholla (*Opuntia* × *kelvinensis*), and Wilcox pincushion cactus .

Table B7-2. Special Status Plant Species with Potential to Occur in the Project Area

Common name	Scientific Name
Broadleaf Ground Cherry	<i>Physalis latiphysa</i>
Button Cactus	<i>Epithelantha micromeris</i>
Chihuahuan Scurfpea	<i>Pediomelum pentaphyllum</i>
Desert barrel cactus	<i>Ferocactus cylindraceus</i>
Devilthorn Hedgehog Cactus	<i>Echinocereus pseudopectinatus</i>
Dune Pricklypear	<i>Opuntia arenaria</i>
Engelmann pricklypear (var. <i>flavispina</i>)	<i>Opuntia engelmannii</i> var. <i>flavispina</i>
Giant Sedge	<i>Carex gigantea</i>
Gregg Night-blooming Cereus	<i>Peniocereus greggii</i>
Huachuca Water Umbel	<i>Lilaeopsis schaffneriana</i> spp. <i>recurva</i>
Kelvin Cholla	<i>Opuntia</i> x <i>kelvinensis</i>
Littleleaf False Tamarind	<i>Lysiloma watsonii</i>
Magenta Flowered Hedgehog Cactus	<i>Echinocereus fasciculatus</i>
Needle-spined Pineapple Cactus	<i>Echinomastus erectocentrus</i> var. <i>erectocentrus</i>
Night-blooming Cereus	<i>Peniocereus greggii</i> var. <i>transmontanus</i>
Parish's Alkali Grass	<i>Puccinellia parishii</i>

Table B7-2. Special Status Plant Species with Potential to Occur in the Project Area (Continued)

Common name	Scientific Name
Pima Indian Mallow	<i>Abutilon parishii</i>
Pima Pineapple Cactus	<i>Coryphantha scheeri</i> var. <i>robustispina</i>
Playa Spider Plant	<i>Cleome multicaulis</i>
San Carlos Wild-Buckwheat	<i>Eriogonum capillare</i>
San Pedro River Wild Buckwheat	<i>Eriogonum terrenatum</i>
Slender Needle Corycactus	<i>Coryphantha scheeri</i> var. <i>valida</i>
Staghorn Cholla	<i>Opuntia versicolor</i>
Thornber fishhook cactus	<i>Mammillaria thornberi</i>
Tumamoc Globeberry	<i>Tumamoca macdougalii</i>
Varied Fishhook Cactus	<i>Mammillaria viridiflora</i>
Wilcox Pincushion Cactus	<i>Mammillaria wrightii</i> var. <i>wilcoxii</i>

Concerns

Project-related impacts to special status plant species identified as significant concerns of Federal and State agencies include (1) habitat loss and fragmentation associated with construction of access roads, the transmission line, and substations; vegetation management operations; alteration of local hydrology; and spread of non-native species; (2) disturbance and displacement associated with creation and use of temporary work areas and vehicle trespass off of new public access; and (3) mortality due to removal of special status plant species during construction and maintenance operations.

B7.4.1.6 NATIVE PLANT SALVAGE

Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Salvaging of plants presents a substantial shock to plant specimens. Plants that are identified to be salvaged shall be replanted within one day if at all possible. If plants will not be re-planted within one day, salvaged plant material shall be planted and stored in a salvage yard that is watered regularly to sustain the plant health until the time that they will be replanted in a permanent location. In Arizona, the saguaro is categorized as a Highly Safeguarded and Salvage Restricted plant species (see Section B7.2.14-Arizona State Requirements). Salvaging of saguaros is highly volatile, and industry standard practices such as maintaining a structurally sound root ball, maintain original polar orientation, etc. must be followed. Salvaging should be focused on saguaros in spear form and saguaros less than 15 feet in height will be salvaged unless prevented by site-specific conditions or poor plant health. Once a saguaro grows arms, salvage mortality substantially increases. Larger saguaro or those with arms should be avoided whenever feasible.

B7.4.2 Plant and Wildlife Proponent Committed Environmental Measures

Environmental protection measures, or PCEMs, were developed to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities and are to be applied to all affected Project areas. The following PCEMs were identified and listed in the EIS, and are included in table 8 of the POD. These PCEMs will be implemented by the construction contractor(s) with this Plant and Wildlife Conservation Measures Plan.

B7.4.2.1 VEGETATION PCEMS

- VEG-1 Efforts will be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access will not be graded unless necessary for erosion control or other engineering reasons. Final structure and spur road locations will be selected to avoid special status vegetation to the greatest extent feasible.
- VEG-2 Southline and its construction contractor have developed a Reclamation, Vegetation, and Monitoring Plan (Appendix B15) that will guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan addresses all land disturbances, regardless of ownership. It has been developed in consultation with appropriate agencies and landowners and will be provided to these entities for review and input. The plan provides details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.
- VEG-3 Special status plants, including the Pima pineapple cactus, will be avoided. Where avoidance is not possible, special status plants will be conserved by relocating plants and/or reseeded, replacing topsoil with existing topsoil that was removed, and regrading in compliance with local ordinances (Pima County, Tohono O’odham Nation). Measures to conserve special status plants will be implemented through the Reclamation, Vegetation, and Monitoring Plan (appendix B15).
- VEG-4 Removal of riparian scrubland vegetation will be avoided where possible. Natural regeneration of native plants will be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.
- VEG-5 In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor will develop and implement a Noxious Weed Management Plan (appendix B11).
- VEG-6 As required, equipment will be cleaned before ingress to minimize the potential for the spread of invasive species. These details are described in the Noxious Weed Management Plan. Buffelgrass (*Pennisetum ciliare*) is specifically addressed in the plan, which outlines efforts to control it within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.
- Preconstruction native plant inventories, including Chihuahua scurfpea, and surveys for noxious weed species as stipulated by the appropriate land management agency will be conducted once transmission line center line, access road, and transmission line structure sites have been located.
- Although the 150-foot ROW across the San Xavier District of the Tohono O’odham Nation was surveyed for Pima pineapple cactus in summer 2014, additional preconstruction species-specific surveys for the Pima pineapple cactus will be conducted once transmission line center line, access road, and transmission line structure sites have been located, as needed.
- Preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups will be conducted to minimize impacts to Tumamoc globeberry (*Tumamoca macdougalii*) monitoring plots and plants on Tumamoc Hill. Measures to conserve this plant, as well as other special status plants, will be implemented through the Reclamation, Vegetation, and Monitoring Plan.
- In construction areas where grading is not required, vegetation will be left in place wherever feasible, and original contours will be maintained to avoid excessive root damage and allow for regrowth. All existing roads will be left in a condition that is equal to or better than their

condition before the construction of the transmission lines, as determined by the appropriate land management agency.

- Field presence/absence surveys will be conducted for special status species in locations where such species are likely to occur within the Project ROW, and specifically locations where vegetation will be impacted, prior to any actual impacts. Surveys will be conducted following established protocols by qualified biologists approved by BLM.
- Southline and its construction contractor will provide training to all appropriate field personnel working on the Project to identify noxious weeds and prevent spread. Training will discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course will be provided to the BLM and Western.
- Invasive and noxious weed populations will be mapped and reported to BLM/Western. BLM and Western will determine which areas will necessitate vehicle washing, based on the results of the invasive/noxious weed surveys.
- Noxious weeds and other exotic, invasive plant species will be inventoried by a qualified biologist in the immediate proximity to any sensitive plant communities and any special status species populations. This noxious weed inventory will then provide information to supplement mitigation plans for sensitive plant communities and/or special status species habitats, to prevent the expansion of any noxious weeds or other exotic invasive plant species into those locations. Mitigation planning is included as part of the Plant and Wildlife Species Conservation Measures Plan.
- Southwest Regional Gap Analysis Project plant associations (communities) that are considered to be environmentally sensitive will be included in ground-truthing field surveys, such as wetlands, riparian areas, drainages, and special status species habitats, to confirm the presence and extent of such communities. If any such sensitive plant communities are identified and documented, the first response will be a determination regarding whether the sensitive community can be avoided. If avoidance is not possible, a mitigation plan (included as part of the Plant and Wildlife Species Conservation Measures Plan) will be developed as needed for those vegetation communities, including options to reduce impacts to those communities. Exclusion zones (at least 10 feet around the perimeter of the plant community) will be delineated around any such plant communities and marked with flagging. Construction monitoring shall be employed around any such sensitive plant communities, and the biological monitor shall have the authority to halt any construction activity deemed intrusive and causing impacts beyond those stated in the mitigation plan. Any changes in construction plans that occur after the Project approval will require additional field presence/absence surveys for such sensitive plant communities and will require a variance request from the BLM if such communities are found, and the above mitigation measures will apply.
- A compensation plan will be developed as part of the Plant and Wildlife Species Conservation Measures Plan, to meet BLM requirements and approval. The compensation plan will include calculations of compensation ratios and mitigation acreages for special status plant species requiring additional mitigation. Compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; or a combination of the two.
- For Pima pineapple cactus that cannot be avoided, Southline will purchase credits in FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied Pima pineapple cactus habitat. Alternatively, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus Priority Conservation Areas.

- In compliance with EO 13112 regarding invasive species, all disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.
- Also in compliance with EO 13112 regarding invasive species, all earthmoving and hauling equipment shall be washed at the contractor's storage facility prior to arriving onsite to prevent the introduction of invasive species.
- To prevent invasive species propagules from leaving the site, the contractor will inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris identified prior to leaving the construction site.
- Any Pima pineapple cactus that are not within the area of permanent disturbance, but are present within the Project vicinity, will be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction. Flagging will consist of flagging the area around the Pima pineapple cactus, not flagging the plant itself, and signage will label it as an "Environmentally Sensitive Area". Flagging will be removed following construction.
- Any Pima pineapple cactus that cannot be avoided will be conserved by relocating plants within the existing ROW, but outside of the area of any ongoing disturbance.
- BLM and Western will coordinate with the Arizona-Sonoran Desert Museum in salvaging for the museum's collection if individual Pima pineapple cactus cannot be relocated for some reason.
- Preconstruction surveys for Chihuahua scurfpea and other special status plant species will occur in suitable habitat and ground disturbance in occupied habitat will be avoided to the extent practicable. FWS shall be contacted prior to disturbance if any Chihuahua scurfpea are located.

B7.4.2.2 WILDLIFE PCEMS

- WILD-1 A Worker Environmental Awareness Program (WEAP) will be prepared. All construction crews and field contractors will be required to participate in WEAP training prior to starting work on the Project. The WEAP training will include instructions for crews to report any issues; a review of the special status species; WUS; riparian habitat; cultural, paleontological, and other sensitive resources that could be impacted by the proposed Project; the locations of sensitive biological resources and their legal status and protections; and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel will be maintained during the construction period.
- WILD-2 In consultation with the BLM and Western, Southline and its construction contractor will prepare and implement a Construction Biological Monitoring Plan prior to issuance of a notice to proceed and prior to construction that will specify the level of biological monitoring to be provided throughout construction activities in all construction zones with the potential for presence of sensitive biological resources. The number of monitors and monitoring frequency will be specified for each work zone.
- WILD-3 Preconstruction surveys will be required in areas where Sonoran desert tortoise (now a separate species: Morafka's desert tortoise (*Gopherus morafkai*), and Gila monster (*Heloderma suspectum*) are expected to occur. In consultation with the BLM and Western, Southline and its construction contractor will hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species.
- WILD-4 To reduce impacts on the Sonoran (Morafka's) desert tortoise, known to exist in the western portion of the project area, only authorized biologists with a valid AGFD permit will handle desert tortoises if encountered within the Project area, following the most current desert tortoise handling guidelines published by the AGFD.

- WILD-5 To reduce impacts on all species protected by the MBTA: (1) Southline and its construction contractor will conduct preconstruction surveys for active nests, and consult with the appropriate agencies (BLM, FWS, or AGFD) on a case-by-case basis when active nests are found in Project areas, unless directed to do otherwise by these same agencies; (2) a buffer will be placed around active bird nests, and nests will not be moved during breeding season, in compliance with the MBTA, unless the Project is expressly permitted to do so by the FWS or BLM, depending on the location of the nest; (3) all active nests and disturbance or harm to active nests will be reported to the FWS or BLM, upon detection; and (4) work will halt if it is determined that active nests will be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.
- WILD-6 To reduce impacts on golden eagles and other raptors, Southline and its construction contractor will develop and implement an Avian Protection Plan, in coordination with AGFD and the BLM and Western for approval. The plan will be prepared in accordance with guidance provided by the FWS and in consultation with best practices such as the “Reducing Avian Collisions with Power Lines” (APLIC 2012).
- WILD-7 Southline and its construction contractor will follow Pima County guidelines for surveys prior to disturbance located in Pima County for western burrowing owls. Surveys for western burrowing owl will also be conducted in Cochise County near agricultural fields surrounding the Willcox Playa, and anywhere else throughout the Project where suitable habitat occurs. Surveys for western burrowing owls in Arizona will follow the “Burrowing Owl Project Clearance Guidance for Landowners” (AGFD 2009).
- Surveys for western burrowing owl in New Mexico will follow the NMDGF “Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation” (NMDGF 2007).
- WILD-8 Final structure and spur road locations will be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.
- Preconstruction survey will be conducted in suitable habitat for non-game sensitive species such as ornate box turtle (*Terrapene ornata*), western burrowing owl, Texas horned lizard (*Phrynosoma cornutum*), kit fox (*Vulpes macrotis*), etc. Timing of the surveys will be determined through consultation with AGFD and NMDGF.
- Preconstruction surveys for species listed under the ESA or specified by the appropriate land management agency as sensitive or of concern will be conducted in areas of known occurrences or suitable habitat. Timing of the surveys will be determined by FWS-approved, species-specific survey protocol.
- Monitoring of construction activities will be required in some areas to ensure that effects on these species are avoided during construction. If bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) nests are identified during preconstruction surveys, seasonal restrictions on construction within a specified buffer will be implemented where applicable, according to FWS protocols, to comply with the Bald and Golden Eagle Protection Act. Preconstruction nesting-season surveys for migratory birds and surveys for burrowing owls in suitable habitat will be conducted as needed to comply with the MBTA.
- Surveys for bat roosts will be conducted within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts will be avoided.
- Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas will be conducted outside the breeding season for most desert-nesting migratory birds.

- Construction holes left open overnight will be appropriately fenced or covered to prevent damage to wildlife or livestock. They will be inspected daily until filled to ensure no wildlife has become entrapped.
- Except where otherwise posted or allowed, a Project speed limit of 25 miles per hour (mph) will be designated for all construction areas, spur roads, and new access roads to minimize the potential for construction equipment collisions with wildlife. In areas with mountainous terrain and/or poor sight distances, the Project speed limit will be 15 mph.
- In construction areas where recontouring is not required, vegetation will be left in place wherever possible, to avoid excessive root damage and allow for resprouting.
- To avoid impacting roosting bats at the Ina Road bridge, blasting activities will be restricted to less than 130 decibels (dB) if possible, and if that is not possible, then blasting activities will occur at night after most bats have left their roost. No blasting will occur in April or May when the maternity colony is present.
- All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros (*Carnegiea gigantea*) will be inventoried within the proposed ROW, and the potential to avoid or salvage each plant will be assessed. The priority will be avoidance when feasible.
- All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that cannot be avoided will be salvaged using methods approved by the BLM/Western and FWS, but mature agaves will be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.
- Other species of agaves such as *A. schottii* that are not primary food plants for nectar-feeding bats will be salvaged and used for reclamation in accordance with the Reclamation, Vegetation, and Monitoring Plan.
- Saguaros less than 15 feet in height will be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros will be avoided whenever feasible, but will be topped or removed if necessary.
- Agave and saguaro salvage will be augmented, as necessary, within 3 years after completion of initial restoration activities. Augmentation will occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants will be used.
- Salvaged plants will be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water will be provided, if monitoring indicates that rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period will be reported annually to the BLM/Western, FWS, and AGFD.
- All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River will take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers.
- Line marking devices will be placed at the proposed crossings of the San Pedro River, Cienega Creek, Santa Cruz River, and the Willcox Playa Wildlife Area, to minimize the potential for avian collisions with transmission lines.

- All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and Santa Cruz River will take place between September 15 and March 1, to avoid disturbance of breeding or nesting yellow-billed cuckoos.
- BAT-1 Construction activities that create sudden, and sporadic loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex will be restricted in the Spring (April 1 to May 31), depending on the presence of bats to protect maternity roosts and potential hibernacula.
- BLM and Western will work with FWS, AGFD, and NMDGF to implement recovery actions for lesser long-nosed bat, Mexican long-nosed bat, southwestern willow flycatcher, and yellow-billed cuckoo.
- BLM and Western will work with FWS, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for northern Mexican gartersnake (*Thamnophis eques megalops*), particularly on efforts to remove harmful nonnative species from occupied northern Mexican gartersnake habitat.
- BLM, Western, and Southline will use the smallest mesh size possible (<0.5 inch) for erosion-control products, or products that do not contain any mesh- or net-like attributes near occupied northern Mexican gartersnake habitat. BLM, Western, and Southline will refrain from using erosion-control products (such as wattles), that contain a mesh size of 0.5 inch (or 1.27 cm) within proposed critical habitat for the northern Mexican gartersnake.
- Preconstruction surveys will take place in habitat classified as moderate or high suitability for the northern aplomado falcon within the proposed ROW and a 1-mile buffer. Surveys should be conducted several times from January 15 to June 30 in order to detect breeding activity.
- All existing raptor nests or other large nests found during preconstruction surveys will be preserved in place, if possible, or relocated if necessary. No relocation of active nests will occur, and no nests will be relocated until after consultation with the Federal action agencies, State agencies, and FWS.
- Construction will not take place within 1 mile of occupied northern aplomado falcon nests between January 15 and September 1. Aplomado falcons are frequently observed on their breeding territories in southern New Mexico in January. Therefore, January 15 is the start date for seasonal restrictions.
- Preconstruction desert tortoise surveys will be conducted in suitable habitat. A WEAP that includes information on desert tortoises will be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities will be handled in accordance with the AGFD “Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects” (AGFD 2007).

B7.4.3 Other Specific Stipulations and Methods

Design features and selective environmental measures for environmental protection are to be applied to all affected Project areas to help reduce impacts to biological resources. Qualified biologist are to be used for handling of any sensitive species. Listed below are plant and wildlife species conservation (PWC) design features and selective environmental measures beyond the PCEMs identified in the EIS and POD, for environmental protection to be implemented by the construction contractor(s):

DESIGN AND ENGINEERING

PWC-1 Structures will be located to allow conductors to span identified sensitive features within the limits of standard tower design. Structures will be placed so as to avoid sensitive features to

the extent practicable, including, but not limited to, wetlands, riparian areas, water courses, hazardous substance remediation, and cultural sites. Avoidance measures may include selective tower placement, spanning sensitive features, or realigning access routes.

CONSTRUCTION, OPERATION, AND MAINTENANCE

PWC-2 Clearing of vegetation in and adjacent to the ROW will be minimized to reduce loss and fragmentation of migratory bird nesting habitat, to the extent practicable to satisfy conductor-clearance requirements.

PWC-3 To reduce habitat loss and fragmentation, the construction contractor(s) will use overland access to the extent practicable in areas where no grading would be needed to access work areas. Overland access will consist of drive-and-crush and/or clear-and-cut travel. 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. Clear-and-cut is considered as brushing off (removal) of all vegetation to improve or provide suitable access for equipment.

PCW-4 Where feasible, access roads that traverse sensitive habitats will be gated or otherwise blocked to limit public access.

PCW-5 There will be no blading of new access roads in select areas of sensitive resources (e.g., perennial streams, riparian areas, trails) during construction or maintenance. To reduce habitat loss and fragmentation, existing or overland access routes are to be used for construction and maintenance in these select areas. To minimize ground disturbance, overland routes must be flagged with easily seen markers, and the route must be approved in advance of use by the landowner or land-management agency.

B7.5 Compensation Plan

This compensation plan includes compensation ratios and approximate cost per acre for Pima pineapple cactus compensatory mitigation. It also addresses species listed under the Arizona Native Plant Law occurring on lands administered by the Arizona State Land Department (ASLD), BLM and on private lands. Compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; or a combination of measures.

Currently, there are two conservation banks for Pima pineapple cactus, one on a private ranch in the Altar Valley (Palo Alto Ranch Conservation Bank) and another owned by Pima County that includes areas in both the Altar Valley and south of Green Valley. The cost of compensatory mitigation at the Palo Alto Ranch Conservation Bank is currently \$5,500 per credit and will rise to \$6,000 per credit after 30 more credits are sold. The number of acres to be purchased in the conservation bank by Southline will be determined during pre-construction surveys and will include mitigation credits on a 1:1 ratio to the number of occupied acres of Pima pineapple cactus to be disturbed during Project construction. Ground disturbance from the Project in Pima pineapple cactus habitat will be approximately 155 acres; however, compensatory credits will only be purchased for the number of acres of occupied habitat disturbed. To calculate the number of acres of compensatory mitigation required, habitat considered occupied will be those areas within the ROW with Pima pineapple cactus present where permanent disturbance occurs.

While possible, it is unclear if Pima County Pima pineapple Priority Conservation Area lands would be available for compensatory mitigation or if they are only for Pima County sponsored projects.

On lands administered by the ASLD certain plants are protected under the Arizona Native Plant Law. A compensatory fee must be paid to the ASLD for each plant removed or destroyed. Compensation will be based on the required native plant survey conducted prior to disturbance activities and following ASLD standard survey protocol. The current valuation of protected plants is given in the Native Plant Disposition and Valuation memo (ASLD 2011), and the associated Native Plant Fee Structure is provided at https://land.az.gov/sites/default/files/documents/files/Native_Plant_Fee_Structure.pdf.

Mitigation for impacts to the Willcox Playa Wildlife Area have been developed with AGFD and include off-site mitigation measures. The mitigation measures include funding to relocate Crane Lake which includes construction of the lake and associated infrastructure, revegetation, and visitor facilities. This will include operation and maintenance costs of the lake and infrastructure for the life of the Project, with the renewal of commitment upon future renewal of the Project permit. Funding will be provided to improve riparian emergent wetlands on three historic ponds near Kansas Settlement Road. Wetlands will be constructed to AGFD specifications and adequately equipped with pumps, liners, and drains to ensure that wildlife values are maintained. Mitigation also includes funding for the removal of non-native flora and revegetation with native flora on the Willcox Playa Wildlife Area.

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APPENDIX B8 EROSION, DUST CONTROL, AND AIR QUALITY PLAN

B8.1 Introduction

This Erosion, Dust Control, and Air Quality Plan addresses regulatory compliance, environmental concerns, and Proponent Committed Environmental Measures (PCEMs) to ensure impacts associated with construction, operation, and maintenance activities on the Southline Transmission Line Project (Project) are minimized as they relate to soil conservation and air quality. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B8.2 Purpose

This plan provides a detailed summary of the PCEMs identified in the Environmental Impact Statement (EIS) and other specific stipulations and measures to be used by Southline Transmission, LLC (Southline), and the construction contractor(s) to ensure regulatory compliance and protection of the soils and air quality that will be affected by the Project. This plan is a framework of the actions to be implemented during the construction, operation, and maintenance phases of the Project that were developed to address (1) soil erosion from wind and (2) air quality from fugitive dust and emissions from Project-related activities.

This plan first describes the concerns for impacts related to soil erosion and air quality and then presents the PCEMs and other specific measures that will be used to minimize the impacts. 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, extent of area to be disturbed, and other factors. Stormwater erosion is not covered in this plan but is discussed at length in Appendix B3 – Stormwater Pollution Prevention Plan. Proper methods for soil reclamation and revegetation are not covered in this framework plan, but are discussed at length in Appendix B15 – Reclamation, Revegetation, and Monitoring Plan.

B8.3 Regulatory Compliance

Construction, operation, and maintenance activities for the Project are subject to various regulations designed to protect environmental resources and the public from wind erosion, dust, and other possible effects on air quality. The following permits and documents contain requirements for preventing accelerated erosion and minimizing dust and emissions. Some permits appear unrelated to this topic; however, dust suppression and erosion control are conditions of those permits. Southline and the construction contractor(s) can refer to these documents, along with this plan, when assessing which PCEMs and other specific measures are appropriate for a specific area.

Since 1963, the Clean Air Act and subsequent amendments in 1970, 1977, and 1990 have provided the authority and framework for regulation of air emission sources. At a minimum, Southline and the construction contractor(s) will need to adhere to or obtain the following permits as required.

B8.3.1.1 State – New Mexico

At the New Mexico State level, temporary sources, such as concrete batch plants, must obtain a Notice of Intent (NOI) for a General Construction Permit (GCP) from the State if the facility meets certain regulatory thresholds. Emission rates above 10 tons per year (tpy) of any regulated air pollutant (with the exception of lead), require submittal of an NOI to the State for the facility; emission rates greater than 25 tpy of criteria pollutants require a permit to construct. A GCP for concrete batch plants is available from the State if the facility meets certain siting, sizing, and regulatory requirements (e.g., facility is not subject to any National Emission Standards for Hazardous Air Pollutants or Maximum Achievable Control Technology standards; facility has production rates equal to or less than 2,400 cubic yards per day) (New Mexico Administrative Code 20.2.72). The New Mexico Environment Department does not currently require dust control permits. However, the State is soliciting input from stakeholders and the public regarding whether or not a statewide dust regulation is necessary or desired, and permits may be required in the future.

B8.3.1.2 State – Arizona

Air quality in Arizona is regulated with Air Quality Permits from the Arizona Department of Environmental Quality Air Quality Division. Arizona air quality statutes are codified in Arizona Revised Statutes (ARS), Title 49, Chapter 3. Air quality regulations in Arizona are codified in the Arizona Administrative Code (AAC), Title 18, Chapter 2. The State of Arizona has incorporated the National Ambient Air Quality Standards by reference and does not have any additional ambient air quality standards. Two Arizona counties (Pima and Pinal) associated with the proposed Project and alternatives have their own air pollution control programs and operate pursuant to ARS 49-402.

For concrete batch plants, regulations at the State of Arizona level provide an application to permit the source under a concrete batch plant general permit in lieu of an individual permit.

Air quality regulations governing general construction activities are codified at AAC R18-2-604(A) and (B), R18-2-605, -606, -607, -802, and -804. These regulations require that reasonable precautions be made to limit excessive amounts of particulate matter (PM) from becoming airborne from sites or activities such as open areas, roadways and streets, and site cleaning machinery. The relevant air quality regulations include:

- R18-2-604: Open Areas, Dry Washes, or Riverbeds
- R18-2-605: Roadways and Streets
- R18-2-606: Material Handling
- R18-2-607: Storage Piles
- R18-2-802: Off-road Machinery
- R18-2-804: Roadway and Site Cleaning Machinery

B8.3.1.3 Local

City and county conditional use permits, temporary use permits for staging areas, road crossing permits and/or encroachment permits may have permit conditions that must be met regarding air quality. Requirements vary by county.

In New Mexico, Doña Ana and Luna counties have additional ordinances that apply to the proposed Project and alternatives. Grant and Hidalgo counties have no additional county-specific air quality

regulations that apply to the proposed Project and alternatives. In Arizona, Cochise, Pima, and Pinal counties have additional county-specific ordinances and/or air quality regulations that apply to the proposed Project and alternatives. Greenlee and Graham counties have no additional county-specific air quality regulations that apply to the proposed Project and alternatives. A summary of county-specific regulations are presented in table B8-1 below.

Table B8-1. Applicable County Plans, Laws, Ordinances, Regulations, and Standards Related to Air Quality

County and Regulation	Summary of Regulation
Doña Ana County, New Mexico	
Ordinance 194-2000 on Erosion Control Regulations (Doña Ana County 2000)	Requires an erosion control plan approved by the county planning director to minimize the creation or aggravation of erosive forces.
Luna County, New Mexico	
Ordinance 75 on Buildings (Luna County 2010)	Requires a plan approved by the officer to prevent soil, sand, dust, building materials, construction waste, and other materials from being blown by the wind from the land.
Cochise County, Arizona	
Ordinance 00-030 on Land Clearing (Cochise County 2000)	Any activity that includes the clearing of more than 1 acre of land is required to have a clearing permit from the county. Dust and erosion control measures are required to be submitted along with the permit application.
Pima County, Arizona	
Pima County Air Quality Control District Code of Regulations, Title 17, Air Quality Control (Pima County 2013)	Specific permitting and emission limitations regulations apply for Class I areas and nonattainment areas. The county has dust control regulations associated with the permitting program so that dust is controlled at all times, even if a project is not active.
Pinal County, Arizona	
Pinal County Air Quality Control District Code of Regulations (Pinal County 2010)	The county has dust control regulations associated with the permitting program that apply to earthmoving and stockpiling activities.

B8.4 Environmental Concerns

All requirements of those entities having jurisdiction over wind erosion, dust control, and air quality will be adhered to, and any permits needed for construction or operation and maintenance activities will be obtained. The construction contractor(s) will not proceed with any construction activities without taking reasonable precautions to prevent excessive airborne soil from leaving the site and creating nuisance conditions.

B8.4.1 Soil Conservation and Erosion

Soil conservation for the Project includes minimizing impacts that will affect soils from the construction and operation of the proposed transmission line, such as minimizing wind erosion, soil compaction, and surface disturbance. Prior to ground disturbance, soil/geotechnical conditions will be assessed, and any recommendations related to more specific detail/measures regarding soil conservation for the Project will be documented and provided to the appropriate contractor(s).

Erosion potential is the result of several factors including slope, vegetation cover, climate, and the physical and chemical characteristics of the soil. Increased soil erosion may occur when vegetation is removed during construction, or in areas where the surface is disturbed by heavy equipment. Wind is also an erosion factor throughout portions of the Project area. In addition, soil compaction could be a concern if there is repeated traffic use on sections of access roads.

Erosion controls include both stabilization practices, as well as structural controls that will be implemented as needed. The PCEMs and other specific measures to control soil erosion on the Project site are presented in sections B8.4.5 and B8.4.6 below.

B8.4.2 Air Quality and Dust Control

Construction of the transmission line and related facilities will cause a temporary increase in fugitive dust from earthmoving and vehicle travel on paved and unpaved surfaces. Ambient levels of nitrogen oxides, hydrocarbons, carbon dioxide, carbon monoxide, and diesel particulates near the construction zone may also be temporarily increased due to tailpipe emissions from heavy construction equipment, some of which are thought to contribute to climate change as well, although this is a global-scale issue rather than being localized, and the Project greenhouse gas emissions would be expected to have an insignificant impact on climate change. Related facilities and operations will cause a minimal increase in fugitive dust from vehicle travel on paved and unpaved surfaces.

All applicable regulations will be adhered to, and any permits needed for construction activities will be obtained. The construction contractor(s) will not proceed with any construction activities without taking reasonable precautions to minimize PM from becoming airborne and creating nuisance conditions.

The factors that affect dust emission include ambient conditions (temperature, wind, and humidity), size and weight of vehicles, vehicle speed, frequency and number of active vehicles, soil characteristics (chemical composition, particle size distribution, organic components), and day-to-day aggressiveness of mitigation efforts (e.g., application of water or dust suppressants). Impacts from fugitive dust will be controlled by applying the appropriate control measures (e.g., watering unpaved roads, covering piles, etc.) by mitigation measures identified below and/or as otherwise stipulated by applicable air quality control agencies. PCEMs and other specific stipulations and methods are discussed in sections B8.4.3 and B8.4.4 below.

B8.4.3 Proponent Committed Environmental Measures

Southline has developed environmental protection measures, or PCEMs, to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities. The following PCEMs were identified in the EIS, and are included in table 8 of the Plan of Development (POD). Southline and the construction contractor(s) will use these PCEMs in the development of the final Erosion, Dust Control, and Air Quality Plan:

- General PCEM: All vehicle movement will be restricted to designated access, contracted acquired access, or public roads.
- AIR: Project activities will be in compliance with all applicable Federal, State, and local laws and regulations concerning prevention and control of air pollution during construction and operation.
- AIR: An Erosion, Dust Control, and Air Quality Plan will be prepared as part of the final POD. The plan will be developed and implemented to minimize and mitigate potential air quality and climate change impacts. The Erosion, Dust Control, and Air Quality Plan will include a section detailing the Construction Emissions Mitigation Plan (CEMP).
- AIR: All necessary air quality permits and/or fugitive dust permits will be obtained prior to construction or operating equipment that will result in regulated air quality pollutants or fugitive dust emissions.
- AIR: Trackout control devices such as grizzly bars, wheel washers, gravel pads, etc. will be located at all entrances and exits.

- AIR: Where implementation of these measures will have a meaningful impact on air quality, haul-truck cargo beds will be covered with tarps and travel speeds will be limited to no more than 15 miles per hour (mph) on unpaved roads.
- AIR: Combustion emissions from mobile sources will be minimized by proper maintenance of equipment.
- AIR-1: Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, will be implemented; these include the following reasonable precautions: (1) frequent watering (no new water sources developed), stabilization, or covering (as appropriate) of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; (2) reduction in the amount of disturbed area where possible; (3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended; and/or (4) treatment of actively disturbed areas with approved dust palliatives.
- AIR-2: To reduce the potential for greenhouse gas emissions, only properly trained Project personnel will handle sulfur hexafluoride, and a sulfur hexafluoride recovery and recycling program will be implemented.
- SOIL-1: As appropriate and feasible, Southline and its construction contractor(s) will implement topsoil segregation and conservation practices at substation sites and as directed by the Bureau of Land Management (BLM) and Western Area Power Administration.
- SOIL: In construction areas (i.e., temporary use areas, structure sites, access roads, etc.) where grading is required, surface restoration will be implemented as required by the landowner or BLM authorized officer. The method of restoration will normally consist of returning disturbed areas back to approximate their normal contour, replacing topsoil, reseeded (where required), installing cross drains for erosion control, placing water bars in the road, and/or filling ditches. The Reclamation, Vegetation, and Monitoring Plan will include final details on the details of restoration.
- VIS-3: During the construction period, dust suppression measures would be used to minimize the creation of dust clouds potentially associated with the use of access roads.

B8.4.4 Other Specific Stipulations and Methods

Design features and selective environmental measures for environmental protection are to be applied to all affected Project areas to help reduce potential erosion and air quality related impacts. Listed below are additional design features and selective environmental measures beyond the PCEMs identified in the EIS and POD, for environmental protection to be implemented by the construction contractor(s):

- Project construction supervisors will be trained on dust control procedures.
- Earthmoving activities will include, but not be limited to, water application by means such as trucks, water tanks, water wagons, water trailer hoses, or sprinklers at sufficient frequency and quantity to control fugitive dust prior to, during, and after earthmoving operations. The construction sites for affected earthmoving activities will be pre-watered in advance of vegetation clearing where feasible. In addition, earth-loading activities will be executed carefully by maintaining the bucket close to the truck while dumping (i.e., minimizing material drop height).
- To the extent practicable, grading will be limited during high-wind events. If wind conditions cause fugitive dust emissions to exceed the visible emissions requirement, despite implementation

of planned measures, the construction contractor will ensure that other control measures are implemented or cease dust-generating operations and stabilize any disturbed surface area.

- Trackout onto paved roads at construction access points must be cleaned up as quickly as possible if it extends a cumulative distance of 25 linear feet or more along an area accessible to the public, including curbs, gutters, and sidewalks. All trackout/carryout must be cleaned up no later than the end of the work day or no later than 8:00 p.m.
- Exposed storage piles of soil and other excavated materials will be sprayed with water or approved dust suppressants daily as needed, or covered with tarps and/or canvas.
- Areas that remain inactive for longer than 30 days must be stabilized after the 30th day (for 24 hours per day, 7 days per week) until the area again becomes active or is permanently stabilized. Permanent stabilization of disturbed surface areas is required within 10 days following the completion of the dust-generating activity if finished for a period of 30 days or longer. For sequenced construction that may include inactive periods that last longer than 30 days, temporary stabilization will be achieved using the primary control measure of water spraying, but other measures may be utilized if appropriate.
- Vegetation removal and soil disturbances (including temporary road improvements) will be minimized; the use of overland travel without blading a road will be maximized. In areas of overland construction, where vegetation removal is required, mowing or cutting will be the preferred method used.
- Erodible slopes that do not require grading should be cleared using equipment that results in the minimum practicable soil disturbance.
- Native vegetation cover will be reestablished in highly erodible areas as quickly as feasible following construction, where determined necessary.
- To prevent accelerated wind erosion on dirt roads, gravel, recycled asphalt, or other suitable material will be applied and maintained. Steeper slopes may require additional erosion control structures.

B8.5 Monitoring

During construction, air quality monitoring will be conducted as required according to permit requirements. Emissions from roadways and roadway conditions will be observed daily or more often when necessary. Monitoring of erosion control mitigation measures will continue until reclamation efforts are considered complete and successful, and accelerated erosion and air emissions have been controlled (see Appendix B3 – Stormwater Pollution Prevention Plan). Roughened surfaces should be periodically inspected. Areas exhibiting accelerated erosion will be filled and reseeded as necessary.

After construction and reclamation, monitoring of the reclamation/revegetation success will begin and monitoring the erosion control mitigation measures will continue on an annual basis during the operation and maintenance phase until affected soils have been stabilized. Monitoring should continue until there is no or minimal accelerated erosion or air emissions and until reclamation efforts are considered complete and successful.

APPENDIX B9 HAZARDOUS MATERIALS MANAGEMENT PLAN

B9.1 Introduction

The Hazardous Materials Management Plan (HMMP) for the Southline Transmission Line Project (Project) is intended to reduce the risks associated with the use, storage, handling, transportation, and disposal of hazardous materials (which in this document may include hazardous substances and hazardous wastes regardless of the statutory definitions of those terms). The term “hazardous materials,” as presented in this plan, will refer to hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, and materials designated as “hazardous materials” for transportation as defined in 49 CFR 171.8.

This plan will identify Project-specific Proponent Committed Environmental Measures (PCEMs), as in the Environmental Impact Statement (EIS) and table 8 in the Plan of Development (POD), and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project. This document provides a template for the development of a detailed HMMP to be completed once the construction POD is finalized by Southline Transmission Line (Southline).

As indicated in the Plan of Development (POD), this HMMP is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate. The HMMP will clearly identify which legal requirements apply to specific types of hazardous materials and will identify design features of the proposed action for environmental and human protection which, although not necessarily legally required, will be followed to reduce risks associated with hazardous materials. Nothing in this plan or in the final HMMP (once developed) shall be construed as an admission regarding the legal applicability of requirements or practices to any particular class of hazardous material.

B9.2 Purpose

The goal of this plan is 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, (4) minimize risks to human health, and (5) provide a template for the development of a detailed final HMMP. This plan includes the following components:

- Framework for developing the HMMP
- Spill prevention procedures related to the transportation, storage, and disposal of hazardous materials
- Spill control, response, and cleanup methods
- An overview of the notification and documentation procedures to be followed in the event of a spill
- Operation and maintenance considerations
- Sample hazardous materials management forms which may be used as examples.

In general, hazardous materials will be stored in approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility. Persons responsible

for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and will be familiar with all applicable laws, policies, procedures, and the PCEMs applicable to their tasks..

It is the responsibility of the construction contractor(s) to maintain file records of proper training/certification for any individual(s) who may potentially handle hazardous materials for the Project. Southline reserves the right to audit any contractors or subcontractors to verify compliance.

B9.3 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 laws and regulations also govern the use, storage, transportation, production, and disposal of hazardous materials. Some of the key requirements of these laws are outlined in:

- Occupational Safety and Health Act (29 CFR 1900–1910 and 1926)
- Clean Water Act (40 CFR 100–149)
- Clean Air Act (40 CFR 50–99)
- Toxic Substances Control Act (40 CFR 700–799)
- Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (40 CFR 300–399)
- Resource Conservation and Recovery Act (40 CFR 239–282)
- Hazardous Materials Transportation Act (49 CFR 100–199)
- State-Specific Regulations

B9.4 Framework for Developing the Hazardous Materials Management Plan

The HMMP will include certain information, such as site plans that show storage areas; an inventory of hazardous materials on the site; procedures and best management practices (BMPs) for transportation, handling, use, and disposal of hazardous materials; and a spill contingency plan. This section is an expanded outline of the HMMP.

The HMMP is designed to reduce the risks associated with the storage, use, transportation, and disposal of hazardous materials anticipated to be used during the construction phase of the project.

Other environmental documents associated with the HMMP that are being developed for the construction phase of the Project shall be reviewed and used in conjunction with the HMMP. They include:

- Stormwater Pollution Prevention Plan (SWPPP) (refer to appendix B3) to address erosion and stormwater control and prevent migration of contaminated stormwater off the construction site
- Spill Prevention, Control, and Countermeasures (SPCC) Plan (refer to appendix B4) to address prevention, control and response related to oil, hydraulic fluid, and petroleum fuel spills

- Blasting Plan (refer to appendix B6) to ensure human health and safety during construction blasting operations and to address mitigation of impacts such as noise and vibration.
- Waste Management Plan to address the handling of non-hazardous solid and liquid wastes generated at the Project site

B9.4.1 Certifications, Acknowledgments, and Designation of Coordinator / Responsible Person(s)

The final construction POD will identify the responsible party that shall certify with a signature that all of the information provided in the HMMP is accurate and complete to the best of their knowledge. The construction contractor(s) also will certify with a signature they are committed to implementing the plan as written.

The identified responsible party shall agree to make all necessary and appropriate amendments to the HMMP and submit any and all such amendments to Southline (if appropriate), Western Area Power Administration (Western), and the appropriate county (if required), State, or Federal authorities within 7 days of finding that an amendment is necessary. Amendments to the HMMP shall be necessary when any of the following apply:

- Applicable laws or regulations are substantively revised
- A 100 percent or more increase of a previously disclosed hazardous material unless such increase is demonstrated through a risk assessment to be insignificant
- Any handling of a previously undisclosed hazardous material subject to inventory requirements
- A change in formulation of a previously disclosed hazardous material (e.g., solid to liquid)
- A change of responsible party's business address, name, or ownership
- The list of emergency coordinators or contact information changes
- The list of emergency equipment changes

The final HMMP shall identify an Emergency Coordinator/Responsible Person for hazardous materials management and emergency response. Two alternates shall also be identified. Business, residential, and mobile phone numbers shall be provided for all three persons to allow for contact 24 hours a day. Primary and alternate emergency response coordinators shall be knowledgeable of the chemicals and processes involved in construction of the Project, and will have the authority to commit construction contractor(s) resources to implement the plan. They also shall have stop-work authority in case of noncompliance or danger to human health or the environment.

B9.4.2 Facility Description

A site map/facility map will be provided in the HMMP that contains storage and safety precautions for hazardous materials.

B9.4.2.1 SITE MAPS

Because of the linear nature of the Project, all hazardous materials that will be stored during the construction of the transmission line will be stored in designated storage/staging areas.

No prolonged storage will occur in the right-of-way (ROW) outside designated areas. The locations of the proposed material storage/staging areas shall be shown on maps. A site map will be developed for each of

the material yards to identify material storage areas where hazardous materials will be stored and where safety precautions will be implemented.

B9.4.2.2 TYPES AND AMOUNTS OF HAZARDOUS MATERIALS

The construction contractor(s) will maintain a complete inventory of the types and amounts of all hazardous materials stored or used on the construction project site. This will include potentially hazardous materials such as fuels, oils, hydraulic fluid, lubricating oils and solvents, cleansers, explosives, and herbicides. One common method to inventory hazardous materials is using a Hazardous Materials Inventory Statement (HMIS). A hazardous materials inventory method will be developed by the construction contractor(s) and approved by Southline.

A list of the typical fuel, lubricants, and hazardous materials used on the Project will be provided as an appendix to the HMMP. The construction contractor(s) will provide, maintain, and make available the appropriate Safety Data Sheet (SDS) documents for all hazardous materials used or stored in the material storage/staging areas or used on the ROW.

B9.4.3 Hazardous Waste and Materials Management

Containers holding hazardous wastes will be kept closed at all times, except when it is necessary to add or remove contents. Before the handling or transportation of containers carrying hazardous waste, the containers will be inspected to ensure that they are sealed so no spilling of the material can occur.

B9.4.3.1 RESPONSIBILITIES

It is the construction contractor's responsibility to properly collect, store, and contain hazardous construction waste in accordance with all Federal, State, and local rules, regulations, and ordinances until such time as it can be removed from the Project site to a disposal facility authorized to accept such materials. It is the construction contractor's and subcontractor's responsibility to ensure that their employees are familiar with the HMMP and take appropriate actions if they become aware of an issue. It is the employees' responsibility to follow the directions outlined in the HMMP and report any variances to their supervisor.

Hazardous waste will be removed from the Project site and disposed of by a contracted, permitted transporter facility. U.S. Environmental Protection Agency (EPA)-approved waste manifest forms, or the state equivalent if the state has been delegated authority by EPA, will be used when hazardous waste is transported. The final HMMP will address the different categories of hazardous waste generators as applicable to the Project and the associated requirements for registration, storage and recordkeeping. Copies of all waste manifests will be retained in the HMMP for a minimum of 3 years.

All Project documents relating to hazardous waste and materials management will be maintained on-site until Project construction is complete. Upon Project completion, project documents will become part of the permanent Project construction record maintained by Southline and Western and made available to regulatory personnel at any time.

This includes:

- SDS documents (not required for hazardous waste)
- Training records
- Spill reports

- Laboratory reports
- Chain-of-custody forms
- Waste manifests
- Transportation documents
- Compliance reports and audits
- Site inspection reports
- Vehicle inspection reports
- Other related environmental documents

B9.4.3.2 TRAINING

All construction personnel, as well as contractor employees and subcontractors, will be required to complete training before they commence work on the Project. Hazardous waste and materials management and spill response will be addressed during Project orientation. Additional training/certifications will be provided to employees who are responsible for handling or transporting hazardous materials for the Project. This will include training on the proper use and management of the materials. Refresher training will be performed at least annually or may be conducted as part of mandatory weekly safety and environmental meetings. Training records will be maintained by the construction contractor(s) as part of the permanent construction record.

Training topics will include items such as:

- Information about the Hazard Communication Program (HCP), including the location of the HCP binder, organization of the SDSs, availability of the SDSs for their use and what information they contain, the manner in which hazardous materials are labeled, and the list of hazardous materials that may be encountered at the job site
- Information on the handling, labeling, and storage of hazardous materials they may use or encounter
- An explanation of any operations that will take place in the work area where hazardous materials are present, the physical and health hazards of the material, and protection measures to be used to prevent exposure (such as appropriate work practices, emergency procedures, and proper use of personal protective equipment)
- The importance of immediately reporting leaks and spills to a project supervisor

B9.4.3.3 LABELING AND HAZARD COMMUNICATION

The construction contractor(s) will label all hazardous waste storage containers, as required by 40 CFR 262. Hazardous waste labels will include the following:

- Identity of the hazardous chemical
- The accumulation start date and/or the date of the 90-day storage period
- The words “Hazardous Wastes”
- A warning indicating the hazards of the particular waste (such as flammable, corrosive, or reactive)
- The name and address of the facility that generated the waste

Each construction contractor and subcontractor is required under the Occupational Safety and Health Administration (OSHA) to have its own HCP that identifies methods for informing and training employees on hazardous substances that may be encountered on the job site; contents, use, and availability of SDSs; and labeling procedures. Master SDSs will be maintained in the HCP, and sheets shall be updated if and when they are updated by the supplier. All SDSs must be readily accessible to employees.

B9.4.3.4 OVERVIEW OF HAZARDOUS MATERIALS AND EXPECTED PROJECT WASTE

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 material yards/staging areas as necessary and on the ROW to operate and maintain equipment during construction. Explosives may be used for blasting rock where needed to install transmission towers.

Because of the remote nature of portions of this Project, it is likely that diesel fuel will need to be stored in relatively large quantities (up to 500 gallons) at material storage/staging areas or used on the ROW to operate and maintain equipment during construction. To the extent possible, storage and use of hazardous materials in the material storage/staging areas and in the ROW will be minimized to the amount necessary to perform the work.

Smaller quantities of other materials such as pesticides and fertilizers, paints, and chemicals (e.g., sulfur hexafluoride) will be used during Project construction, operation and maintenance. Pesticides and herbicides are potentially hazardous and shall be used according to labeling instructions (refer to Appendix B11 – Noxious Weed Management Plan). Sulfur hexafluoride will only be present or used at substation sites.

Common construction-generated hazardous waste includes items such as used undrained aerosol cans, used oil that is not recycled and exempt from key sections of the hazardous waste regulations or oil products, empty hazardous material containers with hazardous substance residue (as defined in the regulation), or material associated with a leak or spill of a hazardous material. The construction contractor(s) will properly collect, store, and contain hazardous construction waste on the Project site until such time as it can be removed to a waste management facility authorized to accept such materials. All hazardous materials will be stored in closed labeled containers.

B9.4.4 Operating Procedures

The following hazardous materials mitigation measures will be implemented by all construction contractors:

- Totally enclosed containment will be provided for all hazardous waste
- All potentially hazardous construction waste will be removed to a waste management facility authorized to accept such material
- An SPCC Plan framework (see appendix B4) has been prepared and will be completed using the specific methods described in this HMMP to address prevention and control of oil, hydraulic fluid, and petroleum fuel spill, including spills that could enter navigable waters of the United States
- Oils or chemicals will be hauled to an approved site for disposal or recycling

- Training of all personnel on procedures and immediate steps to clean up a spill. Cleanup materials will be available at every work site (or every vehicle). To minimize impacts and as practicable, contaminated soil will be scooped up and contained (in a plastic bag or drum for the purpose) immediately.
- If a spill occurs on Federal or State land, the appropriate agency office will be notified, and a copy of the manifest for disposal of the affected materials will be provided to the appropriate agency if required.

B9.4.4.1 REFUELING AND SERVICING

Refueling of equipment in the ROW will be necessary throughout the construction phase. As needed, fuel will be transferred from bulk storage tanks in the materials yard to refueling tankers or transported from non-project related facilities. Fuel will then be transported to specific locations within the ROW that are generally flat to minimize the chance of a spilled substance reaching a stream or wash. All refueling activities will be monitored by the contractor's site coordinator or their designee. Transfer of materials from large bulk tanks to small refueling tankers will be performed using the appropriate equipment, including pumps, hoses, and safety equipment. All fuel nozzles will be equipped with functional automatic shut-off valves. Devices such as drip trays and sorbent pads will be used during on-site refueling to minimize spills. Fuel/service vehicles will carry (1) suitable absorbent material to collect approximately 20 gallons of spilled materials, and (2) containment (such as plastic bags, plastic-line fiber drums, or steel drums) for that material and contaminated soil. Prior to departure of any refueling tanker, all outlets on the vehicle will be examined by the driver for leakage and tightened, adjusted, or replaced as necessary to prevent leaking while in transit. Details on spill prevention measures and procedures that will be used at the Project site are addressed in the SPCC Plan (see appendix B4) and SWPPP (see appendix B3).

B9.4.4.2 TRANSPORTATION OF HAZARDOUS MATERIALS

Procedures for loading and transporting fuels and other hazardous materials will meet the minimum requirements established by the U.S. Department of Transportation (USDOT) and by the Arizona or New Mexico Department of Transportation. Transportation of hazardous materials will be performed by a hazardous material transport company, and appropriate shipping papers shall be completed by properly trained personnel in accordance with federal and state regulations and guidance. During transportation, all hazardous materials used for the Project will be properly labeled and stored in USDOT-approved containers. The Project Blasting Plan (see appendix B6) contains special provisions specific to the transportation and storage of explosives.

B9.4.4.3 STORAGE AND LABELING OF HAZARDOUS MATERIALS

Storage methods and quantities will vary with the length of Project construction phases, the time of year, and the type of terrain. SDSs for all hazardous materials used or stored in the ROW or in material yards will be made accessible to all construction contractor and subcontractor employees. The SDSs will provide basic emergency response information for small and large releases of hazardous materials. In addition, the construction contractor(s) will make copies of the USDOT-produced Emergency Response Guidebook available for employee reference.

Proper storage and handling of hazardous materials can reduce or eliminate many associated risks. Proper storage information can usually be obtained from the SDS, label, or other chemical reference material. An SDS must be available for every chemical in the Project worksite. The SDS and chemical label can be consulted for information on special storage requirements.

The SDS can also answer questions such as:

- Is the chemical a flammable?
- Is the chemical a corrosive?
- Does the chemical need to be stored other than at ambient temperature?
- Is the chemical an oxidizer or reducer?
- Is the chemical light sensitive?
- Does the chemical require any special handling procedures?

Storage Containers

Typical storage considerations may include temperature, ignition control, ventilation, segregation, and identification. If cabinets are used to segregate chemicals, consider the compatibility of the chemicals with the cabinet. For example, corrosives, like strong acids and caustics, will corrode most metal cabinets. Non-metallic or epoxy-painted cabinets are available and will provide a better service life with these types of chemicals.

There are cabinets available specifically for flammable materials. It is important to be aware of maximum allowable container size and maximum quantities for storage in cabinets based on the category of the flammable. The class of a flammable is determined by its flash point and boiling point.

All hazardous materials stored on the Project site will be located in secured fenced materials storage/staging area at least 100 feet away from washes, ditches, or other waterways and away from environmentally sensitive areas or areas subject to periodic flooding. All storage containers will remain sealed when not in use, and storage areas shall be gated, locked, and/or guarded at night or during non-construction periods.

Totally enclosed containment will be provided for all hazardous materials. Containers holding hazardous materials or waste will be compatible with the specific materials stored. At a minimum, containers shall be inspected weekly to verify the integrity of the containers and containment system. If the container is damaged or shows signs of leaking, the material will be transferred to a container in good condition.

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 wastes, the containers will be inspected to ensure they are sealed such that no material spillage occurs.

Incompatible Materials

Materials, including hazardous wastes, will not be stored with incompatible materials or be placed in containers that previously held an incompatible waste or material. Proper segregation is necessary to prevent incompatible materials from inadvertently coming into contact. If incompatible materials were to come into contact, fire, explosion, violent reactions or toxic gases could result. When segregating chemicals, acids will not be stored with bases, and oxidizers will not be stored with organic materials or reducing agents. A physical barrier and/or distance is effective for proper segregation.

Figure B9-1 below is a general guide to the types of hazardous products you can store together and the types you need to separate by 20 feet or a 1-hour firewall. Refer to the product label or SDS to determine the product type.

The products indicated by the placards are compatible with each other if shown within the same red lines and incompatible with products shown in other areas surrounded by red lines. The red lines indicate a minimum of 20 feet separation or a 1-hour firewall. However, it may still be preferable to separate these products even farther; for instance, try not to store flammable solids with flammable liquids or compressed gases with flammables.



Figure B9-1. Types of hazardous products you can store together and the types you need to separate by 20 feet or a 1-hour firewall. Source: <http://www.fs.fed.us/t-d/pubs/htmlpubs/html04712810/page30.htm>.

Ignitable or Reactive Materials

Containers holding hazardous materials that are reactive or may ignite must be located at least 50 feet from the material yard's property line. "NO SMOKING" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive material.

Secondary Containment

Liquid hazardous materials will be placed within secondary containment and inspected daily for spills or leaks. Diesel fuel is the only hazardous material that is expected to be stored on the project site in large bulk quantities. Secondary containment for large volumes of diesel include devices such as dual-walled aboveground tanks or bermed areas lined with impervious material designed to provide a minimum containment volume equal to 110 percent of the volume of the largest storage vessel contained within the bermed area. Small volumes of materials such as paints or solvents will be stored in properly labeled containers in fireproof boxes inside contractor vehicles or on-site structures.

Security

Hazardous materials will be stored in secure areas to prevent damage, vandalism, or theft. All storage containers will remain sealed when not in use and storage areas shall be secured (gated, locked, and/or guarded) at night and/or during non-construction periods.

Explosives

Storage of explosives is discussed in Appendix B6 – Blasting Plan.

B9.4.4.4 DISPOSAL

In general, hazardous materials, hazardous wastes, and used cleanup materials will be stored in approved containers until they can be properly transported and disposed of at an approved waste management facility. Persons responsible for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and will be familiar with all applicable laws, policies, procedures, and PCEMs related to such handling or transportation.

Hazardous materials and hazardous waste must be properly, legally, and safely disposed of according to federal and state rules and regulations. Copies of manifests of all hazardous wastes disposed of must be retained and provided to agencies upon request.

Hazardous Waste

Hazardous waste will be removed from the Project site and disposed of at a properly-permitted waste management facility by a contracted, permitted transporter. EPA-approved waste manifest forms will be used when hazardous waste is transported, and such manifests will become part of the Project's permanent construction record.

Container Management

Containers that once held hazardous materials as products or held hazardous wastes must be considered as potential hazardous wastes due to the possible presence of residual hazardous material. Regulations specify that for the container to be handled as a nonhazardous waste, as much of the contents have been removed as possible, the pressure in the container approaches atmospheric (for compressed gases), and if empty containers are less than 5 gallons, they may be disposed of as a nonhazardous solid waste. If the empty containers are greater than 5 gallons, they must be returned to the vendor for reuse, sent to a drum recycler, or be used or recycled onsite. Additional regulations may apply.

Used Oil and Oil Filters

Used oil containing less than 1,000 parts per million total halogens can be managed as nonhazardous waste. Used metal canister oil filters can be managed as nonhazardous wastes if:

- They are thoroughly drained of free-flowing oil
- The filters are accumulated, stored, and transferred in a closed, rainproof container
- The filters are transferred for the purposes of recycling
- The filters are not terne-plated (an alloy of tin and lead).

Terne-plated oil filters are a hazardous waste, exhibiting the hazardous characteristics of lead. Terne-plated oil filters not recycled must be managed as a hazardous waste.

B9.4.5 Spill Contingency Plan

An SPCC Plan framework has been prepared for the Project and is available as appendix B4. The SPCC Plan details the spill response procedures, employee training, and spill response equipment and will be finalized as the construction POD is developed.

B9.4.5.1 SPILL EMERGENCY CONTACTS

In the event that there is an oil or fuel spill, immediate measures will be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department will be notified. Information on Project emergency contact for spill response will be provided as an appendix to the HMMP and shall be posted in conspicuous locations wherever hazardous materials are transported, loaded/unloaded, stored, or used. Spill emergency contact information is available as an appendix to the HMMP, in section B9.4.6.2 below.

B9.4.5.2 SPILL RESPONSE PROCEDURES

In the instance of a spill of hazardous materials, immediate response activities will be initiated by field personnel. Only persons having received proper training and with the appropriate protective clothing and clean-up materials should attempt to clean up or control a spill. Untrained individuals should notify the appropriate response personnel.

All spills must be reported to the Spill Coordinator and/or the Site Representative. If a spill occurs on Federal or State land, the appropriate agency office will be notified, and a copy of the manifest for disposal of the affected materials will be provided to the appropriate agency if required (see Section 6.5 – Notification and Documentation below).

B9.4.5.3 EMPLOYEE TRAINING

The SPCC Plan (see appendix B4) details employee training regarding spill prevention and emergency response procedures for the Project. Employee training also includes:

- Use of spill cleanup materials and equipment
- Procedures for coordinating emergency response teams
- Procedures for notifying agencies
- Procedures for documenting spills
- Identification of sites/areas requiring special treatment

B9.4.5.4 SPILL CONTINGENCY RESPONSE EQUIPMENT

The construction contractor(s) shall supply spill response kits, which shall be stored at all material yards/staging areas and readily accessible during construction. The Spill Coordinator will make known to all personnel involved with construction the contractor's location of the spill response kits. The contractor shall also provide a smaller portable spill kit for each truck.

B9.4.5.5 NOTIFICATION AND DOCUMENTATION

Spill Notification

If a spill occurs on Federal or State land, the appropriate agency office or landowner will be notified, and a copy of the manifest for disposal of the affected materials will be provided to the appropriate agency if required. Following is standard information required when notifying a regulatory agency of a spill, followed by specific reporting criteria for federal and state agencies.

When notifying a regulatory agency, the following information should be provided:

- Current threats to human health and safety, include known injuries, if any;
- Spill location, including landmarks and nearest access route;
- 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; and
- Status of response actions.

Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government. The EPA has determined that discharges of oil in quantities that may be harmful to public health or the environment include those that:

- Violate applicable water quality standards;
- Cause a film or "sheen," or discoloration of the surface of the water or adjoining shorelines; or
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

New Mexico Reporting Requirements

- According to the New Mexico Environment Department (NMED), a discharge of any material in a quantity that may, with reasonable probability, injure or be detrimental to human health, animal/plant life, or property; or may unreasonably interfere with the public welfare or the use of the property must be reported. This includes chemicals, biohazard materials, petroleum products, and sewage. In addition to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or ground water, also must be reported.
- Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535 or (505) 476-6000

- Website: <http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm>
- Oral notification must be provided to NMED as soon as possible after learning of a discharge, but in no event more than twenty-four (24) hours thereafter.

Arizona Reporting Requirements

- According to the Arizona Department of Environmental Quality, federal reportable quantities apply. However, a spill of any quantity that impacts a waterway within the state of Arizona must be reported.
- Emergency: (602) 390-7894, Non-Emergency: (800) 234-5677 or (602) 771-2330
- Website: <http://www.azdeq.gov/er.html>

Spill Documentation

Appropriate forms documenting the release and cleanup must be completed and signed, and stored, along with any sample results, shipping manifests, chains of custody, photographs, and other relevant materials. The construction contractor(s) is to retain these records and make them available to agencies upon request. Details to be collected for even small spills include the following:

- Date and time
- Name of person recording the data
- Persons and agencies notified
- Type and quantity of spill
- Resources affected (i.e., soil, surface water, etc.)
- Cleanup actions taken
- Reason for the spill
- Photographs of the spill site
- How cleanup materials and contaminated soil, water, and equipment were disposed of
- Other pertinent details

B9.4.6 APPENDICES TO THE HMMP

The following appendices will be included in the HMMP.

B9.4.6.1 APPENDIX A. SITE PLAN

Detailed site plans will be provided by the construction contractor(s), reviewed periodically, and updated when necessary.

B9.4.6.2 APPENDIX B. EMERGENCY INFORMATION FOR SPILL RESPONSE (POSTED ONSITE)

Emergency information for spill response shall be posted in conspicuous locations wherever hazardous materials are transported, loaded/unloaded, stored, or used. The posting will include the following information at a minimum (certain of these may not apply in Arizona versus New Mexico):

Phone numbers for:

- Local emergency (i.e., 911)
- Local fire, ambulance, and police
- Local hospital
- The Construction Contractor's Emergency Coordinator/Responsible Person, and two alternate contractor contacts, for contact 24 hours per day

National Response Center (Washington, D.C.)

The National Response Center (NRC) is the sole Federal point of contact for reporting all hazardous substances releases and oil spills. The NRC receives all reports of releases involving hazardous substances and oil that trigger Federal notification requirements under several laws.

Website: <http://www.nrc.uscg.mil/>

Phone: (800) 424-8802

U.S. Environmental Protection Agency

Superfund, Toxic Release Inventory, Emergency Planning and Community Right-to-Know Act, Risk Management Program, and Oil Information Center:

Phone: (800) 424-9346

Type of Coverage: Staffed by live Information Specialists. Assistance is also available through the Emergency Management Frequently Asked Question Database, which provides answers to frequently asked questions and an option to submit questions electronically to the Information Center.

Description: A publicly accessible service that provides up-to-date information on the regulatory requirements of the Oil Pollution Prevention Program, including Spill Prevention Control and Countermeasures (SPCC) Plans, Facility Response Plans (FRPs), and oil discharges. The Information Center does not provide regulatory interpretations. It does, however, maintain up-to-date information on the availability and distribution of publications and other resources pertaining to its program areas.

Additional Notes: This hotline is shared and managed by the following EPA Programs: the Toxics Release Inventory, EPCRA, Risk Management Plans, Superfund, and Oil Spill Prevention.

EPA Region 6 Customer Service Line:

Phone: (800) 887-6063; Outside Region 6 call 214-665-6444

Serving Region 6 (AR, LA, NM, OK, and TX).

EPA Region 9 Customer Service Line:

Phone: (866) 372-9378; Outside EPA Region 9 call 415-947-8000.

Serving Region 9 (AZ, CA, HI, NV, and Pacific Islands).

BLM, Las Cruces District Office:

1800 Marquess Street, Las Cruces, NM 88005

(575) 525-4300

District Manager: Bill Childress

BLM, Safford Field Office

711 14th Avenue, Safford, AZ 85546
(928) 348-4400
District Manager: Tim Shannon
Field Manager: Scott Cooke

BLM, Tucson Field Office

3201 East Universal Way, Tucson, AZ 85756
(520) 258-7200
District Manager: Tim Shannon
Field Manager: Vi Hillman

Western Area Power Administration

Desert Southwest Region
PO Box 6457, Phoenix, AZ 85005-6457
Contact: TBD

New Mexico Environment Department

Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535 or (505) 476-6000
Website: <http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm>

Arizona Department of Environmental Quality

Emergency: (602) 390-7894, Non-Emergency: (800) 234-5677 or (602) 771-2330
Website: <http://www.azdeq.gov/er.html>

B9.4.6.3 APPENDIX C. SPILL RESPONSE PROCEDURES (POSTED ONSITE)

As noted in appendix B4 (the SPCC Plan), while each spill, leak, or response is unique, standard procedures generally apply. Steps are detailed in the SPCC Plan (appendix B4) and may include the following:

1. First response / assessment and initiation of action
2. Spill control and containment
3. Cleanup
4. Disposal
5. Documentation and reporting
6. Agency notification, federal and state
7. Assessment and evaluation

B9.4.6.4 APPENDIX D. SAFETY DATA SHEETS

Material Safety Data Sheets and/or Safety Data Sheets will be stored in this appendix, reviewed periodically, and updated when necessary.

B9.4.6.5 APPENDIX E. EXAMPLE HAZARDOUS WASTE LABELS

HAZARDOUS WASTE

FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL

**IF FOUND, CONTACT THE NEAREST POLICE OR
PUBLIC SAFETY AUTHORITY OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY**

GENERATOR INFORMATION:

NAME: _____

ADDRESS: _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. _____ EPA WASTE NO. _____

ACCUMULATION START DATE _____ MANIFEST TRACKING NO. _____

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE!

Waste

HOLD FOR ANALYSIS

Sample Collected:

Results Expected:

Questions?

Contact:

Phone:



B9.4.6.6 APPENDIX F. TYPICAL FUEL, LUBRICANTS, AND HAZARDOUS MATERIALS

Generic List of Chemicals Used During the Construction of an Overhead Transmission Line

2-cycle oil (contains distillates and hydrotreated heavy paraffinic)
ABC fire extinguisher
Acetylene gas
Air tool oil
Ammonium hydroxide
Automatic transmission fluid
Battery acid (in vehicles and in the meter house of the substations)
Bee Bop Insect Killer
Canned spray paint
Chain lubricant (contains methylene chloride)
Connector grease (penotox)
Contact cleaner 2000
Diesel de-icer
Diesel fuel
Diesel fuel additive
Explosives (detonators, detonator assemblies – non-electric, tubular primers, cap-type primers, ammonium nitrate fertilizers)
Eye glass cleaner (contains methylene chloride)
Gasoline
Gasoline treatment
Herbicides (used for vegetation control)
Hot Stick cleaner (cloth treated with polydimethylsiloxane)
Insulating oil (inhibited, non-PCB)

Lubricating grease
Mastic coating
Methyl alcohol
North wasp and hornet spray (1,1,1-trichloroethene)
Oxygen
Paint thinner
Petroleum products (gasoline, diesel fuel, jet fuel A, lubricants, brake fluid, hydraulic fluid)
Prestone 11 antifreeze
Propane.
Puncture seal tire inflator
Safety fuses
Starter fluid
Wagner brake fluid
WD-40
ZEP (safety solvent)
ZIP (1,1,1-trichloroethane)

B9.5 Proponent Committed Environmental Measures

Southline has developed environmental protection measures to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities. The following PCEMs were identified in the EIS, and are included in table 8 of the POD. These PCEMs will be used in the development of the HMMP:

- Framework Plans prepared as part of the final POD will be developed in more detail and implemented to minimize and mitigate potential hazardous materials and waste; plans include SWPPP; SPCC Plan; and Soil Management Plan. These plans will include requirements by the EPA, OSHA, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.
- The SWPPP (see appendix B3) includes BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. The SWPPP is required by, and enforced by, the EPA in New Mexico, and the Arizona Department of Environmental Quality in Arizona.
- Construction, operation, and maintenance crew members who handle oil or other hazardous substances described in the SPCC Plan will be properly trained to deal with a spill, and appropriate spill response or containment material will be available for use at applicable work sites. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in the SPCC Plan, will reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures will be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department will be notified as defined in the SPCC Plan (see appendix B4).
- Personnel, contractors, and transporters involved with hazardous materials management will be required to comply with Federal and State regulations established for the transportation, storage, handling, and disposal of hazardous substances, materials, and wastes. “Hazardous substances” means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.
- HAZ-1 The Project-specific HMMP and program will outline proper hazardous materials use, storage, and transport requirements and applicable handling procedures. EPA procedures for handling and storage of hazardous materials, OSHA requirements for proper storage and labeling

on the job site, and New Mexico and Arizona Department of Transportation requirements for transportation of hazardous materials will be followed.

- HAZ-2 If backfill material to be used is derived from a site that could possibly have contamination, it will be sampled and determined to be free of regulated contaminants before it is used to fill excavations. The results of any tested soils will be shared with the appropriate surface managing agency. No contaminated soils will be used as fill material for the Project.
- HAZ-3 New or expanded substation locations that involve the purchase or long-term leasing of land, purchased transmission line ROWs, and any other property to be acquired will be screened for environmental liabilities. The degree and level of screening will be based on knowledge or information available on the property to determine the probability of contaminants of concern or other environmental impairment. A Phase I Environmental Site Assessment will be conducted if preliminary screening indicates a reasonable risk that such environmental conditions may exist on the property and the property continues to be targeted for acquisition by the Project, consistent with American Society for Testing and Materials Standard E1527-13.
- HAZ-4 The Soil Management Plan (see appendix B14) will provide guidance for the proper handling, onsite management, and disposal of contaminated soil, if encountered during construction, operation, and maintenance activities. Appropriately trained personnel would be onsite during preparation, grading, and related earthwork activities to monitor the soil conditions encountered.
- HAZ-5 In the event of a spill, workers in the immediate area will cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in the SPCC Plan. Southline and its construction contractor(s) are responsible for cleanup and assume liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline will immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.
- HAZ-6 All construction and demolition waste, including trash and litter, garbage, and other solid waste, will be removed and transported to an appropriately permitted recycling or disposal facility. Southline and its construction contractor will prepare a Construction Waste Disposal Plan for all nonhazardous wastes generated during construction of the Project. The plan will contain a description of all nonhazardous solid and liquid construction wastes, recycling plans, and waste management methods to be used for each type of waste.
- HAZ-7 Southline or the applicable contractors will maintain all vehicles in good working order. Equipment will be properly tuned and maintained to avoid leaks of fluids.
- HAZ-8 Service and refueling procedures will not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment will not be done within the ROW.

APPENDIX B10

EMERGENCY PREPAREDNESS AND RESPONSE PLAN

B10.1 Introduction

Despite an organization's best efforts, accidents, acts of nature, and other emergency situations can occur. Effective preparations for emergency and response can reduce injuries, prevent or minimize environmental impacts, protect employees and the community, reduce asset losses, and minimize downtime. An effective emergency preparedness and response program will include provisions for identification of hazards, a chain of command and responsibility, and a strategy for emergency communications.

This Emergency Preparedness and Response Plan is intended to provide methods for prevention of and response to a broad spectrum of emergency situations. This document discusses the chain of command and emergency communications strategy to be used as a guide for an Emergency Preparedness and Response Plan to be completed by Southline Transmission, LLC (Southline), and other responsible parties identified in the construction Plan of Development (POD). As indicated in the POD, this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

The final Emergency Preparedness and Response Plan will be approved by the Bureau of Land Management (BLM), Western Area Power Administration (Western), and other agencies as appropriate. More specific emergency procedures for blasting, hazardous materials, and fire are included in Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B12 – Fire Protection Plan.

Emergency response procedures will be implemented for the following potential events, or similar events:

- Downed transmission lines, structures, or equipment failure
- Fires and explosions
- Spills or releases of hazardous materials
- Sudden loss of power
- Natural disasters
- Serious personal injury

B10.2 Purpose

No plan can describe specific procedures and protocols for every potential event. However, having a general plan in place with hazards identification, a chain of command and responsibility, a strategy for emergency communications, and foresight and planning can mitigate for most significant events. This is particularly true and important for the initial response phase of an emergency situation.

The purpose of an Emergency Preparedness and Response Plan is to provide clear procedures and information to enable Southline, the construction contractor(s), the compliance inspection contractor (CIC), and the BLM, Western, or other agency authorized officer or his/her designated representative to

prepare for and effectively respond to emergency situations. The primary objective of this plan is to prevent adverse impacts on human health and safety, property, and the environment that could potentially occur as a result of potential emergencies during the construction, operation, and maintenance of the Southline Transmission Line Project (Project).

B10.3 Regulatory Compliance

There are numerous regulatory drivers that call for the preparation of an Emergency Preparedness and Response Plan. 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 Western. The Occupational Safety and Health Administration also provide regulations for construction and operational workplace activities.

Additional regulatory drivers include the Clean Water Act (CWA) requirements for Stormwater Pollution Prevention Plans (SWPPPs) and the CWA, Oil Pollution Act requirement for a Spill Prevention, Control, and Countermeasure Plan (SPCC Plan), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, a.k.a. Superfund). The SWPPP (appendix B3) and SPCC Plan (appendix B4) also include response procedures for spills of oil or hazardous materials.

B10.4 Responsibilities

Southline and the construction contractor(s) are responsible for the effective response to any emergency situation or event related to the construction, operation, and maintenance of the Project. To ensure a coordinated and effective response, a chain of command will be developed as part of the Emergency Preparedness and Response Plan and followed in the event of an emergency. In the establishment of a chain of command, considerations to be taken into account include the levels of vertical and horizontal activation and the participation necessary to respond to specific situations are. In other words, does the response need to move further up the chain of command, or does the response need to broaden to include additional divisions or disciplines? Sometimes the response will be both, and higher levels of command may be needed to authorize or oversee additional divisions or disciplines. The following are factors for the establishment of a chain of command:

- Type of event (natural, injury, environmental, electrical supply/outage, external forces)
- Severity, location, and physiographic surroundings
- Multiple, interconnected, or combined events
- Anticipated duration
- Multi-division and/or multi-discipline response required
- External agency coordination
- Authority of various command levels

B10.5 Response Coordination

The amount of resources and coordination required for response to a specific hazard or emergency is determined by type, severity, location, and duration of the event. Most events require managing at the field operations level and will require increasing resource requirements to match the severity and duration

of the event. This emergency management organization will be included as part of this Emergency Preparedness and Response Plan and will provide increasing levels of resources and the coordination necessary to support immediate or escalating emergency events. Because the field level is often where an emergency response is initiated, field level personnel must be aware of and have access to emergency contact information, procedures, and equipment.

In the event of an emergency, crews will be dispatched quickly to repair or replace any damaged equipment. While protection of human health and life is paramount, repair of the transmission line will have priority under emergency conditions and all reasonable efforts will be made to protect plants, wildlife, and other natural resources. Reclamation procedures following completion of repair work will be similar to those prescribed during construction (see Appendix B15 – Reclamation, Vegetation, and Monitoring Plan).

B10.6 Emergency Communications

Effective communication and exchange of information is essential in every emergency response. Misdirected, incorrect, or untimely information can be detrimental and even increase the threat to life or property. As an emergency event escalates, the rapid increase of information creates chaos and confusion. Simple communication diagrams can help to alleviate this situation.

B10.6.1 Emergency Contact List

In case of emergency, call 911 first. Additional potential emergency contacts are listed below and should be called as appropriate, depending on the situation (e.g., fire, injury). Further guidance on emergency response, notification, and reporting protocols are included in Appendix B3 – SWPPP, Appendix B4 – SPCC Plan, Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B12 – Fire Protection Plan. The Emergency Contact List shall be verified at the beginning of construction and updated throughout the Project by the construction contractor(s) to ensure accurate contact information. Emergency contacts are just that – persons to be contacted to respond to an emergency. Notifications, both internal and to State and Federal agencies, may also be required on a case-by-case basis. When the emergency contact list is posted at a jobsite, it may be tailored to the locale as appropriate.

In case of emergency – Call 911

Fire: Call 911 first

Southwest Coordination Center

The interagency focal point for coordinating the mobilization of resources between the twelve Federal and State Dispatch Centers of the Southwest Area and, when necessary, the National Coordination Center in Boise, ID.

Website: <http://gacc.nifc.gov/swcc/>

To report a wildfire in New Mexico: Silver City Dispatch Center (575) 538-5371

To report a wildfire in Arizona: Tucson Interagency Dispatch Center (520) 202-2710

Emergency Medical: Call 911 first

List all local hospitals and clinics as appropriate

Law Enforcement: Call 911 firstNew Mexico County Sheriffs:

Doña Ana County Sheriff's Office (575) 525-1911
Luna County Sheriff's Department (575) 546-2655
Grant County Sheriff's Office (575) 574-0100
Hidalgo County Sheriff's Office (575) 542.3833

Arizona County Sheriffs:

Cochise County Sheriff's Office (520) 432-9505
Pima County Sheriff's Department (520) 351-4900
Pinal County Sheriff's Office (520) 866-5111

Hazardous materials and oil spills:National Response Center (Washington, D.C.)

The National Response Center (NRC) is the sole Federal point of contact for reporting all hazardous substances releases and oil spills.

Website: <http://www.nrc.uscg.mil/>

Phone: (800) 424-8802

U.S. Environmental Protection Agency

EPA Region 6 Customer Service Line:

Phone: (800) 887-6063; Outside Region 6 call 214-665-6444

Serving Region 6 (AR, LA, NM, OK, and TX).

EPA Region 9 Customer Service Line:

Phone: (866) 372-9378; Outside EPA Region 9 call 415-947-8000.

Serving Region 9 (AZ, CA, HI, NV, and Pacific Islands).

New Mexico Environment Department

Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535 or (505) 476-6000

Website: <http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm>

Arizona Department of Environmental Quality

Emergency: (602) 390-7894, Non-Emergency: (800) 234-5677 or (602) 771-2330

Website: <http://www.azdeq.gov/er.html>

Bureau of Land Management ContactsBLM, Las Cruces District Office:

1800 Marquess St, Las Cruces, NM 88005

(575) 525-4300

District Manager: Bill Childress

BLM, Safford Field Office

711 14th Avenue, Safford, AZ 85546

(928) 348-4400

District Manager: Tim Shannon

Field Manager: Scott Cooke

BLM, Tucson Field Office
3201 East Universal Way, Tucson, AZ 85756
(520) 258-7200
District Manager: Tim Shannon
Field Manager: Vi Hillman

Western Area Power Administration Contacts

List as appropriate

Southline Transmission, LLC Contacts

List as appropriate

Divisions of Emergency Services & Homeland Security

New Mexico Department of Homeland Security & Emergency Management
Mission: To protect the people of New Mexico and the nation through a comprehensive, consolidated, and coordinated program of mitigating hazards, preparing for emergencies, preventing attacks, and responding and recovering from events that occur without regard to cause
Website: <http://www.nmdhsem.org/>
Phone: (505) 476-9600

Arizona Division of Emergency Management
Mission: To provide military and emergency management capabilities to citizens of Arizona and the Nation
Website: <http://www.dem.azdema.gov>
Phone: (800) 411-2336 / (602) 244-0504

Arizona Department of Homeland Security
Website: <http://www.azdohs.gov/>
Phone: (602) 542-7013

Construction Contractor Manager

List as appropriate

Compliance Inspection Contractor

List as appropriate

B10.7 Hazard Identifications and Key Response Criteria

Potential hazards or threats will always be present in association with construction and operation of the Project. It is effective and necessary to identify likely and potential hazards in advance, and the associated risks, so as to outline potential effects and consequences, and determine the resources and actions for an adequate response.

It is not feasible to anticipate all potential hazards and describe an exact response for each. Responses to different events may vary as the event evolves, and even responses to identical events may differ based on geography, local circumstances, response time, and myriad other factors. However, response methods and

responsibilities to be determined in the Emergency Preparedness and Response Plan will be essential for any possible situation. Having a general plan in place with hazards identification, a chain of command and responsibility, a strategy for emergency communications, and foresight and planning can mitigate for most significant events.

Effective emergency response training is based on plausible scenarios and then developing the understanding, elements, and actions necessary to respond. Scenarios to consider are: electrocution, fatality, massive equipment failure, structure failure, weather/environment, etc. Because the field level is often where an emergency response is initiated, field level personnel must be trained on and have access to emergency contact information, procedures, and equipment. Field level personnel and supervisors must be trained to identify hazards within their purview, and the importance of mitigating those hazards before they become emergencies.

APPENDIX B11

NOXIOUS WEED MANAGEMENT PLAN

B11.1 Background

The Bureau of Land Management (BLM) defines noxious weeds as “a plant that interferes with management objectives for a given area of land at a given point in time.” The New Mexico Noxious Weed Act defines noxious weeds as “any weed or plant which the board of county Commissioners acting as the governing body of the district, and with the advice of the county agent, declares to be harmful or to possess noxious characteristics.” The Arizona Department of Agriculture (ADA) defines a noxious weed as “any species of plant that is, or is liable to be, detrimental or destructive and difficult to control or eradicate and shall include any species that the director [Department of Agriculture], after investigation and hearing, shall determine to be a noxious weed.” Noxious weeds are opportunistic plant species that may aggressively colonize in disturbed areas. Once established in an area, noxious weeds typically out-compete native plants for resources and may permanently degrade the native plant community. In addition, noxious weeds often become monocultures, which may alter the local fire regime by increasing the fine fuel load. Such changes usually exclude reestablishment of the native plant community in disturbed areas, and result in a long-term or permanent change in the local ecology. Infestations of noxious weeds may also have negative economic impacts. Infestations of certain noxious weeds on rangelands may poison livestock, and infestations in agricultural fields may lower crop yields.

The format and content of this Noxious Weed Management Plan is based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 (BLM 1992) and in Section 11.0 of the Western Area Power Administration (2011) Integrated Vegetation Management Guidance Manual (Western 2011). This plan includes a discussion on (1) the plan purpose, goals, and objectives, (2) the noxious weed inventory, (3) noxious weed management practices, (4) post-construction monitoring, and (5) the proper use of herbicides within the Project area. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B11.1.1 Plan Purpose

This purpose of this Noxious Weed Management Plan is to provide preventive and treatment methods to control the potential occurrence of noxious weeds during and following construction-related activities for the Southline Transmission Line Project (Project). It is the responsibility of Southline Transmission, LLC (Southline), and the construction contractor(s), working in coordination with the Compliance Inspection Contractor (CIC) and the BLM and Western or their designated representative, to ensure that noxious weeds are identified and controlled during construction, operation, and maintenance of Project facilities and that all Federal, State, county, and other local noxious weed requirements are satisfied. The BLM and/or Western will review and approve this Noxious Weed Management Plan prior to implementation.

B11.1.2 Goals and Objectives

The goal of this Noxious Weed Management Plan is to implement early detection, containment, and control of noxious weeds during Project construction. Information gathered by Southline during preconstruction surveys and provided by the BLM will be used to monitor and control the spread of

noxious weeds during the construction and operation of the Project. An evaluation of the effectiveness of the prescribed control measures will also be implemented during the operational phase of the Project.

B11.2 Regulatory Framework

This Plan is written to address guidelines set forth in the BLM Intergraded Weed Management Manual 9015 (BLM 1992). This manual ensures BLM compliance with all Federal laws regulating noxious weeds and sets forth the BLM's policy relating to the management and coordination of noxious weed activities on BLM-administered lands. In addition, the New Mexico Department of Agriculture (NMDA) and ADA have ordinances designed to deter the spread of noxious weeds within each state. These ordinances are discussed in sections B11.2.3 and B11.2.4 below.

- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701–1712).
- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.).
- Federal Noxious Weed Act of 1974 (as amended 1990) (7 U.S.C. 2801–2813).
- Carlson-Foley Act of 1968 (Public Law 90-583).
- Executive Order (EO) 11987, Exotic Organisms.

B11.2.1 Bureau of Land Management Manual 9015

BLM Integrated Weed Management Manual 9015 directs the BLM to manage noxious weeds and undesirable plants on BLM lands by preventing the establishment and spread of new infestations, reducing existing population levels, and managing and controlling existing stands (BLM 1992). Required management for ground-disturbing actions includes determining the risk of spreading noxious weeds associated with the Project and ensuring that contracts contain provisions that hold contractors responsible for the prevention and control of noxious weeds caused by their operations if the activity is determined to be moderate to high risk (i.e., Class A weeds as defined by the BLM).

B11.2.2 New Mexico Noxious Weed Act

The NMDA regulates noxious weeds under the Noxious Weed Management Act (76-7-23 to 76-7-30 NMSA 1978). This Act authorized the formation of a Noxious Weed Control District with the power to set forth rules and regulations regarding noxious weeds aimed at reducing the negative effects of noxious weeds within the state. Through the implementation of this Weed Management Plan and in conjunction with the BLM (as described above), the Project will be in compliance with the New Mexico noxious weed laws.

B11.2.2.1 STATE LISTED NOXIOUS WEEDS – NEW MEXICO

The State of New Mexico and the U.S. Department of Agriculture (USDA) maintain an official list of weed species designated as noxious for the state. The following is an explanation of the categories established for noxious weeds by the NMDA. The State of New Mexico has officially designated 33 weed species as noxious (USDA 2015a). The noxious weed species regulated by the State of New Mexico are shown in table B11-1.

Categories for Noxious Weeds in New Mexico

The NMDA separates noxious weeds into four management categories. The following is an explanation of the categories established for noxious weed management by the NMDA. While State management priorities are outlined below, all noxious weeds in the Project area will be treated as outlined in this plan.

- Class A species are currently not present in New Mexico, or have limited distribution. Preventing new infestations of these species and eradicating existing infestations is the highest priority.
- Class B species are limited to portions of the state. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread.
- Class C species are widespread in the state. Management decisions for these species should be determined at the local level, based on feasibility of control and level of infestation.
- Watch List species are species of concern in the state. These species have the potential to become problematic. More data are needed to determine whether these species should be listed. When the species are encountered, the State requests location documentation and contact of appropriate authorities.

Table B11-1. Noxious Weed Species of Potential Concern – New Mexico

Scientific Name	Common Name	State Category	Known to Occur in the Project Area
<i>Acroptilon repens</i>	Russian knapweed	Class B	
<i>Aegilops cylindrica</i>	Jointed goatgrass	Class C	
<i>Alhagi maurorum</i>	Camelthorn	Class A	
<i>Alhagi pseudalhagi</i>	Camelthorn	Class A	
<i>Asphodelus fistulosus</i>	Onionweed	Class A	
<i>Cardaria draba</i>	Hoary cress	Class A	X
<i>Carduus nutans</i>	Musk thistle	Class B	
<i>Centaurea calcitrapa</i>	Purple starthistle	Class A	
<i>Centaurea diffusa</i>	Diffuse knapweed	Class A	
<i>Centaurea melitensis</i>	Starthistles	Class B	
<i>Centaurea solstitialis</i>	Yellow starthistle	Class A	
<i>Centaurea maculosa</i>	Spotted knapweed	Class A	
<i>Cirsium arvense</i>	Canada thistle	Class A	
<i>Cirsium vulgare</i>	Bull thistle	Class B	
<i>Conium maculatum</i>	Poison hemlock	Class B	
<i>Convolvulus arvensis</i>	Field bindweed	Class C	
<i>Dipsacus fullonum</i>	Teasel	Class B	
<i>Drymaria arenarioides</i>	Alfombrilla	Class A	
<i>Elaeagnus angustifolia</i>	Russian olive	Class C	
<i>Euphorbia esula</i>	Leafy spurge	Class A	
<i>Halogeton glomeratus</i>	Halogeton	Class B	
<i>Hydrilla verticillata</i>	Hydrilla	Class A	
<i>Hyoscyamus niger</i>	Black henbane	Class A	

Table B11-1. Noxious Weed Species of Potential Concern – New Mexico (Continued)

Scientific Name	Common Name	State Category	Known to Occur in the Project Area
<i>Isatis tinctoria</i>	Dyer's woad	Class A	
<i>Lepidium latifolium</i>	Perennial pepperweed	Class A	
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	Class A	
<i>Linaria vulgaris</i>	Yellow toadflax	Class A	
<i>Lythrum salicaria</i>	Purple loosestrife	Class A	
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	Class A	
<i>Onopordum acanthium</i>	Scotch thistle	Class A	
<i>Peganum harmala</i>	African rue	Class B	X
<i>Tamarix</i> sp.	Saltcedar	Class C	X
<i>Ulmus pumila</i>	Siberian elm	Class C	

B11.2.3 Arizona Noxious Weed Act

The ADA (under Title 3, Chapter 4, of the AAC) prohibits certain noxious weeds from entering the State, and regulates noxious weeds to prevent further infestation or contamination within the state. Restricted species are quarantined to prevent further infestation or contamination (ADA 2015). Through the implementation of this Noxious Weed Management Plan and in conjunction with the BLM (as described below), the Project will be in compliance with the Arizona noxious weed laws.

B11.2.3.1 STATE LISTED NOXIOUS WEEDS – ARIZONA

The State of Arizona and the USDA maintain an official list of weed species designated noxious for the state. The following is an explanation of the categories established for noxious weeds by the ADA. The State of Arizona has officially designated 58 weed species as noxious (USDA 2015b). The noxious weed species regulated by the State of Arizona are shown in table B11-2.

Categories for Noxious Weeds in Arizona

The ADA separates noxious weeds into four management categories. All categories of Arizona noxious weeds pertain to plants, stolons, rhizomes, cuttings, and seed. While State management priorities are outlined below, all noxious weeds in the Project area will be treated as outlined in this plan.

- Prohibited species are prohibited from entry into the state.
- Regulated species, if found within the state, may be controlled or quarantined to prevent further infestation or contamination.
- Restricted species, if found within the state, shall be quarantined to prevent further infestation or contamination.
- Other species include BLM noxious weeds of concern, which are controlled and managed by the Arizona BLM field offices.

Table B11-2. Noxious Weed Species of Potential Concern – Arizona

Scientific Name	Common Name	State Category	Known to Occur in the Project Area
<i>Acroptilon repens</i>	Russian knapweed	Prohibited/Restricted	
<i>Aegilops cylindrica</i>	Jointed goatgrass	Prohibited/Restricted	
<i>Alhagi pseudalhagi</i>	Camelthorn	Prohibited/Restricted	
<i>Alternanthera philoxeroides</i>	Alligator weed	Prohibited	
<i>Cardaria pubescens</i>	Hairy whitetop	Prohibited	
<i>Cardaria chalepensis</i>	Lens-podded hoary cress	Prohibited	
<i>Cardaria draba</i>	Whitetop (globed-podded hoary cress)	Prohibited/Restricted	
<i>Carduus acanthoides</i>	Plumeless thistle	Prohibited/Regulated	
<i>Cenchrus echinatus</i>	Southern sandbur	Prohibited	
<i>Centaurea calcitrapa</i>	Purple starthistle	Prohibited	
<i>Centaurea iberica</i>	Iberian starthistle	Prohibited	
<i>Centaurea squarrosa</i>	Squarrose knapweed	Prohibited	
<i>Centaurea sulphurea</i>	Sicilian starthistle	Prohibited	
<i>Centaurea solstitialis</i>	Yellow starthistle	Prohibited/Restricted	
<i>Centaurea diffusa</i>	Diffuse knapweed	Prohibited/Restricted	
<i>Centaurea maculosa</i>	Spotted knapweed	Prohibited/Restricted	
<i>Chondrilla juncea</i>	Rush skeletonweed	Prohibited	
<i>Cirsium arvense</i>	Field bindweed	Prohibited	
<i>Coronopus squamatus</i>	Creeping wartcress (coronopus)	Prohibited	
<i>Cucumis melo L. var. Dudaim Naudin</i>	Dudaim melon (Queen Anne's melon)	Prohibited	
<i>Cuscuta</i> spp.	Dodder	Prohibited/Restricted	
<i>Drymaria arenarioides</i>	Alfombrilla (lightningweed)	Prohibited	
<i>Eichhornia crassipes</i>	Floating water hyacinth	Prohibited/Regulated	
<i>Eichhornia azurea</i>	Anchored water hyacinth	Prohibited	
<i>Elytrigia repens</i>	Quackgrass	Prohibited/Restricted	
<i>Euphorbia esula</i>	Leafy spurge	Prohibited	
<i>Halogeton glomeratus</i>	Halogeton	Prohibited/Restricted	
<i>Helianthus ciliaris</i>	Texas blueweed	Prohibited	
<i>Hydrilla verticillata</i>	Hydrilla (Florida elodea)	Prohibited	
<i>Ipomoea</i> spp.	Morning glory. All species except <i>ipomoea carnea</i> , Mexican bush morning glory	Prohibited	
<i>Ipomoea triloba</i>	Three-lobed morning glory	Prohibited/Restricted	
<i>Isatis tinctoria</i>	Dyer's woad	Prohibited	
<i>Linaria genistifolia</i> var. <i>dalmatica</i>	Dalmatian toadflax	Prohibited/Restricted	
<i>Lythrum salicaria</i>	Purple loosestrife	Prohibited	
<i>Medicago polymorpha</i>	Burclover	Prohibited/Regulated	

Table B11-2. Noxious Weed Species of Potential Concern – Arizona (Continued)

Scientific Name	Common Name	State Category	Known to Occur in the Project Area
<i>Nassella trichotoma</i>	Serrated tussock	Prohibited	
<i>Onopordum acanthium</i>	Branched broomrape	Prohibited/Restricted	
<i>Orobanche ramosa</i>	Hemp broomrape	Prohibited	
<i>Panicum repens</i>	Torpedo grass	Prohibited	
<i>Peganum harmala</i>	African rue (Syrian rue)	Prohibited	
<i>Pennisetum ciliare</i>	Buffelgrass	Prohibited/Regulated	X
<i>Portulaca oleracea</i>	Common purslane	Prohibited/Regulated	
<i>Rorippa austriaca</i>	Austrian fieldcress	Prohibited	
<i>Salvinia molesta</i>	Giant salvinia	Prohibited/Regulated	
<i>Senecio jacobaea</i>	Tansy ragwort	Prohibited	
<i>Solanum carolinense</i>	Carolina horsenettle	Prohibited	
<i>Sonchus arvensis</i>	Perennial sowthistle	Prohibited	
<i>Solanum viarum</i>	Tropical soda apple	Prohibited	
<i>Stipa brachychaeta</i>	Puna grass	Prohibited	
<i>Striga</i> spp.	Witchweed	Prohibited	
<i>Trapa natans</i>	Water-chestnut	Prohibited	
<i>Tribulus terrestris</i>	Puncturevine	Prohibited/Regulated	
<i>Cenchrus incertus</i>	Field sandbur	Regulated	
<i>Convolvulus arvensis</i>	Field bindweed	Regulated	
<i>Euryops subcarnosus</i> subsp. <i>vulgaris</i>	Sweet resinbush	Restricted	
<i>Ipomoea triloba</i>	Three-lobed morning glory	Restricted	
<i>Onopordum acanthium</i>	Scotch thistle	Restricted	
<i>Asphodelus fistulosus</i>	Onionweed	Other	

B11.3 Noxious Weed Inventory

Prior to ground-disturbing activities in predetermined areas, a qualified weed specialist will survey the proposed disturbance area and map existing populations of noxious, invasive weeds. The preconstruction surveys will establish a baseline for construction and post-construction noxious weed management procedures.

Based on weed data from Phil Smith (Rangeland Management Specialist, BLM Las Cruces District Office) the primary noxious weed of concern known to occur within the vicinity of the proposed Project in New Mexico is African rue (*Peganum harmala*). Starthistles (*Centaurea* spp.) and saltcedar (*Tamarix* spp.) are known to occur in segment P5 and in the San Simon Creek vicinity (National Institute of Invasive Species Science [NISS] 2015). In addition, whitetop (*Cardaria draba*) has been documented in the vicinity of Lordsburg (NISS 2015) and potentially along segment LD3a. Other weed species, including Russian thistle (*Salsola* sp.), filaree (*Erodium* spp.), kochia (*Bassia* sp.), Lehmann lovegrass (*Eragrostis lehmanniana*), and mustards (*Brassica* spp.), are also known to occur throughout the New Build Section. However, these species are not classified as noxious weeds in New Mexico; thus, they are not discussed in this plan.

Based on data received from Darrell Tersey (Natural Resource Specialist, BLM, Ironwood Forest National Monument), the primary noxious weed of concern along the Upgrade Section is buffelgrass (*Pennisetum ciliare*), which has been documented in the Tucson area (NISS 2015). This species is known to occur in segment U3, and likely to occur in segment U4. Other invasive species of concern along the Upgrade Section include Russian thistle, fountain grass (*Pennisetum setaceum*), filaree, and mustards. However, these species are not classified as noxious weeds in Arizona; thus, they are not discussed in this plan.

B11.4 Noxious Weed Management

Regulatory agencies along the Project alignment, and specifically the BLM, have varying requirements for weed management. A noxious weed risk assessment (see attachment B 11-1) will be performed based on the results of the noxious weed inventory survey, and using the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 (BLM 1992). Based on the results of the assessment, a risk rating will be determined for the Project. Additional mitigation measures may be required if the Project is determined to have a high risk of spreading noxious weeds. The management of noxious weeds will be considered throughout all stages of the Project, including:

- Educating appropriate construction personnel regarding the identified problem areas and the importance of preventive measures and treatment methods.
- Specific preventive measures to prevent the spread of noxious weeds.
- Pre- and post-construction treatment methods to be applied to areas of noxious weed infestation.

Following is a description of the measures that may be required for noxious weed management as directed by the BLM or State Quarantine Officer. Applicable measures will be agreed upon prior to initiation of any ground-disturbing activities, and this Noxious Weed Management Plan will be modified accordingly.

B11.4.1 Identification of Problem Areas and Education

Prior to the initiation of construction activities, all relevant construction personnel will be instructed on the importance of controlling noxious weeds. As part of the start-up activities, Southline will provide its construction contractor(s) with information and training regarding noxious weed management. The importance of preventing the spread of noxious weeds in areas not infested and controlling the proliferation of weeds already present will be emphasized.

B11.4.1.1 WEED MANAGEMENT PERSONNEL REQUIREMENTS

Weed management actions shall be carried out by a specialist experienced in weed management with the following qualifications:

- Training and experience in native plant taxonomy/identification.
- Training and experience in field ecology and plant community mapping.
- Possession of a Commercial Applicator's License for herbicides from the State Department of Agriculture (New Mexico and/or Arizona as appropriate).
- Training in weed management or Integrated Pest Management with an emphasis in weeds.
- Experience in coordination with agency and private landowners.
- Recent attendance at a BLM-approved noxious weed training course or equivalent in current experience.

B11.4.2 Project Specific Noxious Weed Stipulations and Methods

Southline has developed environmental protection measures to be incorporated as part of the Project. The goals of these Proponent Committed Environmental Measures (PCEMs) is to reduce or avoid potential environmental impacts resulting from Project-related activities, and they are to be applied to all affected Project areas. The **following** PCEMs were identified in the Southline Transmission Project Final Environmental Impact Statement (FEIS) and are included in table 8 of the POD. These PCEMs will be implemented by the construction contractor(s) as part of the Noxious Weed Management Plan.

- VEG-5 In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor will develop and implement a Noxious Weed Management Plan.
- VEG-6 As required, equipment will be cleaned before ingress to minimize the potential for the spread of invasive species. These details will be described in the Noxious Weed Management Plan. Buffelgrass (*Pennisetum ciliare*) is specifically addressed in the plan, which will outline efforts to control it within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.
- Preconstruction native plant inventories and surveys for noxious weed species as stipulated by the appropriate land management agency will be conducted once transmission line center line, access road, and transmission line structure sites have been located.
- Southline and its construction contractor will provide training to all appropriate field personnel working on the Project to identify noxious weeds and prevent spread. Training will discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course will be provided to the BLM and Western.
- Invasive and noxious weed populations will be mapped and reported to the BLM. The BLM will determine which areas would necessitate vehicle washing, based on the results of the invasive/noxious weed surveys.
- Noxious weeds and other exotic, invasive plant species will be inventoried by a qualified biologist in the immediate proximity to any sensitive plant communities and any special status species populations. This noxious weed inventory will then provide information to supplement mitigation plans for sensitive plant communities and/or special status species habitats, to prevent the expansion of any noxious weeds or other exotic invasive plant species into those locations. Mitigation planning will be included as part of the Plant and Wildlife Species Conservation Measures Plan (appendix B7).
- In compliance with EO 13112 regarding invasive species, all disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the Project vicinity.
- Also in compliance with EO 13112 regarding invasive species, all earthmoving and hauling equipment will be washed at the contractor's storage facility prior to arriving onsite to prevent the introduction of invasive species.
- To prevent invasive species propagules from leaving the site, the contractor will inspect all construction equipment and clothing and remove all attached plant/vegetation and soil/mud debris identified prior to leaving the construction site.
- Prickly Russian thistle (*Salsola tragus*), Sahara mustard (*Brassica tournefortii*), and fountain grass (*Pennisetum setaceum*) are not identified as noxious weeds in Arizona. However, if these species are present in the ROW and not present in adjacent areas, thus indicating that project

activities caused the introduction and spread of these species, then measures will be taken to treat these invasive species in the ROW.

- If noxious weed species on the 2006 list, which currently have small and limited distributions in the state and/or are identified as “alert” species in AZ-WPIG are identified in and/or adjacent to the ROW, the BLM/Southline will attempt to coordinate with the adjacent landowner to treat and eradicate, if possible, these uncommon noxious weeds.
- The responsible Project operator will comply with agency requirements regarding management of noxious weeds within the ROW, along access roads, and at temporary use areas (e.g., cleaning equipment to prevent spread of noxious weeds). Chemical treatment within or adjacent to the ROW generally would be limited only to areas with noxious weeds, and only if absolutely necessary.

B11.4.3 Additional Preventive Measures

The following preventive measures will be implemented to avoid the spread of noxious weeds during construction activities, as well as during Project restoration and reclamation efforts. These preventive measures are to be applied on a case-by-case basis, where applicable and necessary, based on the recommendations of the weed specialists as approved and/or required by the BLM and CIC.

- Prior to arrival at the work site, all contractor vehicles and equipment will be cleaned of all soil and plant material using compressed air or high-pressure water spraying equipment. All wash station locations will be approved by the BLM or appropriate landowner. The cleaning activities will concentrate on tracks, feet, or tires and the undercarriage with special emphasis on axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. The location of vehicle cleaning stations will be identified by the construction contractor(s), and the location and design of the wash stations will be reviewed by the BLM and/or Western for approval. Also, when moving from weed infested areas to other areas along the Project ROW, all construction vehicles and equipment will be cleaned before proceeding to new locations before the vehicles and equipment are allowed use of access roads on the ROW.
- Where feasible, construction will begin in weed-free areas before operating in weed-infested areas. The feasibility of this measure will be determined after survey data are complete to identify weed-free and weed-infested areas.
- Prior to construction, areas of concern identified during the weed survey, will be flagged by qualified personnel and reviewed by the CIC. This flagging will alert construction personnel and prevent area access until noxious weed management control measures have been implemented (see Appendix A1 – Flagging, Fencing, and Signage Plan).
- All movement of construction vehicles outside the ROW will be restricted to predesignated access, contractor-acquired access, or public roads. All construction sites and access roads will be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All personnel shall be informed their activities must be confined within the marked or flagged areas (see appendix A1).
- Inspect access roads before maintenance to prevent the spread of weeds by vehicles or equipment.
- In areas of temporary disturbance where infestations are identified or noted, predisturbance treatment of noxious weeds will be implemented. In limited cases (i.e., isolated noxious weed locations), as directed by the BLM, topsoil infested with noxious weed material may be removed from the site for disposal. Where it is not feasible to remove topsoil off-site (i.e., large, contiguous infestation sites), 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 marked as containing noxious weed-seed materials to avoid mixing with weed-free soil. Other control methods may also be considered with approval from BLM.

- Where necessary, during reclamation, weed-free topsoil will be brought to locations where infested topsoil has been removed from the site. In areas where infested topsoil has not been removed from the site, the contractor will return the topsoil and vegetative material back to their original locations and, as directed by the BLM, may provide additional treatments (i.e. pre-emergent herbicides) to prevent return of noxious weeds.
- The construction contractor(s) will ensure straw or hay bales, used for sediment barrier installations or mulch application, are obtained from State-approved sources that are certified free of noxious weeds, as outlined in Appendix B3 – Stormwater Pollution Prevention Plan.
- Immediately following construction, Southline will implement the reclamation of disturbed land as outlined in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan, as required. Continuing revegetation efforts will ensure adequate vegetative cover, minimizing the potential for noxious weed colonization.
- Reclamation treatments, such as seeding, will be based on site-specific conditions and the appropriate seed mix identified for those conditions. Seeding will help to 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 eradicated before seeding.

B11.4.3.1 NOXIOUS WEED CONTROL METHODS

The construction contractor(s) will implement noxious weed control measures in accordance with existing regulations and BLM requirements. Control measures will be based on species-specific and site-specific conditions (e.g., proximity to water or riparian areas, agricultural areas, season) and will be coordinated with the BLM Authorized Officer and/or Western. If existing populations are currently under treatment by the BLM or other individuals, Southline will engage in cooperative management efforts to treat the noxious weeds associated with the Project area. In the event noxious weed infestations are identified in the future, the following protocols and methods will be followed. The weed specialist contracted by Southline shall provide a detailed control methodology for each noxious weed species documented. The BLM Authorized Officer and/or Western will review and approve this method prior to implementation. Control measures may include one or more of the following methods prior to implementation of reclamation actions, as described below.

Mechanical Control

Mechanical methods rely on equipment that can be used to mow or disk weed populations. This type of methodology is useful for smaller, isolated populations or if larger populations occur in agricultural lands where tillage can be implemented. Appropriate mechanical methodology will vary by species. For example, disking or tilling may actually benefit some rhizomatous weeds and would therefore be inappropriate for such species. If disking or tilling is used in areas to be reclaimed, subsequent seeding will be conducted to reestablish a desirable vegetative cover that will stabilize the soils and slow the potential reestablishment of noxious weeds.

Manual Control

Removing plants by hand-pulling works well for small infestations of annual and biennial plants; the entire root system will be thoroughly removed to ensure that the plant species does not resprout from

residual roots. Trees, such as saltcedar (*Tamarix ramosissima*), will not be able to be hand-pulled; thus, heavy equipment to remove all of the root system is required. Cut-stump herbicide treatments are also effective in eradicating noxious tree species. All plant material, especially seeds, will be removed from the Project area and stored, transported and disposed of in a manner that will not allow propagation (e.g. placing weed material in trash bags and disposing at a landfill). Also, some plants produce chemicals that cause allergic reaction or dermatitis in some people. Workers will wear personal protection equipment (long sleeves, gloves, etc.) and avoid areas where chemical treatments or other safety restrictions apply.

Chemical Control

Noxious weeds located within the Project area that are actively growing (not dormant) will be treated with herbicide. Herbicide will be applied using either the cut-stump treatment method or foliar spray treatment method. All herbicide application methods will adhere to the manufacturer's label and instructions. In addition, all herbicide applications will be applied in accordance with BLM herbicide use policies. An herbicide use proposal shall be prepared by the construction contractor and submitted to the CIC for BLM/Western weed coordinator approval prior to herbicide application. A list of herbicides approved for use on public lands (BLM 2014) is provided as attachment B11-2 of this document.

To avoid damage to native species from the herbicide applications, all native vegetation within the Project area will be avoided. In addition, all herbicide applicators shall be trained and knowledgeable in identification of noxious and native species within the Project area. All equipment shall be calibrated to ensure proper application rate, and spray-nozzle pressures shall be monitored on a regular basis. Only areas identified in this plan will be treated.

B11.4.3.2 SPECIES-SPECIFIC NOXIOUS WEED CONTROL METHODS

African Rue (*Peganum harmala*)

African rue is a perennial forb that is native to the Middle East and Asia. African rue blooms between May and June; however, this species can reproduce both vegetatively and by seed. This capability increases the species potential to aggressively colonize disturbed areas. African rue is highly adapted to arid environments, which has facilitated its spread throughout the American Southwest. The current distribution of this species in North America includes New Mexico, Arizona, California, Idaho, Montana, Nevada, Texas, Oregon, and Washington (USDA 2015b).

African rue is toxic to livestock and can replace forage consequently reducing the productivity of pasture and rangelands. This plant has encroached into arid Southwest rangelands replacing native plants such as saltbrush and grasses. It has a competitive advantage as it germinates earlier in the spring than most native species. In addition, this plant contains chemicals that impede or prevent the growth of nearby vegetation (Whitson et al. 1996).

Management Recommendations

Mechanical/Manual Control: African rue reproduces vegetatively, as well as by seed; therefore, mechanical removal methods such as mowing or disking are not recommended. Tilling, blading, or any disturbance in infested areas can quickly spread the species by transporting taproots and seeds to different locations within the Project area.

Chemical Control

The most effective method to control African rue is herbicide, applied to the foliage of actively growing plants while in bud stage. Given the robust taproot of this of this species, several applications of herbicide may be required to ensure the species does not resprout. Herbicides selective for broad leaf weeds, such as 2,4-D and 2,4-DP are the BLM-recommended treatments for this species (BLM 2007).

Buffelgrass (*Pennisetum ciliare*)

Buffelgrass is a perennial, cool-season bunchgrass native to arid regions of Africa, Asia, and the Middle East. This species is fire adapted and resprouts immediately after a fire, which allows the species to outcompete native species for resources. The species also provides a continuous fuel load that increases fire frequency and intensity.

Management Recommendations

Mechanical/Manual Control: Most mechanical/hand control methods simulate grazing, a treatment to which buffelgrass is well adapted. A community group in southern Arizona has had much success with removal by digging the plants out by the root and removing them, being careful to bag and remove all of the seeds and flowers.

Chemical Control

Buffelgrass can be controlled using chemical applications when the plant is actively growing. An herbicide selective for perennial bunchgrasses, such as glyphosate is the BLM recommended treatments for this species (BLM 2007).

Saltcedar (*Tamarix* sp.)

Saltcedar, also known as tamarisk, is a deciduous shrub or small tree that forms dense thickets that reach up to 15 feet in height. This species was introduced from Eurasia in the early 1800s as an ornamental and for erosion control. Saltcedar is a fire-adapted species. This species produces long tap roots that allow the interception of deep water tables and interfere with natural aquatic systems. They can also increase the risk of fire in riparian ecosystems through deposition of flammable fuels. In addition, saltcedar disrupts native plant communities and degrades native wildlife habitat by out-competing and replacing native plant species, monopolizing limited moisture, changing soil chemistry, and increasing the frequency and intensity of fires.

Management Recommendations

Mechanical/Manual Control: Mechanical techniques include hand-pulling, digging, root-cutting, use of weed-eaters, axes, machetes, and bulldozers. Removal by hand tools is generally recommended for small infestations of saplings under 1 inch in diameter. Root cutting and bulldozing may be effective but are costly, labor-intensive, and may cause extensive damage to soils and lead to resprouting, or invasion by other undesirable invasive species.

Chemical Control

For extensive infestations of saltcedar, chemical control has been shown to be the most effective method. Cautious use of herbicides aids in restoration of saltcedar-infested sites by allowing repopulation by native plant species. Systemic herbicides (e.g., those that kill the plant from the root up) are recommended for saltcedar management; application methods include foliar sprays, cut-stump treatments, basal bark treatments, and aerial sprays. Because saltcedar usually grows in or adjacent to streams, wetlands, and

other waterways, it is important to use products registered for aquatic application. The BLM recommends the use of Triclopyr to treatment for this species (BLM 2007).

Starthistle (*Centaurea* sp.)

Most starthistles are herbaceous winter annual species that were introduced to the southwestern United States from Europe as a seed contaminant. Due to sharp spines and a bitter taste, starthistles are rarely consumed by livestock and may be toxic to livestock. In addition, dense infestations of starthistle displace native plants and animals, thereby degrading the structure and function of natural ecosystems.

Management Recommendations

Mechanical/Manual Control: Mechanical methods, including pulling, grazing, mowing, burning, and cultivation, can be used over a period of several years to deplete seed banks and manage infestations.

Hand pulling is effective for small populations. Once plants have shed seed in a location, it must be revisited several times each year, for 7 to 10 years, to pull seedlings. Mowing, if done at the correct time of year, can be a part of the integrated weed management plan for starthistles. Access roadsides with dense infestations should be mowed at early flowering, in order to avoid scattering seeds during the fruiting stage. Mowing should be used carefully, as it is likely to spread the infestation and make it much worse if done during the time of year when seed heads are mature, or if proper procedures to prevent spread are not adhered to. These procedures include beginning mowing in uninfested areas and moving toward infested areas, and thoroughly washing equipment after running it through sites known to have starthistles.

Chemical Control

Herbicides selective for broadleaf weeds are desirable, since starthistles often grows in ROWs in close association with native perennial grasses. The Arizona Department of Transportation has used clopyralid and chlorsulfuron along Highway 188 to control starthistles. This has been very effective on the strip that was sprayed. The BLM recommends the use of Clopralid, Dicamba, or Dicloram to treat this species (BLM 2007).

Whitetop (*Cardaria draba*)

Whitetop is a creeping perennial forb that is native to western Asia and eastern Europe. This species is difficult to control due to an extensive and deep root system that facilitates the spread of the species. Whitetop quickly establishes in disturbed areas. Once established it readily displaces native plants. In addition, this species is capable of tainting the meat and milk of grazing animals and may be toxic to livestock.

Management Recommendations

Mechanical/Manual Control: Pulling and grubbing should be done within 10 days of plant emergence and before flowering and seed set. Soil tilling is an effective means to remove whitetop; however, repetition may be necessary to remove all the root systems. In addition, regular mowing can help to control infestations by reducing seed production in existing plants; however, this method used alone will not eradicate existing populations (BLM 2011).

Chemical Control

Successful chemical control of this species usually requires repeated applications with foliar herbicides. Whitetop may be effectively controlled using a variety of readily available herbicides. Metsulfuron can be

used on rosettes, but is not effective after the plants bloom. Mature plants may be controlled with a foliar application of 2,4-D (BLM 2007). Herbicides are most effective against this species when applied at the rosette stage or flowering stage when carbohydrates are moving from above to below ground and herbicides are more likely to be transported to the roots (BLM 2011).

B11.4.3.3 RECLAMATION ACTIONS

As specified in Appendix B15 – Reclamation, Vegetation, and Monitoring Framework Plan, areas where weed control measures have been implemented may require post-construction reclamation actions (i.e., seeding). The following specific stipulations and methods are applicable:

- If areas are not immediately seeded after construction, because of weather or scheduling constraints, all undesirable vegetation will be eradicated before seeding, preferably in the spring.
- If disking or tilling is an appropriate and feasible treatment method, it will only be permitted in bladed areas.
- Seed selection will be based on site-specific conditions, including desired vegetation and the type or degree of disturbance, and the appropriate seed mix will be identified for those conditions based on the presence and treatment of noxious weeds in the Project area. The CIC or weed specialist may recommend modified seeding application rates and timing of implementation to achieve site-specific weed management objectives.
- Additional weed and/or erosion control measures recommended during monitoring will follow the preventive and control measures outline in this plan. Continued cooperation with the current BLM/Western weed coordinator and local Weed Management Area groups is also encouraged.

B11.5 Monitoring

A weed management expert, contracted by Southline, will monitor the Project ROW and any other areas of disturbance associated with the Project, for a period not to exceed 5 years. Monitoring will be conducted biannually, typically during the spring and fall, but time of monitoring may be adjusted to ensure appropriate coverage for specific species identified within the Project area. Growing seasons will vary from year to year; therefore, the annual monitoring time frame will vary as well. This monitoring may coincide with the reclamation monitoring identified and outlined in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan.

New noxious weed infestations observed within the Project area during the monitoring period will be reported to the BLM district (field) office, within whose jurisdiction the weeds occur when on BLM-managed lands or to the Western designated weed coordinator on other lands. The BLM/Western weed coordinator will determine during the monitoring and evaluation period whether continued treatment is necessary. If continued treatment is deemed necessary, the appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with the BLM, based on the procedures outlined in this Noxious Weed Plan. Southline may be able to take advantage of any existing cooperative agreements between the BLM and the counties by providing the funds required for county personnel to implement the necessary weed control procedures. If not, Southline will be responsible for hiring a contractor to implement the weed control procedures with the qualifications, as described in section B11.4.1.1 of this plan.

B11.5.1 Reclamation Monitoring

Noxious weed observations will be documented following the above-noted field inspections and monitoring reports will be made available to the BLM, Western, and to counties, as required. Southline

will consult with the BLM/Western and counties should they have a concern pertaining to noxious weeds within their jurisdiction. The BLM also may contact Southline to report on the presence of noxious weeds. Areas where the spread of noxious weeds is noted, particularly in previously unaffected locations, will be further evaluated to determine whether these areas require remedial action and additional treatment. Southline will identify such areas to the agencies by state, county, and Project milepost (or nearest transmission structure number) and will record any additional noxious weed control treatments. A report summarizing ROW stability, revegetation progress, percentage of cover, and weed infestation will be provided to the BLM/Western, as described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan.

B11.5.2 Ongoing Monitoring

Southline will monitor and control noxious weeds at a level that does not exceed the density or extent of conditions identified during preconstruction surveys (see section B11.3 of this plan) for the full term of the ROW grant, and will eradicate any new infestation that is demonstrated to be the result of Project construction, operation, or maintenance. Southline will not be responsible for the following:

- Eradication of preexisting noxious weed infestations.
- New or recurring noxious weed infestations caused by the spread of noxious weeds from surrounding and/or adjacent lands unless it can be demonstrably shown to be the result of disturbance caused by the construction, operation, or maintenance of the Project.
- Noxious weeds outside the Project ROW or noxious weeds along existing access roads not improved by the Project.

Operations personnel will be trained in the identification of predominant noxious weed populations, and Southline will control the weeds on a case-by-case basis. If determined necessary, a report on actions taken will be provided in the form of Monitoring Reports to the BLM on a predetermined schedule.

B11.6 Herbicide Application, Handling, Spills, and Cleanup

The Final Programmatic Environmental Impact Statement (PEIS) on Vegetation Treatment on BLM Land in Seventeen Western States lists herbicides acceptable (see Attachment B11-2 – BLM-Approved Herbicides) for use on BLM lands (BLM 2007). Additional tiers of NEPA analysis may be required for local, site-specific decisions regarding herbicide application. Guidelines for use of chemical control of vegetation on BLM lands are presented in BLM Manual 9011 – Chemical Pest Control (BLM 1994). The guidelines outlined in the manual require submittal of an Herbicide Use Proposal, which will be prepared and submitted to the BLM for review and approval prior to initiation of construction activities. Once approved, any use of herbicides will require Herbicide Application Records (HARs) that detail the use and application.

B11.6.1 Herbicide Application and Handling

Prior to herbicide application on BLM lands, a list of herbicides proposed for use will be reviewed and approved by the BLM weed coordinator. Herbicide application will be based on information gathered from the Weed Districts and BLM. Herbicide varieties approved for use on BLM lands are listed in Attachment B11-2 – BLM-Approved Herbicides. All required permits from the local authorities will be obtained (the Weed Districts and BLM) prior to application; permits issued by these agencies may contain additional terms and conditions that go beyond the scope of this plan.

A licensed herbicide applicator, approved in the state of New Mexico or Arizona (as applicable), will perform the application using BLM selected and approved herbicides in accordance with applicable laws, regulations, and permit stipulations. All herbicide applications will be conducted in accordance with the U.S. Environmental Protection Agency (EPA) label instructions. Application of herbicides will cease under any of the following conditions:

- If wind velocity exceeds 10 miles per hour (mph) (6 miles per hour for aerial application) (BLM, 2007).
- If snow or ice covers the foliage of target species.
- If precipitation is occurring or is imminent.
- No herbicides will be applied within 200 feet of open or flowing water, wetlands, or other sensitive resources unless authorized by appropriate regulatory agencies.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used in open areas that are readily accessible by vehicle. Hand-application methods (e.g., backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain or in areas dominated by native vegetation. Calibration checks of equipment will be conducted at the beginning and periodically during spraying to ensure proper application rates are achieved. Calibration procedures are described in BLM Handbook 9011 (BLM, 1988). Herbicide preparation and transport will adhere to the following provisions:

- Mixing will be done offsite or over a drip-catching device at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources.
- Only the quantity estimated for a single day of work will be transported.
- Herbicides will be transported only in approved containers, in a manner that will prevent tipping or spilling, and in a location isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- All herbicide equipment and containers will be inspected for leaks daily.
- Disposal of used containers will be in accordance with the herbicide label or returned to the supplier for reuse.

B11.6.2 Herbicide Spills and Cleanup

All reasonable provisions will be made to avoid herbicide spills. In the event of a spill, cleanup will occur immediately. To facilitate a timely cleanup effort, contractors will keep spill kits in their vehicles and in herbicide storage areas. Items to be included in each spill kit include:

- Protective clothing and gloves
- Absorptive clay, or other approved commercial absorbents
- Plastic bags
- Bucket
- Shovel
- Fiber broom
- Dust pan
- Caution tape

- Highway flares for use on paved or unvegetated roads
- Detergent

The level of response required for each herbicide spill will vary with the size and location of the spill, but general procedures will include:

- Immediate notification to the Project CIC and to BLM and Western
- Traffic control, if necessary
- Proper utilization of protective clothing
- Containment of leaks
- Cleaning up and removing spilled herbicide, contaminated absorptive material, and soil
- Transporting spilled herbicide and contaminated material to an authorized disposal site

B11.6.3 Worker Safety and Spill Reporting

Herbicide contractors will be State-certified to apply herbicides and have readily available copies of the appropriate safety data sheets for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements. Additional information regarding the handling of hazardous materials may be found in Appendix B9 – Hazardous Materials Management Plan.

B11.7 Literature Cited

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B11.8 Attachments

- Attachment B11-1 – Noxious Weed Risk Assessment Worksheet
Attachment B11-2 – Herbicides Approved For Use on Public Lands

Attachment B11-1

Noxious/Invasive Weeds Risk Assessment Form and Definition of Risk Factors

Project Name:

NEPA No:

Date Risk Assessment was completed: *(Insert date completed)*

Describe steps taken to complete Risk Assessment: *(Discuss)*

Project Description:

Project Location:

Risk Factor 1: Assesses the likelihood of noxious/invasive weed species spreading to the Project area. For this Project, the factor rates as (insert low, moderate, or high), (insert number) at the present time. This rating was based on the following findings:

Risk Factor 2: Assesses the consequences of noxious/invasive weed establishment in the Project area. Include a discussion of BLM Class A, B, and C species.

Risk Rating: *(insert number), (insert low to none, moderate, or high) (Score and rating). (The Risk Rating is obtained by multiplying Factor 1 by Factor 2.)*

Based on this risk rating, preventive management measures are/are not (circle one) needed for this Project. Preventive management measures developed for this Project are as follows: (list)

The following preventive measures will be implemented to prevent the spread of noxious weeds during the construction activities, as well as during restoration and reclamation efforts: (list)

RISK RATING FACTORS

Factor 1: Likelihood of Noxious Weed Species Spreading to Project Area

- None: Noxious weed species not located within or adjacent to the Project area. Project activity is not likely to result in the establishment of noxious weed species in the Project area.
- Low: Noxious weed species present in areas adjacent to but not within the Project area. Project activities can be implemented to prevent the spread of noxious weeds into the Project area.
- Moderate: Noxious weed species located immediately adjacent to or within the Project area. Project activities are likely to result in some areas becoming infested with noxious weed species even when preventive management actions are followed. Control measures are essential to prevent the spread of noxious weeds within the Project area.
- High: Heavy infestations of noxious weeds are located within or immediately adjacent to the Project area. Project activities, even with preventive management actions, are likely to result in the establishment and spread of noxious weeds on disturbed sites throughout much of the Project area.

Factor 2: Consequence of Noxious Weed Establishment in Project Area

- Low to None: No cumulative effects expected.
- Moderate: Possible adverse effects on site and possible expansion of infestation within Project area. Cumulative effects on native plant community are likely but limited.
- High: Obvious adverse effects within the Project area and probable expansion of noxious weed infestations to areas outside the Project area. Adverse cumulative effects on native plant community are probable.

RISK RATING SCALE

Step 1 – Identify level of likelihood and consequence of adverse effects for each risk factor and assign values according to the following:

- None – 0
- Low – 1
- Moderate – 5
- High – 10

Step 2 – Multiply level of likelihood by consequence.

Risk Factor 1 * Risk Factor 2 = Risk Rating

Step 3 – Use the value resulting from Step 2 to determine Risk Rating and Action from Table 1 below:

Table 1. Risk Rating and Action Categories

Value	Risk Rating	Action
0	None	Proceed as planned.
1–10	Low	Proceed as planned. Initiate control treatment on noxious weed populations that become established in the area.
25	Moderate	Develop preventive management measures for the Project to reduce the risk of introduction or spread of noxious weeds into the area. Preventive management measures should include modifying the Project, including seeding the area to occupy disturbed sites with desirable species. Monitor area for at least 3 consecutive years and provide for control of newly established populations of noxious weeds and follow-up treatment for previously treated infestations.
50–100	High	Project must be modified to reduce risk level through preventive management measures, including seeding with desirable species to occupy disturbed sites and controlling existing infestations of noxious weeds prior to Project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious weeds and follow-up treatment for previously treated infestations.

Weed Risk Assessment completed by: *(type name[s])*

Reviewed by/Date Reviewed: _____, signed copy on file
(Noxious Weed Coordinator)

Date: _____

Attachment 1 – Project Area Location Map

Attachment B11-2
Herbicides Approved For Use on
Public Lands

<i>Herbicides Formulations Approved for Use on Lands The BLM Administers in the 17 Western States</i>			
			Update May 14, 2014
Restrictions associated with existing Environmental Impact Statements and individual Environmental Assessments (EA), particularly in Oregon, at the present time, may restrict the use of individual herbicide active ingredients allowed for a particular project within that state. Refer to current EAs prior to selecting the active ingredient(s) and subsequent formulation(s).			
Refer to the complete label prior to considering the use of any herbicide formulation. Just because it has a Federal registration, it may not be registered in a particular State, for example California. Label changes can also impact the intended use through, such things as, creation or elimination of Special Local Need (SLN) or 24 (C) registrations, changes in application sites, rates and timing of application, county restrictions, etc.			
ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Bromacil	Bromacil 80DF	Alligare, LLC	81927-4
	Bromacil 80WG	Alligare, LLC	81927-4
	Ceannard Bromacil 80DF	Ceannard, Inc.	58035-19
	Hyvar X	DuPont Crop Protection	352-287
	Hyvar XL	DuPont Crop Protection	352-346
Bromacil + Diuron	Bromacil/Diuron 40/40	Alligare, LLC	81927-3
	Ceannard Diuron/Bromacil 80DF	Ceannard, Inc.	58035-18
	Krovar I DF	DuPont Crop Protection	352-505
	Weed Blast Res. Weed Cont.	Loveland Products Inc.	34704-576
	DiBro 2+2	Nufarm Americas Inc.	228-227
	DiBro 4+4	Nufarm Americas Inc.	228-235
	DiBro 4+2	Nufarm Americas Inc.	228-386
	Weed Blast 4G	SSI Maxim	34913-19
Chlorsulfuron	Alligare Chlorsulfuron	Alligare, LLC	81927-43
	Chlorsulfuron 75	Alligare, LLC	81927-43
	Telar DF	DuPont Crop Protection	352-522
	Telar XP	DuPont Crop Protection	352-654
	Nufarm Chlorsulf SPC 75 WDG Herbicide	Nufarm Americas Inc.	228-672
	Chlorsulfuron E-Pro 75 WDG	Nufarm Americas Inc.	79676-72
Clopyralid	Spur	Albaugh, Inc.	42750-89
	Pyramid R&P	Albaugh, Inc.	42750-94
	Clopyralid 3	Alligare, LLC	42750-94-81927
	Clopyralid 3	Alligare, LLC	81927-14
	Cody Herbicide	Alligare, LLC	81927-28
	Reclaim	Dow AgroSciences	62719-83

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Clopyralid - cont.	Stinger	Dow AgroSciences	62719-73
	Transline	Dow AgroSciences	62719-259
	CleanSlate	Nufarm Americas Inc.	228-491
Clopyralid + 2,4-D	Commando	Albaugh, Inc.	42750-92
	Curtail	Dow AgroSciences	62719-48
	Cutback	Nufarm Americas Inc.	71368-72
2,4-D	Agrisolution 2,4-D LV6	Agriliance, L.L.C.	1381-101
	Agrisolution 2,4-D Amine 4	Agriliance, L.L.C.	1381-103
	Agrisolution 2,4-D LV4	Agriliance, L.L.C.	1381-102
	2,4-D Amine 4	Albaugh, Inc./Agri Star	42750-19
	2,4-D LV 4	Albaugh, Inc./Agri Star	42750-15
	Solve 2,4-D	Albaugh, Inc./Agri Star	42750-22
	2,4-D LV 6	Albaugh, Inc./Agri Star	42750-20
	Five Star	Albaugh, Inc./Agri Star	42750-49
	D-638	Albaugh, Inc./Agri Star	42750-36
	Alligare 2,4-D Amine	Alligare, LLC	81927-38
	Alligare 2,4-D LV 6	Alligare, LLC	81927-39
	2,4-D LV6	Helena Chemical Company	4275-20-5905
	2,4-D Amine	Helena Chemical Company	5905-72
	2,4-D Amine 4	Helena Chemical Company	42750-19-5905
	Opti-Amine	Helena Chemical Company	5905-501
	Barrage HF	Helena Chemical Company	5905-529
	HardBall	Helena Chemical Company	5905-549
	Unison	Helena Chemical Company	5905-542
	Clean Amine	Loveland Products Inc.	34704-120
	Low Vol 4 Ester Weed Killer	Loveland Products Inc.	34704-124
	Low Vol 6 Ester Weed Killer	Loveland Products Inc.	34704-125
	Saber	Loveland Products Inc.	34704-803
	Salvo	Loveland Products Inc.	34704-609
	Savage DS	Loveland Products Inc.	34704-606
	Aqua-Kleen	Nufarm Americas Inc.	71368-4
	Aqua-Kleen	Nufarm Americas Inc.	228-378
	Esteron 99C	Nufarm Americas Inc.	62719-9-71368
Weedar 64	Nufarm Americas Inc.	71368-1	
Weedone LV-4	Nufarm Americas Inc.	228-139-71368	
Weedone LV-4 Solventless	Nufarm Americas Inc.	71368-14	
Weedone LV-6	Nufarm Americas Inc.	71368-11	
Formula 40	Nufarm Americas Inc.	228-357	
2,4-D LV 6 Ester	Nufarm Americas Inc.	228-95	
Platoon	Nufarm Americas Inc.	228-145	

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
2,4-D - cont.	WEEDestroy AM-40	Nufarm Americas Inc.	228-145
	Hi-Dep	PBI Gordon Corp.	2217-703
	2,4-D Amine	Setre (Helena)	5905-72
	Barrage LV Ester	Setre (Helena)	5905-504
	2,4-D LV4	Setre (Helena)	5905-90
	2,4-D LV6	Setre (Helena)	5905-93
	Clean Crop Amine 4	UAP-Platte Chem. Co.	34704-5 CA
	Clean Crop Low Vol 6 Ester	UAP-Platte Chem. Co.	34704-125
	Salvo LV Ester	UAP-Platte Chem. Co.	34704-609
	2,4-D 4# Amine Weed Killer	UAP-Platte Chem. Co.	34704-120
	Clean Crop LV-4 ES	UAP-Platte Chem. Co.	34704-124
	Savage DS	UAP-Platte Chem. Co.	34704-606
	Combelt 4 lb. Amine	Van Diest Supply Co.	11773-2
	Combelt 4# LoVol Ester	Van Diest Supply Co.	11773-3
	Combelt 6# LoVol Ester	Van Diest Supply Co.	11773-4
	Amine 4	Wilbur-Ellis Co.	2935-512
	Lo Vol-4	Wilbur-Ellis Co.	228-139-2935
	Lo Vol-6 Ester	Wilbur-Ellis Co.	228-95-2935
	Base Camp Amine 4	Wilbur-Ellis Co.	71368-1-2935
	Base Camp LV6	Wilbur-Ellis Co.	2935-553
	Broadrange 55	Wilbur-Ellis Co.	2217-813-2935
	Agrisolution 2,4-D LV6	Winfield Solutions, LLC	1381-101
	Agrisolution 2,4-D Amine 4	Winfield Solutions, LLC	1381-103
	Agrisolution 2,4-D LV4	Winfield Solutions, LLC	1381-102
	Phenoxy 088	Winfield Solutions, LLC	42750-36-9779
	Rugged	Winfield Solutions, LLC	1381-247
	Shredder E-99	Winfield Solutions, LLC	1381-195
Dicamba	Dicamba DMA	Albaugh, Inc./Agri Star	42750-40
	Vision	Albaugh, Inc.	42750-98
	Cruise Control	Alligare, LLC	42750-40-81927
	Banvel	Arysta LifeScience N.A. Corp.	66330-276
	Clarity	BASF Corporation	7969-137
	Vision	Helena Chemical Company	5905-576
	Rifle	Loveland Products Inc.	34704-861
	Banvel	Micro Flo Company	51036-289
	Diablo	Nufarm Americas Inc.	228-379
	Vanquish Herbicide	Nufarm Americas Inc.	228-397
	Vanquish	Syngenta	100-884
	Sterling Blue	Winfield Solutions, LLC	7969-137-1381

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Dicamba + 2,4-D	Range Star	Albaugh, Inc./Agri Star	42750-55
	Dicamba + 2,4-D DMA	Alligare, LLC	81927-42
	Weedmaster	BASF Ag. Products	7969-133
	Brush-Rhap	Helena Chemical Company	5905-568
	Latigo	Helena Chemical Company	5905-564
	Outlaw	Helena Chemical Company	5905-574
	Rifle-D	Loveland Products Inc.	34704-869
	KambaMaster	Nufarm Americas Inc.	71368-34
	Veteran 720	Nufarm Americas Inc.	228-295
	Weedmaster	Nufarm Americas Inc.	71368-34
	Brash	Winfield Solutions, LLC	1381-202
Dicamba +	Distinct	BASF Corporation	7969-150
Diffufenzopyr	Overdrive	BASF Corporation	7969-150
NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i> , the aerial application of this herbicide is prohibited.			
Diquat	Alligare Diquat	Alligare, LLC	81927-35
	NuFarm Diquat SPC 2 L Herbicide	Nufarm Americas Inc.	228-675
	Diquat SPC 2 L Herbicide	Nufarm Americas Inc.	79676-75
	Diquat E-Ag 2L	Nufarm Americas Inc.	79676-75
	Reward	Syngenta Professional Products	100-1091
Diuron	Diuron 80DF	Agrilience, L.L.C.	9779-318
	Diuron 80DF	Alligare, LLC	81927-12
	Ceannard Diuron 80DF	Ceannard, Inc.	58035-16
	Karmex DF	DuPont Crop Protection	352-692
	Karmex XP	DuPont Crop Protection	352-692
	Karmex IWC	DuPont Crop Protection	352-692
	Direx 4L	DuPont Crop Protection	352-678
	Direx 80DF	Griffin Company	1812-362
	Direx 4L	Griffin Company	1812-257
	Diuron 4L	Loveland Products Inc.	34704-854
	Diuron 80 WDG	Loveland Products Inc.	34704-648
	Diuron 4L	Makteshim Agan of N.A.	66222-54
	Diuron 80WDG	UAP-Platte Chem. Co.	34704-648
	Vegetation Man. Diuron 80 DF	Vegetation Man., LLC	66222-51-74477
	Diuron-DF	Wilbur-Ellis	00352-00-508-02935
	Diuron 80DF	Winfield Solutions, LLC	9779-318

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Fluridone	Avast!	SePRO	67690-30
	Sonar AS	SePRO	67690-4
	Sonar Precision Release	SePRO	67690-12
	Sonar Q	SePRO	67690-3
	Sonar SRP	SePRO	67690-3
Glyphosate	Aqua Star	Albaugh, Inc./Agri Star	42750-59
	Forest Star	Albaugh, Inc./Agri Star	42570-61
	GlyStar Gold	Albaugh, Inc./Agri Star	42750-61
	Gly Star Original	Albaugh, Inc./Agri Star	42750-60
	Gly Star Plus	Albaugh, Inc./Agri Star	42750-61
	Gly Star Pro	Albaugh, Inc./Agri Star	42750-61
	Glyphosate 4 PLUS	Alligare, LLC	81927-9
	Glyphosate 4 +	Alligare, LLC	81927-9
	Glyphosate 5.4	Alligare, LLC	81927-8
	Glyfos	Cheminova	4787-31
	Glyfos PRO	Cheminova	67760-57
	Glyfos Aquatic	Cheminova	4787-34
	ClearOut 41 Plus	Chem. Prod. Tech., LLC	70829-3
	Accord Concentrate	Dow AgroSciences	62719-324
	Accord SP	Dow AgroSciences	62719-322
	Accord XRT	Dow AgroSciences	62719-517
	Accord XRT II	Dow AgroSciences	62719-556
	Glypro	Dow AgroSciences	62719-324
	Glypro Plus	Dow AgroSciences	62719-322
	Rodeo	Dow AgroSciences	62719-324
	Showdown	Helena Chemical Company	71368-25-5905
	Mirage	Loveland Products Inc.	34704-889
	Mirage Plus	Loveland Products Inc.	34704-890
	Aquamaster	Monsanto	524-343
	Roundup Custom	Monsanto	524-343
	Roundup Original	Monsanto	524-445
	Roundup Original II	Monsanto	524-454
	Roundup Original II CA	Monsanto	524-475
	Honcho	Monsanto	524-445
	Honcho Plus	Monsanto	524-454
	Roundup PRO	Monsanto	524-475
	Roundup PRO Concentrate	Monsanto	524-529
	Roundup PRO Dry	Monsanto	524-505
Roundup PROMAX	Monsanto	524-579	
Aqua Neat	Nufarm Americas Inc.	228-365	
Credit Xtreme	Nufarm Americas Inc.	71368-81	

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Glyphosate - cont.	Foresters	Nufarm Americas Inc.	228-381
	Razor	Nufarm Americas Inc.	228-366
	Razor Pro	Nufarm Americas Inc.	228-366
	GlyphoMate 41	PBI/Gordon Corporation	2217-847
	AquaPro Aquatic Herbicide	SePRO Corporation	62719-324-67690
	Rattler	Setre (Helena)	524-445-5905
	Buccaneer	Tenkoz	55467-10
	Buccaneer Plus	Tenkoz	55467-9
	Mirage Herbicide	UAP-Platte Chem. Co.	524-445-34704
	Mirage Plus Herbicide	UAP-Platte Chem. Co.	524-454-34704
	Gly-4 Plus	Universal Crop Protection Alliance, LLC	72693-1
	Gly-4 Plus	Universal Crop Protection Alliance, LLC	42750-61-72693
	Gly-4	Universal Crop Protection Alliance, LLC	42750-60-72693
	Glyphosate 4	Vegetation Man., LLC	73220-6-74477
	Agrisolutions Cornerstone	Winfield Solutions, LLC	1381-191
	Agrisolutions Cornerstone Plus	Winfield Solutions, LLC	1381-192
	Agrisolutions Rascal	Winfield Solutions, LLC	1381-191
Agrisolutions Rascal Plus	Winfield Solutions, LLC	1381-192	
Cornerstone 5 Plus	Winfield Solutions, LLC	1381-241	
Glyphosate + 2,4-D	Landmaster BW	Albaugh, Inc./Agri Star	42570-62
	Campaign	Monsanto	524-351
	Landmaster BW	Monsanto	524-351
Hexazinone	Velpar ULW	DuPont Crop Protection	352-450
	Velpar L	DuPont Crop Protection	352-392
	Velpar DF	DuPont Crop Protection	352-581
	Velossa	Helena Chemical Company	5905-579
	Pronone MG	Pro-Serve	33560-21
	Pronone 10G	Pro-Serve	33560-21
	Pronone 25G	Pro-Serve	33560-45
Hexazinone +	Westar	DuPont Crop Protection	352-626
Sulfometuron methyl	Oustar	DuPont Crop Protection	352-603
<p>NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i>, the aerial application of this herbicide is prohibited.</p>			

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Imazapic	Panoramic 2SL	Alligare, LLC	66222-141-81927
	Plateau	BASF	241-365
	Nufarm Imazapic 2SL	Nufarm Americas Inc.	71368-99
Imazapic +	Journey	BASF	241-417
Glyphosate			
Imazapyr	Imazapyr 2SL	Alligare, LLC	81927-23
	Imazapyr 4SL	Alligare, LLC	81927-24
	Ecomazapyr 2SL	Alligare, LLC	81927-22
	Rotary 2 SL	Alligare, LLC	81927-6
	Arsenal Railroad Herbicide	BASF	241-273
	Chopper	BASF	241-296
	Arsenal Applicators Conc.	BASF	241-299
	Arsenal	BASF	241-346
	Arsenal PowerLine	BASF	241-431
	Stalker	BASF	241-398
	Habitat	BASF	241-426
	Polaris	Nufarm Americas Inc.	228-534
	Polaris AC	Nufarm Americas Inc.	241-299-228
	Polaris AC	Nufarm Americas Inc.	228-480
	Polaris AC Complete	Nufarm Americas Inc.	228-570
	Polaris AQ	Nufarm Americas Inc.	241-426-228
	Polaris RR	Nufarm Americas Inc.	241-273-228
	Polaris SP	Nufarm Americas Inc.	228-536
	Polaris SP	Nufarm Americas Inc.	241-296-228
	Polaris Herbicide	Nufarm Americas Inc.	241-346-228
	Habitat Herbicide	SePRO	241-426-67690
	SSI Maxim Arsenal 0.5G	SSI Maxim Co., Inc.	34913-23
	SSI Maxim Arsenal 5.0G	SSI Maxim Co., Inc.	34913-24
	Ecomazapyr 2 SL	Vegetation Man., LLC	74477-6
	Imazapyr 2 SL	Vegetation Man., LLC	74477-4
	Imazapyr 4 SL	Vegetation Man., LLC	74477-5
	Imazapyr + Diuron	Mojave 70 EG	Alligare, LLC
Mojave 70 EG		Alligare, LLC	81927-25
Sahara DG		BASF	241-372
Imazuron E-Pro		Etigra, LLC	79676-54
SSI Maxim Topside 2.5G		SSI Maxim Co., Inc.	34913-22

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Imazapyr +	Lineage Clearstand	DuPont Crop Protection	352-766
Metsulfuron methyl			
Imazapyr +	Lineage HWC	DuPont Crop Protection	352-765
Sulfometuron methyl +	Lineage Prep	DuPont Crop Protection	352-767
Metsulfuron methyl			
NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i> , the aerial application of this herbicide is prohibited.			
Metsulfuron methyl	MSM 60	Alligare, LLC	81927-7
	AmTide MSM 60DF Herbicide	AmTide, LLC	83851-3
	Escort DF	DuPont Crop Protection	352-439
	Escort XP	DuPont Crop Protection	352-439
	MSM E-Pro 60 EG Herbicide	Etigra, LLC	81959-14
	MSM E-AG 60 EG Herbicide	Etigra, LLC	81959-14
	Patriot	Nufarm Americas Inc.	228-391
	PureStand	Nufarm Americas Inc.	71368-38
	Metsulfuron Methyl DF	Vegetation Man., L.L.C.	74477-2
Metsulfuron methyl +	Cimarron X-tra	DuPont Crop Protection	352-669
Chlorsulfuron	Cimarron Plus	DuPont Crop Protection	352-670
Metsulfuron methyl +	Cimarron MAX	DuPont Crop Protection	352-615
Dicamba + 2,4-D			
Picloram	Triumph K	Albaugh, Inc.	42750-81
	Triumph 22K	Albaugh, Inc.	42750-79
	Picloram K	Alligare, LLC	81927-17
	Picloram 22K	Alligare, LLC	81927-18
	Grazon PC	Dow AgroSciences	62719-181
	OutPost 22K	Dow AgroSciences	62719-6
	Tordon K	Dow AgroSciences	62719-17
	Tordon 22K	Dow AgroSciences	62719-6
	Trooper 22K	Nufarm Americas Inc.	228-535

ACTIVE INGREDIENT	TRADE NAME	MANUFACTURER	EPA REG. NUMBER
Picloram + 2,4-D	GunSlinger	Albaugh, Inc.	42750-80
	Picloram + D	Alligare, LLC	81927-16
	Tordon 101M	Dow AgroSciences	62719-5
	Tordon 101 R Forestry	Dow AgroSciences	62719-31
	Tordon RTU	Dow AgroSciences	62719-31
	Grazon P+D	Dow AgroSciences	62719-182
	HiredHand P+D	Dow AgroSciences	62719-182
	Pathway	Dow AgroSciences	62719-31
	Trooper 101	Nufarm Americas Inc.	228-561
	Trooper P + D	Nufarm Americas Inc.	228-530
Picloram + 2,4-D + Dicamba	Trooper Extra	Nufarm Americas Inc.	228-586
Sulfometuron methyl	SFM 75	Alligare, LLC	81927-26
	Oust DF	DuPont Crop Protection	352-401
	Oust XP	DuPont Crop Protection	352-601
	SFM E-Pro 75EG	Etigra, LLC	79676-16
	Spyder	Nufarm Americas Inc.	228-408
	SFM 75	Vegetation Man., L.L.C.	72167-11-74477
NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i> , the aerial application of this herbicide is prohibited.			
Sulfometuron methyl + Chlorsulfuron	Landmark XP	DuPont Crop Protection	352-645
NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i> , the aerial application of this herbicide is prohibited.			
Sulfometuron methyl + Metsulfuron methyl	Oust Extra	DuPont Crop Protection	352-622
	SFM Extra	Alligare, LLC	81927-5
NOTE: In accordance with the Record of Decision for the <i>Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)</i> , the aerial application of this herbicide is prohibited.			

ACTIVE INGREDIENT	TRADE NAME	MANUFACTURER	EPA REG. NUMBER
Tebuthiuron	Alligare Tebuthiuron 80 WG	Alligare, LLC	81927-37
	Alligare Tebuthiuron 20 P	Alligare, LLC	81927-41
	Spike 20P	Dow AgroSciences	62719-121
	Spike 80DF	Dow AgroSciences	62719-107
	SpraKil S-5 Granules	SSI Maxim Co., Inc.	34913-10
Tebuthiuron + Diuron	SpraKil SK-13 Granular	SSI Maxim Co., Inc.	34913-15
	SpraKil SK-26 Granular	SSI Maxim Co., Inc.	34913-16
	Triclopyr 3	Alligare, LLC	81927-13
	Triclopyr 4	Alligare, LLC	81927-11
	Triclopyr RTU	Alligare, LLC	81927-33
	Element 3A	Dow AgroSciences	62719-37
	Element 4	Dow AgroSciences	62719-40
	Forestry Garlon XRT	Dow AgroSciences	62719-553
	Garlon 3A	Dow AgroSciences	62719-37
	Garlon 4	Dow AgroSciences	62719-40
	Garlon 4 Ultra	Dow AgroSciences	62719-527
	Remedy	Dow AgroSciences	62719-70
	Remedy Ultra	Dow AgroSciences	62719-552
	Pathfinder II	Dow AgroSciences	62719-176
	Trycera	Helena Chemical Company	5905-580
	Relegate	Nufarm Americas Inc.	228-521
	Relegate RTU	Nufarm Americas Inc.	228-522
	Tahoe 3A	Nufarm Americas Inc.	228-384
	Tahoe 3A	Nufarm Americas Inc.	228-518
	Tahoe 3A	Nufarm Americas Inc.	228-520
	Tahoe 4E	Nufarm Americas Inc.	228-385
	Tahoe 4E Herbicide	Nufarm Americas Inc.	228-517
	Renovate 3	SePRO Corporation	62719-37-67690
	Renovate OTF	SePRO Corporation	67690-42
	Ecotriclopyr 3 SL	Vegetation Man., LLC	72167-49-74477
	Triclopyr 3 SL	Vegetation Man., LLC	72167-53-74477
Triclopyr + 2,4-D	Everett	Alligare, LLC	81927-29
	Crossbow	Dow AgroSciences	62719-260
	Candor	Nufarm Americas Inc.	228-565
	Aquasweep	Nufarm Americas Inc.	228-316

ACTIVE			EPA REG.
INGREDIENT	TRADE NAME	MANUFACTURER	NUMBER
Triclopyr +	Prescott Herbicide	Alligare, LLC	81927-30
Clopyralid	Redeem R&P	Dow AgroSciences	62719-337
	Brazen	Nufarm Americas Inc.	228-564

APPENDIX B12 FIRE PROTECTION PLAN

B12.1 Introduction

This 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 within the construction area during the Southline Transmission Line Project (Project) construction. The precautions and procedures identified in this plan are also applicable for operation and maintenance activities; however, responsibilities for management of all fires and fire prevention measures are predominantly assumed by the Bureau of Land Management (BLM), Western Area Power Administration (Western), and other Agency Fire Management Officers (FMOs) and the operation and maintenance crews of Southline Transmission LLC (Southline). As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B12.1.1 Purpose

The risk of fire danger during construction of a transmission line 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, smoking, and welding. 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 within the construction area. Other plans containing information related to fire protection include: Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B10 – Emergency Preparedness and Response Plan.

B12.1.2 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 and other agency and local fire protection agencies in Arizona and New Mexico.

B12.2 Responsibilities

B12.2.1 Bureau of Land Management

The BLM FMO or other agency FMO(s) will oversee all fire control activities within their prospective administrative units. The FMOs will discuss fire protection stipulations at the notice-to-proceed meeting, which will be attended by the BLM, Western, and other agency authorized officers or his/her designated representative; the compliance inspection contractor (CIC); Southline, the construction contractor(s); and their environmental inspectors.

B12.2.1.1 CONSTRUCTION CONTRACTOR(S)

It will be the responsibility of the construction contractor(s) to notify Southline, the BLM and/or Western when a Project-related fire occurs within or adjacent to the construction area. The construction

contractor(s) will be responsible for any fire started, in or out of the Project area, by its employees or operations during construction. The construction contractor(s) will be responsible for fire suppression and rehabilitation. The construction contractor(s) 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 its 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 construction contractor employees will exit the area to predetermined locations safe from wildfire.

All Federal, State, and county laws, ordinances, rules, and regulations, which pertain to prevention, pre-suppression, 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.

Construction Crew

The construction crew will be responsible for:

- Initial response on any construction caused fire that starts in the Project area and continued suppression activities until relieved by the appropriate fire authorities or until the fire exceeds immediate control or exceeds the capacity of crew members to manage safely given minimal training.
- Immediately notifying the designated Fire Marshall of a fire start; the Fire Marshall will be responsible for notifying the appropriate fire authorities.
- In the event of a fire report, all available trained crews will be alerted and will respond immediately to the fire using appropriate equipment.

Designated Fire Marshall

The final construction Plan of Development will detail the designation of a Project Fire Marshall who will have the following duties and responsibilities:

- In the event of a fire start, initial attack will be initiated and coordinated by the Fire Marshall and suppression will be implemented until the appropriate fire authorities respond or until the fire exceeds immediate control. The construction contractor(s) will dispatch to the fire all available fire-fighting equipment within 15 minutes of the fire report.
- Regularly inspect safety kits, first aid kits, tools, and fire-fighting equipment.
- Ensure compliance with applicable laws and regulations for the storage of flammable fuels and chemicals.
- Posting smoking rules and fire mitigation measures at visible and central locations.
- Coordinating initial response to fires within the Project area.
- Accompanying the CIC on fire prevention and preparedness inspections of the Project area.
- Educating all contractor crews on the content of the Fire Protection Plan and raising awareness of fire risk in periods of high fire danger.
- Monitoring all construction activities closely for potential ignitions.
- Reporting all wildfires to the CIC following notification procedures described below.
- Monitoring site conditions and fire danger and reporting heightened risk to the construction crews.

- Overseeing and advising construction activities and limiting or restricting those activities that may lead to fire during periods of high fire danger.

B12.2.1.2 COMPLIANCE INSPECTION CONTRACTOR

The CIC and the Fire Marshall will accompany the BLM FMO on all BLM fire inspections and if fire protection requirements are not in compliance, corrective actions should be taken. If certain construction activities pose a fire threat in the Project area, the CIC will inform the construction contractor(s) to implement safety measures or cease operations until threats are abated.

B12.2.1.3 NOTIFICATION

During construction or maintenance activities the contractor(s) crews will be responsible for the immediate notification of any fire starting in the Project area. The Fire Marshall will notify the CIC and Western, who will notify the BLM authorized officer and the BLM FMO. Fire notification numbers and emergency numbers for all employees will be on file and readily updated by the construction contractor and Southline.

Table B12-1. Fire Notification Numbers

Contact Person	Phone Number
CALL 911 FIRST	
Bureau of Land Management	Bureau of Land Management Fire Management Officer : Gila District – (928) 348-4508 Phoenix District – (623) 580-5578 Las Cruces – (575) 525-4305
Western Authorized Officer or Designated Representative	To be determined
Bureau of Indian Affairs	NM Southwestern Regional Office: 505-563-3103 BIA: AZ Western Regional Office: 602- 379- 6600
New Mexico State Forestry Division	Fire Program Managers: Socorro – (575) 835-9359 Capitan District Office – (575) 354-2231
Arizona State Forestry Division	Arizona Interagency Dispatch Center– 800-309-7081 Tucson – 520-628-5480
Southwest Coordination Center	Alamogordo Interagency Dispatch Center: 575-437-2286. Silver City Interagency Dispatch Center: 575-538-5371. Tucson Interagency Dispatch Center: 520-202-2710.
911 – Emergency	Dial 911

B12.3 Proponent Committed Environmental Measures

Southline has developed Proponent Committed Environmental Measures (PCEMs) to be incorporated as part of the Project, which are identified in the Environmental Impact Statement (EIS), and included in table 8 of the Plan of Development (POD). The goal of these PCEMs is to reduce or avoid potential environmental impacts resulting from Project-related activities. The construction contractor(s) will adhere to specific PCEM stipulations and design features of the Fire Protection Plan (FP) outlined below in order to provide for safety relating to potential fire starts within the construction site.

- HEA-1: The Health and Safety Plan (HASP) and FP prepared as part of the final POD will be developed and implemented to minimize and mitigate potential health and human safety impacts. Southline and its contractors will work with the appropriate surface-managing agencies to

incorporate any fire restrictions that are put into effect during construction, operation, and decommissioning of the Project.

- The HASP will address potential situations that workers could encounter during construction and maintenance. The purpose and goal of the worker safety and environmental training will be to communicate Project-related environmental and safety concerns and appropriate work practices to all field and construction personnel prior to the start of construction, including spill prevention, emergency response measures, accident prevention, use of protective equipment, medical care of injured employees, safety education, and fire protection. Training will encompass environmental training related to road designations and speed limits, promote “good neighbor” policies, and institute best management practices (BMPs) for construction. The training will emphasize site-specific physical conditions to improve hazard prevention in accordance with Occupational Safety and Health Administration (OSHA) requirements (29 CFR 1910 and/or 1926, as applicable).

B12.4 Other Specific Stipulations and Methods

Additionally, the construction contractor(s) will adhere to the following specific stipulations and design features (beyond the PCEMs identified in the EIS and POD) of the FP outlined below for fire prevention at all times during construction, operation, and maintenance.

- FP1: Construction crews will provide immediate initial attack on all fires (if safe to do so) that start on the construction site. Crews will only suppress fires within their training and equipment capabilities. If fire activity increases beyond the limits of their tools and personnel capability to safely suppress, all crew members will evacuate the area using pre-determined evacuation procedures.
- FP2: Construction crews will notify fire authorities immediately of any fire start that escapes initial attack containment and provide an accurate location and status of the fire.
- FP3: All vehicles and construction equipment will be equipped with fire extinguishers, shovels and water. Fire extinguishers will be rated ABC-10 pound minimum for equipment and ABC-2.5 pound minimum for vehicles.
- FP4: Prior to initiating any activity that may be a source of fire ignition, construction crews will carry out a thorough review of weather forecasts and assessment of potential fire conditions on the site, including an assessment of humidity and wind conditions. Certain activities may need to be delayed or rescheduled if potential for high fire danger is high and adequate protective measures cannot be effectively implemented.
- FP5: Spark arrestors will be used at all times on all internal and external combustion engines. Spark arrestors will be regularly maintained and meet Society of Automotive Engineers Recommended Practices J335 or J350.
- FP6: All vehicle use will be restricted to designated roads and contractor acquired access; parking areas will be located within areas with vegetation less than 8 inches. Undercarriages will be inspected daily to ensure against vegetation build up that could initiate a fire. Construction activities will be contained within predetermined boundaries.
- FP7: Vegetation should be cleared in all areas where welding, grinding or cutting activities will be used. Spark shields should be utilized and a spotter is required to watch for ignitions. Spotter will be equipped with a shovel, back-pack water pump and fire extinguisher. Areas should be wetted down to arrest sparks. Slash should be disposed of in accordance with requirements of the land owner.

- FP8: Smoking is prohibited while operating machinery or equipment and when operating or moving through areas of tall vegetation.
- FP9: Smoking is only allowed in designated areas with cleared vegetation. Tobacco products must be discarded of in approved containers.
- FP10: All fires (including open burning of construction trash) and barbeques are prohibited within the right of way and on construction sites.
- FP11: Any crew member assigned to the field will receive training in emergency response to fires in the event of a fire onsite.
- FP12: All flammable materials not needed on the work site or not in use will be removed from operation areas to a minimum of 10 feet to reduce incidence of fire starts.

B12.4.1 Activity-Related Precautions

B12.4.1.1 FIRE DANGER RATINGS

The National Fire Danger Rating scales will be used to ensure safe construction practices during high fire danger. These ratings are available at: <http://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32>.

The Fire Danger Rating is based on current and antecedent weather, fuel types, and live and dead fuel moistures. The following table B12-2 is the adjective class rating that normalizes rating classes across different fuel models, indexes, and station locations.

Table B12-2. Fire Danger Rating Scale

Fire Danger Rating and Color Code	Description
Low (dark green)	Fuels do not ignite readily from small firebrands, although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
Moderate (light green or blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (yellow)	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High (orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Source: Wildland Fire Assessment System (WFAS): <http://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/class-rating-fire-potential-danger-51?task=view>

B12.4.1.2 RED FLAG WARNINGS

In addition to observation of the Fire Danger Rating scales, the National Weather Service red flag warnings for low humidity and high winds will be observed. The Fire Precaution Levels in table B12-3 will be adhered to. The red flag warnings are posted on the National Weather Service's Western Region Fire Weather website at <http://www.wrh.noaa.gov/firewx/main.php>.

Table B12-3. Fire Precaution Levels

Fire 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 engine is require for blasting	One engine is required for blasting, welding, cutting, and grinding AND operations will shut down from noon until 8 p.m.
Very High	One engine is required for blasting, welding, cutting, and grinding.	Two engines 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	Two engines required for blasting, welding, cutting, and grinding AND operations will shut down from 10a.m. until 8 p.m. Power saws will be shut down from 10 a.m. until 8 p.m.	Unless authorized by the land jurisdictional agency, ALL OPERATIONS SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.

B12.4.2 Burning (Not Allowed)

- FP 13: No burning activities (campfires, barbeques, open burning) will be allowed on the ROW, material yards/staging areas, substations, access roads, or other construction areas.

B12.4.3 Blasting

- FP 14: No blasting will be allowed without the notification of the CIC and Fire Marshall. All blasting operations will adhere to guidelines outlined in the Blasting Plan (appendix B6). The blasting contractor's vehicles will be equipped with appropriate fire suppression equipment and all crew members will be trained in emergency response.

B12.4.4 Welding, Cutting, Grinding, or Drilling

- FP15: The construction contractor(s) Construction Manager must approve all welding, cutting, grinding and drilling operations. Prior to construction activities that could generate sparks, vegetation should be cleared at a minimum of 10 feet from the area. All welding or cutting activities will cease one hour prior to personnel leaving the site to allow for observation of potential smoldering materials. A spotter will be assigned to each activity to watch for sparks that could initiate a fire. The spotter will remain onsite 1 hour after the completion of welding and cutting activities. All vehicles used for welding and cutting operations will be equipped with appropriate suppression equipment and all crew members will be trained in emergency response.

B12.4.5 Spark Arrestors

- FP16: The construction contractor(s) will inspect and approve all equipment used on the Project. All internal and external combustion engines will be equipped with spark arrestors that meet the following agency standards:
 - Light trucks and cars with factory installed (type) mufflers (in good condition) may be used on roads where the roadway is cleared of all vegetation.
 - On roads where vegetation exists, spark arrestors will be used.
 - Spark arrestors will be in good working order.
 - Vehicles equipped with catalytic converters may represent potential fire hazards and will be parked in areas cleared of vegetation.
 - If required, flues used in extra work areas will be equipped with spark arrestors in good working order and meet agency standards.

B12.4.6 Smoking

- FP17: The construction contractor(s) will post all smoking and fire rules on the Project bulletin board at the construction contractor(s) field office and at all entrance points to the construction site. The construction contractor(s) and designated supervisory staff are responsible for enforcement of all rules. Smoking is prohibited while operating construction vehicles and equipment and when operating in or moving through tall vegetation.

B12.4.7 Warning Devices

- FP18: The use of warning devices with open flames, such as torches, fuses, highway flares, are prohibited in the Project area. Only electric and battery powered warning devices are permitted for use in the Project area.

B12.4.8 Parking and Vehicle Storage Areas

- FP19: Parking and storage areas will be cleared of vegetation and other flammable materials as deemed necessary by the BLM authorized officer. Gas and oil storage areas will be cleared of all flammable materials up to 100 feet and sign posted with NO SMOKING signage. All harmful and flammable materials will be properly disposed of in approved containers at an approved disposal facility (as outlined in appendix B9). Glass jugs or bottles will be not permitted for the storage of gasoline or other flammable materials.

B12.4.9 Signage

- FP20: NO SMOKING signs will be posted at material yards/staging areas and all construction sites during fire season as determined by the BLM authorized officer.

B12.4.10 Power Saws

- FP21: All gasoline power saws will be equipped with functioning spark arrestors and maintained in good working order throughout their assignment on the project. Chain saws will comply with the following requirements:
 - Arrestors will be equipped with a 0.023-inch mesh stainless steel screen.
 - Chain-saw operators will be equipped with a round point, long-handled shovel and belt carrying fire extinguisher during operations.

- Re-fueling will occur only in areas cleared of vegetation. Gas will be carried in approved metal containers. Power saws will be moved at least 10 feet from fueling areas before starting.

B12.4.11 Equipment Refueling

- FP22: Fuel trucks will have at minimum a 35-pound fire extinguisher charged with necessary chemicals to control electrical and fuel fires. Helicopter fuel tanks will be grounded to the helicopter during refueling. Crews will follow guidelines provided in appendix B4 to prevent spills during refueling.

B12.4.12 Access

- FP23: The construction contractor(s) will ensure continuous access will be provided to emergency vehicles along all access roads. Access roads will be maintained in a manner that they may be used as fire breaks in the event of a fire start.

B12.5 Minimum Fire Prevention and Suppression Equipment Required

The construction contractor(s) will ensure that the following minimum equipment is available and maintained in proper working condition (per OSHA publication 3080) throughout the duration of the Project.

- FP24: All motorized vehicles and equipment in each active construction area will have:
 - One long-handled round point shovel.
 - One axe or Pulaski tool.
 - Fire extinguishers (rated ABC-10 pound minimum for equipment and ABC-2.5 pound minimum for vehicles). One 5-gallon water back-pack filled with water or other extinguishing solution.
 - Hard hat, work gloves, eye protection for all crew members.
- FP25: In addition construction work sites shall comply with the following:
 - All power saws shall come equipped with an approved and maintained spark arrestor and accompanied by one 5-pound ABC dry chemical fire extinguisher and one long-handled round point size 0 shovel.
 - Fuel trucks shall have at minimum a 35-pound fire extinguisher charged with necessary chemicals to control electrical and fuel fires.
 - Welding and cutting equipment shall be accompanied with at least 2 long-handled round point size 0 shovels and two 5-pound ABC dry chemical fire extinguisher.
 - All construction sites shall have at least one working radio and/or satellite phone for use in contacting the fire authorities, CIC, and Fire Marshall in the event of a fire.
 - All at-risk work sites shall have back-pack pumps filled with water or other extinguisher solution. All wood cutting sites should have 2 pumps, 1 at each welding site and 2 at construction sites.

- FP26: During high fire danger the following equipment shall be staged and available in the construction area to aid with fire suppression:
 - One fire suppression vehicle with a minimum 500-gallon capacity water tank, 250 feet of ¾-inch heavy-duty rubber hose, and a pump with a discharge capacity of at least 20 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: 2 long-handled round-point shovels, 2 axes or Pulaski fire tools, and 1 chainsaw of 3.5 or more horsepower, with a cutting bar of at least 20 inches in length.

B12.6 In Case Of Fire – Initial Response and Emergency Contacts

In the event of a manageable fire start within the Project area, crews shall provide initial attack using appropriate rated fire extinguisher, or other available equipment (i.e. shovel to smother fire with dirt, back-pack pump). All crew members will be trained in emergency response procedures, proper notification and reporting protocols, suppression and control techniques, and measures to determine manageability. Crew will be trained to identify when a fire has exceeded suppression capabilities and the proper evacuation procedures to follow if a fire escapes initial attack containment.

In the event a fire becomes unmanageable, crews will immediately evacuate and call 911 and then the district dispatch (see table B12-1). Regardless of actions taken, all fires must be reported to the jurisdictional fire agency.

B12.7 Post-Fire Rehabilitation Strategies

In the event that a fire occurs as a result of project activities, the construction contractor(s) will implement rehabilitation measures as required by the BLM. The following measures will be taken:

- FP27: All burn areas will be re-vegetated in accordance with BLM standards. Native seed mixes will be used to revegetate small burn areas (as outlined in Appendix B15 – Reclamation, Revegetation, and Monitoring Plan). Larger burn areas may require specific reclamation plans that meet BLM requirements. Monitoring requirements will be developed in conjunction with any reclamation plan. Measures to abate erosion following a fire shall follow procedures outlined in the Erosion, Dust Control, and Air Quality Plan (appendix B8).
- FP28: In order to prevent the spread of noxious weeds in burned areas, a Noxious Weed Plan shall be developed (see appendix B11) in accordance with BLM requirements.

APPENDIX B13

STREAM, WETLAND, WELL, AND SPRING PROTECTION PLAN

B13.1 Introduction

The purpose of this Stream, Wetland, Well, and Spring Protection Plan is to provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities for the Southline Transmission Line Project (Project). This plan incorporates Proponent Committed Environmental Measures (PCEMs) identified in the Environmental Impact Statement and also in table 8 in the Plan of Development (POD). As indicated in the POD, this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

The goals of this plan are to:

- Control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks.
- Protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.

B13.2 Regulatory Overview

The construction, operation, and maintenance phases of the Project are subject to various regulations designed to protect environmental resources and the public. Regulations relevant to water resources are outlined below.

B13.2.1 Federal

General water quality is protected under the federal Clean Water Act (CWA), and a permit may be required if a project will result in the alteration of or discharges into jurisdictional watercourses (waters of the U.S. (WUS)) and wetlands. The U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) regulate the placement of fill into WUS under Section 404 of the CWA. WUS include lakes, rivers, streams and their tributaries, and wetlands. The Project will result in the alteration of or discharge into jurisdictional WUS. To qualify under Section 404 Nationwide Permit (NWP) 12 for Utility Line Activities, the Project will need to meet the criteria for and fall within the thresholds of this NWP. As part of meeting the conditions of NWP 12, wetland delineations will need to be prepared and a Preliminary Jurisdictional Determination obtained from the USACE for the Project. The Preliminary Jurisdictional Determination will establish where WUS may be located that may be affected by the Project. An NWP 12 is typically issued after a 30- to 45-day review of the Preliminary Jurisdictional and Wetland Delineation Report, unless the USACE requests a field review, which will extend the review period. From the date of issuance, the NWP 12 is valid for 12 months.

Requirements related to stormwater pollution under Section 402 of the CWA are handled in New Mexico by the EPA. Requirements under Section 402 are detailed in Appendix B3 – Stormwater Pollution Prevention Plan.

B13.2.2 State

Requirements related to stormwater pollution under Section 402 of the CWA are handled in Arizona by the Arizona Department of Environmental Quality under the Arizona Pollutant Discharge Elimination System (AZPDES). Requirements under AZPDES are detailed in Appendix B3 – Stormwater Pollution Prevention Plan.

In Pima County, certain riparian habitat is regulated and protected. As part of the floodplain use permit process, proposed developments are subject to review for impacts to mapped regulated riparian habitat RRH if more than 0.3 acre of a property's RRH is disturbed. In some instances where disturbed RRH is classified as Hydroriparian, Mesoriparian, and/or Important Riparian Area (IRA), a mitigation plan needs to be approved by the Pima County Board of Supervisors. However, for construction purposes, all clearance and appropriate mitigation will have been completed (see Appendix B7- Plant and Wildlife Species Conservation Measures Plan", and no further avoidance, monitoring, or management will need to be considered during construction.

B13.3 Overview of Streams, Wetlands, Wells, and Springs

B13.3.1 Streams and Drainages

Potentially jurisdictional WUS crossed by the Project will be delineated during preconstruction stream and wetland surveys and provided to the USACE to obtain a Preliminary Jurisdictional Determination. The locations of streams and drainages will be mapped and shown in the POD.

Most streams and drainages crossed by the Project are ephemeral washes that typically do not flow except in response to precipitation events. However, there are several streams identified as potentially requiring special consideration due to intermittent or perennial flow. These include the Mimbres River, the San Pedro River, and Cienega Creek, two of which are existing crossings in the Upgrade Section.

B13.3.2 Wetlands

Wetland delineations that follow the USACE Wetland Delineation Manual (1987) and Arid West Regional Supplement (2008) will be conducted prior to construction. The USACE Wetland Delineation Manual provides technical guidelines and methods for a three-parameter approach to determine the location and boundaries of potentially jurisdictional wetlands. This approach requires that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. Surveyors will gather wetland determination information on data forms in the field and map wetland boundaries using geographical positioning system technology. Wetlands that meet all three parameters will be presented to the USACE for a Preliminary Jurisdictional Determination. The locations of wetlands will be mapped and shown in the POD.

B13.3.3 Wells and Springs

Water wells and springs are considered sensitive resources that will need to be identified and protected. Wells and springs have been considered and avoided in the routing process for the proposed Project. Wells and springs within 600 feet of the Project alignment will be identified, mapped, and shown in POD map sets. Wells and springs in known blasting zones will be identified prior to construction by the construction contractor(s).

B13.4 Proponent Committed Environmental Measures

As the Proponent, Southline Transmission, LLC (Southline), and its construction contractor(s) will adhere to the PCEMs and other specific stipulations and methods discussed in the following section. These measures were developed to minimize Project impacts on streams, wetlands, wells, and springs where they occur along the Project right-of-way, access roads, substations, and temporary staging areas.

There are three main concerns for impacts to streams and wetlands: (1) direct disturbance, (2) potential erosion and movement of sediment from upstream disturbed areas, and (3) potential contamination from spills and accidental releases. This plan provides the framework for addressing the direct disturbance of streams and wetlands. Three other plans provide additional guidance for minimizing impacts from erosion:

- Appendix B3 – Stormwater Pollution Prevention Plan
- Appendix B8 – Erosion, Dust, and Air Quality Control Plan
- Appendix B15 – Reclamation, Vegetation, and Monitoring Plan

Two additional plans provide guidance for minimizing impacts from spills and accidental releases:

- Appendix B4 – Spill Pollution Prevention, Control, and Countermeasures Plan
- Appendix B9 – Hazardous Materials Management Plan

The following are PCEMs that directly address protection of streams, wetlands, wells, and springs:

- Structures will be placed to avoid, and/or to allow conductors to span, sensitive features such as riparian areas, waterways, roads, trails, and cultural sites within limits of standard transmission line structure design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
- HAZ-8: Service and refueling procedures will not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment will not be done within the right-of-way.
- Water facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced to their predisturbed condition if they are damaged or destroyed by construction, operation, or maintenance activities, as required by the landowner of land management agency. Temporary watering facilities will be provided for wildlife and livestock until permanent repair or replacement is complete.
- VEG-4: Removal of riparian scrubland vegetation will be avoided where possible. Natural regeneration of native plants will be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.
- WAT-1: A Project-specific construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to the start of construction of the transmission line and substations in compliance with CWA Section 402, if required. The SWPPP will use best management practices to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads will be the minimum necessary for construction and will be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A USACE permit will be obtained prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404,

if required. Activities in and around streams and wetlands will be designed to avoid, minimize, and mitigate impacts to WUS.

- WAT-2: Construction equipment will be kept out of flowing stream channels, unless feasible alternatives are not available. Structures will be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.
- WAT-3: Flood-control devices will be located where required to protect structures from flooding or erosion. Appropriate design of structure foundations will be used to prevent scour or inundation by a 100-year flood and to avoid disturbed areas. The locations of transmission structures will be designed to avoid steep, disturbed, or otherwise unstable slopes. If drainages cannot be avoided by structure placement, Southline and its construction contractor(s) will design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon post-construction restoration.
- Roads will be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges will be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.
- To the extent practicable, structures will be sited with a minimum distance of 200 feet from streams.
- WF-1: All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River will take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers (*Empidonax traillii eximius*) or yellow-billed cuckoos (*Coccyzus americanus*).

B13.5 Other Specific Stipulations and Methods for Streams and Wetlands

Southline and its construction contractor(s) will adhere to the crossing methods identified below for any stream and wetland crossings.

B13.5.1 Stream Crossing Methods

Streams that Project vehicles and equipment will cross or potentially impact will be identified in the final POD. For the most part, vehicular crossings will be limited to ephemeral washes and dry playas. All wetlands will be avoided if possible, but there may still be some isolated wetland crossings necessary. If a stream or wetland cannot be avoided during construction, the appropriate crossing strategy for vehicular access will be identified from the various types of crossing methods are discussed in detail below. When implemented, these crossing methods will help protect water quality by minimizing stream channel disturbance, erosion, and sedimentation due to Project activities. If the chosen crossing method is not adequately preventing and/or minimizing sedimentation and erosion, additional sediment controls may be required when circumstances warrant. Streams crossed by the Project will be monitored throughout construction for signs of bed and/or bank degradation. If disturbance resulting from installation of erosion control devices across any ephemeral drainages outweighs the benefits of having the devices in place, then there will be the option of not prescribing any temporary stream crossing or erosion control method.

B13.5.1.1 VEHICULAR STREAM CROSSINGS

- Equipment and vehicles will cross streams at existing bridges or established crossings whenever possible to avoid a new stream crossing location.
- The crossings of ephemeral washes or streams will be limited to vehicular crossings along spur roads or access roads as described in the POD.
- Neither grading nor blading will be used to facilitate a stream crossing carrying a discernible flow of water.
- All stream crossings will be made as close as possible to right angles to the streams and washes.
- Generally, streams that have vertical banks greater than 2 feet high or selected smaller crossings may require grading to accommodate vehicle passage. Graded crossings will be accomplished by excavating a ramp through both banks of a stream to allow vehicles to cross. Vehicle access ramps will be graded so soil is pushed away from the stream rather than toward it.
- Topsoil will be salvaged and kept separate from grade spoils. It will be placed a minimum of 20 feet from stream banks. As needed, straw bale barriers or silt fences will be used around the stockpiles and along the stream banks for erosion control, as determined by the SWPPP requirements.
- Flow of sediment into the stream from a cleared crossing will be prevented by installing water bars on the travel route at or near the top of bank (or other slope break) to redirect road runoff away from the stream. If necessary, downslope protection will be increased by extending silt fence from the downgradient end of the water bar.
- In cases where it is impractical and highly disruptive to the environment to construct temporary crossings, such as over very large watercourses or deep canyons, vehicles will not attempt to cross the watercourse. The conductor will be strung across these resources by hand or other method and construction equipment will be routed around.

B13.5.1.2 WETLAND CROSSING METHODS

Wetlands will be avoided if at all possible. If wetlands are not able to be avoided during construction, the crossing methods discussed below will be implemented to avoid, minimize, and mitigate Project-related erosion, sedimentation, and other impacts. These crossing methods have been developed based on numerous factors, including slope, hydrological regime, presence or absence of bank, and erodibility of substrate, soil surface disturbance, and disturbance of wetland plant communities.

- The crossings of wetlands will be limited to vehicular crossings along spur roads or access roads.
- Equipment and vehicles will avoid crossing wetlands to the greatest extent possible by driving around them or using an existing crossing if one exists nearby. If a wetland will be avoided, but a travel route will be bladed within 20 feet of the wetland edge, a silt fence will be installed along the travel route on the wetland side unless the wetland is upgradient.
- If the wetland cannot be avoided, vehicles and equipment will cross the wetlands while implementing the following specific stipulations and methods.
 - Wetland soil will be temporarily stored either within the wetland or in upland areas close to the wetland boundaries and will be used to restore the site to preconstruction contours.
 - A silt fence will be installed around tower sites where necessary to minimize the potential for sediment discharge from excavated spoil into adjacent, undisturbed wetlands.

For wetlands with dry crossing conditions, vehicles and equipment will drive around the wetland to avoid it or will use existing crossing, if possible. If crossing is unavoidable, traffic

corridor will be restricted to 20 feet wide and traffic will be minimized to only the equipment necessary to do the work. Erosion control will be installed as required under the SWPPP.

- For wetlands with wet crossing conditions, and if crossing is unavoidable, vehicles and equipment will use prefabricated equipment pads over saturated areas, traffic corridor will be restricted to 20 feet wide, and minimized to only the equipment necessary to do the work. Erosion control will be installed as required under the SWPPP, or additional measures will be taken if warranted by crossing conditions.

B13.5.2 Spill Prevention

Two additional plans provide guidance for minimizing impacts from spills and accidental releases:

- Appendix B4 – Spill Pollution Prevention, Control, and Countermeasures Plan
- Appendix B9 – Hazardous Materials Management Plan

Special care is given in these plans to the protection of surface water sources, including restrictions on use and storage of hazardous materials and petroleum materials near surface waters or wetlands.

B13.5.3 Erosion and Sedimentation

Three other plans provide additional guidance for minimizing impacts from erosion:

- Appendix B3 – Stormwater Pollution Prevention Plan
- Appendix B8 – Erosion, Dust, and Air Quality Control Plan
- Appendix B15 – Reclamation, Vegetation, and Monitoring Plan

Additional erosion control practices should be considered as needed for any stream crossings or work within stream channels or wetlands.

B13.5.4 Reclamation and Revegetation of Stream Crossings

Reclamation and revegetation of all stream crossings will take place as described in Appendix B15 – Reclamation, Revegetation, and Monitoring Plan.

B13.5.5 Storage of Soil or Organic Debris near Streams

Any soil or other organic debris piled by bulldozers and grading equipment near the stream banks during construction will be stored a minimum of 200 feet from the banks and appropriately re-spread and/or stabilized, covered, etc. to prevent sedimentation during rainfall events. The construction contractor(s) will also adhere to any additional soil storage measures as required by applicable Project permits.

B13.5.6 Stream Obstruction and Flash Flood Hazard

For the most part, vehicular crossings will be limited to ephemeral washes and dry playas. Flow is not normally present in these stream channels. In the event that flow is present, protective measures will be taken as described above.

B13.5.7 Protection of Wells and Springs

All applicable laws and regulations will be followed in respect to the protection for drinking water sources. Wells and springs in known blasting zones will be identified prior to construction by the construction contractor(s).

No wells were identified that will be disturbed by Project construction. In the event a well is discovered, any wells directly impacted by Project disturbance may need to be replaced, in accordance with any well owner agreements. If required to be removed, all wells will be properly abandoned as per appropriate state regulations (in New Mexico, refer to the New Mexico Office of the State Engineer; in Arizona, refer to the Arizona Department of Water Resources).

No springs were identified that will be disturbed by Project construction. In the event a spring is discovered unexpectedly, appropriate measures will be taken to protect both the spring and underground source of waters. If impacts to the spring or underground source of waters are unavoidable, appropriate measures may be required to replace or compensate for the water source, in accordance with any property owner agreements.

B13.6 Literature Cited

U.S. Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Version 2.0.

———. 1987. Corps of Engineers Wetland Delineation Manual On-line Edition: Wetlands Research Program Technical Report Y-87-1. Vicksburg, MS: U.S. Army Corps of Engineers Waterways Experiment Station.

APPENDIX B14

SOIL MANAGEMENT PLAN

A Soil Management Plan will define procedures for managing soils that are excavated during construction, along with plans for their storage and later reuse. This plan is often an appendix to a Stormwater Pollution Prevention Plan (SWPPP). In addition to clean soil excavation, the plan will outline procedures for segregation of potentially contaminated soils, sampling and analysis of those soils, and disposal options if that becomes necessary. It also will define how topsoil will be segregated and stored, how stockpiles will be managed and protected, and used in site restoration. Use of topsoil for restoration activities will be described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan. Erosion and sediment controls for excavated soil will also be discussed.

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

Content to be developed.

APPENDIX B15

RECLAMATION, VEGETATION, AND MONITORING PLAN

B15.1 Introduction

This Reclamation, Vegetation, and Monitoring Framework Plan has been developed based on the principles and procedures established by the Bureau of Land Management (BLM), and Western Area Power Administration (Western). This plan is applicable to the construction of Southline Transmission Line Project (Project) facilities, transmission structures, permanent and temporary access roads, staging areas, tension and pulling stages, and other work areas associated with the Project on lands managed by BLM. Western may use the plan on non-BLM managed lands as appropriate. Requirements for reclamation, revegetation, and monitoring on private and State lands will be negotiated between Western, Southline Transmission, LLC (Southline, or the Proponent), and the States of Arizona and New Mexico as well as affected landowners. The intent of this plan is to provide a framework for reclamation treatments to be applied to the Project on identification of construction-related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas such that these areas are ecologically functional and visually compatible with the surrounding environment to the greatest extent practicable.

B15.2 Regulatory Requirements and Authorities

Authority for the reclamation practices defined in this plan is provided under the following regulations, land use plans, initiatives, and general guidelines:

B15.2.1 Guide Documents

B15.2.1.1 BLM TERMS AND CONDITIONS OF RIGHT-OF-WAY GRANTS AND TEMPORARY USE PERMITS, 43 CFR 2881.2

“The authorized officer shall impose stipulations which shall include, but not be limited to requirements for reclamation, revegetation, and curtailment of erosion of the surface of the land [and] requirements designed to control or prevent damage to the environment (including damage to fish and wildlife habitat).”

B15.2.1.2 FEDERAL LAND POLICY AND MANAGEMENT ACT, SECTION 101 (A)(8)

This requires that “public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition.”

B15.2.1.3 ENDANGERED SPECIES ACT OF 1973, AS AMENDED, SECTION 7(A)(2)

Requires that federal agencies ensure any authorized action “will not result in the adverse modification” of critical habitat.

B15.3 Purpose

The purpose of this plan is to describe and recommend construction and reclamation treatment actions that will meet BLM and other agency goals and objectives under the applicable land use plans, guidelines,

and initiatives described above for land health standards to recover habitat for sensitive plant species, and to provide protocols and/or requirements for implementing and monitoring required reclamation. Important actions in mitigating the effects associated with the Project include (1) minimizing to the greatest degree practicable, the effects associated with right-of-way (ROW) preparation and the construction of facilities, and (2) stabilizing temporarily disturbed construction areas to an acceptable condition to speed up natural recovery. The procedures outlined in this plan will assist in restoring plant communities to near-preconstruction conditions and associated wildlife habitat and range, preventing substantial increases in noxious weeds in the project area, minimizing Project-related soil erosion, and reducing visual impacts of sensitive areas caused by construction activities. To achieve these goals, this Plan outlines actions to be applied during the preconstruction and post-construction phases of the Project.

B15.3.1 Responsible Parties

Southline Transmission, LLC (Southline), will have the overall responsibility of directing and monitoring the reclamation efforts for the Project on BLM-managed lands in accordance with the stipulations in the Plan of Development (POD) and this plan. The ROW agreement holder (Western or Southline as appropriate) will have the responsibility of directing and monitoring reclamation efforts for the Project on other Federal lands or State and private lands and may use the POD as appropriate. Southline and/or its construction contractor(s) may retain the services of a subcontractor (subject to the approval of the BLM, Western, and other agencies) who specializes in reclamation to implement the protocols identified in this plan during and following construction. It is anticipated that post-construction reclamation monitoring would occur concurrent with the practices outlined in Appendix B11 – Noxious Weed Management Plan (as appropriate).

B15.4 Overview of Existing Environments

Reclamation activities shall be specific to the setting and vegetation communities of the Project area impacted during preconstruction, construction, and post-construction activities. In particular, seeding and alternative seeding actions require information to develop appropriate seed mixes that will incorporate the dominant plant species of the existing vegetation communities, where applicable. The classification of vegetation communities in the Project area was based on data obtained from Brown (1994). There are four biotic communities as described by Brown in the Project area. These include Semidesert grassland, Chihuahuan desertscrub, Arizona Upland Subdivision of Sonoran desertscrub, and the Lower Colorado River Subdivision of Sonoran desertscrub. These communities are described below.

Southline shall coordinate with the BLM resource specialists to develop site-specific restoration treatments for the specific settings and vegetation communities where disturbance occurs, select appropriate seed mixes, and delineate the geographic extent in which each seed mix will be distributed within the ROW and areas disturbed by construction.

B15.4.1 Semidesert Grassland

The Semidesert Grassland biotic community covers large areas of southeast Arizona, southwest New Mexico, West Texas, and northern parts of Sonora and Chihuahua, Mexico. This perennial, grass-shrub-dominated community is situated topographically above desert scrub communities and below evergreen woodland, chaparral, or plains grassland (Brown 1994). The upper and lower elevation limits of this community vary substantially over its distribution. The lower contact with desert scrub is generally between about 3,600 and 4,600 feet, while the upper contact with evergreen woodland or chaparral is generally between 4,920 and 5,580 feet. Average annual rainfall in this community ranges from 9.8 to 17.7 inches. This community is dominated by a variety of grasses and seasonally abundant forbs. Typical

grass species found in this biotic community in the project area may include grama species (*Bouteloua* spp.), three-awn (*Aristida* spp.), tobosa grass (*Pleuraphis* spp.), and lovegrass (*Eragrostis* spp.). Common shrub species include mesquites (*Prosopis* spp.), Mormon tea (*Ephedra* spp.), mimosas (*Mimosa* spp.), catclaw acacia (*Acacia greggii*), and ocotillo (*Fouquieria splendens*). Common leaf succulents include agaves (*Agave* spp.), yuccas (*Yucca* spp.), and sotols (*Dasyliirion* spp.). This community is interspersed with Chihuahuan Desertscrub and begins just west of Las Cruces, New Mexico, and extends west until it contacts the Sonoran Desertscrub community southeast of Tucson, Arizona.

The Project will cross approximately 3.5 miles of the Madrean Evergreen Woodland Biotic Community (Brown 1994) southeast of Dragoon, Arizona. Because Semidesert Grassland is present to the east, the west, and the north where this small portion of the Project area crosses Madrean Evergreen Woodland, this biotic community was not identified as an individual Reclamation Zone (section B15.5.1 below). Instead, reclamation and reseeding methods for Madrean Evergreen Woodland will be similar to those utilized for Semidesert Grassland and will be adjusted as needed based on site-specific needs to be determined with the approval of BLM. All reclamation levels, actions, and monitoring will be the same as Semidesert Grassland

B15.4.2 Chihuahuan Desertscrub

The Chihuahuan Desertscrub biotic community covers large areas of southern New Mexico and West Texas, smaller areas of southeast Arizona, and a large part of the State of Chihuahua, Mexico. This community is centered in the highland plains and basins of northern Mexico, below the Semidesert Grassland community (Brown 1994). This biotic community is dominated by basin and range topography, and most of this community is underlain by limestone.

The lower elevation limit of Chihuahuan Desertscrub is around 1,300 feet, while its upper limit is generally between 4,600 and 5,250 feet. Average annual rainfall in this community ranges from 7.9 to 11.8 inches. Large areas of this desert are dominated by three shrubs: creosotebush (*Larrea tridentata*), tarbush (*Flourensia cernua*), and viscid acacia (*Vachellia neovernicosa*). Honey mesquite (*Prosopis glandulosa*) and saltbush (*Atriplex* spp.) are common in some areas. Common leaf succulents include agaves, yuccas, and sotols. This community is interspersed with Semidesert Grassland and extends between Las Cruces, New Mexico, and Benson, Arizona.

B15.4.3 Arizona Upland Subdivision of Sonoran Desertscrub

The Arizona Upland Subdivision covers large areas of the northern and eastern parts of the Sonoran Desertscrub biotic community in Arizona and Sonora, Mexico. This subdivision is a cactus-dominated community situated topographically above the Lower Colorado River Subdivision and below Semidesert Grassland (Brown 1994). As with other communities, the upper and lower elevation limits of this community vary substantially over its distribution. The lower edge of this subdivision is generally between about 1,000 and 2,100 feet, whereas the upper contact with Semidesert Grassland is generally between 2,950 and 3,300 feet. Average annual rainfall in this community ranges from 7.9 to 16.7 inches. This community is dominated by a high diversity of cactus, and most of the woody shrubs have thorns. Common cactus species include saguaro, chollas (*Cylindropuntia* spp.) and pricklypears (*Opuntia* spp.), barrel cactus (*Ferocactus* spp.), hedgehog cactus (*Echinocereus* spp.), and pincushion cactus (*Mammillaria* spp.). Some common small trees and shrubs include paloverde (*Parkinsonia* spp.), ironwood, velvet mesquite (*Prosopis velutina*), acacias (*Acacia* spp.), and creosotebush. In the Project area, this community is limited to the immediate vicinity of Tucson, Arizona.

B15.4.4 Lower Colorado River Subdivision of Sonoran Desertscrub

The Lower Colorado River Subdivision covers large areas of the southern and western parts of the Sonoran Desertscrub biotic community in Arizona, California, Baja California, and Sonora, Mexico. This subdivision is a shrub-dominated community situated topographically below the Arizona Upland Subdivision (Brown 1994). This community is the hottest and driest part of the Sonoran Desert, with average annual rainfall between 1.2 and 11.3 inches. Dominant shrub species include creosotebush, white bursage (*Ambrosia dumosa*), and saltbush. Other shrubs and small trees are present in xeroriparian zones along small drainages. In the Project area, this community is limited to a relatively small area northwest of Tucson, Arizona.

B15.5 Reclamation Plan Methodology

This section of the plan describes the process used to identify reclamation actions that will be required upon identification of construction-related disturbance for the Project. The following discussion focuses on two key components: (1) Identification of Reclamation Zones, and (2) Identification of Reclamation Levels that have been used to designate or prescribe the required preconstruction and post-construction actions for each Reclamation Zone. The implementation of the reclamation actions varies based on these two components, as well as the vegetation communities potentially affected.

B15.5.1 Identification of Reclamation Zones

This plan identifies four reclamation zones, which describe an appropriate range of reclamation actions that will be implemented during preconstruction, construction, and post-construction activities. These zones are based on the four biotic communities (Brown 1994) within the Project area as they relate to vegetation typically found in the communities and reclamation actions applicable to such vegetation. While species composition will vary within each reclamation zone, similar vegetation types will likely occur that will support similar reclamation actions.

- Reclamation Zone 1 occurs where the Project will cross semidesert grassland.
- Reclamation Zone 2 occurs where the Project will cross Chihuahuan desertscrub.
- Reclamation Zone 3 occurs where the Project will cross the Arizona Upland Subdivision of Sonoran desertscrub.
- Reclamation Zone 4 occurs where the Project will cross the Lower Colorado Subdivision of Sonoran desertscrub.

These reclamation zones are mapped in figures B15-1 and B15-2.

Figure B15-1. Reclamation Zones in the New Build Section.

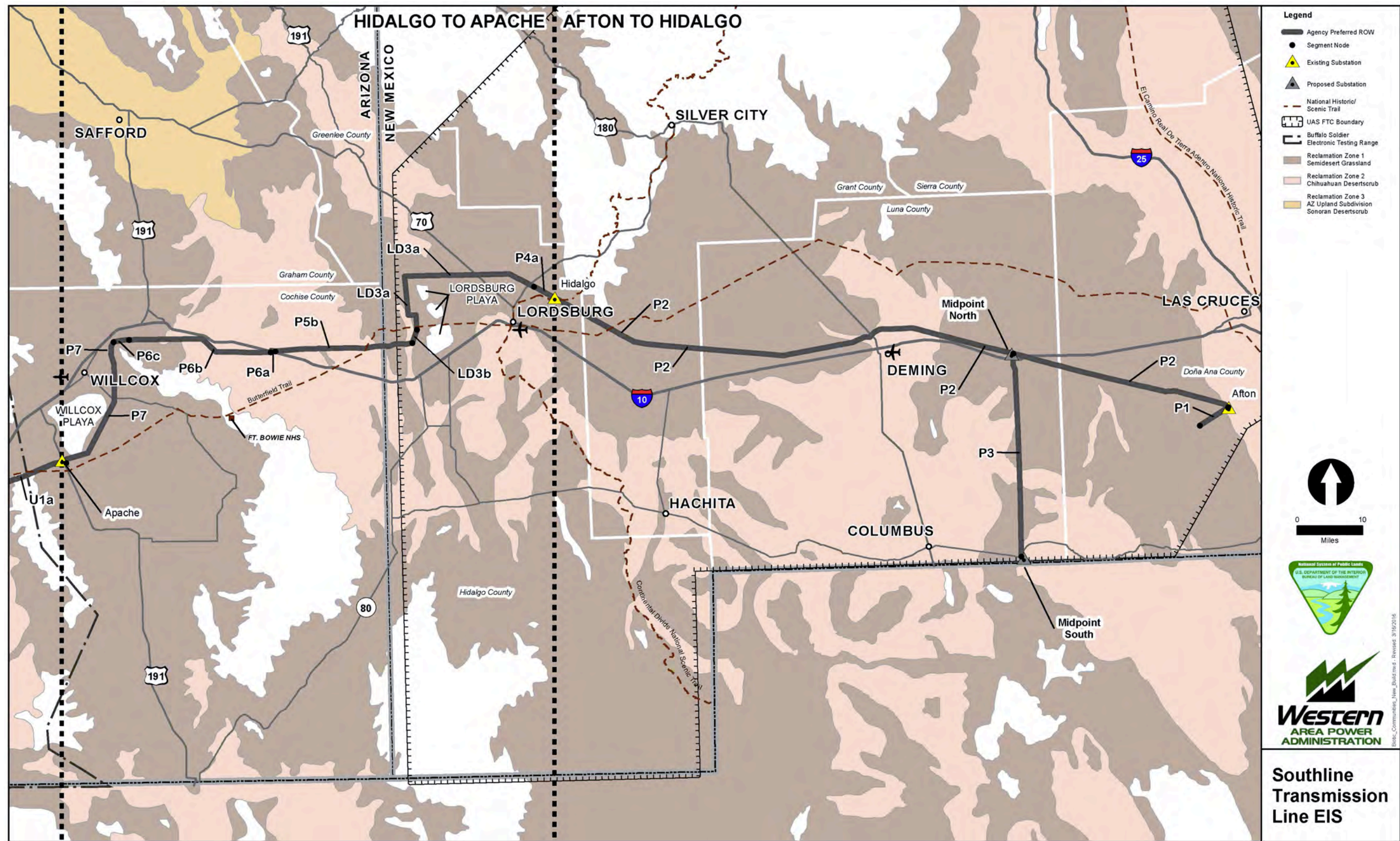
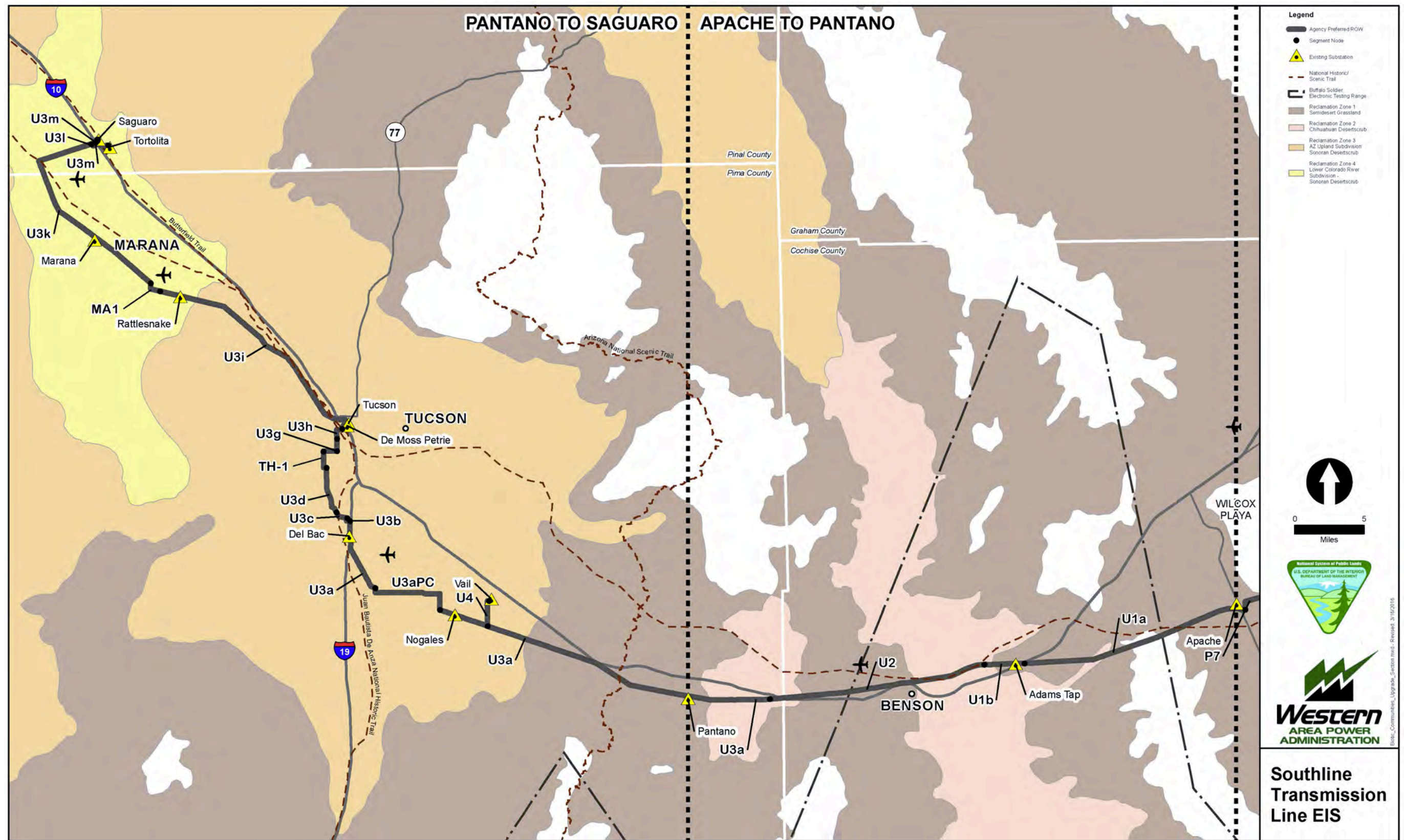


Figure B15-2. Reclamation Zones in the Upgrade Section.



B15.5.2 Identification of Reclamation Levels

Reclamation levels (RLs) that prescribe the types of required preconstruction and post-construction actions were determined based on (1) the type(s) of construction activity, facility features, and the area of associated disturbance, (2) the duration of disturbance (temporary or permanent) associated with these features, and (3) the type of disturbance associated with each activity, as described below.

B15.5.2.1 TYPES OF CONSTRUCTION ACTIVITIES AND FACILITY FEATURES

Activities associated with the construction of the major and ancillary facilities of the Project will include the following tasks:

- Surveying the transmission centerline, other Project features, and work areas;
- Staking and flagging of ROW and protected sensitive areas;
- Upgrading or constructing temporary and permanent access roads;
- Clearing and grading activities for the ROW, tower sites, staging areas, substations, regeneration sites, and batch plants;
- Excavating foundations;
- Installing foundations;
- Assembling and erecting towers with temporary and permanent pad sites;
- Stringing conductors and ground wires;
- Installing tower grounds where needed; and
- Conducting cleanup and reclamation of affected areas.

B15.5.2.2 DISTURBANCE DURATION

This plan defines two broad types of disturbance durations: temporary and permanent. Areas of temporary disturbance are those areas that would be used only during construction activities. Examples include work areas where heavy equipment is used to move and install towers, pulling and tensioning sites, overland access (and parking) across public land to reach the Project area, use of temporary access roads, and designated staging areas for equipment and materials.

Areas of permanent disturbance are those areas where use will be long term or for the life of the Project and the landscape will be altered through vegetation removal or management, site leveling, modifying natural drainages, fencing, and construction of towers, facilities, and other structures. Permanent disturbance also includes access roads constructed for regular maintenance of facilities and structures.

B15.5.2.3 DISTURBANCE TYPE

This plan defines four broad disturbance types based on activities associated with the construction of Project facilities considered in the identification of RLs and practices, as described below.

Disturbance Type 1 (D1) – No New Disturbance

These areas include existing access roads and pre-disturbed locations that do not require improvement (vegetation removal or grading) and that will remain permanent (in place) after Project construction is complete.

Disturbance Type 2 (D2) – Overland Drive-and-Crush

In these areas, disturbance is caused by access to a site or construction activities within a work area that does not significantly modify the landscape. Vegetation is crushed, but not cropped. Soil is compacted, but no surface soil is removed. Examples may include tensioning and pulling areas, tower pad sites, overland access to regeneration sites, spur roads to towers, and wetland areas requiring crane mats for access. Even though vegetation may be damaged and even destroyed, the surface soil and seed bank remains in place. Some crushed vegetation will likely resprout after disturbance ceases. These activities will result in minimal to moderate disturbance.

Disturbance Type 3 (D3) – Overland Clear-and-Cut

In these areas, disturbance is caused by access to the Project site or construction activities within a work area that requires the clearing 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 soil is removed (i.e., no blading of topsoil). Examples include temporary access roads where overland access may be used in the construction of facilities, or in some areas where roads may be improved for access (selective tree and brush clearing). In general, clear-and-cut activities will result in moderate amounts of disturbance.

Disturbance Type 4 (D4) – Blading

Disturbance in these areas is caused by removing vegetation in the affected zone. The soils are compacted, and the surface soil is displaced (i.e., blading of topsoil). These activities result in heavier disturbance; examples include new access roads that require grading and filling, clearing and grading that may be associated with tower sites, and improvements to existing access.

B15.5.2.4 RECLAMATION LEVELS

Five levels of reclamation (RL1 to RL5) have been identified based on the potential type of disturbance and the duration of disturbance associated with the construction of the Project. These RLs are identified in table B15-1 and briefly described below.

Table B15-1. Reclamation Levels

Disturbance Level	Disturbance Duration	
	Permanent	Temporary
D1 – No New Disturbance	RL1	–
D2 – Overland: Drive and Crush	RL1	RL2
D3 – Overland: Clear and Cut	RL4	RL3
D4 – Blading	RL4	RL5

Reclamation Level 1 (RL 1) – Minimal Level of Disturbance, Minimal Actions (Permanent)

Construction in these areas does not result in new disturbance, requires minimal preconstruction treatment, and will normally require no post-construction actions (outside of routine maintenance). Pretreatment of existing weeds is one action that will be required in selected areas to protect from the infestation and spreading of noxious weeds.

Reclamation Level 2 (RL2) – Low Level of Disturbance, Few Actions (Temporary)

Construction and activities in these areas are temporary and will result in disturbance that is confined to overland construction, including vegetation crushing requiring limited reclamation actions. Reclamation actions will focus on noxious weed control, decompaction, and seeding of affected soils.

Reclamation Level 3 (RL3) – Moderate Level of Disturbance, Several Actions (Temporary)

Construction and activities in these areas will result in moderate temporary disturbance, limited to clearing and cutting of vegetation and several reclamation actions. In addition to the actions described under RL2, cleared vegetation will be used as vertical mulch; supplemental mulch such as straw may be used to protect cleared areas. Areas of reclamation will be flagged or signage provided for protection in areas as appropriate.

Reclamation Level 4 (RL4) – Moderate/High Level of Disturbance, Few Actions (Permanent)

Construction of Project facilities in these areas results in a high level of disturbance (e.g., clearing, cutting, and soil removal); however, few reclamation actions will be required because these areas are permanent. This applies most specifically to new access roads that will serve for long-term maintenance and operation of the transmission line. In these locations, seeding and alternative seeding will be applied where appropriate, and replacing of soils and vertical mulch will be limited.

Reclamation Level 5 (RL5) – High Level of Disturbance, Maximum Actions (Temporary)

These are the construction areas that will result in a high level of disturbance due to vegetation and soil removal, but are planned for long-term reclamation. In these areas actions pertaining to soil salvage and seeding will be necessary to reclaim the disturbed seedbank.

Table B15-2 identifies the various RLs to be specifically applied for each of the construction components and associated disturbance levels/durations. In general, the order of preference for disturbance levels, from greatest to least, is overland drive-and-crush, clear-and-cut, and blading.

Table B15-2. Construction Component – Reclamation Levels

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Permanent	Temporary	
Structure work areas	D2 – Overland: Drive and Crush		X	RL2
	D3 – Overland: Clear and Cut		X	RL3
	D4 – Blading		X	RL5
Wire-pulling and tensioning sites, wire-splicing sites, wash stations, multi-use construction yards, staging areas, guard structures, and other ancillary facilities that result in temporary disturbance.	D2 – Overland: Drive and Crush		X	RL2
	D3 – Overland: Clear and Cut		X	RL3
	D4 – Blading		X	RL5
Helicopter landing/laydown areas, helicopter refueling sites	D2 – Overland: Drive and Crush		X	RL2
	D3 – Overland: Clear and Cut		X	RL3

Table B15-2. Construction Component – Reclamation Levels (Continued)

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Permanent	Temporary	
Regeneration sites and other ancillary facilities that result in permanent (long-term) disturbance	D2 – Overland: Drive and Crush	X		RL1
	D3 – Overland: Clear and Cut	X		RL4
	D4 – Blading	X		RL4
Substation construction areas	D2 – Overland: Drive and Crush		X	RL2
	D3 – Overland: Clear and Cut		X	RL3
	D4 – Blading	X	X	RL4/RL5
Existing paved roads, access roads (no improvement)	D1 – No New Disturbance	X		RL1
Existing access road (with improvements)	D4 – Blading	X		RL4
New access road	D2 – Overland: Drive and Crush	X	X	RL1/RL2
New access road	D3 – Overland: Clear and Cut	X	X	RL3/RL4
New access road	D4 – Blading	X	X	RL4/RL5

B15.6 Reclamation Plan

The actions required specifically for each level of reclamation (RL1 to RL5) with respect to the four reclamation zones discussed above are presented in this section of the plan (table B15-3). As described below, preconstruction actions are those that occur before construction of the Project is initiated to preserve resources or features of interest, and include activities associated with ROW preparation for reclamation and preconstruction activities. Post-construction actions focus on activities that will occur after Project construction has terminated and generally include reclamation, maintenance, and monitoring activities. The parties responsible for both pre- and post-construction activities are as outlined in Section B15.3.1 Responsible Parties.

If these reclamation practices cannot be implemented immediately following construction, the appropriate interim erosion control measures discussed in the Stormwater Pollution Prevention Plan (SWPPP) (to be developed before construction begins; see Appendix B3 – Stormwater Pollution Prevention Plan) will be installed until revegetation and final stabilization can occur.

B15.6.1 Right-of-Way Preparation and Preconstruction Actions

ROW preparation includes general site preparation involving flagging of the ROW boundaries and construction areas (see appendix A1). It also includes identification of plants to preserve in place, weed-infested areas, and storage areas for windrowed plant and soil materials. Monitoring sites will also be established during preconstruction activities. Preconstruction actions focus on protection of sensitive areas and resources identified for preservation. Disturbance related to Project construction may begin after all ROW preparation and preconstruction actions have been completed for that segment.

B15.6.1.1 WEED PLAN IMPLEMENTATION

Refer to Appendix B11 – Noxious Weed Management Plan for specific mitigation measures to implement where noxious weeds have been identified, as well as preventive measures to be implemented to prevent the spread of noxious weeds during construction and minimize impacts on sensitive plants. When control measures have been implemented for the preconstruction phase, subsequent actions for ROW preparation may proceed.

Table B15-3. Reclamation Action Identification Table

Reclamation Level	Zone 1					Zone 2					Zone 3					Zone 4				
	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5
Preconstruction Actions																				
Weed plan implementation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Selective clearing/feathering								X	X	X			X	X	X		X	X	X	X
Topsoil segregation					X					X					X					X
Windrow vertical mulch			X	X	X			X	X	X			X					X	X	X
Postconstruction Actions																				
Earthworks		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X
Topsoil replacement					X					X					X					X
Seeding		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X
Alternative seeding		X	X	X	X		X	X	X	X		X	X	X			X	X	X	X
Supplemental planting			X		X			X												
Vertical mulch replacement			X		X			X		X								X		X
Permeon™ (or approved equal)			X	X	X			X	X	X			X	X	X			X	X	X
Supplemental mulch			X		X			X		X			X		X			X		X
Off-highway-vehicle deterrent		X	X		X		X	X		X		X	X		X		X	X		X
Signage		X	X		X		X	X		X		X	X		X		X	X		X
Monitoring		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X

B15.6.1.2 MONITORING TRANSECT SELECTION

Preliminary site monitoring locations will be established along the ROW in random locations but within each of the reclamation zones and vegetation communities traversed by the Project, as well as each disturbance area affecting sensitive plants. The number of sites on federally managed lands will be based on criteria needs and approved by the BLM. An average of five paired (treatment and control) monitoring sites per reclamation zone is recommended, based on the type of vegetation community and the size of its affected area.

Larger areas affected (relative to other vegetative communities) may require more than the recommended average of five paired monitoring sites, whereas smaller areas may require less. Once monitoring site locations are finalized, baseline photographs will be taken prior to any construction-related disturbance.

B15.6.1.3 SELECTIVE CLEARING/FEATHERING (WIRE ZONE-BORDER ZONE TECHNIQUE)

Vegetation clearing will be minimized to the extent practicable and selective clearing and feathering is the normal practice for mitigating impacts in areas where trees or brush of high densities have been cleared due to Project activities. If necessary and where practicable, selective clearing and feathering can be implemented inside the ROW to meet safety standards for conductor clearance for the Project. A representative of Southline's environmental compliance group (specifically vegetation management) will participate in the identification of trees or brush to be selectively cleared. Guiding principles used in the clearing of vegetation during construction are described below.

The construction contractor(s) will prune trees in preference to cutting trees, and will cut trees in preference to bulldozing them, in coordination with the compliance inspection contractor (CIC). Cut material may be placed in slash piles and/or used as vertical mulch as approved by the BLM. Pruning will comply with Western's Integrated Vegetation Management Guidance Manual (Western 2011). Pruning will be accomplished by use of pruning saws, power saws, nippers, bow saws, or cross-cuts.

Where necessary, tree removal will be accomplished by cutting as near to the surrounding grade wherever possible. Though not anticipated for this Project, if tree removal is necessary through dense stands, feathering of the edge may occur in selective areas to visually soften the edge between the cleared and remaining trees as approved by the BLM.

Where the ROW crosses sensitive roads and trails, such as National Trails, selective clearing shall allow natural vegetation to be left in the ROW on each side (as possible). Also, cutting or pruning of trees will occur so the fresh cut is oriented away from these areas where possible.

B15.6.1.4 TOPSOIL SEGREGATION

This activity includes the separation of topsoil from subsoils (if subsoils are disturbed), which contain organic material, including the seeds of plants growing on the site, to be set aside for post-construction replacement. The construction contractor(s) will conduct topsoil salvage and include all rocks and vegetation as vertical mulch. The depth of topsoil separation will be dependent on the soil type within which the reclamation activity will occur and will be identified by the construction contractor(s) and approved by the BLM Authorized Officer or his/her designated representative. This topsoil will be labeled as such and protected from erosion and inadvertent use as fill. Topsoil shall not be mixed with subsoil. When stockpiled, topsoil shall be tackified with water to a 2-inch wetting depth to minimize erosion. Overall handling should be kept to a minimum. Separation between salvaged topsoil and subsoils will always be maintained. Topsoil taken from areas of sensitive plant populations shall be stockpiled

separately from other topsoil and replaced in the same location from which it was taken as soon as practical.

B15.6.1.5 WINDROW VERTICAL MULCH

Materials, including dead plants, cut plants, and rocks, will be temporarily set aside during ROW preparation so they may be shredded or otherwise placed on the soil surface (post-construction) to increase fertility, provide microclimates for seeds to germinate, and stabilize soil. Large rocks and boulders shall also be removed to the side. Large rocks can be removed and stockpiled outside the disturbance areas (within the ROW). Vertical mulch temporary storage areas will be located within the ROW. At Project locations where there are sensitive viewers within line-of-sight to the ROW, temporarily stored windrowed mulch should be located in a less visible area, where possible.

B15.6.2 Post-construction Actions

Post-construction actions occur after Project construction has terminated and primarily focus on stabilizing permanent use areas and restoring temporary areas to allow reoccupation of vegetation. Reclamation actions that may be used are defined below and are organized by their sequence of implementation. Southline and their construction contractor(s) shall describe and document the site-specific techniques as applicable for the reclamation actions identified below in a Project-specific post-construction treatment plan that will be reviewed and approved by the BLM or other agency representative before post-construction actions commence.

B15.6.2.1 EARTHWORKS

These activities may include (1) recontouring (2) soil decompaction, and (3) applying appropriate soil erosion measures in conformance with the SWPPP. Earthmoving equipment places the removed material as close to the preconstruction contour as practical to reclaim the visual quality and provide stability to the slope. Soil decompaction, if required, may include ripping or scarifying to allow permeation of water into the ground. Erosion control measures such as water bars may be installed as recommended by the construction contractor(s) or CIC and used in conformance with the SWPPP.

Recontouring includes burying subsurface soils (backfilling holes) excavated during construction activities so the natural terrain contours are maintained to the extent practicable and do not inhibit access for maintenance activities. Excess subsoil from excavated or graded areas (around transmission structure bases) will be evenly spread over disturbed areas and moistened and compacted to a relative average density comparable to undisturbed adjacent material before respreading topsoil. Subsoils will not be spread outside of these flagged construction areas and will be restricted to areas of permanent disturbance (i.e., access roads) unless approved by BLM or the appropriate private landowner.

Where any compaction or detrimental puddling exists, and based on the vegetation present in the area, the surface will be ripped or scarified to a depth of 6 inches as appropriate (e.g., not applicable to rock faces, severe slopes, or cliff areas), and will retain a 12-inch buffer from existing vegetation or plants designated as preserve in place. Depth and area of compaction and/or puddling relief will depend on site-specific conditions. Decompaction or ripping will be conducted as necessary. Cross-ripping is preferable and care should be taken to prevent inverting the soil layers and preserving any vegetation in place. Deep sandy soils do not need to be decompacted and will not be ripped.

Installation of erosion control measures will be coordinated with the construction contractor(s) in coordination with the CIC and adapted to site-specific conditions.

B15.6.2.2 TOPSOIL REPLACEMENT

Topsoil will be replaced without mixing with subsoil. The purpose of this practice is to prevent mixing fertile, shallow soils with deeper soils that may be less productive because of rock, gravel, sand, calcareous layers, salinity, or other chemical characteristics that would adversely affect desired vegetation. Salvaged topsoil shall be dispersed evenly across the disturbed site. Additional erosion control and soil stabilization may be required to minimize soil movement, especially for heavily sloped areas or for fine-textured soils, as determined by the CIC, in conformance with the SWPPP. Handling of surface soil will be minimized during windy conditions. Soil will be wet to a depth of 2 inches to prevent wind erosion. The site will be left adequately rough after surface soil placement to provide micro-sites for seed germination and to prevent significant movement of soil by seasonal weather events (wind or rain).

B15.6.2.3 SEEDING

Reseeding involves planting new seed of indigenous native species to establish desired vegetation within affected vegetation communities. Seeding should only be applied on areas of the Project that receive at least 7 inches of rainfall per year, alternatives for areas with less than 7 inches rainfall per year are described below in sections B15.6.2.6 and B15.6.2.7. Seeding shall be accomplished in a two-stage process. The first process is the tillage of the soil and applying soil amendments. The second process is the application of seed.

For the first phase, prior to seed application, the area to be seeded shall be tilled (ripping, discing, etc.) to a minimum depth of 8-inches. On sloped areas, tillage shall follow the contour lines so that rows are perpendicular to the slope creating minor ridges to facilitate rain water collection and to reduce erosion. If the slopes are too steep to be tilled by larger equipment, other methods of achieving tillage may be utilized upon approval by the BLM Authorized Officer or his/her designated representative. Soil of the area to be seeded shall be amended with proper fertilizers, compost, and other necessary soil amendment materials to create a viable and healthy seedbed. Fertilizer shall include chemicals such as one part sulfur-coated urea, one part monammonium phosphate, methylene urea, etc. The preferred fertilizer mixture is a 24-18-12 chemical blended fertilizer. Other mixtures may be approved by the BLM Authorized Officer or his/her designated representative. Application rate of the fertilizer shall be approximately 200 pounds per acre. Compost shall be comprised of composted organic vegetative materials. Compost shall be dark in color with an even mixture of fine, medium, and large particles and be a nutrient rich mixture. The contractor shall provide test results of compost to the BLM Authorized Officer or his/her designated representative prior to application.

For the second phase, examples of seed mixtures are given in attachment B15-1, and a BLM specialist (e.g., botanist, range management specialist, or soil scientist designated by the BLM Authorized Officer) will provide the final list of approved type and quantity of seed mixtures, seeding method, and seeding locations. In this regard, mixtures that discourage the establishment of invasive and noxious weeds will be considered as described under Alternative Seeding below. Seed mixtures will be based on vegetation communities described in this plan and should be developed close to the time of reclamation to ensure seed availability. Seeding shall be repeated if a satisfactory stand is not established as determined by the authorizing agency officer upon evaluation after the second growing season. Seeding will be determined satisfactory if the seeded areas have germinated and are demonstrating that they will, over time, achieve a diversity and distribution similar to preconstruction conditions. If after a second growing season the authorizing agency officer identifies problem areas (i.e. low seed germination, presence of noxious weed species) the area will be treated and reseeded. Treatment may include additional seedbed preparation, soil amendments, noxious weed treatment, and/or another appropriate seeding mix.

B15.6.2.4 ALTERNATIVE SEEDING

Alternative seeding is employed to establish ground cover in disturbed or weed infested areas by seeding of annual grasses and/or forbs. Annuals 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 will be determined prior to construction through coordination with a BLM botanist, range management specialist, seed core officer, or soil scientist (as determined by the BLM Authorized Officer).

B15.6.2.5 SUPPLEMENTAL PLANTING

Supplemental planting will be employed for plant species used by the lesser long-nosed bat (*Leponycteris curasoae yerbabuena*) and Mexican long-nosed bat (*Leptonycteris nivalis*). Agave and saguaro salvage will be augmented, as necessary within 3 years after completion of initial restoration activities. Augmentation will occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants will be used. Plants salvaged from areas of permanent disturbance will be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.

B15.6.2.6 VERTICAL MULCH/SLASH

Vertical mulch/slash is brush and limbs less than 6 inches in diameter removed during tree/shrub removal operations. Vertical mulch/slash is not entirely in contact with the soil surface, rather, parts of the mulch rise above the surface. Removed and stored trees and shrubs are the sources of vertical mulch/slash. For cleared areas, vegetation windrowed to the outside of the disturbance boundary will be replaced back onto the site.

B15.6.2.7 SUPPLEMENTAL MULCH

Mulch usually consists of shredded plant material or straw, but also includes wood fiber, paper mulch, or biodegradable erosion mats. Straw mulch may be used 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. Hydroseeding, wood fiber, tackifiers, or erosion blankets may be a less expensive alternative to straw mulch in areas that require seeding, as well. The quantity of mulch to be used shall be recommended by the construction contractor(s) and approved by BLM based on site conditions and will be installed according to the manufacturer's specifications. Straw mulch and other alternative mulches shall be weed-free as specified in the Noxious Weed Management Plan.

B15.6.2.8 OFF-HIGHWAY VEHICLE DETERRENTS

Operation of off-road vehicles 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 control off-road vehicles and other unauthorized vehicle use of the ROW will be determined in consultation with the BLM and relevant landowner, if not BLM, at the appropriate time. Specific areas of potential access to the ROW by off-road vehicles will be identified, and 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. Development of off-road-vehicle deterrents will be determined on a case-by-case basis based on BLM or other agency requirements and the construction contractor(s).

B15.6.2.9 SIGNAGE

Reclamation areas will require informational signs pertaining to reclamation efforts to prevent further disturbance by humans within these recovering areas (see Appendix A1 – Flagging, Fencing, and Signage Plan). All reclamation areas will have signs installed at locations where the ROW intersects permanent access roads to deter vehicular damage to the site.

The construction contractor(s) will provide the reclamation signs and T-posts. Sign locations will be provided by the construction contractor(s) to the BLM following completion of post-construction reclamation procedures and prior to the initiation of reclamation monitoring.

B15.6.2.10 RECLAMATION MONITORING

Monitoring will be conducted prior to construction and continue through post-construction phases of the Project.

B15.6.3 Modifications and Field Changes

The reclamation actions described in this Plan shall be implemented in coordination with Southline, their construction contractor(s), or assigned subcontractor and will be coordinated with the CIC. Adjustments to RLs or actions by the construction contractor(s) may be necessary if Project conditions change (e.g., disturbance levels change at a specific structure work site, access road disturbance type changes based on Project needs, etc.). However, any changes to these levels of reclamation and the associated actions will be reviewed and approved by the CIC. 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 construction contractor(s), and the reclamation level will be reassessed to ensure that appropriate reclamation actions will be implemented.

Additional linear facilities exist in the same area to be occupied by the Project. Where feasible, consolidation of access (i.e., using existing access from other facilities or retaining Project construction access for additional future facilities use, thereby reducing overall new road construction) may result in an overall reduction in access-related concerns and/or impacts to the environmental resources within and near the ROW.

B15.7 Reclamation Success Standards, Monitoring, and Maintenance

This plan requires post-construction reclamation monitoring to evaluate reclamation success of reclaimed areas associated with the construction of Project facilities, identify the need for adaptive management measures, and make a final determination regarding reclamation success to release Southline (and the construction contractor[s] by contractual obligation) from further monitoring and reclamation actions.

Reclamation success standards will be used by BLM/Western to determine whether the implemented reclamation actions have adequately achieved the goals and objectives outlined in the Reclamation Plan, with consideration for the local site conditions. The monitoring practices include standard techniques for monitoring sites, data collection, and quantitative (numerical) and qualitative (descriptive) measures to be used in monitoring reclamation success. Specific monitoring requirements, including the site-specific data analysis protocol, will be developed by the reclamation contractor in cooperation with BLM/Western prior to the start of preconstruction activities. This will allow the BLM to make more accurate

conclusions pertaining to reclamation success based on site-specific conditions, such as biotic community and climatic conditions, once construction has been completed.

The CIC will prepare and submit to Southline, the BLM/Western, and the construction contractor(s) a Reclamation Monitoring Report on an annual basis for up to 5 years following completion of construction. The purpose of the Reclamation Monitoring Report is to (1) present reclamation goals and success standards, (2) describe the monitoring practices to be implemented, and (3) discuss adaptive management and site release from monitoring. The foundation of the Reclamation Monitoring Report will describe, in detail, the monitoring practices used in developing the Reclamation Monitoring Report, and will, at a minimum, include:

- a description of the monitoring practices implemented,
- a presentation of the annual reclamation goals and successes, and
- a discussion of the adaptive management and proposed site release(s) from monitoring.

Adaptive management may be necessary to determine appropriate remedial actions, based on monitoring observations, for sites that have not demonstrated a trend toward reclamation success. If required, implementation of remedial actions will be determined by the BLM based on the monitoring data and annual report. After 5 years of post-construction monitoring, a final report will be submitted to the BLM and cooperating agencies summarizing monitoring data, observations, and the overall trend toward reclamation for each vegetation community. Areas with sensitive plant occurrences affected by Project activities will be monitored to determine whether the sensitive plants are recolonizing the site, whether soils are stable or erosion is occurring, and whether noxious weeds are present. If necessary, a post-construction site-specific treatment plan to encourage establishment of the sensitive plants and other desired vegetation, stabilize soils, and address noxious weeds in these areas will be provided by the construction contractor(s) or Reclamation Contractor for review and approval by the BLM. Southline will be released from further reclamation and monitoring after the report and annual monitoring data are submitted to the BLM documenting that reclamation success criteria have been met. However, reclamation in soils with low moisture may take longer than 5 years to reestablish satisfactory vegetative cover, and Southline would maintain responsibility for post-construction monitoring for these areas.

B15.7.1 Reclamation Goals and Success Standards

As stated above, the intent of this plan is to provide a framework for reclamation treatments to be applied to the Project upon identification of construction related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas such that these areas are functionally and visually compatible. Reclamation success, as presented in this plan, is defined by the progression of vegetation and soils toward reconstruction disturbance conditions.

Southline will be responsible for monitoring reclamation efforts for the Project (see section B15.3.1). Reclamation success will be evaluated by the BLM by comparing Project-affected treatment sites with control site conditions in terms of desirable species density and cover. Reclamation of treatment sites will be considered successful if each site is within a specified percentage of the mean native species density and cover of the control site and the specified percentage of sensitive plants, as determined by the authorizing agency officer, are reestablished within each area of disturbance affecting sensitive plants.

Control sites will be representative areas that exhibit the same target plant community located adjacent to, or near, the Project-affected treatment sites. The establishment of control sites within undisturbed communities will allow the monitor to compare the reclamation progress of the treatment site against the control site.

The specifications in this Plan detail reclamation zones and RLs that provide guidance for specific reclamation actions. This plan presents four reclamation zones, which have been identified based on vegetation characteristics aggregated by biomes. Particularly sensitive environmental features (e.g., sensitive plant areas, critical winter range habitat, noxious weeds, etc.) throughout the Project may require additional reclamation actions to mitigate disturbance issues associated with the Project and maximize the prospect for reclamation success.

Reclamation success is highly dependent on vegetation community type, environmental conditions (e.g., annual precipitation), avoidance of future disturbance, proper implementation of reclamation actions, and to a certain extent, reclamation zone. Recommended success standards will be monitored within each of the previously described reclamation zones specific to the setting of the Project, including topography and the vegetation communities as identified, and sensitive plant disturbance areas. If the final monitoring report concludes (with agency concurrence) that (1) typical environmental conditions, (2) proper implementation of reclamation actions, and (3) lack of disturbance or appropriate mitigation of disturbance effects is evident, reclamation success will be based on desirable vegetation cover and density for each community type and the number of sensitive plants that occupy each area of disturbance affecting sensitive plants. If these conditions are not evident by the final monitoring report (with agency concurrence), adaptive management and/or remedial actions may be required by the BLM. Percent cover (amount of vegetation canopy per unit) and density (number of plant species per unit) will be based on the quantitative data collected from the control plot for each monitoring site and approved by BLM/Western.

B15.7.2 Monitoring Practices (Methodology)

All monitoring sites will be delineated during preconstruction activities and will include the collection of baseline data for subsequent post-construction monitoring. Post-construction annual monitoring and collection of data will be conducted during the flowering season (typically April to August for all Reclamation Zones) after construction and reclamation actions are completed. An annual summary of monitoring information will be provided to BLM/Western for review and discussion of reclamation conditions. As currently anticipated, construction activities will result in varying disturbance levels that will require two types of monitoring:

1. **General route monitoring.** General field reconnaissance (windshield survey) and reporting of conditions in treated areas along the entire length of the transmission line ROW.
2. **Site monitoring.** Detailed field reconnaissance and reporting at designated reclamation monitoring sites and control areas along the transmission line ROW.

A description of the activities associated with these two monitoring methods (practices), and how these practices will be assigned to areas affected by construction of the transmission line and associated facilities, is presented below.

Southline and its construction contractor(s) responsible for performing reclamation monitoring will consult with BLM/Western to adapt these protocols, as needed, to meet localized conditions and concerns.

B15.7.2.1 ROUTE MONITORING

A general field review of the entire transmission line route, where accessible by vehicle, will be conducted in conjunction with annual site monitoring. The intent of this review is to document overall recovery conditions associated with the construction of the transmission line. Conditions to be observed may include areas of dead plants, establishment of noxious weed populations within the ROW or along access roads used for the Project, and/or significantly eroded soils. In lieu of establishing transects,

documentation may include establishing single photo points at agreed on locations with BLM/Western, estimating area or plant populations affected, and/or recording the apparent cause or remediation efforts required. Site locations may be documented by the transmission line tower number or global positioning system coordinates. Adaptive management actions may be implemented based on findings from the route monitoring as recommended by BLM/Western. Each annual visit will be used to assess designated route monitoring locations and document new locations where appropriate. Areas that will be considered through route monitoring are illustrated in table B15-4.

Table B15-4. Reclamation Monitoring Requirements

Construction Component (activity areas)	Disturbance Level	Disturbance Duration		Reclamation Level	Monitoring
		Permanent	Temporary		
Structure work area	D2		X	RL2	Route
	D3		X	RL3	Route
	D4		X	RL5	Route/Site
Wire-pulling and tensioning sites, wire-splicing sites, construction yards, and guard structures	D2		X	RL2	Route/Site
	D3		X	RL3	Route/Site
	D4		X	RL5	Route/Site
Helicopter landing/laydown areas, helicopter refueling sites	D2		X	RL2	Site
	D3		X	RL3	Site
Structure base regeneration sites	D4	X		RL4	None
Substation construction Areas (outside the disturbed area of footprint)	D2		X	RL2	Site
	D3		X	RL3	Site
	D4	X	X	RL4/RL5	Site
Existing paved roads, access roads (no improvement)	D1	X		RL1	None
Existing access roads (with improvements)	D4	X		RL4	None
New access roads overland access – drive and crush	D2		X	RL1/RL2	Route
New access road overland access – clear and cut	D3		X	RL3/RL4	Route
New access roads	D4	X	X	RL4/RL5	None/Route, Site

B15.7.2.2 SITE MONITORING

Preliminary site monitoring locations will be established along the ROW and temporary disturbance areas based on Project engineering data and preconstruction surveys, in accordance with the processes identified below. Sites will be selected for each of the reclamation zones and vegetation communities traversed by the Project illustrated in figures B15-1 and B15-2.

- Site selection will be prioritized to include sensitive plant areas and locations with high visual resource values.
- At least one pair of monitoring sites shall be located within each area of disturbance affecting sensitive plants.

- Where possible, site monitoring locations will meet more than one of these selection criteria, and the number of sites will be determined by BLM/Western.
- An average of five paired (treatment and control) monitoring sites per vegetation community is recommended based on the type of vegetation community and the size of its affected area, as well as one pair for each area of disturbance affecting sensitive plants.
- Vegetation communities with larger areas affected (relative to other vegetation communities in the Project area) may require more than the recommended average of five paired monitoring sites, whereas vegetation communities with smaller areas affected (relative to other vegetation communities in the Project area) may require less.

The level of temporary disturbance will be considered for monitoring site selection; sites will not include areas of permanent disturbance (e.g. access roads). Final determination of monitoring sites will be approved by BLM/Western prior to construction. Cooperation with the construction contractor(s) may be necessary immediately prior to construction if changes to construction work area(s) affect the location of the preliminary monitoring site. Once monitoring site locations are finalized, photographs will be taken (1) prior to any construction-related disturbance; (2) when initial reclamation efforts have been completed; and (3) during each yearly monitoring visit. For each monitoring site, paired vegetation transects will be installed and documented as treatment or control for quantitative monitoring. In general, the treatment transect will be placed within an affected area (normally within the immediate ROW), and the control transect will be placed immediately adjacent to the ROW, on undisturbed ground. Transect size and quantity will be determined based on the final footprint of disturbed areas, in cooperation with BLM/Western. Transect pairs should be sized and oriented in a similar manner, for consistency, if terrain or construction conditions require deviation. In addition, the location of transect sites should avoid areas susceptible to future human disturbance (off-highway vehicle, transmission line maintenance, planned future utilities), where possible, to preserve the integrity of each transect for the duration of the monitoring period.

Plots will be examined annually, and a variety of vegetation data will be collected including quantitative and descriptive information. Reclamation monitoring sites will also assess noxious and invasive weed establishment that may require remedial actions such as removal or treatment. However, it should be noted monitoring for known noxious weed locations may occur independently of reclamation monitoring, as outlined in Appendix B11 – Noxious Weed Management Plan. Reclamation monitoring will also include the consideration of erosion control as a key indicator to measure the trend toward reclamation success (where applicable), and remedial actions may be taken in conjunction with monitoring efforts to control erosion, as recommended by BLM/Western. These remedial actions will also follow requirements as stipulated in Appendix B8 – Erosion, Dust Control, and Air Quality Plan.

B15.7.2.3 MONITORING REQUIREMENTS

To address the various construction activities (components) associated with the transmission line, the disturbance types, and duration of disturbance associated with these construction activities, reclamation monitoring will occur according to the RLs (RL1 to RL 5) and their associated construction components as described in B15.5.2.4 – Reclamation Levels. Categories RL1 and RL4 (e.g., at structure bases, existing and long-term access) are permanent disturbance areas that will not require reclamation monitoring. However, all reclamation level areas will follow measures for noxious weed monitoring as specified in Appendix B11 – Noxious Weed Management Plan. RL2, RL3, and RL5 are temporary disturbance areas that will require reclamation actions and post-construction monitoring in selected locations to evaluate reclamation success. The highest disturbance level for construction activities is associated with RL5 areas, which occur in temporary structure work areas and are associated with new access roads (see table B15-4).

The specific location of monitoring sites associated with these different activities in key areas (e.g., critical habitat, sensitive plant areas, visually sensitive areas, and areas of sensitive soils) will be identified, reviewed, and approved by BLM/Western prior to initiation of preconstruction activities. Once monitoring sites have been approved, the construction contractor(s) will establish the sites in the field and baseline data (e.g., photographs, biometrics, and soil conditions) will be collected for subsequent monitoring up to 5 years following post-construction activities. For disturbed areas affecting sensitive plants, at minimum, photos from permanent photo plots, individual counts of sensitive plants within the affected areas, and noxious weed presence and treatment data will be collected and reported annually in the Reclamation Monitoring Report with an evaluation of whether recolonization is occurring.

B15.7.3 Data Collection

Reclamation monitoring will include both quantitative and qualitative data collection at the designated monitoring sites approved by BLM/Western. Quantitative monitoring will document the trend and degree of change at each site, and qualitative monitoring will detect the initiation of change and changes resulting from environmental conditions, such as precipitation, allowing for a record of change over time.

Reclamation monitoring for the Project will use vegetation as the main indicator of recovery, but observations on soil conditions will also be collected and considered when assessing progress toward functionality. Measurements and descriptions will be accompanied by photographs that will be used to help document the status of recovery at all monitoring sites. Sampling points will be located and mapped according to global positioning system coordinates. Photographic reference points will be the primary method of qualitative monitoring for the Project. A protocol for taking photographs and a standardized data recording form will be developed to ensure consistency of monitoring. Qualitative and quantitative information that will be gathered during general route monitoring and site monitoring is described in detail below.

B15.7.3.1 QUALITATIVE (DESCRIPTIVE) INFORMATION

Qualitative data collection will occur annually for both route and site monitoring. The goal of qualitative monitoring is to document site conditions and assess the need for remedial actions to ensure that sites are progressing toward the success standard established by BLM/Western. The Project area typically has unpredictable weather patterns that may affect reclamation success within the allotted 5-year post-construction monitoring time frame. Qualitative evaluations conducted at designated monitoring sites during monitoring will serve as representative indicators for similarly disturbed areas in the same vegetation community. These site evaluations will then serve as a baseline when conducting general overall route surveys for the remainder of the treated areas within that vegetation community.

Any outstanding or non-Project-related disturbances that could affect reclamation will also be described during the general route monitoring. Recovery from construction-disturbance activities, such as clearing and grading in the semi-arid and arid climactic zones, typically does not occur in a short amount of time, and it is for this reason the monitoring plan will assess the trend toward reclamation success standards.

Reclamation success may be assessed by the presence or condition of certain site characteristics that encourage recruitment of native vegetation. Reclamation actions of a given site, if implemented successfully, are anticipated to contribute to the stabilization of soils, seedling or seedbank recruitment, and avoidance of the establishment of noxious weeds. Lack of erosion at a site provides evidence soils have been adequately stabilized, while natural recruitment and/or reproduction indicates important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. Noxious weeds could potentially compete with native perennial species, and relatively high abundances can have negative effects on site conditions. Evidence of animal use also is used as an indicator that habitat conditions have been reclaimed; however, grazing can negatively affect reclamation success if

unmanaged. Patterns of established vegetation help to determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of surrounding vegetation. Each of these site characteristics will help determine trends that relate to reclamation success. Once recruitment conditions have been met, established vegetation is anticipated to contribute to the maintenance and functionality of the community to ensure continued success after monitoring has concluded.

B15.7.3.2 QUANTITATIVE (NUMERICAL) INFORMATION

Desirable vegetation cover will be numerically measured on those treatment sites, as identified with BLM/Western during the third and fifth growing seasons (or sooner if deemed appropriate) to determine if there is a trend toward reclamation success based on comparison of the control transect/area for each site. Quantitative assessment during the third year will provide enough time for vegetation establishment of the affected areas based on climatic trends for the area. Trends toward reclamation success, as well as remedial actions (if necessary), will be identified during the third year. Quantitative monitoring in year 5 will allow any remedial actions or climatic events to discernibly affect treated areas. Density monitoring records the number of plants per unit of area. This technique is sensitive to changes in the vegetation community caused by climatic conditions and resource uses, and provides useful information on seedling emergence, survival, and mortality. Not all plant species present will be monitored. Monitoring will focus on indicator perennial species as determined by control-site observations of the adjacent plant community. Species density will be evaluated by comparing the total number of indicator species in the treatment site with that of the control site. Other plant species will be inventoried, but densities will not be evaluated. Vegetation cover monitoring records the coverage of vegetation canopy per unit of area. Density and cover data, along with other biometrics (e.g., noxious weed composition, litter, erosion evident, etc.), will be recorded on standard field data sheets to be developed by the Reclamation Contractor and approved by the CIC.

B15.7.4 Adaptive Management and Site Release

The BLM requires an adaptive management approach, designed to allow frequent review and feedback on the progress of reclamation be implemented as a part of monitoring activities 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. Adaptive management actions may be recommended on a case-by-case basis where feasible, and as determined by the BLM, during the 5-year monitoring timeframe.

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 desirable vegetation cover, soil compaction, or lack of natural surface material. Based on this information, appropriate reclamation actions may include measures such as supplemental seeding, mulching, and additional weed control and/or erosion control measures. Recommendations could also include waiting to determine whether favorable germination/establishment conditions are expected. All adaptive management actions will be subject to the review and approval of the agencies. The contractor(s) will use all reasonable methods to help Southline ensure that reclamation is progressing toward the success standards identified in Section B15.7.1 – Reclamation Goals and Success Standards. It is possible some sites will be incapable of supporting adequate vegetation to progress towards the success standards due to conflicting land management, and environmental limitations not associated with the Project. For instance, reclamation may fail in areas with unmanaged off-highway-vehicle access, grazing of domestic livestock, natural disasters such as fire or flooding, and construction of other utility projects. If reclamation failure on federally managed lands is determined by the CIC to be caused by these conditions, neither Southline,

nor any of its construction/reclamation primary contractors or subcontractors, will be held responsible for continued reclamation and monitoring of these sites.

B15.8 Literature Cited

Brown, D.E. (ed.). 1994. Biotic Communities: Southwestern United States and Northwestern Mexico. Salt Lake City: University of Utah Press.

Western Area Power Administration (Western). 2011. Integrated Vegetation Management Guidance Manual.

B15.9 Attachment

Attachment B15-1: BLM Example Seed Mixes

Attachment B15-1

BLM Example Seed Mixes

Seed List Example from the Las Cruces District Office

SOUTHERN ROAD SEED MIXES

There are three seed mixes. As shown on Map 1 below, **MIX A** will be used on gravelly, gravelly loam and limestone hills ecological sites, **MIX B** will be used on bottomland, draw and loamy ecological sites, and **MIX C** will be used on gravelly sand, sandy/gravelly, and sandy sites.

PLS equals pure live seed. Seeding rate can be halved if planted with rangeland drill.

MIX A - gravelly, gravelly loam and limestone hills ecological sites

<u>Species</u>	<u>LBS/PLS/Acre</u>
Sideoats grama variety Niner or Vaugn (Bouteloua curtipendula)	3.0
Blue grama variety Hatchita (Bouteloua gracilis))	3.0
Purple three-awn (Aristida purperea)	1.0
Scarlet Globemallow (Sphaeralcea coccinia)	0.5

MIX B - bottomland, draw and loamy ecological sites

<u>Species</u>	<u>LBS/AC PLS</u>
Alkali Sacaton var. "Salado" (Sporobolus airoides)	3.0
Sideoats grama variety Niner or Vaugn (Bouteloua curtipendula)	3.0
Cane bluestem	1.0

(Bothriochloa barbinodis)

Fourwing Saltbush (Atriplex canescens)	5.0
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MIX C - gravelly sand, sandy/gravelly, and sandy ecological sites

<u>Species</u>	<u>LBS/AC PLS</u>
Sand Dropseed (Sporobolus cryptandrus)	0.5
Mesa Dropseed Sporobolus flexuosus	1.0
Purple Three Awn (Aristida purpurea var purpurea)	3.0
Desert Marigold (Baileya multiradiata)	1.0

Seed List Example from the Safford Field Office

Grass & Wildflowers / Each Species 2% - 7% of mix; for BLM AZ. Safford Field Office; 50% Grasses & 50% Wildflowers

Grasses: sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), rothrock grama (*Bouteloua rothrockii*), green sprangletop (*Leptochloa dubia*), Wolf tail (*Lycurus setosus*), Indian Wheat (*Plantago patagonica*), little bluestem (*Schizachyrium scoparium*), bristlegrass (*Setaria macrostachya* or *S. vulpisetata*), sand dropseed (*Sporobolus cryptandrus*), alkali sacaton (*Sporobolus airoides*), black grama (*Bouteloua eriopoda*).

Flowers: Arizona Poppy (*Kallstroemia grandiflora*), *Bahia absinthifolia*, desert marigold (*Baileya multiradiata*), *Zinnia acerosa* and/or *Z. grandiflora*, Dyssodia, Mexican gold poppy (*Eschscholzia californica*), Indian blanketflower (*Gaillardia pulchella*), Gordon's bladderpod (*Lesquerella gordonii*), *Penstemon palmeri*, *P. eatonii*, Globemallow (*Sphaeralcea angustifolia*, *S. emoryi*, or *S. laxa*), *Yucca elata*.

APPENDIX B16 HEALTH AND SAFETY PLAN

A Health and Safety Plan (HASP) is not typically required by Federal law; however, section 18 of the Occupational Safety and Health Act of 1970 encourages States to develop and operate their own safety and health programs in the workplace. In New Mexico, the Occupational Health and Safety Bureau, part of the New Mexico Environment Department (NMED), has the responsibility of enforcing Occupational Health and Safety Regulations. In Arizona, the Arizona Division of Occupational Safety and Health is responsible for enforcement and voluntary compliance.

The purpose of a HASP will be to ensure the safety of the Project employees, construction personnel, and the public. The HASP will be tailored specifically for the Project, and will include a description of hazards that may be encountered during the life of the Project. The HASP will detail employee safety training procedures that will be used, structural and non-structural safety controls that will be put in place, personal protective equipment that will be required, emergency response procedures, protocols for Project-specific procedures such as confined space entry, and applicable standards, practices, and procedures specified by the Occupational Safe and Health Administration (OSHA) (29 CFR 1910).

Content to be developed.

APPENDIX B17

AVIAN PROTECTION PLAN

An Avian Protection Plan (APP) will be a Project-tailored plan designed to reduce avian electrocution and collision mortality that result from avian interactions with electric utility facilities. The overall goal of an APP is to reduce avian mortality. The 2005 Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife (FWS) APP Guidelines (APLIC 2005) provide a framework, along with principles and examples of APPs.

The APP will be designed as a living document to be continually evaluated and refined over the life of the Project. The elements of the APP will include training, permit compliance, construction design and siting standards, nest management, a reporting system, risk assessment for evaluating the risks posed to migratory birds. The plan will also identify areas and issues of concern, mortality reduction measures, and avian enhancement options.

Examples of avian protection measures that *could* be included in the APP are:

- Marking wires (bird diverters) and/or using special structure design to increase visibility to birds;
- Applying special structural design to decrease the heights of ground wires and conductors;
- Monitoring to ensure that Proponent Committed Environmental Measures (PCEMs) are implemented; and/or
- Conducting additional avian studies, surveys, and/or monitoring to record the presence of birds and incidence of avian collisions, and provide data that could be useful to minimize the potential for collisions with the Project, as well as with existing and future power lines in other locations.

Southline Transmission, LLC (Southline), Bureau of Land Management (BLM), and Western Area Power Administration (Western) will collaborate with agencies such as the FWS, Arizona Game and Fish Department, and New Mexico Department of Game and Fish, and other cooperating agencies on development of the APP, the goal of which is mitigate the collision risk and loss of productivity for all birds.

Content to be developed.

APPENDIX B18

WASTE MANAGEMENT PLAN

A Project-specific Waste Management Plan will be developed to outline non-hazardous waste handling procedures that will be used during the construction, operation, and maintenance phases of the Project. Waste addressed in this plan will include all non-hazardous waste resulting from construction and land clearing, as well as material that is recycled, reused, salvaged, or disposed of as garbage.

Content to be developed.

B18.1 Waste Management Goals

B18.2 Responsibilities

B18.3 Waste Prevention, Packaging, and Recycling

B18.4 Communication and Education

B18.5 Expected Project Waste, Disposal, and Handling

Table B18-1.

Material	Quantity	Disposal Method	Handling Procedure
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B18.6 Material Disposition/Waste Disposal Companies

B18.6.1 Wastes – Location of Disposal, Timing of Pickup

B18.6.2 Recycling – Location of Disposal, Timing of Pickup

B18.7 Housekeeping

B18.8 Documentation

APPENDIX B19 HELICOPTER FLIGHT PLAN/FLIGHT AND SAFETY PLAN

The Helicopter Flight and Safety Plan will describe the hours and estimated number of days that a helicopter will operate for construction of the Project, the type and number of helicopters that will be used, and the kind of work to be performed. Additional information presented in this plan will include the location, size, and number of staging areas for helicopter takeoffs and landings, and safety measures to be implemented during helicopter operations. This plan will be reviewed and approved by the Federal Aviation Administration (FAA) prior to the commencement of helicopter operations.

Content to be developed.

APPENDIX B20 DECOMMISSIONING PLAN

The Decommissioning Plan will detail how the structures and facilities of the Project would be removed after the useful life of the Project is reached, and how the affected properties would be reasonably restored in accordance with the Bureau of Land Management (BLM) right-of-way (ROW) grant. This plan will be a general outline of how the Project will be decommissioned and how land will be restored to its original condition. Decommissioning procedures described will include the removal of structures, disposal of waste, and identification of what, if anything, may remain on the land upon completion. Restoration will include the stabilization and revegetation of the disturbance area to minimize erosion and return the land to productive use.

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

Content to be developed.

Appendix C

**TRANSMISSION CONSTRUCTION AND VEGETATION
MANAGEMENT STANDARDS**

APPENDIX C1 TRANSMISSION CONSTRUCTION STANDARDS



CONSTRUCTION STANDARDS

STANDARD 13 ENVIRONMENTAL QUALITY PROTECTION



September 2013

SAFETY
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STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

TABLE OF CONTENTS

	Page Number
SECTION 13.1—REQUIRED SUBMITTALS, REPORTS, AND PLANS.....	13-5
SECTION 13.2--CONTRACTOR FURNISHED DATA.....	13-5
1. RECYCLED MATERIALS QUANTITY REPORT	13-5
2. RECOVERED AND BIOBASED MATERIAL PRODUCTS REPORT	13-5
3. RECLAIMED REFRIGERANT RECEIPT	13-5
4. WASTE MATERIAL QUANTITY REPORT:.....	13-5
5. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan)	13-5
6. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN.....	13-5
7. PESTICIDE USE PLAN	13-5
8. TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING - CONSUMER INFORMATION RECEIPT	13-6
9. PREVENTION OF AIR POLLUTION.....	13-6
10. ASBESTOS LICENSES OR CERTIFICATIONS	13-6
11. LEAD PAINT NOTICES	13-6
12. WATER POLLUTION PERMITS	13-6
13. PCB TEST REPORT	13-6
14. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT.....	13-6
15. OSHA PCB TRAINING RECORDS	13-6
16. CLEANUP WORK MANAGEMENT PLAN	13-6
17. POST CLEANUP REPORT	13-6
SECTION 13.3--ENVIRONMENTAL REQUIREMENTS	13-6
SECTION 13.4--LANDSCAPE PRESERVATION.....	13-6
1. GENERAL.....	13-6
2. CONSTRUCTION ROADS.....	13-6
3. CONSTRUCTION FACILITIES.....	13-7
SECTION 13.5--PRESERVATION OF CULTURAL AND PALEONTOLOGICAL RESOURCES	13-7
1. GENERAL.....	13-7
2. KNOWN CULTURAL OR PALEONTOLOGICAL SITES.....	13-7
3. UNKNOWN CULTURAL OR PALEONTOLOGICAL SITES.....	13-7
SECTION 13.6--NOXIOUS WEED CONTROL	13-8
SECTION 13.7--RECYCLED MATERIALS QUANTITIES.....	13-8
1. GENERAL.....	13-8
2. RECYCLED MATERIAL QUANTITY REPORT.....	13-8
SECTION 13.8-- USE OF RECOVERED AND BIOBASED MATERIAL PRODUCTS	13-8
1. RECOVERED MATERIAL PRODUCTS.....	13-8
2. BIOBASED MATERIAL PRODUCTS	13-9
3. RECOVERED AND BIOBASED MATERIAL PRODUCTS REPORT	13-9
SECTION 13.9--DISPOSAL OF WASTE MATERIAL	13-9
1. GENERAL.....	13-9
2. HAZARDOUS, UNIVERSAL, AND NON-HAZARDOUS WASTES	13-9

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

3. USED OIL	13-9
4. RECYCLABLE MATERIAL	13-9
5. REFRIGERANTS AND RECEIPTS	13-9
6. HALONS	13-10
7. SULFUR HEXAFLUORIDE (SF6)	13-10
8. WASTE MATERIAL QUANTITY REPORT	13-10
SECTION 13.10--CONTRACTOR'S LIABILITY FOR REGULATED MATERIAL INCIDENTS	13-10
1. GENERAL	13-10
2. SUPERVISION	13-10
SECTION 13.11--POLLUTANT SPILL PREVENTION, NOTIFICATION, AND CLEANUP	13-10
1. GENERAL	13-10
2. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan)	13-10
3. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN	13-11
SECTION 13.12--PESTICIDES	13-11
1. GENERAL	13-11
2. ENVIRONMENTAL PROTECTION AGENCY REGISTRATION	13-11
3. PESTICIDE USE PLAN	13-11
SECTION 13.13--TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING OR DISPOSAL	13-11
SECTION 13.14--PREVENTION OF AIR POLLUTION	13-12
1. GENERAL	13-12
2. MACHINERY AIR EMISSIONS	13-12
3. DUST ABATEMENT	13-12
SECTION 13.15--HANDLING AND MANAGEMENT OF ASBESTOS CONTAINING MATERIAL	13-12
1. GENERAL	13-12
2. TRANSPORTATION OF ASBESTOS WASTE	13-12
3. CERTIFICATES OF DISPOSAL AND RECEIPTS	13-12
SECTION 13.16--MATERIAL WITH LEAD-BASED PAINT	13-12
1. GENERAL	13-12
2. TRANSFER OF PROPERTY	13-12
3. CERTIFICATES OF DISPOSAL AND RECEIPTS	13-12
SECTION 13.7--PREVENTION OF WATER POLLUTION	13-13
1. GENERAL	13-13
2. PERMITS	13-13
3. EXCAVATED MATERIAL AND OTHER CONTAMINANT SOURCES	13-13
4. MANAGEMENT OF WASTE CONCRETE OR WASHING OF CONCRETE TRUCKS	13-13
5. STREAM CROSSINGS	13-13
SECTION 13.18--TESTING, DRAINING, REMOVAL, AND DISPOSAL OF OIL-FILLED ELECTRICAL EQUIPMENT	13-13
1. SAMPLING AND TESTING OF INSULATING OIL FOR PCB CONTENT	13-13
2. PCB TEST REPORT	13-13
3. OIL CONTAINING PCB	13-14
4. REMOVAL AND DISPOSAL OF INSULATING OIL AND OIL-FILLED ELECTRICAL EQUIPMENT	13-14
5. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT	13-14

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.19--REMOVAL OF OIL-CONTAMINATED MATERIAL	13-14
1. GENERAL	13-14
2. CLEANUP WORK MANAGEMENT PLAN	13-14
3. EXCAVATION AND CLEANUP	13-14
4. TEMPORARY STOCKPILING	13-14
5. SAMPLING AND TESTING	13-14
6. TRANSPORTION AND DISPOSAL OF CONTAMINATED MATERIAL	13-15
7. POST CLEANUP REPORT	13-15
SECTION 13.20—CONSERVATION OF NATURAL RESOURCES	13-15
1. GENERAL	13-15
2. KNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT	13-15
3. UNKNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT	13-15

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.1—REQUIRED SUBMITTALS, REPORTS, AND PLANS

1. FINAL PAYMENT: For each section below, final payment may be withheld until the referenced submittal, report, or plan is received.

SECTION 13.2--CONTRACTOR FURNISHED DATA

1. RECYCLED MATERIALS QUANTITY REPORT: Submit quantities of recycled materials listed in Section 13.7, "Recycled Materials Quantities", to the COR prior to submittal of final invoice.
2. RECOVERED AND BIOBASED MATERIAL PRODUCTS REPORT: Provide the COR the following information for purchases of items listed in Section 13.8, "Use of Recovered and Biobased Material Products".
 - (1) Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.
 - (2) Written justification of listed items if recovered material or biobased material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.
3. RECLAIMED REFRIGERANT RECEIPT: A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR prior to submittal of final invoice in accordance with Section 13.9.5, "Refrigerants and Receipts".
4. WASTE MATERIAL QUANTITY REPORT: Submit quantities of total project waste material disposal as listed below to the COR prior to submittal of final invoice in accordance with Section 13.9.8, "Waste Material Quantity Report".
 - (1) Unregulated Wastes (i.e., trash): Volume in cubic yards or weight in pounds.
 - (2) Hazardous or Universal Wastes: Weight in pounds.
 - (3) PCB Wastes: Weight in pounds.
 - (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).
5. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan): Submit the Plan as described in Section 13.11.2, "Spill Prevention Notification and Cleanup Plan", to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.
6. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN: Submit the Plan as described in Section 13.11.3, "Tanker Oil Spill Prevention and Response Plan", to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.
7. PESTICIDE USE PLAN: Submit a plan as described in Section 13.12.3, "Pesticide Use Plan", to the COR for review and comment 14 days prior to the date of intended pesticide application. Review of

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after application, submit a written report in accordance with Standard 2 – Sitework, Section 2.1.1_5, "Soil-Applied Herbicide".

8. TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING - CONSUMER INFORMATION SHEET RECEIPT: Submit treated wood utility poles and crossarms - consumer information sheet receipts to the COR prior to submittal of final invoice (see 13.13, "Treated Wood Utility Poles and Crossarms Recycling or Disposal").
9. PREVENTION OF AIR POLLUTION: Submit a copy of permits, if required, as described in 13.14, "Prevention of Air Pollution" to the COR 14 days prior to the start of work.
10. ASBESTOS LICENSES OR CERTIFICATIONS: Submit a copy of licenses, certifications, Demolition and Renovation Notifications and Permits for asbestos work as described in 13.15, "Handling and Management of Asbestos Containing Material" to the COR 14 days prior to starting work. Submit copies of certificates of disposal and/or receipts for waste to the COR prior to submittal of final invoice.
11. LEAD PAINT NOTICES: Submit a copy of lead paint notices with contractor and recipient signatures as described in 13.16, "Material with Lead-based Paint" to the COR prior to submittal of final invoice. Submit copies of certificates of disposal and/or receipts for waste to the COR prior to submittal of final invoice.
12. WATER POLLUTION PERMITS: Submit copies of any water pollution permits as described in 13.17, "Prevention of Water Pollution" to the COR 14 days prior to start of work.
13. PCB TEST REPORT: Submit a PCB test report as described in 13.18, "Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment", prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.
14. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed as described in 13.19, "Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment", to the COR prior to submittal of final invoice.
15. OSHA PCB TRAINING RECORDS: Submit employee training documentation records to the COR 14 days prior to the start of work as described in 13.19.1.
16. CLEANUP WORK MANAGEMENT PLAN: Submit a Cleanup Work Management Plan as described in 13.19, "Removal of Oil-contaminated Material" to the COR for review and comment 14 days prior to the start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.
17. POST CLEANUP REPORT: Submit a Post-Cleanup Report as described in 13.19, "Removal of Oil-contaminated Material" to the COR prior to submittal of final invoice.

SECTION 13.3--ENVIRONMENTAL REQUIREMENTS

Comply with Federal, State, and local environmental laws and regulations. The sections in this Standard further specify the requirements.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.4--LANDSCAPE PRESERVATION

1. **GENERAL:** Preserve landscape features in accordance with the contract clause titled "Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements."
2. **CONSTRUCTION ROADS:** Location, alignment, and grade of construction roads shall be subject to the COR's approval. When no longer required, surfaces of construction roads shall be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion. If re-vegetation is required, use seed mixtures as recommended by Natural Resources Conservation Service or other land managing agency as appropriate.
3. **CONSTRUCTION FACILITIES:** Shop, office, and yard areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent and prevent impact on sensitive riparian areas and flood plains. Storage and construction buildings, including concrete footings and slabs, shall be removed from the site prior to contract completion. The area shall be re-graded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion or transport of sediment and pollutants. If re-vegetation is required, use seed mixtures as recommended by Natural Resources Conservation Service or other land managing agency as appropriate.

SECTION 13.5--PRESERVATION OF CULTURAL AND PALEONTOLOGICAL RESOURCES

1. **GENERAL:** Do not, at any time, remove, disturb, or otherwise alter cultural artifacts or paleontological resources (fossils). Cultural artifacts may be of scientific or cultural importance and includes, but are not limited to bones, pottery, projectile points (arrowheads), other stone or metal tools, surface features (stone circles, rock piles, etc.), glass, metal, ceramic, or other historic objects, structures and buildings (including ruins). Paleontological resources can be of scientific importance and include mineralized animals and plants or trace fossils such as footprints. Both cultural and paleontological resources are protected by Federal Regulations during Federal construction projects. Contractor shall restrict all ground disturbing activities to areas that have been investigated by Western for cultural or paleontological resources, or have been cleared in writing by the Regional Preservation Officer (RPO) and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-way and 1.3.2 Access to the Work and Haul Routes.
2. **KNOWN CULTURAL OR PALEONTOLOGICAL SITES:** Following issuance of notice to proceed, Western will provide drawings or maps showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground in a manner approved by the COR in conjunction with the RPO. Instruct employees and subcontractors that vehicular or equipment access to these areas is prohibited. If access is absolutely necessary, first obtain approval from the COR in conjunction with the RPO. Western will remove the markings during or following final cleanup. For some project work, Western will require an archaeological, paleontological or tribal monitor at or near cultural or paleontological site locations. The contractor, contractor's employees, and subcontractors shall work with the monitor to insure that sensitive areas are avoided. Where monitors are required, the monitor shall meet with the crew each morning to go over the day's work. The monitor will also conduct awareness training for all contractors prior to any work in the field. Untrained personnel shall not be allowed in the construction area. For sensitive areas requiring a monitor, the contractor may not access those areas without a monitor being present.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

3. UNKNOWN CULTURAL OR PALEONTOLOGICAL SITES: On rare occasions cultural or paleontological sites may be discovered during excavation or other earth-moving or other construction activities.
 - (1) Reporting: If evidence of a cultural or paleontological site is discovered, cease work in the area immediately and notify the COR of the location and nature of the findings. If a monitor is present, the monitor should also be notified. Stop all activities within a 200-foot radius of the discovery and do not proceed with work within that radius until directed to do so by the COR.
 - (2) Care of Evidence: Protect the area. Do not remove, handle, alter, or damage artifacts or fossils uncovered during construction activities.

SECTION 13.6--NOXIOUS WEED CONTROL

Comply with Federal, State, and local noxious weed control regulations. Provide a "clean vehicle policy" while entering and leaving construction areas to prevent transport of noxious weed plants and/or seed. Transport only construction vehicles that are free of mud and vegetation debris to staging areas and the project right-of-way.

SECTION 13.7--RECYCLED MATERIALS QUANTITIES

1. GENERAL: All materials generated from the project that can be recycled, shall be recycled. Record quantities of material by category that is salvaged, recycled, reused, or reprocessed, including:
 - (1) Transformers, Breakers: Weight without oil.
 - (2) Aluminum Conductor – Steel Reinforced (ACSR): Weight in pounds or tons.
 - (3) Steel: Weight in pounds or tons.
 - (4) Aluminum: Weight in pounds or tons.
 - (5) Copper: Weight in pounds or tons.
 - (6) Other Metals: Weight in pounds or tons.
 - (7) Oil: Gallons (separate by type - less than 2 ppm PCB, 2 to 50 ppm PCB, and 50 or greater ppm PCB).
 - (8) Gravel, Asphalt, Or Concrete: Weight in pounds or tons.
 - (9) Batteries: Weight in pounds.
 - (10) Treated Wood Utility Poles and Crossarms: Weight in pounds.
 - (11) Wood construction material: Weight in pounds.
 - (12) Cardboard: Weight in pounds.
 - (13) Porcelain Insulators: Weight in pounds.
2. RECYCLED MATERIAL QUANTITY REPORT: Submit quantities (pounds or metric tons) of all recycled material by category to the COR within 30 days of recycling and prior to submittal of final invoice.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.8--USE OF RECOVERED MATERIAL AND BIOBASED MATERIAL PRODUCTS

1. **RECOVERED MATERIAL PRODUCTS:** If the products listed below or other products listed at <http://www.epa.gov/epawaste/conservation/tools/cpg/products/index.htm> are obtained as part of this project, purchase the items with the highest recovered material content possible unless recovered material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

Construction Products:

- Building Insulation Products
- Carpet
- Carpet cushion
- Cement and concrete containing coal fly ash, ground granulated blast furnace slag, cenospheres, or silica fume
- Consolidated and reprocessed latex paint
- Floor Tiles
- Flowable fill
- Laminated Paperboard
- Modular threshold ramps
- Nonpressure pipe
- Patio Blocks
- Railroad grade crossing surfaces
- Roofing materials
- Shower and restroom dividers/partitions
- Signage
- Structural Fiberboard

2. **BIOBASED MATERIAL PRODUCTS:** If the products listed at <http://www.biobased.oce.usda.gov> are obtained as part of this project, purchase the items with the highest biobased content possible and no less than the percent indicated for each product unless biobased material products are not available: 1) competitively within a reasonable time frame, 2) meeting reasonable performance standards as defined in the Standards or Project Specifications, or 3) at a reasonable price.

NOTE: All station service and pole mounted transformers will be bio-based oil. Western exempts purchase of bio-based large transformers rated above 5 MVA until May 13, 2015. Large transformers will be evaluated on a best value basis using life cycle cost analysis.

3. **RECOVERED MATERIAL AND BIOBASED MATERIAL PRODUCTS REPORT:** Provide the COR the following information for purchases of those items listed above:

Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.

Written justification of listed items if recovered material or biobased material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

SECTION 13.8--DISPOSAL OF WASTE MATERIAL

1. **GENERAL:** Dispose or recycle waste material in accordance with applicable Federal, State and local regulations and ordinances. In addition to the requirements of the Contract Clause "Cleaning

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

Up", remove all waste material from the construction site. No waste shall be left on Western property, right-of-way, or easement. Burning or burying of waste material is not permitted.

2. **HAZARDOUS, UNIVERSAL, AND NON-HAZARDOUS WASTES:** Manage hazardous, universal, and non-hazardous wastes in accordance with State and Federal regulations.
3. **USED OIL:** Used oil generated from the Contractor activities shall be managed in accordance with used oil regulations.
4. **RECYCLABLE MATERIAL:** Reduce wastes, including excess Western material, by recycling, reusing, or reprocessing. Examples of recycling, reusing, or reprocessing includes, but is not limited to, reprocessing of solvents; recycling cardboard; and salvaging scrap metals.
5. **REFRIGERANTS AND RECEIPTS:** Refrigerants from air conditioners, water coolers, refrigerators, ice machines and vehicles shall be reclaimed with certified equipment operated by certified technicians if the item is to be disposed. Refrigerants shall be reclaimed and not vented to the atmosphere. A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR prior to submittal of final invoice.
6. **HALONS:** Equipment containing halons that must be tested, maintained, serviced, repaired, or disposed must be handled according to EPA requirements and by technicians trained according to those requirements.
7. **SULFUR HEXAFLUORIDE (SF6):** SF6 shall be reclaimed and shall not be vented to the atmosphere.
8. **WASTE MATERIAL QUANTITY REPORT:** Submit quantities of total project waste material disposal as listed below to the COR prior to submittal of final invoice.
 - (1) Unregulated Wastes (i.e., trash): Volume in cubic yards or weight in pounds.
 - (2) Hazardous or Universal Wastes: Weight in pounds.
 - (3) PCB Wastes: Weight in pounds.
 - (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

SECTION 13.10--CONTRACTOR'S LIABILITY FOR REGULATED MATERIAL INCIDENTS

1. **GENERAL:** The Contractor is solely liable for all expenses related to spills, mishandling, or incidents of regulated material attributable to his actions or the actions of his subcontractors. This includes all response, investigation, cleanup, disposal, permitting, reporting, and requirements from applicable environmental regulation agencies.
2. **SUPERVISION:** The actions of the Contractor employees and subcontractors shall be properly managed at all times on Western property or while transporting Western's (or previously owned by Western) regulated material and equipment.

SECTION 13.11--POLLUTANT SPILL PREVENTION, NOTIFICATION, AND CLEANUP

1. **GENERAL:** Provide measures to prevent spills of pollutants and respond appropriately if a spill occurs. A pollutant includes any hazardous or non-hazardous substance that when spilled, will

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

contaminate soil, surface water, or ground water. This includes any solvent, fuel, oil, paint, pesticide, engine coolants, and similar substances.

2. **SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan):** Provide the Plan to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Include the following in the Plan:
 - (1) **Spill Prevention measures.** Describe the work practices or precautions that will be used at the job site to prevent spills. These may include engineered or manufactured techniques such as installation of berms around fuel and oil tanks; Storage of fuels, paints, and other substances in spill proof containers; and management techniques such as requiring workers to handle material in certain ways.
 - (2) **Notification.** Most States and the Environmental Protection Agency require by regulation, that anyone who spills certain types of pollutants in certain quantities notify them of the spill within a specific time period. Some of these agencies require written follow up reports and cleanup reports. Include in the Plan, the types of spills for which notification would be made, the agencies notified, the information the agency requires during the notification, and the telephone numbers for notification.
 - (3) **Employee Awareness Training.** Describe employee awareness training procedures that will be implemented to ensure personnel are knowledgeable about the contents of the Plan and the need for notification.
 - (4) **Commitment of Manpower, Equipment and Material.** Identify the arrangements made to respond to spills, including the commitment of manpower, equipment and material.
 - (5) **If applicable, address all requirements of 40CFR112 pertaining to Spill Prevention, Control and Countermeasures Plans.**
3. **TANKER OIL SPILL PREVENTION AND RESPONSE PLAN:** Provide a Tanker Oil Spill Prevention and Response Plan as required by the Department of Transportation if oil tankers with volume of 3,500 gallons or more are used as part of the project. Submit the Tanker Oil Spill Prevention and Response Plan to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

SECTION 13.12--PESTICIDES

1. **GENERAL:** The term "pesticide" includes herbicides, insecticides, rodenticides and fungicides. Pesticides shall only be used in accordance with their labeling and applied by appropriately certified applicators.
2. **ENVIRONMENTAL PROTECTION AGENCY REGISTRATION:** Use EPA registered pesticides that are approved for the intended use.
3. **PESTICIDE USE PLAN:** Provide a pesticide use plan that contains: 1) a description of the pesticide to be used, 2) where it is to be applied, 3) the application rate, 4) a copy of the label, and 5) a copy of required applicator certifications. Submit the pesticide use plan to the COR for review and comment 14 days prior to the date of intended application. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

application, submit a written final report to the COR, including the pesticide applicators report, in accordance with Standard 2 – Sitework, Section 2.1.1_5. "Soil-Applied Herbicide, (4) Final Report".

SECTION 13.13--TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING OR DISPOSAL

Whenever practicable, treated wood utility poles and crossarms removed during the project shall be recycled or transferred to the public for some uses. Treated wood utility poles and crossarms transferred to a recycler, landfill, or the public shall be accompanied by a written consumer information sheet for treated wood as provided by Western. Obtain a receipt, part of the consumer information sheet, from the recipient indicating that they have received, read, and understand the consumer information sheet. Treated wood products transferred to right-of-way landowners shall be moved off the right-of-way. Treated wood product scrap, poles, and crossarms that cannot be donated or reused shall be properly disposed in a landfill that accepts treated wood and has signed Western's consumer information sheet receipt. Submit treated wood utility poles and crossarms consumer information receipts to the COR prior to submittal of final invoice.

SECTION 13.14--PREVENTION OF AIR POLLUTION

1. **GENERAL:** Ensure that construction activities and the operation of equipment are undertaken to reduce the emission of air pollutants. Submit a copy of permits for construction activities, if required (e.g., "non-attainment" areas, state implementation plans, or Class I air-sheds), from Federal, State, or local agencies to the COR 14 days prior to the start of work.
2. **MACHINERY AIR EMISSIONS:** The Contractor and subcontractor machinery shall have, and shall use the air emissions control devices required by Federal, State or Local Regulation or ordinance.
3. **DUST ABATEMENT:** Dust shall be controlled. Oil shall not be used as a dust suppressant. Dust suppressants shall be approved by the COR prior to use.
4. **SULFUR HEXAFLUORIDE EMISSIONS:**
 - 1) **General:** The Contractor shall record quantities of SF₆, including:
 - Nameplate capacity in pounds of SF₆ containing equipment.
 - Record pounds of SF₆ stored in containers, before transferring into energized equipment.
 - Record pounds of SF₆ left in containers, after transferring into energized equipment.
 - Pounds of SF₆ purchased from equipment manufacturers or distributors.
 - Pounds of SF₆ returned to suppliers.
 - Scales used to weigh cylinders must be accurate to within +/- 2 pounds and must have current calibration sticker.
 - 2) **CONTRACTOR FIELD QUALITY TESTING AND SF₆ HANDLING:**
 - The Contractor shall test all functions to verify correct operation and conduct a leak test. No SF₆ gas leakage shall be allowed from any equipment or storage containers.
 - Atmospheric venting of SF₆ gas is not allowed.
 - The Contractor shall remove all empty SF₆ gas cylinders and return to supplier.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

(3) CERTIFICATES OF DISPOSAL AND RECEIPTS:

- 1) The Contractor can use Western's Reporting Form for reporting quantities listed above.
- 2) The Contractor shall provide receipts of SF6 gas returned to supplier.
- 3) The Contractor shall submit SF6 gas Reporting Forms and copies of receipts to the COR prior to submittal of final invoice.

SECTION 13.15--HANDLING AND MANAGEMENT OF ASBESTOS CONTAINING MATERIAL

1. GENERAL: Obtain the appropriate Federal, State, Tribal or local licenses or certifications prior to disturbing any regulated asbestos-containing material. If a building or portion of a building will be demolished or renovated, obtain an Asbestos Notice of and Permit for Demolition and Renovation from the State or Tribal Department of Environmental Quality, Division of Air Quality (or equivalent). The building(s) shall be inspected by a State-Certified or Tribal accepted Asbestos Building Inspector. The inspector shall certify the presence and condition of asbestos, or non-presence of asbestos, on site as directed on the State or Tribal Demolition and Renovation Notice/Permit. The inspections shall be performed and notifications shall be submitted whether asbestos is present or not. Submit a copy of licenses, certifications, Demolition and Renovation Notifications and Permits for asbestos work to the COR 14 days prior to work. Ensure: 1) worker and public safety requirements are fully implemented and 2) proper handling, transportation, and disposal of asbestos containing material.
2. TRANSPORTATION OF ASBESTOS WASTE: Comply with Department of Transportation, Environmental Protection Agency, and State and Local requirements when transporting asbestos wastes.
3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificates of disposal for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR prior to submittal of final invoice.

SECTION 13.16--MATERIAL WITH LEAD-BASED PAINT

1. GENERAL: Comply with all applicable Federal, State and local regulations concerning work with lead-based paint, disposal of material painted with lead-based paint, and management of these materials. OSHA and General Industry Standards apply to worker safety and right-to-know issues. Federal EPA and State agencies regulate waste disposal and air quality issues.
2. TRANSFER OF PROPERTY: If lead-based paint containing equipment or material is to be given away or sold for reuse, scrap, or reclaiming, the contractor shall provide a written notice to the recipient of the material stating that the material contains lead-based paint and the Hazardous Waste regulations may apply to the waste or the paint in some circumstances. The new owner must also be notified that they may be responsible for compliance with OSHA requirements if the material is to be cut, sanded, abraded, or stripped of paint. Submit a copy of lead paint notices with contractor and recipient signatures to the COR prior to submittal of final invoice.
3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificates of disposal for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR prior to submittal of final invoice.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.17--PREVENTION OF WATER POLLUTION

1. GENERAL: Ensure that surface and ground water is protected from pollution caused by construction activities and comply with applicable regulations and requirements. Ensure that streams, waterways and other courses are not obstructed or impaired unless the appropriate Federal, State or local permits have been obtained.
2. PERMITS: Ensure that:
 - (1) A National Pollutant Discharge Elimination System (NPDES) permit is obtained from the US Environmental Protection Agency or State as appropriate if the disturbed construction area equals 1 acre or more. Contractor is responsible for preparation and implementation of the associated Storm Water Pollution Prevention Plan (SWPPP). Disturbed areas include staging, parking, fueling, stockpiling, and any other construction related activities. Refer to www.epa.gov/npdes/stormwater for directions and forms.
 - (2) A dewatering permit is obtained from the appropriate agency if required for construction dewatering activities.
 - (3) Copies of permits and plans, approved by the appropriate regulating agencies, are submitted to the COR 14 days prior to start of work.
3. EXCAVATED MATERIAL AND OTHER CONTAMINANT SOURCES: Control runoff from excavated areas and piles of excavated material, construction material or wastes (to include truck washing and concrete wastes), and chemical products such as oil, grease, solvents, fuels, pesticides, and pole treatment compounds. Excavated material or other construction material shall not be stockpiled or deposited near or on streambanks, lake shorelines, ditches, irrigation canals, or other areas where run-off could impact the environment.
4. MANAGEMENT OF WASTE CONCRETE OR WASHING OF CONCRETE TRUCKS: Do not permit the washing of concrete trucks or disposal of excess concrete in any ditch, canal, stream, or other surface water. Concrete wastes shall be disposed in accordance with all Federal, State, and local regulations. Concrete wastes shall not be disposed of on any Western property, right-of-way, or easement; or on any streets, roads, or property without the owner's consent.
5. STREAM CROSSINGS: Crossing of any stream or other waterway shall be done in compliance with Federal, State, and local regulations. Crossing of some waterways may be prohibited by landowners, Federal or State agencies or require permits.

SECTION 13.18--TESTING, DRAINING, REMOVAL, AND DISPOSAL OF OIL-FILLED ELECTRICAL EQUIPMENT

1. SAMPLING AND TESTING OF INSULATING OIL FOR PCB CONTENT: Sample and analyze the oil of electrical equipment (which includes storage tanks) for PCB's. Use analytical methods approved by EPA and applicable State regulations. Decontaminate sampling equipment according to documented good laboratory practices (these can be contractor developed or EPA standards). Use only laboratories approved by Western. The COR will furnish a list of approved laboratories.
2. PCB TEST REPORT: Provide PCB test reports that contain the information below for disposing of oil-filled electrical equipment. Submit the PCB test report for COR approval prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.
 - Name and address of the laboratory
 - Description of the electrical equipment (e.g. transformer, breaker)

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

- Serial number for the electrical equipment.
 - Date sampled
 - Date tested
 - PCB contents in parts per million (ppm)
 - Unique identification number of container into which the oil was drained (i.e., number of drum, tank, tanker, etc.)
3. OIL CONTAINING PCB: Comply with the Federal regulations pertaining to PCBs found at Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).
 4. REMOVAL AND DISPOSAL OF INSULATING OIL AND OIL-FILLED ELECTRICAL EQUIPMENT: Once the PCB content of the oil has been identified from laboratory results, the oil shall be transported and disposed, recycled, or reprocessed according to 40 CFR 761 (if applicable), Resource Conservation and Recovery Act (RCRA) "used oil", and other applicable regulations. Used oil may be transported only by EPA-registered used oil transporters. The oil must be stored in containers that are labeled "Used Oil." Use only transporters and disposal sites approved by Western.
 5. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed to the COR prior to submittal of final invoice.

SECTION 13.19--REMOVAL OF OIL-CONTAMINATED MATERIAL

1. GENERAL: Removing oil-contaminated material includes excavating, stockpiling, testing, transporting, cleaning, and disposing of these material. Personnel working with PCBs shall be trained in accordance with OSHA requirements. Submit employee training documentation records to the COR 14 days prior to the start of work.
2. CLEANUP WORK MANAGEMENT PLAN: Provide a Cleanup Work Management Plan that has been approved by applicable Federal, State, or Local environmental regulation agencies. Submit the plan to the COR for review and comment 14 days prior to the start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. The plan shall address on-site excavation of contaminated soil and debris and include the following:
 - Identification of contaminants and areas to be excavated
 - Method of excavation
 - Level of personnel/subcontractor training
 - Safety and health provisions
 - Sampling requirements including quality control, laboratory to be used
 - Management of excavated soils and debris
 - Disposal methods, including transportation to disposal
3. EXCAVATION AND CLEANUP: Comply with the requirements of Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).
4. TEMPORARY STOCKPILING: Excavated material, stockpiled on site during construction, shall be stored on heavy plastic and covered to prevent wind and rain erosion at a location designated by the COR.
5. SAMPLING AND TESTING: Sample contaminated debris and areas of excavation to ensure that contamination is removed. Use personnel with experience in sampling and, in particular, with

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

experience in PCB cleanup if PCBs are involved. Use analytical methods approved by EPA and applicable State regulations.

6. **TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL:** The Contractor shall be responsible and liable for the proper loading, transportation, and disposal of contaminated material according to Federal, State, and local requirements. Use only transporters and disposal sites approved by Western.
7. **POST CLEANUP REPORT:** Provide a Post-Cleanup Report that describes the cleanup of contaminated soils and debris. Submit the report to the COR prior to submittal of final invoice. The report shall contain the following information:
 - Site map showing the areas cleaned
 - Description of the operations involved in excavating, storing, sampling, and testing, and disposal
 - Sampling and analysis results including 1) Name and address of the laboratory, 2) sample locations, 3) sample dates, 4) analysis dates, 5) contents of contaminant (e.g. PCB or total petroleum hydrocarbons) in parts per million (ppm)
 - Certification by the Contractor that the cleanup requirements were met
 - Copies of any manifests, bills of lading, and disposal certificates
 - Copies of correspondence with regulatory agencies that support completion of the cleanup

SECTION 13.20—CONSERVATION OF BIOLOGICAL RESOURCES

1. **GENERAL:** Federal law prohibits the "take" of endangered, threatened, proposed or candidate wildlife and plants, and destruction or adverse modification of designated Critical Habitat. Federal law also prohibits the "take" of birds protected by the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct with a protected animal or plant or any part thereof, or attempt to do any of those things without a permit from U.S. Fish and Wildlife Service. The Contractor will take precautions to avoid harming other wildlife species. Contractor shall restrict all ground disturbing activities to areas that have been surveyed by Western for natural resources and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-way and 1.3.2 Access to the Work and Haul Routes.
2. **KNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT:** Following issuance of the notice to proceed, and prior to the start of construction, Western will provide training to all contractor and subcontractor personnel and others involved in the construction activity if there is a known occurrence of protected species or habitat in the construction area. Untrained personnel shall not be allowed in the construction area. Western will provide drawings or maps showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These sensitive areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground by Western. If access is absolutely necessary, the contractor shall first obtain written permission from the COR, noting that a Western and/or other Federal or state government or tribal agency biologist may be required to accompany personnel and equipment. Ground markings shall be maintained through the duration of the contract. Western will remove the markings during or following final inspection of the project.
3. **UNKNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT:** If evidence of a protected species is found in the project area, the contractor shall immediately notify the COR and provide the location and nature of the findings. The contractor shall stop all activity within 200 feet of the protected species or habitat and not proceed until directed to do so by the COR.

APPENDIX C2 INTEGRATED VEGETATION MANAGEMENT STANDARDS

C2.1 Introduction

Southline Transmission, LLC (Southline or the Proponent), will manage vegetation within their rights-of-way (ROWs) and in access and service roads to minimize system reliability issues, to address safety issues, and to facilitate operation and maintenance activities. The vegetation management plan complies with the National Electric Safety Code, American National Standards Institute (ANSI) A300 Part 7: American Operations Integrated Vegetation Management (Bureau of Land Management (BLM) Integrated Vegetation Management Handbook – H 1740-02. March 25, 2008), Western Area Power Administration’s (Western’s) Integrated Vegetation Management Guidance Manual, and Electric Utility Rights-of-Way and the International Society of Arboriculture (ISA) Best Management Practices. The plan is based on the North American Electric Reliability Corporation (NERC) Reliability Standard FAC-003-1. If Western has an approved vegetation management plan for the area, that plan will govern vegetation management on State and private lands.

C2.2 Objectives

Objectives of Integrated Vegetation Management (IVM) on utility ROWs are to establish sustainable plant communities that are compatible with the electric facilities. The intent is to provide stable, low-growing plant ecotypes that reduce fire risk and maintain safe access to the line and associated facilities in order to ensure safe and reliable operation of the transmission line. Objectives include:

- Meeting requirements of the NERC Reliability Standards
- Prevent operation hazards (i.e., flashovers, trees growing into contact with conductors, danger trees)
- Provide access for maintenance and repair
- Protect facilities from fire
- Control spread of noxious weeds
- Protect public and worker safety
- Protect environmental quality
- Establish stable, low-growing plant communities on transmission line ROWs
- Adhere to principles of IVM

C2.3 Regulations

Because the regulatory environment is constantly changing, coordination with the regulatory agencies is essential to ensure compliance. Noxious weed regulation often falls to the county level, and therefore contact with the county regulatory agency should be made to check on additional or more stringent requirements.

C2.3.1 NERC Standards

On July 20, 2006, the Federal Energy Regulatory Commission (FERC) issued an order certifying NERC as the Electric Reliability Organization (ERO) for the United States. NERC substantially revised and strengthened its reliability standards and established a program to monitor and enforce compliance with their standards. The standards include Standard FAC-003-1-Transmission Vegetation Management Program, which requires that a transmission owner prepare and keep current a formal transmission vegetation management program that addresses the following: schedules and types of inspections; line clearances; qualifications and training of vegetation management personnel; Proponent Committed Environmental Measures (PCEMs) where line clearances cannot be attained; a process for immediate communication of vegetation conditions that present an imminent threat; annual planning for vegetation management work; and quarterly reporting of sustained transmission outages caused by vegetation. This standard (as well as those discussed below) applies to all transmission lines operated at 200 kilovolts and above and to any lower-voltage lines designated by the operator as critical to the reliability of the electric system in the region.

C2.3.2 Federal Requirements and Policies

- The National Environmental Policy Act (NEPA)
- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- Users of restricted use (RU) pesticides should particularly note the following regulations:
 - Federal Land Management Agency Herbicide Restrictions
- The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
- The Superfund Amendments and Reauthorization Act of 1986 (SARA Title III), also known as the Emergency Planning and Community Right-To-Know Act (EPCRA):
- The Federal Occupational Safety and Health Administration (OSHA):
- The U.S. Department of Transportation (DOT)
- The Federal Noxious Weed Act of 1974 (part of the Plant Protection Act of 2000) (7 CFR Part 360)
- Federal Land Management Agency Noxious Weeds and Federal Noxious Weed Lists
- The Endangered Species Act (50 CFR)
- Presidential Memorandum Dated April 26, 1994 for the Heads of Executive Departments and Agencies and Guidance for This Memorandum From the Office of the Federal Environmental Executive (August 10, 1995; 60 *Federal Register* 40837)
- Clean Water Act (40 CFR, Chapter I, Subchapter D)

Table C-1. Factors which Influence Decisions About which Specific Vegetation Control Method to Use

Safety
Line voltage (which determines conductor clearances; see Section 10.0)
Proximity to restricted or sensitive environmental areas (adjacent land use)
Treatment objective
Type and density of vegetation – target and non-target species
Expected growth rates

Table C-1. Factors which Influence Decisions About which Specific Vegetation Control Method to Use (Continued)

Size of treatment area
Anticipated costs and equipment limitations
Effectiveness of possible treatments
Landowner or land management agency
Contractual rights
Accessibility
Climate/meteorological conditions at time of treatment (e.g., rainfall)
Herbicide use regulations
Site conditions – soils, slope, drainage
Presence of sensitive species or sensitive cultural resources

Table C-2. Vegetation Control Methods: Advantages and Disadvantages

Method	Advantages	Disadvantages	Where use is most appropriate
Cultural			
1. Develop and maintain stable, low-growing vegetation cover	Long-term effectiveness Required for physical or chemical treatment decreases with time Environmental benefits, e.g., wildlife habitat	None	All ROWs
2. Prescribed fire	Creates conditions for low-growing cover Removes excessive biomass (pile burning)	Any fire hazards must be controlled Limited areas appropriate for safe use	Low-growing vegetation with no hazard to overhead lines Slash piles
Biological			
1. Introduce natural insect predators	Targets specific noxious plants Perpetual, inexpensive	Intense monitoring efforts Availability of insects Long-term control option	Specific noxious weeds that can be controlled with specific insects, e.g., musk thistle
2. Animal grazing	Effective control Cost-effective Provides nitrogen	Timely grazing management is needed Also affects valuable vegetation Soil compaction Degrades riparian areas Soil erosion on steep slopes	Where agreement exists with landowner who raises livestock – existing "rangeland"
Physical/Mechanical			
1. Manual clearing with chain saw, machete, axe, etc.	Very selective Low soil impact Minimal disturbance of riparian and other sensitive areas	Low production rates High cost; high labor requirement If done without herbicide application, plants may resprout quickly Safety concerns for workers - falls, cuts, exposure to poisonous plants, snakes, etc. Exposure to vapors, dust	In sensitive areas In areas with low to moderate stem density Where limited clearing is the only approved option
2. Mowing with "bush hog" mower; mowing grass/weeds with mower	High production rates Low cost	Not selective - removes non-target plants If done, without herbicide application, plants may resprout quickly Slope, topographic restrictions Some soil disturbance and compaction Creates slash High labor requirement for mowing	Nonsensitive visual/environmental areas High stem density of small, noncompatible brush Areas with restrictions on herbicide use Vegetation will not resprout rapidly Yard/grass areas at substations and other facilities
3. Blading/Scarification	Low cost Effective	High erosion potential due to soil disturbance Not selective High visual impact Creates slash	As "last resort" where cannot gain access due to density of brush (e.g., along access routes to reach danger trees) Non-sensitive visual/ environmental areas only

Table C-2. Vegetation Control Methods: Advantages and Disadvantages (Continued)

Method	Advantages	Disadvantages	Where use is most appropriate
4. Use of geotextile barriers	Low cost Effective, especially when placed during initial construction/landscaping	May not eliminate unwanted vegetation that remains beneath barrier (roots) Need to use during initial construction/landscaping Not always stable on slopes	Landscaped areas Level ground New construction
Chemical			
1. Nonselective Herbicides			
1A. Spray	No moisture needed to activate Relatively low cost	Spills harder to contain/clean Need to be mixed Higher drift hazard	For any non-selective situation – where "bare ground control" is needed; for certain noxious weeds if applied selectively
1B. Granules	No need for mixing Drift hazard low Simple application equipment	Often more expensive than liquid May need moisture to activate	Around substations, yards, wood poles; possibly spot-treatment of certain noxious weeds
1C. Bio-barriers	Combine effectiveness of geotextile barrier with herbicide Time-release control	Must install during initial construction to be cost effective	Initial substation/yard construction
2. Selective Herbicides			
2A. Stump treatment (spray or capsule injection)	Very selective Limited or no drift to non-target vegetation Capsule injection- no chemical mixing; exposure limited	Timing critical - must apply immediately after cutting to be effective Early spring treatments not as effective as later season Capsule injection may require training and is labor intensive	Initial clearing Maintenance clearing when trees are too tall for foliage spray Near areas sensitive to drift, runoff
2B. Selective basal bark treatment	Selective Limited drift to non-target vegetation No brownout if applied during dormant season	Need to use oil-base formulation for best penetration	Maintenance clearing if brush too tall for foliage spray or need more selectivity
2C. Selective (low-vol.) foliar application	Less costly than others because less labor intensive, no oil use	Higher potential for drift onto non-target vegetation and workers Not as effective during hot weather More potential for runoff "Brownout" causes visual impact	Maintenance treatment when brush is 12–15 feet high and mostly tall-growing species. Not near areas sensitive to drift or "brownout."
2D. Growth inhibitors (grass)	Less costly than mowing because less labor intensive Lengthens maintenance cycles	Potential for drift onto non-target vegetation	Maintenance treatment where it is not practical to mow, but ground cover is desired

Table C-2. Vegetation Control Methods: Advantages and Disadvantages (Continued)

Method	Advantages	Disadvantages	Where use is most appropriate
2E. Tree growth regulators	Control branch growth without need for frequent pruning/trimming Long-term maintenance cycles More aesthetic than directional pruning, hard pruning More cost effective than frequent trimming	Will require training or contracting for application May be less effective on smaller-diameter trees on certain species Requires some time before see results	In sensitive areas (especially visual sensitivity) Where directional pruning/trimming is not desirable but full removal is not permitted and cannot be negotiated with land management agency or landowner
All Herbicides:	Prevent resprouting of woody vegetation - lengthen maintenance cycles; reduce costs; promote stable low-growing cover; lower life-cycle cost	Environmental and safety concerns - drift to non-target organisms, water contamination, proper application	

Content to be Developed Prior to the Notice to Proceed

- State Pesticide Regulations and Requirements
- State Weed Control Regulations and Requirements
- State Fire Hazard Reduction Regulations
- ANSI Standards and Other Pruning Guidance
- Noxious Weed Management
- Revegetation/Reclamation

Attachments

Attachment A: Standard FAC-003-1 — Transmission Vegetation Management Program

Attachment B: Western Area Power Administration Order 430.1A Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes

Attachment C: Western Area Power Administration Integrated Vegetation Management Guidance Manual

Attachment D: Excerpts from BLM Integrated Vegetation Management Handbook H-1740-2

A. Introduction

- 1. Title:** Transmission Vegetation Management Program
- 2. Number:** FAC-003-1
- 3. Purpose:** To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW, and reporting vegetation-related outages of the transmission systems to the respective Regional Reliability Organizations (RRO) and the North American Electric Reliability Council (NERC).
- 4. Applicability:**
 - 4.1.** Transmission Owner.
 - 4.2.** Regional Reliability Organization.
 - 4.3.** This standard shall apply to all transmission lines operated at 200 kV and above and to any lower voltage lines designated by the RRO as critical to the reliability of the electric system in the region.
- 5. Effective Dates:**
 - 5.1.** One calendar year from the date of adoption by the NERC Board of Trustees for Requirements 1 and 2.
 - 5.2.** Sixty calendar days from the date of adoption by the NERC Board of Trustees for Requirements 3 and 4.

B. Requirements

- R1.** The Transmission Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications¹.
 - R1.1.** The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.
 - R1.2.** The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.
 - R1.2.1.** Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the Transmission Owner plans to return for future

¹ ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.

vegetation management work. Local conditions may include, but are not limited to: operating voltage, 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, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.

R1.2.2. Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.

R1.2.2.1 Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.

R1.2.2.2 Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.

R1.3. All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.

R1.4. Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.

R1.5. Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.

R2. The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

- R3.** The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.
- R3.1.** Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- R3.2.** The Transmission Owner is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).
- R3.3.** The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.
- R3.4.** An outage shall be categorized as one of the following:
- R3.4.1.** Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;
- R3.4.2.** Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;
- R3.4.3.** Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.
- R4.** The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.

C. Measures

- M1.** The Transmission Owner has a documented TVMP, as identified in Requirement 1.
- M1.1.** The Transmission Owner has documentation that the Transmission Owner performed the vegetation inspections as identified in Requirement 1.1.
- M1.2.** The Transmission Owner has documentation that describes the clearances identified in Requirement 1.2.
- M1.3.** The Transmission Owner has documentation that the personnel directly involved in the design and implementation of the Transmission Owner's TVMP hold the qualifications identified by the Transmission Owner as required in Requirement 1.3.
- M1.4.** The Transmission Owner has documentation that it has identified any areas not meeting the Transmission Owner's standard for vegetation management and any mitigating measures the Transmission Owner has taken to address these deficiencies as identified in Requirement 1.4.

- M1.5.** The Transmission Owner has a documented process for the immediate communication of imminent threats by vegetation as identified in Requirement 1.5.
- M2.** The Transmission Owner has documentation that the Transmission Owner implemented the work plan identified in Requirement 2.
- M3.** The Transmission Owner has documentation that it has supplied quarterly outage reports to the RRO, or the RRO's designee, as identified in Requirement 3.
- M4.** The RRO has documentation that it provided quarterly outage reports to NERC as identified in Requirement 4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

RRO
NERC

1.2. Compliance Monitoring Period and Reset

One calendar Year

1.3. Data Retention

Five Years

1.4. Additional Compliance Information

The Transmission Owner shall demonstrate compliance through self-certification submitted to the compliance monitor (RRO) annually that it meets the requirements of NERC Reliability Standard FAC-003-1. The compliance monitor shall conduct an on-site audit every five years or more frequently as deemed appropriate by the compliance monitor to review documentation related to Reliability Standard FAC-003-1. Field audits of ROW vegetation conditions may be conducted if determined to be necessary by the compliance monitor.

2. Levels of Non-Compliance

2.1. Level 1:

- 2.1.1.** The TVMP was incomplete in one of the requirements specified in any subpart of Requirement 1, or;
- 2.1.2.** Documentation of the annual work plan, as specified in Requirement 2, was incomplete when presented to the Compliance Monitor during an on-site audit, or;
- 2.1.3.** The RRO provided an outage report to NERC that was incomplete and did not contain the information required in Requirement 4.

2.2. Level 2:

- 2.2.1.** The TVMP was incomplete in two of the requirements specified in any subpart of Requirement 1, or;
- 2.2.2.** The Transmission Owner was unable to certify during its annual self-certification that it fully implemented its annual work plan, or documented deviations from, as specified in Requirement 2.
- 2.2.3.** The Transmission Owner reported one Category 2 transmission vegetation-related outage in a calendar year.

2.3. Level 3:

- 2.3.1. The Transmission Owner reported one Category 1 or multiple Category 2 transmission vegetation-related outages in a calendar year, or;
- 2.3.2. The Transmission Owner did not maintain a set of clearances (Clearance 2), as defined in Requirement 1.2.2, to prevent flashover between vegetation and overhead ungrounded supply conductors, or;
- 2.3.3. The TVMP was incomplete in three of the requirements specified in any subpart of Requirement 1.

2.4. Level 4:

- 2.4.1. The Transmission Owner reported more than one Category 1 transmission vegetation-related outage in a calendar year, or;
- 2.4.2. The TVMP was incomplete in four or more of the requirements specified in any subpart of Requirement 1.

E. Regional Differences

None Identified.

Version History

Version	Date	Action	Change Tracking
Version 1	TBA	<ul style="list-style-type: none"> 1. Added “Standard Development Roadmap.” 2. Changed “60” to “Sixty” in section A, 5.2. 3. Added “Proposed Effective Date: April 7, 2006” to footer. 4. Added “Draft 3: November 17, 2005” to footer. 	01/20/06

U.S. Department of Energy



ORDER

WAPA O 430.1A

DATE: 03-18-08

SUBJECT: RIGHT-OF-WAY MANAGEMENT GUIDANCE FOR VEGETATION,
ENCROACHMENTS, AND ACCESS ROUTES

1. PURPOSE. This Order delegates and clarifies responsibilities and establishes Right of Way (ROW) guidance and organizational support for the safe and reliable operation of the power system owned and/or maintained by the Western Area Power Administration (Western).
2. CANCELLATION. This Order cancels WAPA Order 430.1, Right-of-Way Management Guidance for Danger Trees, Encroachments, and Access Routes, dated 11-21-01.
3. SCOPE. The provisions of this Order apply to all organizational elements of Western.
4. DEFINITIONS.
 - a. Danger Trees. Trees located within or adjacent to the easement or permit area that present a hazard to employees, the public, or power system facilities. Characteristics used in identifying a danger tree include but are not limited to the following:
 - encroachment within the safe distance to the conductor as a result of the tree bending, growing, swinging, or falling toward the conductor;
 - deterioration or physical damage to the root system, trunk, stem or limbs and/or the direction and lean of the tree;
 - vertical or horizontal conductor movement and increased sag as a result of thermal, wind, and ice loading;
 - exceeding facility design specifications;
 - fire risk;
 - other threats to the electric power system facilities or worker/public safety.

DISTRIBUTION:
All Supervisors - Western-Wide
Available Online: <http://www.int.wapa.gov/Directives/alphadir.htm>

INITIATED BY:
CSO Natural
Resources Office

- b. Emergency Situations. An emergency situation occurs when a danger tree or encroachment poses an immediate danger to Western's facility as well as the welfare of the public and Western's maintenance personnel. For these situations it is not necessary to notify a landowner or government entity prior to removing the danger tree or encroachment.
 - c. Encroachments. Encroachments are conditions or developments that occur within the transmission line ROW that impair Western's rights to operate and maintain the facilities or present a hazard to the safe operation of the power system. Examples of potential encroachments are houses, businesses, signs, light structures, outbuildings, landfills, roadways, vegetation, etc.
 - d. Maintenance Manager. The individual located in the Regional or Field Office who is accountable for managing maintenance and/or operations functions. For example, in the Rocky Mountain Region this would be the Maintenance Manager; in the Bismarck Office this would be the North Dakota Maintenance Manager.
 - e. Right-Of-Way (ROW). Western acquires easements across State and private lands, is issued grants, permits or easements across Federal lands, and assumed the Bureau of Reclamation (Reclamation) responsibilities set forth in various agreements historically negotiated between Reclamation and other Federal agencies, such as the Bureau of Land Management, Bureau of Indian Affairs, National Park Service and U.S. Forest Service. As applied to a specific situation, ROW refers to rights acquired by Western as set forth in the applicable granting document.
 - f. Western Authorized Representative. The Western field representative in the Region who has the authority to take a maintenance action (this will be the Regional Manager or his designee).
5. POLICY. Maintenance Managers have the authority and responsibility for implementing and overseeing the proper maintenance of Western's ROWs. This includes all activities within ROWs that ensure the safe and reliable operation of the power system, as well as protection of the environment, the public, and Western's maintenance personnel. These activities include routine maintenance of access routes; vegetation management; identification of potential encroachments; and development of positive landowner relations. Regional Realty Officers, Environmental Managers, and Safety Managers, and, when necessary, the Corporate Services Office (CSO) Office of General Counsel (OGC) and CSO Natural Resources Office (NRO), will provide support to Maintenance Managers.
 6. BACKGROUND. Western acquires easements across State and private lands, is issued grants, permits or easements across Federal lands, and assumed the Bureau of Reclamation (Reclamation) responsibilities set forth in various agreements

historically negotiated between Reclamation and other Federal agencies, such as the Bureau of Land Management, Bureau of Indian Affairs, National Park Service and U.S. Forest Service. Western's rights to maintain vegetation, to challenge a use that is considered to impair or encroach upon Western's rights, and to access the power facilities are dictated by the language contained in these agreements.

- a. State and Private Land. Generally, the easement agreement provides for the perpetual right to access, construct, operate, and maintain the power system facility in a manner that ensures safe operation and system integrity.
 - (1) Vegetation Management and Control. Responsibility for these functions is often Western's and may, based upon the terms of the easement contract, or other agreements, require compensation to the landowner for damages to crops or trees. Contracts are generally reviewed by the Regional Realty Officers to determine the extent of Western's right to maintain or clear vegetation.
 - (2) Landowner's Use of the Easement Area. Easement provisions specify Western's rights to operate and maintain the power facilities. Where landowners add uses or developments in the easement area, the Maintenance Managers must determine, through the review of the easement contract, whether the use or development must cease, or be removed or mitigated some other way to protect Western's rights.
 - (3) General Access Rights Language. Language defining Western's access rights is usually provided in the easement agreement. To ensure that open and safe access is available across private land, the easement agreement must be thoroughly researched and verified to identify access routes and any restrictions that regulate their use.
- b. Federal Land. ROW agreements are sometimes limited to a specific term and specify stipulations or conditions associated with vegetation management, compatible land uses, and access rights.
 - (1) Vegetation Management and Control. Responsibility for these functions is Western's, but is affected by land and resource plans, resource management plans, or other planning instruments approved by the land management agency, and these dictate tree removal or trimming criteria within and adjacent to the ROW, as well as other uses allowed on the same lands traversed by the power facility.
 - (2) ROW Use and Development. Uses or developments within Western's ROWs are authorized by the government entity managing the land and are usually reviewed and concurred upon by a Western authorized representative prior to the use being authorized.

- (3) Access Routes. Access routes can be authorized in the same ROW agreement or in a separate permit or agreement. These authorizations may contain specific terms and conditions that restrict the season of use and/or construction or road improvement activities allowed on the authorized access routes.

7. RESPONSIBILITIES.

- a. Regional Managers. Provide oversight of the ROW maintenance program in their respective Regions.
 - b. Regional Maintenance Managers. Develop long-term strategies and programs, in coordination with Regional safety, environment, and realty personnel, to resolve vegetation, encroachment, and access problems in and along Western's transmission line ROWs.
 - c. Regional Safety Managers. Support the Maintenance Managers in providing guidance for resolution of safety concerns as well as ensuring the Regional ROW program meets Western's safety goals and objectives.
 - d. Regional Environmental Managers. Support the Maintenance Managers in ensuring that maintenance activities employed to resolve vegetation, encroachment, and access problems comply with environmental laws and regulations.
 - e. Regional Realty Officers. Support the Maintenance Managers in the identification and resolution of vegetation, encroachment, public relations, and access problems. The Regional Realty Officers also provide coordination in working with the landowners and have the responsibility of identifying land rights, including vegetation control rights.
 - f. Office of General Counsel (OGC). Provides legal advice, counsel, and representation.
 - g. CSO Natural Resources Office (NRO). Provides advice and support to the Regional Maintenance Managers, Realty Officers and Environmental Managers in order to resolve vegetation, encroachment, and access problems.
8. GENERAL GUIDANCE. As a component of each Regional Office's routine maintenance activities, Maintenance Managers will develop a ROW management program, including performance measures and will coordinate its development and implementation with Regional safety, environment, and realty personnel as well as CSO NRO and OGC, when necessary. This program will include a long-term strategy to inventory Western's rights as they pertain to vegetation management,

use restrictions, encroachments and access. The program will identify potential problem areas or situations to be resolved and the resolution process.

- a. Vegetation Management. It shall be the responsibility of the Regional Realty Officers to inventory the vegetation management rights, including any compensation rights to landowners, for a power facility on an as needed basis. The following guidance is provided for vegetation management practices within and adjacent to the ROW. Prior to vegetation management activities, an effort will be made to notify landowners. Such notifications or attempts to notify landowners shall be documented.

- (1) Easements on State and Private Lands.

- (a) Where provided in the easement agreement, Maintenance Managers shall manage the vegetation within and adjacent to the easement in accordance with WAPA Order 450.3A (latest version).
- (b) Where the easement agreement does not provide for the rights to manage vegetation in or adjacent to the easement area, or if the rights are limited, the following shall apply in accordance with each Region's Vegetation Management Plan:
 - 1) **Emergency Situations.** If the vegetation is creating an emergency situation, the Maintenance Managers have the discretion to address emergency situations, including removing danger trees.
 - 2) **Non-Emergencies.** If vegetation is not causing an emergency situation, Western will work with the landowner to conduct the required vegetation management activity. If necessary, Western will expand its land rights to manage the vegetation within or adjacent to the easement.
- (c) CSO OGC and NRO will provide assistance and consultation to support the Maintenance Managers and support the future expansion of easement rights to include all required vegetation management activities.

- (2) ROW Agreements on Federal Lands.

- (a) Where provided in the ROW agreement, the Maintenance Managers shall manage vegetation within the ROW.
- (b) Where land use plans or terms contained in the agreement with the Federal land management agency and Western dictate trees may only be trimmed (sides or on top) within the ROW, the NRO will assist the

Maintenance Manager and Realty Officer in obtaining modifications to the ROW agreement to allow for all required vegetation management activities.

- (c) Where the ROW agreement does not provide for the removal of trees in or adjacent to the ROW, the Maintenance Managers have discretion in removing danger trees without notification to the Federal land managers. Western will contact the Federal agency following removal of danger trees. The CSO NRO will provide assistance to the Maintenance Managers to expand ROW rights to allow more extensive vegetation management activities consistent with current industry standards and requirements as provided for in Western's Transmission Vegetation Management Program.
- (3) Tree Removal Criteria. Criteria that will be used to determine the need for tree removal activities include either of the following two conditions:
- (a) Any tree classified as being a "Danger Tree" as defined in 4a above.
 - (b) Requirements established in WAPA Order 450.3A (latest version).
- (4) Vegetation Management Clearances. The following table provides the minimum clearance distances (lateral and vertical) to be achieved at the time of transmission vegetation management work as required by the North American Electric Reliability Council (NERC) Standard FAC-003-1 ("Clearance 1" values). However, it is Western's policy to proactively manage to a desired condition of much lower growth and low vegetation density. The desired condition considers the reduction of fuel loading to reduce the risk and intensity of wildfire on and adjacent to the ROW. It is also Western's policy to encourage the land management agencies to manage lands adjacent to the ROWs in a manner which further reduces vegetation and wildfire hazards that are a threat to the safe and reliable operation of the power facility.¹

¹ The minimum clearance is based on the OSHA 29 CFR § 1910.333 minimum approach distance for non-electrical workers (rounded up to the nearest foot) plus 5 feet to account for conductor and tree movement due to wind and ice loading or increased conductor sag as a result of thermal loading. In addition, another 5 feet is added to allow for an average tree growth of 12 inches per year and a re-treatment interval of not less than 5 years. In situations where more rapid tree growth can be expected because of species or better than average growing conditions, a distance (either horizontal or vertical) greater than 5 feet is required.

TRANSMISSION LINE ROW MINIMUM CLEARANCE¹ REQUIREMENTS FOR VEGETATION AFTER TREATMENT	
Line Voltage	Minimum Clearance ¹ Between Conductor and Vegetation
69 kV	20 feet
115 kV	21 feet
138 kV	22 feet
161 kV	22 feet
230 kV	23 feet
345 kV	26 feet
500 kV	29 feet

- (5) Customer Focus. It is Western's policy that landowners are our customers. Maintenance Managers have the responsibility to ensure early notification to the private landowner or government entity prior to the vegetation management or encroachment removal activities within or adjacent to the ROW. Where emergency removal of danger trees is necessary within or adjacent to the ROW and prior notice is not possible, the Maintenance Manager is responsible for initiating or coordinating notification after the fact. The Regional Realty Officers will provide support in mitigating such actions.

b. Encroachments.

- (1) State and private land. The Maintenance Managers shall be accountable for identifying potential encroachments. The Regional Realty Officer is accountable for verification and resolution. Where encroachments are found to be compatible with Western's rights, a license will be issued by the Western authorized representative. Where the encroachment is found to be incompatible, the Realty Officer shall coordinate the removal or mitigate the use or development. The Regional Realty Officer may consult or ask assistance from the NRO and OGC in those cases involving complex legal issues and landowner investments.
- (2) Federal land. For situations where uses or developments are located within ROWs on Federal lands that appear to impair Western's rights to operate and maintain its facilities, the Regional Realty Officer will be responsible for contacting the government entity and resolving the problem. If necessary, the Regional Realty Officer may consult with or ask assistance from the NRO and OGC.

c. Access Routes.

- (1) To ensure safe, reliable access to Western's facilities for maintenance purposes, it shall be the responsibility of the Maintenance Managers to

identify and locate access routes in support of facility maintenance programs across private, State and Federal lands, where necessary. Maintenance Managers have the discretion to reopen blocked access routes where Western's right of access is being impeded. Regional Realty Officers will be responsible to respond to the Maintenance Managers when requested to coordinate the reopening of such routes with the landowners and/or land management agency and will be supported by the NRO and OGC, when necessary.

- (2) Where new access is needed across State or private land, the Regional Realty Officer must consult with the Environmental Manager and the NRO to develop an acquisition plan to obtain access easements. Where access is needed across Federal lands, the Regional Realty Officer shall perform the same coordination as for State or private lands except that Western will obtain an amendment to its ROW authorization. In either case, Western will strive to obtain access routes with the fewest restrictions as to season of use or impacts to resources.

9. REFERENCES.

- a. WAPA 450.1B, Environmental Considerations in the Planning, Design, Construction, and Maintenance of Power Facilities and Activities, latest version.
- b. WAPA Engineering Manual (EM) 6460.3, Property Damage Investigation Appraisal and Settlement, latest version.
- c. WAPA EM 6404, Construction Management Practices and Procedures, Chapter V, Real Estate, of 02-20-90, latest version.
- d. Transmission Line Right-of-Way Handbook, latest version.
- e. WAPA Order 450.3A, Transmission Vegetation Management Program, latest version.
- f. www.arboday.org/treeguide
- g. Code of Federal Regulations (CFR) 29 CFR § 1910.333.
- h. Alcoa Conductor Accessories Sag 10, version 3.0 Software.
- i. National Electric Safety Code (NESC).

10. CONTACT. Questions concerning this Order should be addressed to the CSO NRO at (720) 962-7272.

A handwritten signature in black ink, appearing to read "T. J. Meeks", with a stylized flourish at the end.

Timothy J. Meeks
Administrator

U.S. Department of Energy



ORDER

WAPA O 450.3A

DATE: 03-13-08

Page Change: 02-23-09

SUBJECT: TRANSMISSION VEGETATION MANAGEMENT PROGRAM

1. OBJECTIVES. The objective of this Order is to define the Transmission Vegetation Management Program (TVMP) for the Western Area Power Administration (Western); to ensure the safe and reliable operation of the electrical transmission system in an environmentally sensitive, cost effective, and socially responsible manner.
2. CANCELLATION. This Order cancels WAPA Order 450.3, Transmission Vegetation Management Program, dated 05-10-07.
3. BACKGROUND. This Order is in accordance with the requirements defined in the North American Electric Reliability Council (NERC) Standard FAC-003-1.
4. APPLICABILITY.
 - a. Western Program Areas. This Order applies to all Western programs involved with vegetation management beneath and adjacent to transmission lines and associated facilities that make up the transmission system maintained by Western. At a minimum, this standard shall apply to all 200 kV and above transmission lines and to any lower voltage lines designated by the Regional Reliability Organization (RRO) as critical to the reliability of each Region's electric system.
 - b. Contractors. Contractors in support of Western's TVMP are responsible for ensuring full compliance with the requirements set forth in applicable Contracts and are also responsible for any subcontractor's compliance.
5. POLICY. It is Western's policy to identify and perform maintenance management activities in support of obtaining a desired condition for transmission line rights-of-way (ROW) and associated facilities. Western will apply the concept of Integrated Vegetation Management (IVM) as a practice for creating and maintaining a desired condition. Western's IVM Guidance Manual (see paragraph 13 of this Order) provides guidance for these practices.

DISTRIBUTION:
All Supervisors – Western-Wide
Available Online: <http://www.int.wapa.gov/Directives/alphadir.htm>

INITIATED BY:
CSO Engineering

6. RESPONSIBILITIES.

- a. Chief Operating Officer. Ensures full compliance with NERC and RRO reliability standards
- b. CSO Engineering. Provides oversight in the development of Engineering and Maintenance policies and standards.
- c. CSO Natural Resources Office. Provides support to the Regions relative to environment and lands programs. Serves as a point of contact with DOE Headquarters offices for the purpose of policy development, reporting, regulatory review, Native American issues, and other requirements.
- d. Office of General Counsel. Provides legal advice, counsel, and representation.
- e. Regional Managers. Provide oversight of the maintenance and safety policy and programs in their respective regions.
- f. Regional Maintenance Managers. Develop long-term strategies and programs, in coordination with Regional safety, environmental, and realty personnel, to address vegetation issues in and along all Western maintained transmission lines and associated facilities.
- g. Regional Environmental Managers. Support the Maintenance Managers in ensuring that the maintenance activities employed to manage Western's TVMP are in compliance with environmental laws and regulations.
- h. Regional Safety Managers. Support the Maintenance Managers in advising supervisors and foremen on the applications of the Power System Safety Manual and applicable safety and health regulations.
- i. Regional Reality Officers. Support the Maintenance Managers in the resolution of vegetation management problems by working with landowners in identifying and enforcing vegetation control rights

7. DESIRED CONDITION. Western's desired condition beneath and adjacent to its transmission line facilities is characterized by stable, low growth plant communities free from noxious or invasive plants. These communities will typically be comprised of herbaceous plants and low growing shrubs which ideally are native to the local area. Vegetation on the bordering areas of transmission line easements/ROWs can be managed so that increased tree height is allowed in relation to an increasing distance from the transmission line. Accumulations of vegetation debris from intensive or repetitive vegetation treatments may require mitigation to reduce risks from wildfire and enhance the fire survivability of the transmission facility. The

density of the remaining vegetation will also 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.

a. Areas of Concern. The desired condition will allow Western to manage vegetation such that it does not threaten power system safety or reliability. Vegetation management activities will be undertaken to the maximum extent that is reasonable and practical within three main areas of concern:

- (1) Vegetation within the defined boundary of a facility (ROW, fence line, etc.);
- (2) Vegetation adjacent to the facility; and
- (3) Prevention of wildfire on and off the facility.

b. Guidance. On-the-ground conditions can be extremely variable and specific for each transmission facility or unique section of a facility. In general, it is Western's practice to perform vegetation management activities in support of achieving the desired condition of low, stable growth plant communities. However, reasonable accommodations can be made in consideration of other critical resources or management issues. The principal purpose of the transmission facility is for the safe and reliable operation of the power system and all other resource and management issues are considered secondary. When constraints do not allow for the immediate removal of trees and other taller vegetation, the desired condition should identify the maximum tree height and density thresholds allowed. American National Standards, ANSI A300, part 7, *Tree, Shrub, and Other Woody Plant Maintenance - Standard Practices (Integrated Vegetation Management, a. Electrical Utility Rights-of-way)*, may be used for additional guidance and reference.

c. Objective. Western's intent is to secure and maintain a manageable landscape that minimizes vegetative threats to transmission system reliability and safety, and ultimately does not require frequent re-treatments. Achieving a desired condition is a process that may take several iterations over an extended period of time. However, once defined, the desired condition will serve as the guide for future vegetation management decisions. All subsequent vegetation treatment activities should consistently move toward achieving and maintaining the desired condition. Once achieved, the desired condition will be proactively maintained by occasional re-treatments.

8. PRACTICES. Western's TVMP practices are guided by internal manuals, handbooks, guidelines, orders, and standards outlining objectives, practices, approved procedures, and work specifications set forth in paragraph 14. These various formal documents are kept current through internal working committees from the functional organizations where the document resides.

9. REQUIREMENTS.

- a. Maintenance Schedule. Aerial and ground patrol schedules for each transmission facility are developed and maintained by each regional maintenance organization. Maintenance schedules are based on requirements and procedures set forth in Western's maintenance program. Other conditions where additional inspections may be necessary are those where catastrophic results could occur. Aerial or ground patrols may be conducted after an outage occurrence.
- b. Vegetation clearance levels for each transmission line. Clearance 1 distances required by NERC FAC-003-1 are provided in Western Order 430.1A, Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes. Western's desired condition is a condition of low growth plant communities; these values represent the maximum but not preferred vegetation height thresholds allowed. NERC FAC-003-1, Clearance 2 distances are provided in Western's Power System Safety Manual (PSSM), Table A-1.
- c. Qualifications and Training. Personnel involved in the design, implementation, and execution of the TVMP shall be qualified and trained as provided in individual position descriptions and contract language. The Western Transmission Vegetation Management Committee was established to design and provide oversight of the TVMP, and committee membership qualifications are outlined in the charter. Western staff involved in the preparation and implementation of annual plans discussed in paragraph 9 of this Order shall be included. PSSM Chapter 11 also addresses field crew training requirements for trimming and felling trees and brush near power lines. Contractors hired by Western must be fully qualified with respect to all certifications, licenses, training, and other skills and requirements as presented in the most recent version of Western's statement of work.
- d. Mitigation Measures. WAPA Order 430.1A and the Regional Transmission Vegetation Management Program Statements provide mitigation measures and processes to achieve sufficient clearances for the protection of the transmission systems in identified locations where Western is restricted from attaining the clearances specified in paragraph 9b.
- e. Inspections and Emergency Procedures. Transmission line maintenance personnel are responsible for inspection of Western's transmission facilities from vehicles, on foot or from aircraft. Routine inspections of vegetation are made during scheduled ground and aerial line patrols. Any encroachments, including vegetation, are documented and forwarded to the proper functional organization for assessment and resolution. Typical patrol reports will describe the

encroachment, clearance between the conductor and encroachment, and other pertinent information, such as when the reading was taken, and why there is a problem. If an imminent threat of a transmission line outage is identified and requires action (such as switching the line out of service), the threat shall immediately be reported verbally for resolution.

Western's craft personnel and IVM contractors are responsible for complying with prescribed clearance and safety rules and regulations, are qualified to recognize safety hazards and unsafe conditions, and are required to initiate action to alleviate or eliminate the hazards. Duties include the immediate reporting of safety hazards and unsafe conditions and initiating action to correct the safety hazard. Line crew members are required to report potential power system troubles to their Foreman. While on patrol, they are qualified to make on-the-spot decisions as to the urgency for immediate communication of vegetation conditions that present an imminent threat of a transmission system outage so that action may be taken.

10. ANNUAL PLANS FOR VEGETATION MANAGEMENT WORK. Each Regional Maintenance Organization shall create and implement an annual plan for vegetation management activities to ensure the reliability of the power system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or authorizations from landowners or regulatory authorities and also to conduct the appropriate environmental review. Each maintenance organization shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work is completed according to work specifications

11. REPORTING REQUIREMENTS. Each Region will report quarterly to their RRO, and upon request, will also report sustained transmission line outages determined to have been caused by vegetation. If there are no sustained transmission line outages for the quarter, the report shall be submitted indicating full compliance. Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.

- a. Western is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation. These outages are: (1) vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters (examples of disasters that

could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by Western or an applicable regulatory body, ice storms, and floods); and (2) vegetation-related outages due to human or animal activity (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural, horticultural, agricultural activities, or removal or digging of vegetation).

- b. The outage information provided by Western to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) experiencing the outage, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by Western.
- c. An outage shall be categorized as one of the following:
 - Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;
 - Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;
 - Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

12. DOCUMENTATION. All documentation required in this section shall be retained for a minimum period of 5 years.

- a. Each Region shall document that they have performed the vegetation inspections identified in 8a above. This information shall be retained in Western's maintenance management databases (Maximo, TAMIS, SIMS, TLDB, etc.).
- b. Western shall retain documentation that describes the clearances identified in 8b above. This information shall be retained in Western's PSSM, Table A1 (Clearance 2), and WAPA Order 430.1A (Clearance 1).
- c. Western shall retain documentation that describes the qualifications of personnel directly involved in the design, implementation, and execution of the TVMP as required in 8c. This information shall be retained in the employee's position descriptions and training records maintained by Western and the Corporate Human Resource Information System (CHRIS).
- d. Each Region shall document any areas identified as not meeting this Order for vegetation management and any mitigating measures taken to address these deficiencies as identified in 8d. This information shall be retained by each

Regional Lands Office and attached to the appropriate authorizing document (easement, permit, etc.). It should also be noted in the geographic information system (GIS) database so that it is available to the maintenance organization responsible for planning and completing vegetation management activities.

- e. Western shall maintain a documented process for the immediate communication of imminent threats by vegetation as required in 8e above. This information shall be retained in the employee's position description and the Standard Operating Procedures.
- f. Each Region shall document that the annual work plan identified in paragraph 9 has been implemented. This will be documented in the appropriate procurement records (for contract work) and in Western's maintenance management databases (Maximo, TAMIS, SIMS, TLDB, etc.).
- g. Each Region shall retain copies of all quarterly reports and additional outage reports submitted to the RRO, or the RRO's designee, as identified in paragraph 10.
- h. Each Region shall develop a Transmission Vegetation Management Program statement which identifies Regional specific practices.

13. CERTIFICATION. Each Region shall demonstrate compliance through self-certification submitted to the compliance monitor (RRO or RRO's designee) in accordance with the requirements of NERC FAC-003-1.

14. REFERENCES.

- a. North American Electric Reliability Council (NERC) Reliability Standard FAC-003-1.
- b. Western Area Power Administration Integrated Vegetation Management Guidance Manual, latest version.
- c. American National Standards, ANSI A300 (part 7)-2006 IVM for Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Integrated Vegetation Management, a. Electrical Utility Rights-of-Way).
- d. Chapter 13, Power System Maintenance Manual (PSMM), latest revision.
- e. WAPA Order 430.1A, Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes, latest revision.

- f. Chapter 11, PSMM, Trimming and Felling of Trees and Brush Near Power Lines, latest revision.
 - g. Chapter 1, Power System Operations Manual (PSOM), Power System Switching Procedure, latest revision.
 - h. Chapter 4, PSOM, Power System Operating Guidelines, latest revision.
 - i. Power System Safety Manual (PSSM), latest revision.
 - j. Regional Transmission Vegetation Management Program Statements.
 - k. ANSI A300, (Part 1) – 2001 Pruning for Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance.
 - l. ANSI Z133.1 – 2000, for Arboricultural Operations – Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements.
 - m. Western Transmission Vegetation Management Committee (TVMC) Charter.
15. CONTACT. Questions concerning this Order should be addressed to the CSO Engineering Office at (720) 962-7296.



Timothy J. Meeks
Administrator

U.S. Department of Energy



PAGE CHANGE

WAPA O 450.3A

DATE: 03-13-08
Change 1: 02-23-09

SUBJECT: TRANSMISSION VEGETATION MANAGEMENT PROGRAM

1. PURPOSE. To transmit revised pages 3 and 4 to WAPA O 450.3A, Transmission Vegetation Management Program, dated 03-13-08.
2. EXPLANATION OF CHANGES. To correct the references to the paragraph numbers identified in paragraph 8 and paragraph 9d.
3. LOCATION OF CHANGES.

<u>Page</u>	<u>Paragraph</u>
3	8
4	9d

After filing the attached pages, this transmittal may be discarded.



Timothy J. Meeks
Administrator

Chapter 6 - Treatment Selection and Effectiveness

Monitoring

I. Introduction

Where proactive manipulation of the vegetation is identified as an appropriate activity toward achieving the desired vegetative condition in a land use or activity plan, treatments should be selected that will best achieve this desired condition. An interdisciplinary (ID) team should be used to identify treatment options for achieving the objectives, and evaluate the strengths and weaknesses of potential methods within each option. The ID team members should be thoroughly familiar with treatment techniques commonly used to manipulate vegetation in the area(s) under consideration, or have ready access to experienced individuals or other resources where such information can be obtained.

Although vegetation management programs have been evolving since Plummer et al. (1968) first proposed ten principles to follow when planning and implementing vegetation management programs, the principles are still valid, and applicable to most sites in the western United States (Jordan, 1981; cited in Monsen et al., 2004). Most of the principles, which primarily address ecological considerations, have been incorporated in some fashion into existing BLM guidance elsewhere. However, no BLM reference presents all ten in a single source. Briefly, they are:

1. The proposed changes to the plant community must be necessary and ecologically sustainable.
2. The terrain and soil must support the desired changes.
3. Precipitation must be adequate to assure establishment and survival of indigenous planted species.
4. Competition must be controlled to ensure that planted species can establish and persist.
5. Plant and manage site-adapted species, subspecies, and varieties.
6. A multi-species seed mixture should be planted.
7. Sufficient seed of acceptable purity and viability should be planted.
8. Seed must be planted on a well-prepared seedbed and covered properly.
9. Plant during the season that provides the most favorable conditions for establishment.
10. Newly seeded areas must be managed properly.

In addition to ecological considerations, vegetation treatments and methods are also selected based on cost and implementation considerations. Cost considerations should address treatment type and relative effectiveness, the ability of treatments to achieve multi-program objectives, and site accessibility. Implementation considerations include equipment type and availability, staff availability, impacts to ongoing or other land uses and land users, impacts to other landowners in the vicinity, on-site and off-site impacts to flora and fauna, and post-treatment management capability and control. Evaluation of treatment options should address, but not necessarily be limited to, the following:

1. Site capability (soils, elevation, slope, aspect, precipitation): *Does the site have the capacity to produce the desired vegetation community?*
2. Site disturbance effects: *What soil disturbance will be created by a given treatment and what will the subsequent effects be?*
3. Seed availability: *Is a sufficient quantity of quality seed available to not only implement the treatment as planned, but, if necessary, to also meet re-treatment needs?*
4. Susceptibility to invasive species: *To what degree would a potential treatment method increase or reduce post-treatment susceptibility to invasive species?*
5. Project timing: *Can a potential treatment be implemented at a time that is ecologically optimal?*

6. Success of past treatments under similar conditions: *What types of treatments in the past have produced successful results? Was the success related to the type of treatments, or to other factors not related to the treatments?*
7. Treatment cost-effectiveness: *Given the probability of treatment-related success, what is the relative cost-effectiveness of potential treatment methods? Do some treatment methods present opportunities to prevent future undesirable situations more than other treatment methods?*
8. Land uses on or near the site(s) to be treated: *What would the effects be of potential treatment methods on land users or other landowners adjacent or proximate to treatment areas?*
9. Potential to impact humans, fish, wildlife or special status plants: *What would the effects be of potential treatment methods on fish, wildlife or special status plants either on-site or adjacent or proximate to treatment areas?*
10. Need for subsequent re-vegetation or re-treatment: *What is the relative probability of needing to re-treat, restore, or otherwise take unplanned post-treatment actions to ensure successful outcomes of treatments?*

II. Integrated Pest Management

Because of its legal and growing functional significance, the role of Integrated Pest Management (IPM) in achieving vegetation management objectives is an important early consideration in selecting treatments. The Department of Interior has adopted and endorses Integrated Pest Management as defined in the Food Quality Protection Act, 7USC§136r-1: “Integrated Pest Management is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.” (USDI, BLM, 2007).

IPM incorporates management goals, consensus building, pest biology, environmental factors, pest detection, monitoring, selection of the best available technology to prevent unacceptable levels of pest damage, and project evaluation. IPM opportunities and objectives are identified early in the planning process, and incorporated into integrated vegetation management objectives. Methods for pest management can include one or a combination of: no action, non-chemical, cultural, mechanical, physical, biological, and chemical management methods.

A. Sources of IPM Information

Although BLM has no specific IPM manuals or handbooks, the following Manual Sections and Handbook describe policy and guidance for programs or applications that are regularly employed in IPM:

Departmental Manual 517 DM 1 – Integrated Pest Management
 Manual Section 9011 – Chemical Pest Control, Handbook H-9011 – Chemical Pest Control
 Manual Section 9012 – Expenditure of Rangeland Insect Pest Control Funds
 Manual Section 9014 – Use of Biological Control Agents of Pest Control on Public Land
 Manual Section 9015 – Integrated Weed Management

Many sources of technical and other information outside of BLM for IPM exist at national, regional and state levels. Most are readily accessible through internet searches. Two examples are provided as a starting point from which to expand information searches.

The USDA National Site for USDA Regional IPM Centers Information System (<http://www.ipmcenters.org>) provides information about commodities, pests and pest management practices, people and issues in the U.S. It also provides links to sites for each of the four Regional IPM Centers (Western, Southern, Northeastern, North Central), which, in turn, also provide links to other important IPM resources, such as the Database of IPM Resources.

Integrated Pest Management: Guidance for Preparing and Implementing Integrated Pest Management Plans is a planning document produced by the U.S. Fish and Wildlife Service that has general applicability for IPM planning. It is posted on the internet (<http://www.fws.gov/contaminants/Documents/GuidanceIPMPlan.pdf>).

A. Pesticides in IPM

Pesticides, EPA labeled substances that control, destroy, repel, or attract pests, are often referred to according to the type of pest they control; insecticides, insect repellents, miticides, herbicides, fungicides, fumigants, nematocides, rodenticides, avicides, plant growth regulators, defoliant, desiccants, antimicrobials, and algicides. All pesticides must be used in accordance with the pesticide labeling, and at a rate shown in the EIS for the area of use, by personnel with appropriate training in pesticide application. The handling and use of all pesticides must be according to the pesticide label and by, or under the supervision of, a certified applicator (BLM Course 9000-1) [FIFRA Section II (e) (1)]. Additionally, it is BLM policy that all non-restricted pesticides shall be applied by a certified applicator.

B. Levels of Control

From a vegetation management perspective, IPM generally targets weeds or weedy/invasive species. Planning for IPM includes incorporating the degree of management desired for each pest species into overall objectives; prevention, containment, reduction, or eradication. Whatever strategy or combination of strategies is chosen, a monitoring program is needed.

Prevention is an option available for consideration in IVM. A discussion of Prevention of Weeds and Early Detection and Rapid Response is presented in the Final Vegetation Treatments EIS, (USDI, 2007b).

Containment, keeping an established population in check so that the size of the infested area does not increase, can be employed against newly invading weeds or well-established species. It is especially useful when time and money are in short supply and the when an infestation is very large.

Reduction is the reducing of either the spatial area covered by a weed, or reducing its dominance. Although reduction can be used for either small or large established weed infestations, it requires more resources and more time than containment.

Eradication is completely eliminating the target species from a management area and usually consumes the greatest amount of time and resources. Eradication is applicable mainly to newly invading weeds that are confined to a limited number of small areas.

C. Insect and Disease Management

Controlling insects and diseases that may alter vegetation diversity, resiliency and productivity must be an integral component of vegetation management activities on Public Lands. In addition, vegetation management activities that potentially injure trees and plants must include steps to limit insect outbreaks and the spread of disease.

Through an interagency MOU, the USDI, Forest Service provides technical advice and insect and disease identification mapping on BLM-administered lands. During planning, field offices should coordinate needs and activities with their local Forest Service Forest Health Protection office. Funding is also available through the Forest Service to suppress outbreaks and prevent future epidemics (see Funding Sources for Vegetation Management in Chapter 9). The BLM is also engaged in cooperative efforts with

the USDI, Animal and Plant Health Inspection Service Plant Protection and Quarantine for grasshopper and Mormon cricket control.

Guidelines for reducing the impact of bark beetles and other forest insects and diseases were issued by the Department of the Interior in 2003 (see Appendix 3). These guidelines should be followed to prevent unanticipated impacts from vegetation treatments in forests and woodlands.

D. IPM for Vegetation

No individual treatment method will control vegetation such as noxious weeds in a single treatment. Diligence and persistence are required over a number of years to manage such infestations. The success of different treatment methods depends on the type of weed and age of infestation to be controlled. It is important to think of treatment methods as they relate to specific vegetation, such as weed characteristics.

Chemical Controls: In IPM programs, herbicides are considered transition tools used in the process of replacing undesirable plants with desirable vegetation that is competitive with the undesirable plants. BLM Manual 9011 recommends selecting the least toxic, low-residual herbicide that is effective against the target vegetation and applied in a judicious manner.

Specific information on the chemical and physical properties of active ingredients in pesticides as well as recommendations and precautions for use, is available from the National Pesticide Information Center (NPIC) (<http://npic.orst.edu>). Pesticide Emergency Resources are:

911 for pesticide emergencies or the appropriate contacts below.

Human Poison Control Centers in the U.S.: 1-800-222-1222

Recognition and Management of Pesticide Poisonings, 5th ed.

ASPCA Animal Poison Control Center 1-888-426-4435 (credit card fee charged)

Small Pesticide Spills - Call the manufacturer or call NPIC at 1-800-858-7378

Large Pesticide Spills - Call Chemtrec as follows:

In the U.S.: 1-800-424-9300

Outside the U.S.: (703) 527-3887 **AND** call the National Response Center at 1-800-424-8802

III. Treatment Methods

The treatments used by BLM for manipulating or restoring vegetation include fire, mechanical, manual, biological, and chemical. In-depth discussion of the various methods and techniques within these categories, including advantages, limitations, effectiveness, and relative costs, is described in the Vegetation Treatments on BLM Lands EIS/PER (USDI, BLM, 2007b) and Monsen et al. (2004). These or other sources of such information relevant to treatment methods and techniques should be consulted during the treatment selection process.

For most vegetation treatment projects, pre-treatment surveys are conducted before selecting one or more treatment methods. These surveys involve consideration of all feasible treatments, including their potential effectiveness based on previous experience, local monitoring results and best available science, potential environmental impacts, and costs. Before vegetation treatment or ground disturbance would occur, BLM should consult specialists or databases for sensitive areas within the project area. Sites may require survey for listed or proposed federal threatened or endangered species, BLM sensitive species, and for evidence of cultural or historic sites. In some cases, areas may receive one or more treatments in combination, such as prescribed burning followed by an herbicide application. Some areas may be treated using one or more treatment methods

over several years. The following general characteristics of each treatment category are summarized from the Vegetation Treatments on BLM Lands EIS/PER (USDI, 2007).

A. Fire

Fire applications can include using prescribed fire, wildland fire use, or other pyrrhic methods to achieve resource benefits. Prescribed fire is the intentional application of fire to wildland fuels under specified conditions of fuels, weather, and other variables. In areas where there is no threat to human life or property, wildland fires are used for resource benefit to maintain ecosystems that are functioning within their normal fire regime. These fires must meet specific environmental prescriptions and they are utilized only in pre-planned areas and when there are adequate fire management personnel and equipment available to achieve defined resource objectives.

The Fire Management Plan (FMP) serves as the program strategy document for fuels treatments and prescribed fire activities. It identifies how fuels treatments, fire use, and other fire management strategies will be used to meet the overall land management goals identified in land-use plans. The FMP also identifies areas where the use of wildland fire for resource benefits is acceptable.

The Prescribed Fire Plan is a stand-alone, legal document that provides the prescribed fire burn boss all the information needed to implement the project. Prescribed fire projects must be implemented in compliance with the written plan.

A Wildland Fire Implementation Plan (WFIP) is prepared for all wildland fires that are managed for resource benefit. The WFIP is an operational plan for assessing, analyzing, and selecting strategies for wildland fire use. It is progressively developed, and documents appropriate management responses for any wildland fire managed for resource benefits.

Factors considered when designing a burn plan and implementing a prescribed burn include weather conditions, vegetation types and density, slope, fuel moisture content, time of year, risks to dwellings and property, alternative treatment methods, and potential impacts on air quality, land use, cultural resources, and threatened and endangered species.

Hand-held tools, such as drip torches, propane torches, diesel flame-throwers, and flares, may be used to start a prescribed fire. Mass ignition techniques include terra-torches and heli-torches, which release an ignited gelled fuel mixture onto the area to be treated. Helicopters may also be used to drop hollow polystyrene spheres containing potassium permanganate that are injected with ethylene glycol immediately before ignition. The sphere ignition method is best used for spot-firing programs.

Prescribed fire can be used in some situations where some other treatment methods are not feasible due to soil rockiness, slope steepness, or terrain irregularity, although prescribed fire is limited to situations where adequate fuel is available to carry the fire. It is also relatively inexpensive to treat vegetation using fire, ranging from \$20 to \$500 per acre, with higher costs associated with treating forest lands in California and Oregon.

The use of prescribed fire comes with a risk of the fire getting out of control and damaging property and endangering human life. Thus, chemical, biological, mechanical and manual methods, instead of fire, are often used to control vegetation near communities. In some situations, prescribed fire can encourage the germination and establishment of weeds if a treatment site is not treated with herbicides or re-vegetated after fire use.

B. Mechanical

Mechanical treatment involves the use of vehicles such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, or chop existing vegetation. The selection of a particular mechanical method is based upon characteristics of the vegetation, seedbed preparation and re-vegetation needs, topography and terrain, soil characteristics, climatic conditions, and an analysis of the improvement cost compared to the expected productivity (USDI, BLM, 1991a). Mechanical methods that may be used by BLM include chaining, root plowing, tilling and drill seeding, mowing, roller chopping and cutting, blading, grubbing, and feller-bunching. As new technologies or techniques are developed, they could be used if their impacts are similar or less than existing methods.

Chaining consists of pulling heavy chains (40 to 90 pounds per link) in a “U” or “J” shaped pattern behind two crawler-type tractors. A chain is usually 250 to 300 feet long, and may weigh as much as 32,000 pounds. The width of each swath varies from 75 feet to 120 feet. Chain link size, modifications to links, and operation of the crawler tractors determine the number and size of trees and shrubs that are removed and the effects on understory species. Chaining can be conducted during the appropriate season to benefit soil stability and plant seeding, and reduce the invasion of weeds (Monsen et al., 2004).

Chaining works best for crushing brittle brush and uprooting woody plants. Chaining can be done on irregular, moderately rocky terrain, with slopes of up to 20%. Chaining may cause soil disturbance, but the plant debris can be left in place to minimize runoff and erosion, shade the soil surface, and maintain soil moisture and nutrient recycling. Alternatively, the debris can be burned to facilitate seeding, improve scenic values, and eliminate potential rodent habitat. Chaining is a cost-effective means of incorporating seed into soil, especially in burned areas. Chaining provides a variety of seeding depths and microsites, as well as improves ground cover and forage production. Recent studies showed improved seedling establishment on chained sites resulted in less downy brome establishment three years after fire in sagebrush and pinyon-juniper habitats (Ott et al., 2003).

Tilling involves the use of angled disks (disk tilling) or pointed metal-toothed implements (chisel plowing) to uproot, chop, and mulch vegetation. This technique is best used in situations where thinning or complete removal of vegetation is desired, and in conjunction with seeding operations. Tilling leaves mulched vegetation near the soil surface, which encourages the growth of newly planted seeds. Tilling is usually done with a brushland plow, a single axle with an arrangement of angle disks that covers about 10-foot swaths. An offset disk plow, consisting of multiple rows of disks set at different angles to each other, is pulled by a crawler-type tractor or a large rubber tire tractor. This method is often used for removal of sagebrush and similar shrubs. It works best on areas with smooth terrain, and deep, rock-free soils. Chisel plowing can be used to break up soils such as hardpan.

Often, drill seeding is conducted along with tilling. Seed drills, which consist of a series of furrow openers, seed metering devices, seed hoppers, and seed covering devices, are either towed by or mounted on tractors. A seed drill opens a furrow in the seedbed, deposits a measured amount of seed into the furrow, and closes the furrow to cover the seed.

Mowing tools, such as rotary mowers or straight-edged cutter bar mowers, can be used to cut herbaceous and woody vegetation above the ground surface. Mowing is often done along highway rights-of-way (ROW) to reduce fire hazards, improve visibility, prevent snow buildup, or improve the appearance of the area. Mowing in sagebrush habitats can create mosaics of uneven-aged stands and enhance wildlife habitat. Mowing is most effective on annual and biennial plants (Rees et al. 1996). Weeds are rarely killed by mowing, and an area may have to be mowed repeatedly for the treatment to be effective. However,

the use of a “wet blade,” in which an herbicide flows along the mower blade and is applied directly to the cut surface of clipped plants, has greatly improved the control of some species. In addition, chipping equipment can be used to cut and chip vegetation in one pass.

Roller-chopping tools are heavy-bladed drums that, through a rolling action, cut and crush vegetation up to five inches in diameter. The drums are pulled by crawler-type tractors, farm tractors, or a special type of self-propelled vehicle designed for forested areas or range improvement projects.

Blading entails using a crawler-type tractor blade to shear small brush at ground level. Topsoil could be scraped with the brush and piled into windrows during this operation. Blading use is limited to areas where degradation to the soil is acceptable, such as along ROW or in roadside ditches (USDI BLM 1991a).

Grubbing is done with a crawler-type tractor and a brush or root rake attachment. The rake attachment consists of a standard dozer blade adapted with a row of curved teeth projecting forward at the blade base. Brush is uprooted and roots are combed from the soil by placing the base of the blade below the soil surface. Grubbing greatly disturbs perennial grasses, so grubbed areas are usually reseeded to prevent extensive runoff and erosion (USDI BLM 1991a).

Feller-bunchers are machines that grab trees, cut them at the base, pick them up, and move them into a pile or onto the bed of a truck (BPA, 2000). Feller-bunchers are used in forest and woodland thinning to remove potential hazardous fuels. Large chippers, or “tub-grinders,” are often used to chip the limbs, bark, and wood of trees to generate mulch or biomass, which can be used in power generation facilities.

Mechanical methods are effective for removing thick stands of vegetation. Some mechanical equipment can also mulch or lop and scatter vegetation debris, so debris disposal is taken care of while the vegetation is removed. Mechanical methods are appropriate where a high level of control over vegetation removal is needed, such as in sensitive wildlife habitats or near homesites, and are often used instead of prescribed fire or herbicide treatments for vegetation control in the WUI.

Unless used with follow-up herbicide treatments, mechanical treatments have limited use for noxious weed control, because the machinery tends to spread seeds and not kill roots. Mechanical vegetation control costs from \$100 to \$600 per acre for equipment and labor (BPA, 2000). Additionally, repeated mechanical treatments are often necessary due to residual weed seed in the seed bank.

C. Manual

Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth (USDI, BLM, 1991a).

Hand tools used include the handsaw, axe, shovel, rake, machete, grubbing hoe, mattock (combination of cutting edge and grubbing hoe), pulaski (combination of axe and grubbing hoe), brush hook, and hand clippers. Power tools such as chain saws and power brush saws are also used, particularly for thick-stemmed plants.

Manual treatments, such as hand-pulling and hoeing, are most effective where weed infestation is limited and soil types allow for complete removal of the plant material (Rees et al., 1996). Additionally, pulling

works well for annual and biennial plants, shallow-rooted plant species that do not re-sprout from residual roots, and plants growing in sandy or gravelly soils. Repeated treatments are often necessary due to soil disturbance and residual weed seeds in the seed bank.

Manual techniques can be used in many areas and usually with minimal environmental impacts. Although they have limited value for weed control over a large area, manual techniques can be highly selective. Manual treatment can be used in sensitive habitats such as riparian areas, areas where burning or herbicide application would not be appropriate, and areas that are inaccessible to ground vehicles (USDI, BLM, 1991a).

Manual treatments are expensive and labor intensive, compared to other vegetation management methods such as prescribed burning and herbicide application. Typical manual vegetation control costs range from \$70 to \$700 per acre. Manual methods may also be more dangerous for the workers involved in implementation because of the use of sharp tools and the difficulties associated with working conditions, such as steep terrain with slippery ground cover. Also, some plants may contain potentially toxic or hazardous compounds. While manual techniques may not be highly efficient or cost effective over large acreages, they may be very useful, and necessary, for specific invasive species problems, and for educating public land users.

D. Biological Control

Biological control involves the intentional use of domestic animals, insects, nematodes, mites, or pathogens (agents such as bacteria or fungus that can cause diseases in plants) that weaken or destroy vegetation (USDI, BLM, 1991a, BPA, 2000). Biological control is used to reduce targeted weed populations to acceptable levels by stressing target plants and reducing competition with desired plant species.

Domestic animals, such as cattle, sheep, or goats, control the top-growth of certain invasive and noxious weeds, which can help to weaken the plants and reduce the reproduction potential. Using the weeds as a food source, some animal species can consume 50% or more of their daily diet as target weeds after a brief adjustment period (Tu et al., 2001). They can also reduce the amount of flammable vegetation or alter the vertical and horizontal of the vegetation to alter wildfire behavior and effects.

Cattle primarily eat grass, but also some shrubs and forbs. Sheep consume many forbs, as well as grasses and shrubs, but tend not to graze an area uniformly. Goats typically eat large quantities of woody vegetation as well as forbs, and tend to eat a greater variety of plants than sheep (USDI BLM 1991a; Tu et al. 2001). Goats and sheep are effective control agents for leafy spurge, Russian knapweed, toadflax, other weed species, and some types of shrubs.

A successful treatment program can enhance habitat for wildlife. For example, cattle and sheep feeding in the spring and early summer can thin understory forbs and grasses, reducing competition for light, nutrients, and water for desirable shrub species. The shrub species will increase their vegetative output for winter browsing by deer and other wildlife (USDI, BLM, 1991a).

In order for this treatment to be effective, the right combination of animals, stocking rates, timing, and rest must be used. Grazing by domestic animals should occur when the target species is palatable and when feeding on the plants can damage them or reduce viable seeds. Additionally, grazing should be restricted during critical growth stages of desirable competing species. When desirable species are present, there must be adequate rest following the treatment to allow desirable species to recover.

Whenever the use of livestock to control vegetation is being considered, the needs of the domestic animals as well as the other multiple-use objectives for the area must be considered. A herder, fencing, or mineral block may be required to keep livestock within the desired area. Many weed species are less palatable than desired vegetation, so livestock may overgraze desired vegetation rather than the target weeds. Additionally, some weeds may be toxic to certain livestock and not to others, which will influence the management option selected (Tu et al., 2001). Proper management of domestic animals is extremely important if this method of treatment is to be successful (Olson, 1999).

Caution should be used whenever grazing or any other vegetation control is prescribed near riparian areas, in steep topography, or in areas with highly erodible soils. Weed seeds may still be viable after passing through the digestive tract of animals, so the animals should not be moved to weed-free areas until ample time has passed for all seeds to pass through their systems. Seeds can also travel on the animals' fur (Tu et al., 2001). Plant-eating insects, nematodes, mites, or pathogens affect plants directly, by destroying vital plant tissues and functions, and indirectly, by increasing stress on plants, which may reduce their ability to compete with other plants (BPA, 2000). Several biological control agents can be used together to reduce undesired vegetation density to an acceptable level. Biological control agents currently used by BLM have been tested by the USDA Agricultural Research Service to ensure that they are host-specific and will feed only on the target plant and not on crops, native flora, or endangered or threatened plant species.

Once biological control agents become established, they can reproduce and increase in numbers and continue to affect target organisms. However, it may take as many as 15 to 20 years for agents to establish themselves and bring about the desired level of control. Biological control agents are most suitable for treating large sites where target plants are well established and very competitive with native species. Agents are also often fairly mobile and can seek out new host plants (Rees et al., 1996). It is unlikely that biological control agents will eradicate a pest plant, because as populations of the host plant decrease, populations of the agent will also decline.

Treatment of noxious weeds using domestic animals is relatively inexpensive, costing about \$12 to \$15 per acre. Biological control costs using insects, nematodes, mites, or other pathogens range from \$80 to \$150 per release for ground applications and \$150 to \$300 for aerial releases (BPA, 2000). The cost reflects the limited availability of appropriate control agents and expertise required in dealing with the agents and treating areas. Biological treatments are most effective when followed with other treatments.

E. Herbicides

Herbicides are chemicals that kill or injure plants, and all herbicides interfere with plant metabolism in a variety of ways (Bussan and Dyer, 1999). They can be categorized as selective or non-selective. Selective herbicides kill only a specific type of plant, such as broad-leaved plants. Some herbicides used for noxious weed control are selective for broad-leaved plants, so that they can be used to control weeds while maintaining grass species. Non-selective herbicides must be used carefully around desirable and non-target plants (Rees et al., 1996).

Only those herbicides approved for BLM use can be used (See the Final Vegetation Treatments EIS (USDI, BLM, 2007b) for additional information the approval process. Some new chemicals may be used for experimental trials on three plots of no more than five acres each.

Herbicide treatments must comply with USEPA label directions and follow BLM procedures outlined in BLM Handbook H-9011-1 (Chemical Pest Control), and manuals 1112 (Safety), 9011 (Chemical Pest Control), and 9015 (Integrated Weed Management), and meet or exceed states' label standards

(USDI, BLM, 1991a). Application methods depend upon treatment objective(s) (removal or reduction); the accessibility, topography, and size of the treatment area; characteristics of the target species and the desired vegetation; location of sensitive areas and potential environmental impacts in the immediate vicinity; anticipated costs and equipment limitations; and meteorological and vegetative conditions of treatment areas at the time of treatment.

A project file with NEPA documentation and a ROD is developed for each herbicide project. A pesticide use proposal (PUP) is then completed by a person whose certification by BLM course 9000-1 is current and sent to the State weed coordinator for signatures. The NEPA documentation includes information on project specifications, key personnel responsibilities, communication procedures, safety, spill response, and emergency procedures. The plan should also specify wind speeds and temperature ranges, minimum buffer widths between treatment areas and water bodies for non-aquatic use herbicides that comply with BLM policy and label restrictions (BLM Handbook H-9011-1).

Herbicide application schedules are designed to maximize impacts to target species and minimize potential impacts to non-target plants and animals, while remaining consistent with the objective of the vegetation treatment program. Application rates depend upon the target species, the presence and condition of non-target vegetation, weather and site conditions, soil type, depth to the water table, presence of other water sources, the label requirements, approved BLM rates, and sensitivity of non-target species. A pesticide application report (PAR) must be filled out within 24 hours of application.

Herbicides are applied aerially with helicopters or fixed-wing aircraft, and on the ground with vehicles or manual application devices. Although using helicopters is more expensive than fixed-wing aircraft, helicopters are more maneuverable and more effective in areas with irregular terrain. Helicopters also are more effective for treating target vegetation in areas with multiple vegetation types.

Manual applications of herbicides are used only in small areas, in areas inaccessible by vehicle, and/or to minimize potential impacts to non-target plants. Herbicides may be applied to green leaves with a backpack applicator or spray bottle, wick (wiped on), or wand (sprayed on). Herbicides can be applied to trees around the circumference of the trunk on the intact bark (basal bark), to cuts in the trunk or stem (frill, or "hack and squirt"), to cut stems and stumps (cut stump), or injected into the inner bark (Tu et al., 2001).

Herbicides can be used selectively to control specific types of vegetation, or nonselectively to clear all vegetation on a particular area. Herbicides can be applied over large areas and in remote locations using aircraft, or applied using spot applications in environmentally sensitive areas. The cost of herbicide application generally ranges from \$20 to \$250 per acre (BPA, 2000).

There are drawbacks and limitations to herbicide use. Herbicides can damage or kill non-target plants. Weeds may develop resistance to a particular herbicide over time. All herbicides must be applied by someone with the appropriate certification identified in state laws and BLM.

The Forest Service has prepared interactive spreadsheets for some herbicides that allow the determination of exposure concentrations for plants and animals under different application rates and exposure scenarios for these herbicides. The Ecological Risk Assessments (ERAs) are available at the Forest Service Pesticide Management and Coordination website <http://www.fs.fed.us/foresthealth/pesticide/index.shtml>.

Information contained in the ERAs was used by the BLM to characterize risks to non-target species from the specific chemicals and is incorporated by reference into the Vegetation Treatments PEIS. The BLM

has completed risk assessments for all approved chemicals and will not approve any new ones until a risk assessment for their use is completed. The relationship between risk assessments prepared by the Forest Service and those prepared and updated by BLM is discussed in the Vegetation Treatment EIS, Volume 1, Chapter 2 (USDI, BLM, 2007).

IV. Treatment Effectiveness Monitoring

Chapter 3 of this handbook defines monitoring as the regular collection of data over time to evaluate progress toward meeting a management objective or the effectiveness of our management actions. Monitoring is a key part of what has been termed “adaptive management,” in which monitoring measures progress toward or success in achieving an objective and provides the evidence for management change or continuation (Holling, 1978; Ringold et.al.,1996 and Elzinga et.al., 1998).

Inherent in defining monitoring as part of the adaptive management cycle is the concept that monitoring is *driven by objectives*. What is measured, how well it is measured, and how often it is measured are design features that are defined by how an objective is articulated. In a land-use plan or activity plan the objective describes the desired condition. Management is designed to meet the objective and is implemented through a variety of activities and uses. Monitoring is designed to determine if the objective is met. When we implement a vegetative treatment, we monitor the post-treatment conditions to determine if our treatment has been effective at moving the vegetation closer to the overall desired condition. In many cases, multiple treatments and longer time periods may be necessary to actually achieve the desired condition described in a land-use plan. The effectiveness of an individual or a series of treatments is most often monitored within a shorter timeframe, such as one to five years after treatment, so that the cause and effect relationships are more clearly evident. Still, clear and measurable treatment objectives form the foundation of a treatment effectiveness monitoring effort (Elzinga et al.,1998).

The following guidance on planning and implementing treatment effectiveness monitoring has been summarized from numerous publications that go into much more depth than can be included in this handbook. Readers are encouraged to review the references provided in this section for more information on treatment effectiveness monitoring.

A. Monitoring Overview

BLM treatment effectiveness monitoring activities range from site evaluations to the BLM Legacy Program, which is an outgrowth of the need to provide current BLM field managers and specialists with an opportunity to learn about past management practices and land treatments, and to evaluate the results of those practices 25 or more years later.

To make monitoring data useful in building on successes and learning from past mistakes, monitoring must be designed to determine if the treatment was effective, and to ensure that treatment did not have unintended adverse impacts on other resources. Collaborative, multi-party monitoring is encouraged and in the case of treatments carried out under the authority of the Healthy Forests Restoration Act of 2003, is required. Multi-party monitoring can be an effective means of building trust and collaboration with local communities and diverse stakeholders, including interested citizens and tribes.

This handbook is not intended to provide a comprehensive listing of treatment effectiveness monitoring techniques. Other documents exist that provide the comprehensive information needed by field managers and staffs to develop effective treatment monitoring plans, including Measuring and Monitoring Plant Populations (Elzinga et.al., 1998) and Sampling Vegetation Attributes (Coulloudon et.al., 1996).

Rather, this section provides information on the importance of monitoring treatment effectiveness and adapting treatment design to better measure whether the desired outcomes are achieved. It also strongly encourages a multi-program approach toward monitoring to achieve multi-program objectives developed through the planning process, as well as interdisciplinary treatment design. By learning together about what works and what doesn't work, the vegetation management programs within the BLM will be better prepared to implement the integrated vegetation management approach outlined in this handbook.

B. The Benefits of Integrated Monitoring

Traditionally each resource program has conducted its own monitoring. Range specialists have collected vegetation data to estimate the forage resource for grazing. Wildlife biologists have visited the same ground to collect vegetation data that describes components of wildlife habitat. Fuels specialists have visited the same ground to estimate the volume of fuel the same vegetation provides. Foresters have visited the same piece of ground to measure the forest or woodland resource.

Today, BLM is faced with constrained budgets, limited personnel and increased work load. BLM must become more efficient in conducting business. Integrated monitoring across disciplines could increase efficiency particularly for the four programs that are engaged in monitoring the effectiveness of landscape treatments: range, wildlife, forestry, and fire/fuels.

Numerous benefits can be achieved from integrated monitoring in the realm of cost savings, connectivity to land-use plans, integration of resource management objectives across disciplines, and incorporation of stakeholder input.

1. Cost Savings

As mentioned before, sending one team of specialists to the same piece of ground to conduct vegetation studies for four programs at one time is more cost effective than sending four teams to the same piece of ground four different times. This approach would also foster better understanding among resource specialists of the management objectives from the various programs of range, wildlife, forestry and fire.

2. Better Connectivity to Planning Documents

Overarching management objectives for the field office and local management units are stated in various planning documents such as the field office or district office Resource Management Plan (RMP) and in various National Environmental Policy Act (NEPA) related documents, such as environmental assessments, environmental impact statements, and biological opinions. Integrated monitoring can develop one monitoring protocol to understand the effectiveness of treatments designed across the programs instead of addressing each program separately.

3. Landscape-Level Approach Facilitates Efficiency

Integrated monitoring is best applied at the landscape level such as a watershed scale. This approach allows for maintenance of connectivity among resources that cover large or linear geographic units such as:

- Wildlife corridors
- Riparian corridors

- Fire management units
- Areas of interest for t&e species recovery plans
- Habitat management units
- Timber sales
- Wildlife habitat
- Ecological site descriptions

A landscape-level approach also facilitates synthesis of integrated management objectives. There are more opportunities to identify “added value” between/among program areas. One multi-disciplinary team can serve multiple programs with “one-stop shopping” or “one-stop monitoring.” For example, one interdisciplinary team for range evaluations can also collect data to serve wildlife needs and at the same time assist in development of prescribed burn plans for a unit or watershed.

Focusing personnel on one planning unit will provide efficiency in coordinating calendar schedules, reduced access time to the field, reduced cost by reducing vehicle use and employee time.

4. Improved Stakeholder Involvement

When BLM personnel, issues and management objectives are focused within a planning unit, the stakeholders are apt to be more focused and involved. For example, working within a watershed unit allows the permittees to focus on management of the whole complex of allotments within the watershed. This reduces the number of agency personnel the permittee needs to communicate with and the number of issues the permittee needs to understand. It should enhance the permittees understanding of the overall management objectives and the relationship among the resource programs. It should facilitate opportunities for the permittee to contribute to the management objectives.

5. Focused Adaptive Management

Integrated monitoring across disciplines within a planning unit should reduce the potential for conflict among disciplines. Managers can look at the impact or affect a decision will have on the various resources within the whole planning unit, and select adjustments to management that will be constructive for all resources.

C. Mechanisms for Integrating Monitoring

BLM has much to gain from integrated monitoring. Interdisciplinary teams that examine resource values within a single program are already functioning well. However, providing integrated monitoring to serve multiple programs at the same time is a new concept. Implementing this program may require some adjustment, particularly at the field office and district levels (locally) and to some extent for broad planning units (regionally) such as at the sage grouse habitat region.

1. Organize Treatments and Programs by Watershed or Landscape Unit

By aggregating vegetation treatments in a watershed or other geographic unit, treatments can more effectively alter large vegetation communities, thus having a greater impact on how that vegetation functions as wildlife habitat and how ecological processes, such as watershed and fire, work. It can also have the effect of focusing monitoring on plant community condition rather than site-level effects.

In many field offices the vegetation monitoring program is driven by one program more than others. For example, the expiration dates of grazing permits may dictate which allotments are monitored and when. To facilitate integration of program treatment objectives and effectiveness monitoring, permit expiration dates should be adjusted so that grazing allotments within one watershed are monitored during the same time period.

Monitoring associated with T&E species should be streamlined to facilitate cooperation with US Fish and Wildlife Service. Vegetation treatments such as weed control, prescribed burns and timber harvest are also facilitated by management within a planning unit.

2. Consider Identifying a Visible Platform for Monitoring

BLM offices should consider consolidating monitoring activities in one central person or group within a field office. A monitoring group or person may provide the service of vegetation monitoring to range, wildlife, forestry and fire. In this way, duplication of monitoring activities could be reduced. Duties would include those of science advisor for sample design and monitoring implementation, as well as quality checking of data, data base management, analyses, interpretation, report writing and recommendations to adjust management. The monitoring specialist should have close coordination with the GIS specialist for the construction of maps and geo-referenced data.

The monitoring specialist or group should be positioned with the office to allow for close coordination with the various program specialists and Bureau needs.

C. Writing Measurable Treatment Objectives

Management objectives typically increase in specificity as they progress from national policies to land-management plan objectives to project objectives, to individual treatment objectives. For example, objectives to improve the overall condition or health of the vegetation, as prescribed in national policies, typically begin with broad statements concerning the diversity or productivity, such as those contained in the Fundamentals for Rangeland Health (USDI, BLM, 2001a) or the 10-Year Comprehensive Strategy Implementation Plan (USDI and USDA, FS, 2006).

As these broad objectives are refined in land-use plans and activity plans, additional specificity is added, including a description of the desired future conditions for particular plant communities, the attributes of a vegetation community that are desirable and the priority and timing for applying treatments to improve condition.

In the design of treatments, these objectives must be further refined, particularly to ascertain if the treatment was applied properly and was effective at accomplishing the objective and to adapt future treatments to better achieve the desired outcome. In particular, treatment objectives should be measurable, either quantitatively or qualitatively. And, because some vegetation attributes are difficult to measure directly, surrogates or indicators should be used as a proxy for the actual attribute of concern. For example, where the objective is to increase community resiliency to wildfire, the objective should be described such that one or more of the community attributes is modified to improve community resiliency. The following is an example of such an objective:

Mimic natural disturbance patterns in Douglas-fir habitat type group 1 by reducing the average conifer canopy coverage by 50-75% in patches, while retaining 80% of the existing Douglas-fir trees over 24 inches in diameter on 400 acres in west Gallagher Creek.

In this example, stand resiliency to disturbance by wildfire is represented by reducing canopy cover and retaining large diameter Douglas-fir trees.

Another example of an objective which uses vegetation attributes to measure a characteristic that is difficult to measure directly is:

Improve big game winter foraging habitat by reducing the density of pinyon pine and juniper trees on 1,200 acres in lower Basin Creek and thereby increasing the vigor and/or productivity of cool season perennial grasses.

The most common vegetation attributes used to describe vegetation communities within BLM are (Sampling Vegetation Attribute. 1999. BLM Technical Reference 1734-4):

- Frequency
- Cover
- Density
- Production
- Structure
- Species Composition

Other desirable characteristics of treatment objectives that will facilitate treatment effectiveness monitoring are (Elzinga et.al., 1998):

- Contain the specific geographic location where the treatment is expected to have an effect.
- Use an action verb, e.g., increase, decrease or maintain.
- Quantify a measurable state or degree of change for the attribute.
- Identify the time frame when the action effects are anticipated to be discernable.

Examples of treatment objectives that can more easily be monitored for effectiveness include:

- Decrease the frequency of *Bromus tectorum* by 30% at the Iron Creek population of *Penstemon lemhiensis* between 1997 and 2005.
- Increase the frequency of occurrence of key perennial native grass species to a density of three per square meter in the Five Creeks watershed by the end of 2004.
- Improve the overall Fire Regime Condition Class rating, as determined by the FRCC Interagency Guide protocols, in the ponderosa pine habitat types in the East Fork Elk Creek drainage by decreasing the amount of mid-seral/closed stand structures by 20 percent over the next five years.

Of particular concern in the arid west, is the control of invasive grass and noxious weed species following restoration treatments and other ground-disturbing activities and events. It is BLM policy to prevent, control and contain the spread of noxious and invasive weeds on BLM land. In situations where invasive grasses or noxious weeds are likely to persist or expand into treated areas, treatment objectives should identify threshold values for these species for specified time periods following treatment. For example, if an invasive grass such as Lehman's lovegrass were to become 15% or more species composition two years following a vegetation treatment, the decision record could include management action to further control invasive species at that time. Threshold values are defined by the local vegetation experts with guidance from state and county agencies.

Chapter 7 - Best Management Practices

I. Introduction

Best Management Practices (BMPs) are defined by BLM Handbook H-1601-1 as a suite of techniques that guide or may be applied to management actions for achieving desired outcomes. The BMPs in this handbook are measures considered highly applicable to management actions related to integrated vegetation management that can be applied on a site-specific basis to reduce or avoid adverse environmental or social impacts. They should also be given consideration during the development of land use and activity plans.

The following list of programmatic BMPs is not intended to be all inclusive, and other sources of BMPs, such as Manual Section 6840 (Special Status Species), H-4120-1 (Grazing Management), and H-8550-1 (Management of Wilderness Study Areas) should also be consulted when designing vegetation treatments.

Many of the BMPs listed below are identified as Standard Operating Procedures (SOPs), Prevention Measures, or Mitigation Measures in the BLM Vegetation Treatments Using Herbicides Environmental Impact Statement Record of Decision (ROD) (USDI, BLM, 2007a) or as SOPs in the BLM Vegetation Treatments Programmatic Environmental Report (PER) (USDI, BLM, 2007b). These documents contain a much more extensive list relative to weed prevention and herbicide use. Those SOPs required by the ROD and included as BMPs in this section are identified with an asterisk. The ROD should be consulted for all required SOPs, Prevention Measures and Mitigation Measures when designing vegetation treatments. The associated Biological Assessment and Biological Opinion should also be consulted when designing vegetation treatments that use herbicides near federally listed species.

The BMPs listed in this handbook should not be considered as a “one-size-fits-all” approach and don’t encompass all the effective BMPs currently required. They should be considered and applied where applicable to promote healthy, functioning native plant communities or to meet regulatory requirements. The appropriate BMPs for a particular site may vary to accommodate unique, site-specific conditions and local resource concerns. Specific BMPs should be evaluated by an interdisciplinary team to ensure they are not in conflict with resource goals and objectives. Regardless of the chosen practices, the final strategy used should ensure that the overarching goal of a healthy and functioning native plant community can be achieved by BLM vegetation management projects.

II. Best Management Practices

A. Invasive and Non-Native Species

The following BMPs focus on the prevention of further spread and/or establishment of invasive and non-native species:

- * Before ground-disturbing activities begin, inventory weed infestation and prioritize areas for treatment in project operating areas and along access routes.
- * Minimize soil disturbance to the extent practical, consistent with project objectives.
- * Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas or restrict travel to periods when the spread of seed or propagules is least likely.
- * Pre-treat high risk sites for weed establishment and spread before implementing projects.
- Design vegetation treatments to retain native vegetation in and around project activity areas.
- Begin project operations in areas without non-native or noxious weed species.
- Clean vehicles and equipment (remove soil and plant parts) before entering public land.
- * Clean all equipment before leaving the project site if operating in areas infested with weeds. Utilize standard contract provisions to ensure that contractors adhere to this guideline.

- Locate and manage vehicle and equipment wash stations to limit weed and invasive species spread into native plant communities.
- * Inspect and treat weeds that become established at equipment cleaning sites.
- Inspect sand, gravel and fill materials on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before using pit material offsite.
- * Survey the area where material from treated weed-infested sources is used for at least three years after project completion to ensure that any weeds transported to the site are promptly detected and controlled.
- Use caution when transporting vegetative materials and wood products from project sites to minimize the spread of invasive and non-native pests.
- *Locate project staging areas for refueling, maintenance equipment, materials and operating supplies in weed-free areas.
- Dispose of noxious weed and non-native vegetation properly to prevent unwanted spread.
- * Use certified weed-free and/or weed-seed-free hay or straw where certified materials are required and/or are reasonably available.
- * Use weed-free feed for horses and pack animals.
- Schedule management activities (e.g. livestock grazing) when they may be most detrimental to populations of noxious weeds and non-native species without harming preferred species.
- Utilize domestic animals to contain the target species in the treatment areas prior to weed seed set. If seed set has occurred, do not move the domestic animals to uninfested areas for seven days.
- Use sterile or non-persistent exotic plants at low planting densities as nurse crops for local natives to preclude the migration of noxious weeds into adjacent natural areas.
- Schedule and coordinate roadside maintenance activities in consultation with weed specialists.
- * Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least three growing seasons following completion of the project.

B. Soil Resource

The following BMPs relate to the protection of soil structure and integrity as well as prevent erosion and compaction:

- Identify soil or site conditions that may dictate specific timing, treatment methods, or equipment, or that may lead to weather-related or seasonal closure of the operation.
- Minimize rutting on primary trails, roads, staging areas, and landings and avoid rutting in the general project area.
- Inspect soil-stabilization practices throughout all stages of operations to ensure they are successful and remain functional.
- Use heavy equipment on dry and/or frozen ground to minimize soil compaction and rutting.
- Minimize damage and/or impacts to biological soil crusts by limiting the use of heavy machinery or excessive traffic in sensitive areas.
- * Minimize use of domestic animals if removal of vegetation may cause significant soil erosion or impact biological soil crusts.
- Minimize site-disturbance on slopes with high erosion potential. Implement erosion control measures where necessary.
- Minimize soil disturbance by limiting the piling and burning of treated fuels.
- Minimize the amount of time between soil disturbance and remediation.
- Conduct mechanical treatments along topographic contours to minimize runoff and erosion.
- Minimize use of heavy equipment on slopes greater than 20%.

C. Native Plant Conservation and Revegetation

The following BMPs apply to the conservation of native plant species and communities. They also relate to the re-vegetation/reestablishment of native plants on disturbed and/or treated sites:

- Reestablish native vegetation on sites if natural regeneration is unlikely. Use native vegetation that is genetically appropriate (e.g. from the same seed zone and of similar elevation) to the area treated when conducting revegetation activities.
- Manage for a mosaic of native plant communities and successional stages across the landscape.
- *When available, use native seed of known origin, as labeled by state seed certification programs that is free of noxious and invasive weeds, as determined and documented by a seed inspection test by a certified seed laboratory.
- Mitigate and limit impacts to habitats with existing and healthy native plant populations. Consider site characteristics, environmental conditions, and application equipment in order to retain native vegetation in and around project areas to the maximum extent possible consistent with project objectives.
- Conduct pre-treatment surveys for special-status plants within or adjacent to proposed treatment areas
- Consider seasonal impacts of management actions (e.g. growing vs. dormant season disturbance effects) when developing objectives and strategies.
- Maintain proper stocking rates and livestock distribution to protect native plant communities. Manage the intensity and duration of containment by domestic animals to minimize over utilization of desirable plant species.
- Where possible, provide interim revegetation in areas being actively disturbed.
- *Limit fertilizer applications that favor annual grass growth over forb growth in newly seeded areas where invasive annuals are becoming established.
- *Use native or sterile species for rehabilitation and stabilization projects to compete with invasive species until desired vegetation establishes.
- Exclude livestock from revegetated areas for a minimum of two growing seasons or until vegetation has become established. Additional time may be required for the arid regions. Consult local policies and decisions to determine the appropriate amount of time.
- Avoid attracting bark beetles to forest and woodland areas where vegetation is being manipulated by removing the treatment residue or by burning or chipping it on site and by minimizing bark damage to residual trees. Chipping should be conducted in the fall to allow the chips to dry over the winter and before the spring bark beetle flight.
- *To support local pollinators use native seed mixes that maximize blooming times when pollinators are most active and include native nectar and pollen-producing plants.

D. Using Pesticides and Biological Controls

The following BMPs relate to the use of pesticides and/or biological controls for the purposes of integrated vegetation management (See SOPs, Prevention Measures or Mitigation Measures in the BLM Vegetation Treatments Using Herbicides Environmental Impact Statement Record of Decision (ROD) (USDI, BLM, 2007a) for complete list of required SOPs when implementing vegetation treatments using herbicides):

- Use only biological control agents on species that have been tested and have approval.
- *Select pesticides that are the least toxic, which will provide the most desired results.
- * Develop plans to thoroughly evaluate the need for chemical treatments and their potential for impact on the environment.
- * Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

- * Select herbicide that is least damaging to the environment while providing the desired results.
- * Apply the least amount of herbicide needed to achieve the desired result.
- * Follow herbicide product label for use and storage.
- * Have licensed applicators apply herbicides.
- * To protect special status species, implement all conservation measures for plants, aquatic animals and terrestrial animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment*.
- Evaluate soil characteristics prior to pesticide application to prevent unwanted transport or leaching.
- * Consider effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks.
- * Use appropriate buffer zones based on label and risk assessment guidance.
- Minimize use of pesticides near wetlands and riparian areas.
- * Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies.
- *Minimize impacts of pesticides on pollinators by utilizing typical application rates, maintaining chemical free buffers around important pollen/nector sources and nesting habitats.
- Minimize damage to non-target plants by using non-broadcast treatments (e.g. spot treatments) and considering seasonality (e.g. treating during dormant periods) when possible.
- *Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness.
- * Use the “minimum tool” to treat noxious and invasive vegetation in wilderness, relying primarily on the use of ground-based tools, including backpack sprayers, hand sprayers, and pumps mounted on pack and saddle stock.
- Avoid using pesticides in areas actively grazed by livestock and/or wild horses and burros.
- Avoid using pesticides in areas of special wildlife consideration (see wildlife habitat section below).
- * Notify potentially affected parties of treatment activities that occur on public lands.
- *Post signs noting exclusion areas and the duration of exclusion, if necessary.
- * To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an integrated pest management program for projects proposing local use of herbicides.

E. Air Quality

The following BMPs deal with the protection and maintenance of air quality. However, these BMPs are not tied directly to any air quality standards and thus, as explained earlier, are only suggestions to be considered when planning integrated vegetation management projects:

- Minimize dust impacts along roads to the extent possible.
- Manage treatments to prevent air quality violations and minimize impacts to smoke-sensitive areas.
- Consider weather-related factors such as wind when developing a smoke management plan for prescribed fire.
- Minimize burning pesticide treated vegetation for at least six months after application.

F. Wildlife Habitat

The following BMPs relate to the protection and maintenance of wildlife habitat. It is important to note that these BMPs were selected not because they minimized impacts directly to wildlife (e.g. direct take of wildlife species) but because they focused more on the habitat (i.e. the vegetation component of habitat). Therefore, any project that may directly impact wildlife should review programmatic BMPs and policies directly related to the take of individual animals:

- Follow standard procedures for compliance with Section 7 of the Endangered Species Act.
- Survey for species of concern when a project may impact sensitive or protected species (e.g. federally and state listed species) and/or their habitat.
- Consider all aspects of wildlife habitat needs (e.g. feeding, shelter, etc.) when developing management strategies. Use site-specific conservation measures from approved biological evaluations for listed species/species of special concern.
- Limit the size and intensity of disturbances within critical habitats or areas where protected/sensitive species are present that could be affected by disturbance. Limit activities which may result in long-term and/or cumulative impacts to sensitive species habitats (e.g., creation of trails or roads in or adjacent to important wildlife habitat).
- Minimize direct impacts to species of concern through appropriate mitigation measures (e.g. season of activity, etc.). Avoid treatments during critical periods for wildlife (e.g. breeding, nesting, foaling, etc.).
- Consider habitat needs of bird populations (both migratory and non-migratory). Avoid activities that may disrupt nesting and breeding of sensitive bird species.
- Provide appropriate amounts of dead woody material following treatments for wildlife habitat (e.g. snags, downed logs, etc.). Take into consideration fuels management and insect pest species.
- When aircraft are used, plan flight paths and schedules to minimize impacts on wildlife.
- Minimize treatments on important forage areas necessary to sustain local livestock and wildlife populations unless they are required to stimulate growth. Use mosaic strategies to treat large areas grazed by animals.
- Design projects so that important food sources for pollinators are treated in patches and vegetation treatments are timed to occur before these sources bloom. Projects should also consider when pollinators are most actively foraging.

G. Cultural and Historical Resources

The following BMPs are related to protection and preservation of cultural and historical resources:

- *Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act.
- Initiate necessary consultations with appropriate cultural resource staff, State Historic Preservation Offices, and Native American Tribes to locate any areas of significance (cultural or historical) that may be impacted.
- Conduct archeological surveys and soils tests in culturally sensitive areas where ground disturbance is possible.
- *Consider impacts to culturally significant plants and work with the appropriate federal, tribal, and state resources to plan mitigation.

H. Water Quality and Wetlands

The following BMPs deal with protection of water resources, maintenance and preservation of riparian areas, and protection of wetlands.

- Minimize crossing of streams (intermittent and perennial) and wetlands with vehicles and heavy machinery.
- Locate residue piles (sawdust, field chipping residue, etc.) away from drainages where runoff may wash residue into water bodies or wetlands.
- *Maintain appropriate vegetative/riparian buffers between treatment areas and water bodies to protect water quality.

- Manage riparian areas to provide adequate shade, sediment control, bank stability, and recruitment of wood into stream channels.
- Locate project staging areas for refueling, maintenance equipment, materials and operating supplies in areas not designated as riparian and/or streambank management zones.

I. Recreation, Visual, and Wilderness Resources

The following BMPs pertain to values and resources related to recreation, aesthetics, and wilderness values and integrity:

- Use the least-intrusive methods possible to achieve objectives in wilderness areas.
- * Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness.
- * Use the “minimum tool” to treat noxious and invasive vegetation, relying primarily on the use of ground-based tools, including backpack sprayers, hand sprayers, and pumps mounted on pack and saddle stock.
- Avoid staging areas and large clearings within the view of travel routes or recreation areas.
- Design activities that mimic the form, line, color, and texture of the natural landscape.
- Upon completion of a project remove all trash and human waste from project areas.
- Minimize visual and audible impacts in high use recreation areas.
- Design vegetation treatments to repeat natural openings and mosaic on the landscape.
- Avoid straight line edges by scalloping or feathering edges and creating irregular openings.
- Retain a mix of native plant species and sizes to create a more natural appearance.
- * Notify the public of treatment methods, hazards, time and nearby alternative recreation areas.

III. Summary

As stated previously, the BMPs listed in this handbook are not “one-size-fits-all” and do not encompass all the effective BMPs currently required and/or available. However, several common themes related to the mitigation of environmental impacts were expressed throughout the previous sections. They include:

- The need for proper planning related to timing, spatial extent, and duration are critical to minimize environmental impacts.
- The value of consulting with a cross-section of natural resource specialists (e.g., biologists, ecologists, botanists, range conservationists, foresters, fuels specialists, etc.) to inform the decision making processes.
- The importance of considering multiple factors such as wildlife or water quality when developing and implementing management activities.
- The necessity of contingency revegetation plans in cases where natural reestablishment of native vegetation may not be feasible due to lack of seed source or impacts from competing non-native/invasive vegetation.
- The need to give special emphasis to the protection of sensitive resources (e.g. listed species habitats, cultural resources, etc.).
- The importance of developing inventory and monitoring strategies.

Regardless of the project proposed or outcomes desired, managers involved in integrated vegetation management should consider these six thematic best management practices as well as the protection of human health and safety throughout all stages of planning and implementation.

Chapter 8 - Using Native Plant Materials

I. Introduction

This chapter provides guidance on the use of native plants and seed in restoration and other revegetation projects and provides a brief overview of BLM's Native Plant Materials Development Program. As stated in Chapter 2 of this handbook; it is the policy of the Bureau of Land Management to manage for biologically diverse, resilient and productive native plant communities to sustain the health and productivity of the public lands. This policy recognizes that, for a variety of reasons, not every acre of public land will contain native plants and that, in certain circumstances to prevent further site degradation and improve functionality, non-native plants may be used as part of post fire stabilization and rehabilitation activities as well as in restoration to achieve short-term site stabilization objectives. However, where practical, uses and activities will be conducted to favor the health and persistence of native plant communities where they currently exist and rehabilitation or restoration actions will be undertaken to improve their diversity, resiliency and productivity. The policy in BLM Manual Supplement 1745 requires that native species shall be used except under limited circumstances. This handbook updates the 1745 policy and the procedures used in complying with it.

Healthy native plant communities are typically self-sustaining and rarely require management intervention to recover from natural disturbance. Natural recovery by native plant species is preferable to planting or seeding. However, the introduction of many non-native invasive plants into the United States, combined with disturbances that are often outside the range of natural variability, require BLM to analyze the potential for native plant community recovery and determine which types of treatment are warranted to assist in restoring their health. In some instances, it may be necessary to either reintroduce native species or augment native plant communities to aid in ensuring that more BLM-administered lands achieve Land Health Standards, particularly those focused on the Fundamentals of Land Health of: (1) upland and riparian watershed function; (2) ecological processes such as the nutrient cycle, energy flow, and the hydrologic cycle; (3) water quality; and (4) habitat quality for Threatened & Endangered and special status species.

Native plants are used in a wide range of programs within BLM including, burned area emergency stabilization and rehabilitation, hazardous fuels reduction, forest and rangeland health restoration, wildlife habitat improvement, threatened and endangered species recovery, noxious weed control, and others. It is essential that these programs work together in developing vegetation objectives and determining whether plant community and land health goals will require reintroduction or augmentation with native plants.

II. Establishing Priorities for Using Native Plants

Because native plant materials are in short supply, and many new native plant species are needed in the plant material toolbox for restoration and rehabilitation, combined with the length of time it takes to get new plant materials developed and released for use, the planning phase may be the most important part of any project.

Determining native plant materials needs should be part of the land-use planning process. While developing a LUP, field offices should determine priority areas for restoration and rehabilitation, the native plant species needed to restore those areas and the desired densities, frequencies or composition of those plants in the desired plant community or the potential natural community. Field offices should evaluate the suitability of the native plant material that is available for the sites, and begin collecting from local populations of those species that are not currently available using the protocol developed for the "Seeds of Success" project (see Appendix 4). Seed collected in this manner should be contributed to the native plant germplasm collections curated by the Agricultural Research Service (in Pullman, Washington and Fort Collins, Colorado facilities) for future plant

material development. It could also be taken to local growers for immediate seed increase or it could be used in a project requiring a small amount of seed.

When collecting seed for a project, generally use several (~ 50 or more) unrelated (spaced at least one-quarter mile apart for self pollinated species and within one-quarter mile for some cross-pollinated species) source plants within the collection area to maximize genetic diversity, would be collected in areas that match the ecological characteristics of the project area. Only use healthy source plants. It is best to collect seed when it is mature and still on the plant (if possible). For plants that disperse their seed quickly at maturity, spreading sheets beneath the parent plant is advised. Try to collect an equal number of seeds/cuttings from each source plant. These steps are outlined with more detail in Appendix 4.

Document the location of all source populations and as much as possible, track the plant materials taken from each population until they reach the field, and monitor the performance of each collection over time.

III. Treatment Design Considerations

The following criteria should be considered when designing treatments that reintroduce native plant species or augment existing native plant communities:

- A. Seed collection from the site to be disturbed prior to disturbance actually taking place is an ideal means for acquiring locally adapted seed. Stockpiling should begin as early as possible. If nursery-grown seedlings are required, allow plenty of time for growing out. Early consideration should also be given to soil stockpiling, erosion control methods, and on-site planting and maintenance activities.
- B. In the case of stabilizing and rehabilitating sites following wildfire, or other unplanned disturbance event, the use of a Programmatic Emergency Fire Stabilization and Rehabilitation Plan prepared in advance can help identify native plant material needs. Determining what native seed will be needed for stabilization and rehabilitation purposes in the event of an unplanned disturbance is recommended for areas prone to disturbance events.
- C. Careful consideration must be given to selecting native plant species to be reintroduced or used in augmenting existing plant communities. A variety of sources are available for information on plant species native to a particular site. References including local floras and herbarium collections should be consulted as well as the sources mentioned in Chapter 4 to determine what species should be in the mix to increase the likelihood of success. Climatic information should be reviewed for information on timing of growing season, precipitation and annual precipitation patterns. The following are important sources of information for evaluating and planning vegetation treatments:
 1. The Ecological Site Descriptions for your local area can be obtained either from the NRCS state rangeland management specialist or on the web at: <http://www.nrcs.usda.gov/technical/efotg/>.
 2. The Fire Effects Information System (FEIS) at <http://www.fs.fed.us/database/feis/> is one source of information on fire effects and recovery potential for many plants.
 3. The NRCS "VegSpec" website (<http://www.plants.usda.gov> and click on "VegSpec" icon) is an expert system that aids technical specialists or managers in making decisions on what to plant on specific sites. VegSpec integrates the Natural Resources Conservation Service (NRCS) soils, plants, and climate databases to select adapted plants including those native to the United States to seed in rehabilitation or restoration projects.

4. "Guidebook to the Seeds of Native and Non-Native Grasses, Forbs and Shrubs of the Great Basin," Scott Lambert 2005. Bureau of Land Management, Idaho Technical Bulletin No. 2005-04.
 5. The Plant Conservation Alliance (<http://nps.gov/plants>) website has many useful links and sources of information for determining species that may be appropriate to use in restoration work.
- F. Determine if appropriate commercially available native plant material exists, thereby decreasing costs considerably over locally collected and grown out native seed. If the plant material is not commercially available, determine the collection method (seeds or cuttings), the amount needed, and the planting method (seeding or transplanting), potential revegetation success, and costs in choosing what to collect or what to plant on the site. If nursery or seed collection and grow-out services are required, keep in mind that some nurseries and collectors require a year or more advance notification.
 - G. Determine techniques applicable to the life form you are collecting material from, transplanting, and/or seeding through literature review and personal contacts. Use the best method of seeding or planting as developed by knowledgeable plant researchers, such as the BLM Seed Warehouse, U.S. Forest Service Shrub Lab, National Resource Conservation Service Plant Materials Centers, and the U.S. Forest Service research stations.
 - H. When special-status plants are known or suspected in an area to be treated, avoid the use of any plant material that can interbreed with or out-compete the special-status species. Some taxa interbreed more easily than others. When choosing species for restoration and rehabilitation efforts where special status plants are present, consider the risk of genetic contamination to the genus level for special status plants and other declining plant species. For example, where listed or sensitive Penstemon species occur, choose only common Penstemon species that are native to the project site in a rehabilitation or restoration mix. Avoid the use of plant material releases that were developed to aggressively establish and out-compete other plant species in special status plant habitats. The use of locally rare plant species in vegetation treatments should be avoided except when special status plant species reintroduction/augmentation plans are written and approved. Federally listed or proposed species shall not be used for native plant reintroduction or augmentation efforts unless authorized in an approved recovery plan. Following the best management practices outlined in the previous chapter for native plant protection and revegetation will benefit special-status plant populations.
 - I. Develop plans for long-term maintenance and monitoring of planted or seeded areas.
 - J. The management of seeded or planted areas must be designed to maintain or enhance the native plant species that have been reintroduced or augmented.
 - K. Develop a contingency plan in case the plant materials become unavailable or fail to survive in the field. Seed availability may be a limiting factor for some species, so several different native species should be considered.
 - L. If possible, maintain an ongoing stock of seed or vegetative materials from frequently used local species, to aid in maintaining species composition on site during restoration projects. This is especially useful for species currently not available in the seed industry such as native annual grasses and important forb species. Meticulous records must be kept on the source of all materials. Use of a central collection facility such as ARS seed storage or an NRCS Plant Material Center may be more advantageous than developing field office storage.

- M. Some plant species, such as oaks, have seeds that will not survive in storage. If possible, designate and manage areas of those species to maintain seed sources in the field when they are determined to be priority species needed for restoration in the land use planning process.

IV. Plant Material Sources

A. Natural Regeneration

If there is an ample seed source and suitable conditions, natural regeneration is preferred. However, to rely on natural regeneration, one must be confident there is not significant weed seed existing in the soil or on an adjacent site. Topsoil should be salvaged and re-spread if possible, as native seeds and microbiota can often be preserved (if storage length is limited). Care should be taken during the time it is stored to keep it free from invasive plants and their seeds.

B. Plant Salvage

If a project will take place where native plants will be lost in a location that will not be managed to meet land health standards such as developing a new open pit mine, plants can be salvaged from the site and used in nearby restoration and rehabilitation projects. Replant salvaged material as soon as possible to avoid loss of plants. Replant salvaged material in sites that match the original one to the extent possible to ensure adaptability.

C. Wildland Seed Collection

To the extent possible, seeds and plants used in restoration, erosion control, burned area stabilization and rehabilitation, forage enhancement, and other projects should originate from local sources. Local sources often possess genotypes that are adapted to the local environment, leading to higher short-term and long-term establishment and survival rates. “Local” refers to sources within or as close as possible to the project area and within the same ecological region. Collections should also be made within the same vegetation series and general soil type. Follow the recommendations outlined in native plant seed transfer zones as they become available.

If a plant population occurs on an unusual soil (e.g., serpentine), is found in an extreme environment or has distinct morphological characteristics that may be genetically based, then take seeds/cuttings from these local variants for use in projects where these occur. For example, a restoration effort on serpentine soil would use only seeds/cuttings collected on serpentine soil from within the same ecological site and elevation band. Ideally, riparian species should be collected from riparian areas immediately upstream or downstream, or within sub-watersheds within the same ecological site and at similar elevations. These guidelines can and should be tailored to individual species, sites and conditions. The use of common garden studies, out-plantings, and genetic analysis can be helpful in determining the presence and distribution of ecotypes, and should be done by personnel experienced with the various techniques.

When contracting seed collection, make sure the collector is experienced in seed collection, knowledgeable of the area and species and reputable; with a history of satisfactorily completing contracts. Determine payment based on pure live seed delivered. If collected seeds are grown out in a nursery, make sure that the contract states that the seeds are government property, and cannot be used for commercial purposes. For additional information on wild seed collection see Appendix 4 – “Seeds of Success Protocol.”

D. Commercial Seed Sources

If local sources are unavailable, commercial sources of native plants and seeds may be used. There are two sources of commercially available native plant seed. Seed can come from germplasm releases made by USDA Plant Materials Centers that was grown out and multiplied by growers in the seed industry or it can be collected from wildland plants. Germplasm releases are often named cultivars. Wildland collected seed is typically from shrubs like sagebrush, or forb species that are requested by the seed industry, but to date have not been included in germplasm releases. Cultivars can be manipulated or they can be natural, without genetic manipulation. Many of the cultivars available today are grass species. Information on the location of seed used to make a cultivar or release, the type of manipulation, if any, and the intended uses of a cultivar or release are available on line at <http://nativeseednetwork.org> or from the USDA Plant Material Center responsible for release. This information can be helpful in determining if the use of released germplasm is appropriate in a restoration or rehabilitation project.

Plant materials should be bred and/or grown under environmental conditions that are similar to the project area. Ideally, plant sources should be within the same eco-region as the project area. It is best to use commercial sources where the genetic origin is verified by source identification through seed certification. When possible, purchase nursery-produced native seed grown under conditions that did not allow hybridization with other species or non-adapted collections of the same species.

The Association of Official Seed Certifying Agencies (AOSCA) has a process for certified production of native seed. During seed procurement, communicate with the state AOSCA certification agency to get independent verification of the identification as to the subspecies, seed type, and seed source location, including elevation. When buying native seed, the best choice is Pre-Varietal, Germplasm Category Source Identified (Yellow Tag). If native seed comes from a common garden selection it will be Pre-Varietal, Germplasm Category Selected Class (Green Tag). More information on AOSCA is available at <http://www.aosca.org>.

1. Consolidated Seed Buys

The national seed coordinator and the National Business Center contracting officer coordinate consolidated seed buys, which occur at least three times per year: spring (March-April), summer (July), and fall (October). The consolidated seed buys procure seed for Great Basin area BLM field offices and district offices, and for selected programs such as Burned Area Emergency Stabilization and Rehabilitation. The advantage of being part of the consolidated seed buy is that the seed coordinator and the contracting officer are familiar with the seed industry and knowledgeable about the current native seed market and help BLM offices get the best quality native seed for the best price.

2. Indefinite-Delivery, Indefinite-Quantity Contracts

Indefinite-Delivery, Indefinite-Quantity (IDIQ) contracts may be useful for seed procurement and for grow-out or increase of local, herbaceous, native plant materials. An IDIQ contract estimates the quantities and species to be ordered by BLM over the entire life of the contract. These contracts can be developed using an interagency approach so that contracting officers from BLM, Bureau of Indian Affairs, Fish and Wildlife Service, National Park Service, and U.S. Forest Service are authorized to place delivery orders against an IDIQ contract.

3. Non-native Plant Materials

Although native plants should always be given first consideration, there are certain situations where non-natives may be desired. For example, on highly disturbed sites that have had their physical characteristics altered so that native vegetation can not reestablish or survive, it may be necessary to use non-natives to help restore site stability. Other examples include noxious weed containment and emergency situations where there is a risk of soil loss or threats to life and property. In cases where the use of non-native vegetation is desired, a justification, including the identification of any desired native species that is not available, should be submitted for approval by the state director or other delegated authority. As outlined in BLM Manual 1745 - Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants, the use of non-native seeds as part of a seeding mixture is appropriate only if:

- a. Suitable native species are not available,
- b. The natural biological diversity of the proposed management area will not be diminished,
- c. Exotic and naturalized species can be confined within the proposed management area,
- d. Analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment and,
- e. Resource management objectives cannot be met with native species.

When suitable natives are not available, identify the native species (including subspecies or variety when applicable) that is not available. Identify plant species native to the project area that may be available as a first substitute. If natives are only partially available, or not available, identify a non-native species of the same functional group to use on that site. If analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment, look for suitable native species replacements before choosing non-native plants.

In considering the natural biological diversity of the area, it is best to consider the whole community, its processes and the dynamics between species rather than maintenance of vascular plant diversity. For example, there can be unintended consequences of the use of non-natives if or when soil microbial communities or pollinating animals including insects are displaced because non-native plants are chosen.

All non-native vegetation used should be non-invasive and ideally be short-lived, have low reproductive capabilities, or be self-pollinating to prevent gene flow into the native community. One good example is sterile oats, which provide erosion control and will fade out in one year without cultivation (although they do release seed if disturbed). Non-native vegetation should not compete with the naturally occurring or returning native plant community or exchange genetic material with common native plant species. Non-native material must not invade plant communities outside the targeted management area. Non-natives listed on state and federal noxious weed species lists or non-natives listed in state weed seed lists must not be considered for use.

As stated in Chapter 2, diverse, healthy, and resilient native plant communities provide the greatest opportunity to be successful in meeting multiple use objectives within BLM. Set resource management objectives that can be met using native species for most situations. However, as a last resort, it may be necessary to introduce non-native, non-invasive plant materials to break unnatural disturbance cycles or to prevent further site degradation by noxious or invasive plants.

V. Seed Quality

All seeds/plants used for BLM projects will be tested for weeds, pests and diseases, and shall be processed, stored, and conditioned properly. All field offices are required to use seed on public land that contain no noxious weed seed and meets certified seed quality. All seed to be applied on public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab results shall show no more than 0.5 percent by weight of other weed seeds; and the seed lot shall contain no noxious, prohibited, or restricted weed seeds according to state seed laws in the respective state(s). The seed procured for use on public land will meet the Federal Seed Act criteria. Seed may contain up to 2.0 percent of 'other crop seed' by weight, which includes the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Purchase seed with less than 12% moisture content to avoid mold or rot of seed.

Copies of the seed lab test results, including purity and germination (viability) rate, must be forwarded to the appropriate BLM office prior to seed application. If the seed does not meet the BLM and state/federal standard for noxious weed seed content or other crop seed allowances, it shall not be applied to public land. All seed test results must be retained in the seeding project file. The BLM state contracts for seed may be more restrictive with "other weed seeds" of concern as deemed necessary.

VI. Seed Storage

The native seed BLM buys or collects should be stored in the most optimal conditions to ensure the longest shelf life. Ensure that the seed going on the ground has not lost its viability during seed storage. For example, sagebrush seed not stored under optimal cold storage conditions (36-38 degrees Fahrenheit and average 25 percent relative humidity) may last only a few weeks in hot localities and a few months in cooler localities.

Seed storage requirements are highly variable for each species. Generally, each 1% reduction in seed moisture and each 10 degree Fahrenheit reduction in seed temperature doubles the life of the seed. Dry the seeds to between 5-8% moisture content before tightly sealing in durable containers to store seeds for three to five years at ambient temperatures. For longer storage, dry to 2.5-5% moisture. As a minimum, properly label each container with information on species, location of source plant, environmental information, date of collection, and the collector. A central collection facility such as an ARS seed storage facility or an NRCS plant material center may be more advantageous than developing field office storage.

The BLM National Seed Warehouse in Boise, Idaho, provides most seed needed in the Great Basin states (ID, OR, NV, and UT) under a Memorandum of Understanding between the state directors and the seed warehouse. However, all other states can receive seed and/or assistance in procurement of seed. Because of space limitations, the National Seed Warehouse stores only the seed procured through consolidated seed buys and only until the seed can be delivered to the office requesting it.

BLM participates in the native seed collection that is stored and curated at the ARS seed storage facility in Pullman, Washington. Seed that has been collected from public land and is cleaned and ready for storage can be sent to this collection with the proper documentation.

VII. Seeding Rates

Determining and applying suitable seed rates is an essential aspect of developing successful, cost-effective plans and treatments. Consult the BLM national seed coordinator and other local plant material specialists or appropriate literature when developing seeding treatments to determine the most appropriate seeding rate.

The USDA recommendation for drilled seeding rate for large seeded species is 20 pure live seeds (PLS) per square foot. The recommended drill seeding rate for small seeded species (most BLM seed mixes) is 30 to 40 seeds per square foot.

Broadcast or aerial seedings are recommended at the rate of 60 to 80 seeds per square foot (about double the drilled rate).

Aerial or broadcast seeding rates should not be higher than has proven to be successful and cost effective. As an example, 0.2 lbs PLS of Wyoming big sagebrush seed (approx. 1.25 lbs bulk) per acre equals 11.5 sagebrush seeds per sq. ft. should not be exceeded, even in an aerial seeding.

If multiple seed applications are planned, the rate per treatment should be lowered so that the total seed rate, combining all application methods, does not exceed 80 seeds per square foot.

Because of limited knowledge of the techniques necessary to plant and establish many new native plant species, monitor and document the success of the application of native plant materials using quantitative, measurable methods.

VIII. Native Plant Materials Development Program Overview

The BLM Native Plant Materials Program began in 2001 with direction from Congress to develop a long-term program to manage and supply native plant materials for use in federal land management rehabilitation and restoration efforts. The native plant materials program recognizes that public lands are the primary source of new plant materials needed for restoration and rehabilitation work.

Congress specifically directed “the Secretaries of Interior and Agriculture to report jointly to Congress with specific plans and recommendations to supply native plant materials for emergency stabilization and longer-term rehabilitation and restoration efforts.” The “Report to Congress” (Appendix 5) outlined the following five action items for the federal land managing agencies:

- A. Undertake a comprehensive assessment of the short-term and long-term need for native plant materials including estimate of the amount of native plant materials needed and whether an adequate supply of these plant materials exists. Agencies also need the ability to identify and track this information.
- B. Make a long-term commitment to native plant materials production, research and development, education and outreach, and technology transfer. On-going financial and organizational support will be required to increase the variety and quantity of native plant materials. The average time it takes to develop a typical native plant cultivar is between ten and twenty years.

- C. Expand efforts to increase availability of numerous species of native plant materials. Both increases in commercial field production and wildland seed collection are needed to meet public land needs. Annual seed purchases by federal agencies, or as a result of federal programs, vary greatly creating an unpredictable market. Multi-year contracting and increased storage capacity could enhance market stability. Agencies can also facilitate a secondary, non-federal market.
- D. Invest in partnerships with state and local agencies and the private sector. Identify restoration and rehabilitation efforts to conduct in partnership with other land managers and interested parties. Close cooperation and coordination with the private seed industry will ensure their interests and concerns are addressed.
- E. Ensure that adequate science-based protocols for monitoring of restoration and rehabilitation efforts are established. To promote efficiency and economy, monitoring programs with consistent protocols for measuring success must be developed and implemented.