Chapter 4

ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter presents the results of the environmental impact analysis for the various resources introduced in chapter 3 of this EIS. The analysis of potential environment impacts has been updated since the Draft EIS to a discussion of the route variations new to the Final EIS (P7a–d and U3aPC).

4.1.1 Impact Assessment

The proposed Project and alternatives outlined in chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects on the decision-makers and public. This process of disclosure is one of the fundamental goals of the NEPA process. The no action alternative is also described. The no action alternative forms the baseline against which the potential impacts of the Proponent Preferred alternative and the other action alternatives are compared.

Effects/Impacts

The terms "effect" and "impact" are synonymous under NEPA. Effects may refer to ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proponent Preferred alternative or action alternatives. Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed at the end of this chapter.

Effects, or impacts, can be beneficial or adverse, result from the action directly or indirectly, and can be long term, short term, temporary, or cumulative in nature. A direct effect occurs at the same time and place as the action. Indirect effects are reasonably foreseeable effects that occur later in time or are removed in distance from the action. Direct and indirect effects are discussed in combination under each affected resource. Short-term effects, or impacts, result in changes to the environment that are stabilized or mitigated rapidly and without long-term effects; these changes typically occur during construction, or may be sporadic maintenance events during the life of the proposed Project. Long-term impacts are defined as those that would remain substantially for the life of the proposed Project, or beyond short-term impacts.

Mitigation and Residual Impacts

Mitigation measures (PCEMs, see chapter 2) are a means with which to address environmental impacts that are applied in the impact analysis to reduce the intensity or eliminate potential impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into five broad categories: avoid the impact, minimize the impact, rectify the impact through repair and/or rehabilitation, reduce or eliminate the impact, or compensate for the impact.

As described in section 2.4.6, activities under the proposed Project and action alternatives (see sections 2.4 and 2.6) would include environmental protection measures that are an integral part of the proposed Project. The analysis that follows for each resource takes into account, and assumes that, all the PCEMs in table 2-8 are implemented. The Draft EIS included an "Additional Mitigation" section at the end of the description of impacts for each resource—for the Final EIS these mitigation measures are included in

table 2-8 and in the project design and are not considered in terms of Additional Mitigation, but as with all PCEMs, are considered integral to the proposed Project.

If residual effects remain after the PCEMs are applied, those effects are described. The residual impacts section addresses impacts that cannot be avoided by the application of PCEMs and discloses the effectiveness of additional mitigation measures provided for each resource.

Impacts of Decommissioning

The term of the BLM ROW grant to allow use of Federal land would be limited to 50 years, although the useful life of the Project facilities is projected to be at least 50 years and up to 75 years. At the end of the ROW grant term, Southline would have the option to decommission the line or to renew the ROW grant past 50 years to continue operation of the line. Either action could initiate environmental clearance under prevailing laws and regulations. As discussed in "Decommissioning" in chapter 2, if the ROW and facilities are no longer needed, the transmission lines and associated facilities would be decommissioned. Subsequently, conductors, insulators, concrete pads, and hardware would be dismantled and removed from the ROW. All areas of permanent disturbance would be restored in accordance with a decommissioning plan, to be developed by the ROW grant holder (Southline) and approved by the BLM authorized officer.

Impacts resulting from the decommissioning process would be similar in scope to the impacts that would occur during construction of the proposed Project. The amount of ground disturbance for access to the proposed Project facilities would be within the amount of land disturbed during construction. Impacts associated with decommissioning are anticipated to be similar to the impacts during construction in terms of the extent of disturbance. However, potential impacts and the timeframe for decommissioning are so far in the future that determining or estimating the impacts would be speculative. Therefore, the impacts of decommissioning cannot be meaningfully analyzed within each resource section. The Decommissioning Plan, discussed in chapter 2, would include procedures that would be implemented under the direction of the land management agencies or landowners, in compliance with applicable regulations and guidelines.

4.1.2 Cumulative Effects

Effects on a resource are considered cumulative when the effects from the Project are added to the potential effects from other past, present, or future projects in the analysis area. Cumulative effects are discussed in detail in section 4.21.

4.1.3 Significance and Impact Indicators

Significance is defined by the CEQ as a measure of the intensity and context of the effects of an action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Proximity to sensitive areas or protected resources, public health and safety, level of controversy, unique risks, or potentially precedent-setting results are all factors considered in determining the intensity of the effect. This EIS uses the terms major, moderate, or minor/negligible in describing the intensity of effects (table 4.1-1).

Context means that the effect(s) of an action must be analyzed within a framework or within physical or conceptual limits. Resource disciplines, location, type, or size of area affected (e.g., local, regional, national), and affected interests are all elements of context that ultimately determine significance. For this EIS, both short- and long-term impacts are relevant (see table 4.1-1).

Table 4.1-1. Standard Resource Impact Descriptions for Magnitude and Duration

	Description Relative to Resource
Magnitude	
No Impact	Would not produce obvious changes in baseline condition of the resource.
Minor/ Negligible	Impacts would occur, but resource would retain existing character and overall baseline conditions.
Moderate	Impacts would occur, but resource would partially retain existing character. Some baseline conditions would remain unchanged.
Major	Impacts would occur that would create a high degree of change within the existing resource character and overall condition of resource.
Duration	
Short term	During construction and up to 5 years (from when ground-disturbing activities begin, through reclamation when vegetation has been reestablished in construction areas).
Long term	More than 5 years, life of the Project.

Use of the term *significant* when referring to resource impacts indicates that some threshold was exceeded for a particular impact indicator. Impact indicators are the consistent parameters used to determine quality, intensity, and duration of change in a resource. Working from an established existing condition (i.e., the baseline conditions described in chapter 3), one or more condition indicators are used to predict or detect change in a resource related to causal impacts of proposed Project actions. These thresholds are consistent with CEQ's guidance on the criteria for a significant impact. Table 1-8 in chapter 1 lists the key issues for analysis, as derived from public scoping and agency input, and the sections in which these issues are analyzed in the EIS.

The following categories of magnitude and duration are presented to define relative levels of effects and to provide a common language when describing effects. The definitions in table 4.1-1 below are general. Descriptors are specifically defined for certain resources when the general definitions presented in this table are inadequate. Tables 2-15, 2-16, 2-17, and 2-18 in chapter 2 of the EIS include a summary of the impacts presented in this chapter, including the corresponding descriptions of magnitude.

4.1.4 Analysis Approach Summary

The information available for the proposed Project is preliminary and is subject to change during the detailed design process. This EIS has been developed based on available information deemed adequate to characterize expected impacts to the extent that the intensity, context, magnitude, and duration are understood for each affected resource.

As noted in section 3.1, chapter 4 that follows discusses the environmental consequences of the direct impacts of the proposed Project within a 150- to 200-foot-wide representative ROW. A representative ROW was identified for the Project's New Build and Upgrade sections, where the majority of ground disturbance resulting from the proposed Project is expected to occur.

Based on Southline's request for a 200-foot ROW for the New Build Section (see table 2-1 in chapter 2), the representative ROW for the New Build Section of the proposed Project is 200 feet wide. This 200-foot representative ROW applies to all segments, subroutes, local alternatives and route variations in the New Build Section.

Based on Southline's request to expand Western's existing 100-foot ROW to up to 150 feet in places, the representative ROW for the Upgrade Section of the project is 150 feet wide, except between the Del Bac

and Rattlesnake substations and across Bar V Ranch where it is 100 feet because the ROW would not be expanded (see chapter 2). This 100- to 150-foot representative ROW applies to all segments, subroutes, local alternatives, and route variations in the Upgrade Section.

The Project design is preliminary. Therefore, the ground disturbance that could occur from the proposed Project, whether in the representative ROW or from disturbance areas outside the representative ROW, has been estimated based on typical design characteristics of the Project as described in the POD (see appendix N of this EIS). These estimates are conservative (i.e., they comfortably over-estimate expected impacts) and include assumptions for typical structure types, a range of structure types needed per mile, structure foundations, staging areas, pulling and tensioning sites, access road types, and spur access routes. It is important to note that not all areas in the ROW or along access roads would be completely disturbed.

The average disturbance acreage per mile for both temporary and permanent ground disturbance within the representative ROW was calculated for both the New Build and Upgrade sections of the Project. Temporary disturbance per mile within the ROW was estimated based on assumptions for structure work areas, wire pulling and tensioning sites, wire splicing sites, and cross-country travel access to structure sites. Permanent disturbance within the ROW was estimated based on assumptions for structure base and on improving or constructing new access roads.

In addition, there may also be ground disturbance outside the representative ROW from staging areas and substation expansion. The temporary disturbance from staging areas was estimated based on typical staging area needs described in the POD. Substation expansion would result in both temporary and permanent ground disturbance based on preliminary designs in the POD, which is subject to change during the detailed design process. Estimates for both temporary and permanent ground disturbance outside the representative ROW are presented as acreage in table 2-7 in chapter 2.

As discussed in chapter 2 of the EIS (and summarized in table 2-7), the following assumptions were used to estimate temporary and permanent disturbance by Project segment. Permanent ground disturbance is estimated to include transmission line structure base areas, substations, ancillary facilities, and permanent access roads. Impacts associated with ancillary facilities—including, but not limited to, new substations and access roads—are assumed to be located and taken into account within the representative ROW analyzed for the transmission line. Following are the assumptions used to estimate total temporary and permanent disturbance as presented in table 2-7:

- Maximum disturbance based on lattice structures was assumed for construction of structures in the New Build Section, resulting in 5.6 acres of temporary disturbance and 0.1 acre of permanent disturbance per mile of transmission line built;
- Maximum disturbance based on pole structures was assumed for construction of structures in the Upgrade Section, resulting in 5.1 acres of temporary disturbance and 0.01 acre of permanent disturbance per mile of transmission line built;
- Substation expansion areas (see tables 2-5 and 2-6) are included in the estimates;
- Temporary construction yards (estimated at 20 acres of ground disturbance every 20 miles) are included in the subroute disturbance calculations; and
- Access road types A and B would not create any new ground disturbance, whereas ground disturbance from types C and D would be 16 feet wide and from type E would be 12 feet wide.

4.2 AIR QUALITY

4.2.1 Introduction

This section describes the impacts to air quality associated with the construction, operation, and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to air quality are discussed in terms of proposed Project emissions of criteria air pollutants, HAPs, and GHGs on a subroute basis. In addition to quantifying the proposed Project emissions on a mass basis, a general screening-level impact analysis has been conducted to predict ambient concentrations of air pollutants for proposed Project-related activities that have the greatest potential to exceed applicable ambient air quality standards.

For the purposes of the analysis, emission estimate summaries for each of the subroutes under consideration have been compared with general conformity threshold levels, while predicted ambient air concentrations have been compared with the SILs. Where predicted exceedances to an SIL exist, the predicted ambient concentration plus the representative background concentration have been compared with the applicable national or State ambient air quality standards. Impacts to air quality related values (AQRVs) in relation to Class I areas (national parks) and impacts to climate change are also discussed in a qualitative manner.

All action alternatives would result in emissions of criteria pollutants, HAPs, and GHGs. Only the no action alternative would result in no Project-related emissions or impacts.

Operational emissions and impacts would be much lower than construction phase emissions; therefore, impacts have not been quantified (with the exception of SF_6 from the circuit breakers). Operation and maintenance emissions would include vehicle exhaust from travel to substations and the transmission line for routine inspection, as well as SF_6 emissions from operation of the gas-insulated circuit breakers in the switchyards. The sources of emission categories that have been considered include the following:

- Fugitive dust from earth-moving associated with construction activities in support of the upgrade and new build of the transmission lines and substations;
- Fugitive dust from vehicle movement on paved and unpaved roads accessing various segments of the line route;
- Engine exhaust (tailpipe emissions) from both on-road and non-road vehicles/equipment, including construction worker commuting, delivery of materials and supplies, and onsite construction activities;
- Emissions from concrete batch plants used to mix the concrete for structure and substation equipment foundations; and
- SF_6 emissions from gas-insulated circuit breakers in the switchyards.

The proposed Project would be required to comply with all applicable air quality regulations associated with the above sources of emissions and to obtain all required air quality permits from the appropriate regulatory authorities as described in chapter 3, section 3.2.2. As discussed in appendix B, portions of the analysis area are inherently windy and dusty. Project PCEMs would minimize the ability for wind to pick up additional fugitive dust from Project disturbance areas. Additionally, the Construction Emissions Mitigation Plan (CEMP) for the proposed Project would include fugitive dust controls, mobile and stationary source controls, and administrative controls to minimize construction-based emissions.

This analysis assumes that proposed Project design details would be employed as required by the States of New Mexico and Arizona for fugitive dust for land-clearing, road construction, and construction activities associated with construction of the line. In addition, fugitive emissions would be controlled on unpaved roads to the extent required by the applicable air regulatory authority.

4.2.2 Methodology and Assumptions

This section describes the air quality analysis area, the assumptions and methodology used to calculate air pollutant emissions, and the approach to identifying significant impacts and identifies what would be considered a significant air quality impact from the construction, operation, and maintenance of the proposed transmission lines, substations, and ancillary facilities.

Analysis Area

As described in chapter 3, the air quality analysis area for both the New Build and Upgrade sections and the alternative routes and segments is a 50-km radius (approximately 31 miles) along the centerline of the proposed Project (see figure 3.2-1). The 50-km radius was used for consistency with minimum air quality analyses required by PSD guidelines, if applicable, and the ADEQ and New Mexico Department of Environmental Quality modeling guidelines.

Analysis Assumptions

Emissions were calculated to estimate ambient air impacts from construction and, where appropriate, operation and maintenance of the transmission lines, substation, and ancillary equipment associated with the proposed Project. Emission inventories were developed using published and agency-accepted values, such as from emission factors from AP-42, MOBILE6.2, and NONROAD. PM_{10} and $PM_{2.5}$ emissions were quantified for fugitive dust from earth-moving and construction activities that would be associated with construction of the transmission line and substations, including fugitive dust from concrete batch plant construction and operation; fugitive dust from vehicles traveling on paved and unpaved roads accessing various segments of the line route during construction; criteria air pollutants, HAPs, and GHGs resulting from engine exhaust from worker commutes, delivery trucks, and construction equipment during construction; and SF_6 emissions from operation of the gas-insulated circuit breakers in the switchyards. The assumptions used to calculate emission estimates from the proposed Project and alternatives are discussed further in appendix B.

Additionally, the analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

Proposed Project emissions of air pollutants for each of the subroutes under consideration are calculated on an annualized basis for the purposes of comparison between the various alternatives and local alternatives. Proposed Project emission estimates are then evaluated to determine compliance with conformity thresholds, and, via an analysis of AERSCREEN (the EPA-preferred screening dispersion model) results from comparable projects, the NAAQS. A significant impact would result should proposed Project emissions and/or pollutant concentrations be anticipated to exceed any of the significant impact criteria outlined in "Significant Impacts." A significant impact would constitute a "major" impact according to the impact description provided in table 4.1-1. The other impact descriptions provided in table 4.1-1 are also used herein for impacts less than major. The proposed Project would result in emissions of air pollutants during the construction and, to a lesser extent, the operations of the proposed Project transmission lines, substations, and ancillary facilities. GHG emissions have also been quantified, where feasible (potential SF_6 emissions

from substation circuit breakers and engine exhaust). Due to the comparatively low level of proposed Project emissions (i.e., below the general conformity threshold levels), AQRVs such as acid rain deposition and visibility impacts to Class I areas are not quantified. Instead, a qualitative discussion of proposed Project impacts to these AQRVs is provided.

With the exception of GHG emissions from circuit breakers, emissions from transmission line and substation operation have not been quantified. Emissions from operations would be similar in type to those from construction, but would be emitted in much smaller amounts. Proposed Project operational activities would include vehicular use for routine maintenance and emergency repair activities.

Significant Impacts

Proposed Project construction and, to a lesser extent, operation would result in some increase to ambient air pollutant concentrations, even though construction emissions would be temporary in nature. The primary indicators for determining whether or not proposed Project emissions would result in a significant impact to air quality are as follows:

- Estimated proposed Project emissions exceed conformity de minimis thresholds; and/or
- The increase in ambient pollutant concentrations for a particular area as a result of proposed Project emissions would result in an exceedance of the NAAQS for that area.

A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a Federal nonattainment or maintenance area would equal or exceed specified annual emission rates (referred to as “de minimis” thresholds) or would be “regionally significant.” A project’s direct and indirect emissions are regionally significant if they exceed 10 percent or more of a nonattainment or maintenance area’s emissions inventory for that pollutant. For ozone precursors (volatile organic compounds (VOCs) and nitrogen oxides (NO_x)), Pb, PM_{10}, and $PM_{2.5}$ the de minimis thresholds depend on the severity of the nonattainment classification. For other pollutants, the threshold is set at 100 tpy. The conformity determination was conducted in accordance with the BLM’s fact sheet on the air quality conformity rule, discussed in chapter 3.

As discussed in section 3.2, the analysis area for the proposed Project is within the boundaries of the nonattainment and/or maintenance areas provided in figures 3.2-2a and 3.2-2b in section 3.2. The conformity de minimis thresholds are provided in table 4.2-1 for each criteria pollutant for which nonattainment or maintenance is at issue. The proposed Project would lie within the boundaries of two nonattainment/maintenance areas regardless of the action alternative chosen: the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area. The proposed Project would be outside of the remaining nonattainment and/or maintenance areas analyzed; however, these nonattainment and/or maintenance areas could lie within the air quality analysis area of 50 km, depending on the alterative chosen.

Table 4.2-1. Project Conformity Thresholds

Nonattainment or Maintenance Area/Pollutant	Conformity de Minimis Level (tpy)
Anthony, New Mexico, PM_{10} Moderate Nonattainment Area	100
Sunland Park, New Mexico, O_3 Nonattainment Area (VOCs and NO_x)*	100
Grant County, New Mexico, SO_2 Maintenance Area	100

Table 4.2-1. Project Conformity Thresholds (Continued)

Nonattainment or Maintenance Area/Pollutant	Conformity de Minimis Level (tpy)
Douglas, Arizona, SO_2 Maintenance Area	100
Ajo, Arizona, PM_{10} Moderate Nonattainment Area	100
Ajo, Arizona, SO_2 Maintenance Area	100
Tucson, Arizona, CO Maintenance Area	100
Rillito, Arizona, PM_{10} Moderate Nonattainment Area	100
Phoenix, Arizona, PM_{10} Serious Nonattainment Area	70
Phoenix-Mesa, Arizona, O_3 Marginal Nonattainment Area (VOCs and NO_x)	100
San Manuel, Arizona, SO_2 Maintenance Area	100
Hayden, Arizona, SO_2 Nonattainment Area	100
Hayden, Arizona, PM_{10} Moderate Nonattainment Area	100
West Central Pinal, Arizona, $PM_{2.5}$ Nonattainment Area[†]	10
Miami, Arizona, PM_{10} Moderate Nonattainment Area	100

* As discussed in section 3.2, the Sunland Park Ozone Nonattainment Area is currently proposed; since the proposed Project would lie outside the boundaries of this nonattainment area (but is within the analysis area), the de minimis levels conformity level for areas outside the transport region of the nonattainment area was used.

[†] The EPA has not published de minimis conformity determination levels for $PM_{2.5}$; therefore, the cut-off for Federal "significant" emissions of $PM_{2.5}$ was used (40 CFR 51.165-166).

For nonattainment and maintenance areas, proposed Project emissions are compared by route group with the appropriate conformity de minimis thresholds outlined in table 4.2-1. For areas that are in attainment with respect to a pollutant, the de minimis threshold for the criteria pollutant for which the area is in attainment is assumed at 100 tpy, with the exception of $PM_{2.5}$, which is assumed at 10 tpy.

Although there are no conformity standards for HAPs, as discussed in section 3.2, there are significant threshold levels for permitting purposes. Proposed Project HAP emissions are therefore compared with the significant threshold level of 25 tpy of combined HAPs.

Likewise, conformity standards do not exist for GHGs; therefore, GHG emissions are compared against the reporting thresholds outlined in 40 CFR Part 98, Subpart A of 25,000 metric tons per year (a metric ton is the equivalent of approximately 1.1 short tons). Additionally, revised CEQ draft GHG guidance has set a reference point of 25,000 metric tons per year of GHG emissions. If emissions are less than the reference point, than a quantitative analysis is not warranted; however, a quantitative analysis is provided herein for a comparison of alternatives (CEQ 2014).

Screening methods such as the EPA-approved AERSCREEN can be used to predict concentration levels of criteria pollutants to demonstrate compliance with the NAAQS, increment thresholds, and SILs. Construction emissions are not fixed to any one point, but range over a wide geographic area. Therefore, proposed Project emissions would already be widely dispersed. Additionally, construction emissions are transient in nature, and any impacts to air quality from construction sources would disappear along with these sources. Operational emissions would be significantly lower than those of construction emissions. Nevertheless, the BLM has conducted recent screening level analyses for transmission line construction projects of comparable or greater-sized projects. The screening level modeling is presented for each individual route group and compared with the SIL for various air pollutants and short-term averaging periods. If the dispersion modeling impacts are predicted to exceed the applicable SIL, or if there is not a defined EPA SIL, the proposed Project impact has been added to a representative background

concentration and the total has been compared with the applicable ambient standards (Federal or State) (BLM 2013a, 2013n).

4.2.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not issue a ROW permit and Western would not participate in the Project or allow upgrading of its transmission lines. Impacts to air quality from construction and operation and maintenance of the proposed Project transmission line and associated activities and facilities would not occur. Under the no action alternative, air quality conditions would likely continue at current levels and trends, although it is uncertain whether other changes may occur that affect conditions.

Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

CONSTRUCTION

Substation construction activities would result in air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from substations, and fugitive dust from soil disturbance. Table 4.2-2 presents the estimated total criteria, HAPs, and GHG emissions that would occur from construction of the substations for the New Build Section.

Table 4.2-2. Estimated Substation Construction Criteria and GHG Pollutant Emissions (tpy)

	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Route Group 1 – Afton Substation to Hidalgo Substation								
Afton Substation Expansion	0.13	0.87	1.47	<0.01	0.32	0.15	273	0.0004
Proposed or Alternative Midpoint Substation (Midpoint North/Midpoint South)	0.16	1.04	1.85	<0.01	0.67	0.25	345	0.0004
Hidalgo Substation Expansion	0.19	1.17	2.15	<0.01	0.69	0.27	460	0.0004
Route Group 2 – Hidalgo Substation to Apache Substation								
Apache Substation Expansion	0.21	1.30	2.40	<0.01	0.69	0.27	501	0.0004
Route Group 3 – Apache Substation to Pantano Substation								
Adams Tap Substation Expansion	0.06	0.37	0.75	<0.01	0.14	0.08	134	<0.0001
Pantano Substation Expansion	0.04	0.23	0.47	<0.01	0.15	0.06	83	<0.0001

Table 4.2-2. Estimated Substation Construction Criteria and GHG Pollutant Emissions (tpy), Continued

	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Route Group 4 – Pantano Substation to Saguaro Substation								
Vail Substation Expansion	0.14	0.87	1.75	<0.01	0.25	0.16	314	<0.0001
Nogales Substation Expansion	0.10	0.62	1.27	<0.01	0.21	0.12	233	<0.0001
Del Bac Substation Expansion	0.06	0.38	0.78	<0.01	0.17	0.08	139	<0.0001
Tucson Substation Expansion	0.08	0.46	0.95	<0.01	0.15	0.09	194	<0.0001
DeMoss Petrie Substation Expansion	0.13	0.71	1.48	<0.01	0.11	0.11	300	<0.0001
Rattlesnake Substation Expansion	0.07	0.38	0.80	<0.01	0.17	0.08	162	<0.0001
Marana Substation Expansion	0.07	0.38	0.80	<0.01	0.17	0.08	162	<0.0001
Saguaro Substation Expansion	0.07	0.40	0.82	<0.01	0.21	0.09	166	<0.0001
Tortolita Substation Expansion	0.07	0.42	0.87	<0.01	0.09	0.07	175	<0.0001

Substation construction and expansion is not specific to any subroute or alternative chosen; however, for the purposes of determining whether or not significant air impacts would occur from proposed Project construction, estimated emissions from the various substations constructed have been added to those of the route group they are located within. Emissions related to the construction of the transmission lines are discussed in the individual route group sections below. These total construction emissions are then compared with the significant impact thresholds in the analysis of the individual route groups presented below.

To determine whether the proposed Project's construction emissions would have an impact to the ambient air, the expected Project-related impacts are first compared to respective SILs. Table 4.2-3 compares the screening level maximum short-term (e.g., 1-hour and 24-hour) pollutant concentrations from transmission line and substation construction to the respective SIL.

Table 4.2-3. Transmission Line and Substation Construction: Comparison of Estimated Maximum Air Pollutant Concentrations with Significant Impact Levels

Pollutant	Averaging Period	Maximum 1-hour AERSCREEN Concentration ($\mu g/m^3$)*	SILs ($\mu g/m^3$)	Pollutant Over the SIL?
NO_2	1-hour	59.91	7.5	Yes
	24-hour	59.91	–	–
PM_{10}	24-hour	80.32	33	Yes
$PM_{2.5}$	24-hour	10.98	1.2	Yes
CO	1-hour	90.21	2,000	No
	8-hour	90.21	1,034	No
SO_2	1-hour	0.96	7.9	No
	3-hour	0.96	25	No
	24-hour	0.96	5	No

Note: $\mu g/m^3$= micrograms per cubic meter.

* Maximum AERSCREEN concentrations obtained from comparable and larger transmission line/substation construction projects (BLM 2013a, 2013n).

As shown in table 4.2-3, the expected emissions of CO and SO_2 would be below the SILs that are used to define impacts that are considered to be negligible or de minimis and would not cause or contribute to an exceedance of the NAAQS. Calculated pollutant concentrations for NO_2, PM_{10}, and $PM_{2.5}$ are over their respective SILs and require a more thorough analysis. For each route group, the maximum 1-hour AERSCREEN concentration and the representative background concentration for those pollutants are summed and compared to the applicable ambient air quality standard. Those comparisons are found under each route group section that follows.

Construction of the proposed Project would emit low levels of NO_X and SO_2, which are the potential acid-producing pollutants emitted from mobile sources during construction and operation and maintenance. However, by providing a conduit and contributing a portion of the power from renewable sources (i.e., solar and wind power) to the Southwest region, the net impact of the proposed Project would be to improve atmospheric conditions to the extent that the generation of electricity from renewable sources would avoid the use of electricity generated in fossil fuel–fired power plants and their associated acid-producing pollutants.

The closest Class I area to the Proponent Preferred route and/or local alternatives is the Saguaro National Park outside Tucson, Arizona in Pima County, located approximately 1 mile from the proposed route. Background visibility data for this park are available. The data demonstrate that visibility is of concern for the Saguaro National Park; however, visibility has showed trending improvement from 1990 to 2008 (NPS 2010b). Proposed Project construction emissions, particularly PM_{10} and $PM_{2.5}$, have the potential to impact visibility in this national park and in other nearby Class I areas; however, project PCEMs would reduce those fugitive dust emissions and minimize the impact to visibility at Saguaro National Park. Additionally, the CEMP for the proposed Project would include fugitive dust controls, mobile and stationary source controls, and administrative controls to minimize construction-based emissions. Other Class I areas that are within the area of analysis for the proposed Project include the Chiricahua National Monument and the Chiricahua Wilderness Area, located as near as approximately 15 miles from the proposed Project or alternatives, and the Saguaro Wilderness Area, located as near as 5 miles from the proposed Project or alternatives. Impacts to visibility to these Class I areas would likely be lower than impacts to the Saguaro National Park due to their increased distance from the proposed Project and alternatives; therefore, as with impacts to the Saguaro National Park, proposed Project construction emissions would be temporary in nature and below de minimis thresholds. Proposed Project operational emissions would be substantially lower than those of construction emissions.

Federal land managers have visibility protection responsibility under 40 CFR 51.307 (New Source Review), which spells out the requirements for SIP visibility protection programs, as well as 40 CFR 52.27 (Protection of visibility from sources in attainment areas) and 40 CFR 52.28 (Protection of visibility from sources in nonattainment areas). These three provisions, taken together along with the SIP-approved rules, establish the visibility protection program for new and modified sources throughout the country. Section 165 (42 U.S.C. 7475) of the CAA requires the EPA, or the State/local permitting authority, to notify the Federal land manager if emissions from a proposed project may impact a Class I area. The permitting authority should forward PSD applications to the Federal land manager for review and analysis as soon as possible after receipt, giving the Federal land manager an opportunity to review the application concurrently with the permitting authority. The proposed Project does not constitute a major PSD source and therefore does not require notification to the Federal land manager regarding visibility impacts.

OPERATION AND MAINTENANCE

As already noted, because operational emissions and impacts would be much lower than construction phase emissions and impacts, they have not been quantified (with the exception of potential SF_6 emissions from the circuit breakers). Operation and maintenance emissions would include vehicle exhaust from

travel to substations, the transmission line, and ancillary facilities for routine inspection, as well as potential SF_6 emissions from operation of the gas-insulated circuit breakers in the switchyards. An additional source of air emissions would be the ozone generated from the operation of the line; however, transmission lines do not generally represent a significant source of ozone emissions and therefore ozone emissions from line operation would be expected to be minimal. Emissions from vehicle travel during operation and maintenance would be minimal, and mileage for vehicle travel to substations and the transmission line for routine inspection would be much less than during construction. Emissions from vehicle exhaust during operation and maintenance would therefore be less than those from construction.

Table 4.2-4 presents the potential SF_6 emissions from circuit breaker leakage from each substation during operation and maintenance. As shown in the table, these operation emissions would be minimal and are below the GHG reporting thresholds as outlined in "Significant Impacts." Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to air quality resources would be minor (i.e., impacts would occur but air quality would not be impacted) but long-term (i.e., greater than 5 years in duration). Additionally, the replacement of older substation equipment with newer equipment would potentially result in reduced SF_6 emissions. Operational GHG emissions from substations would occur regardless of the action alternative chosen.

Table 4.2-4. Estimated SF_6 Emissions from Substation Circuit Breaker Leakage during Operation

Substation	Emissions (as metric tons CO_2e per year)
Route Group 1 – Afton Substation to Hidalgo Substation	
Afton Substation Expansion	910.48
Proposed Midpoint or Alternative Substation (Midpoint North/ Midpoint South)	1,040.54
Hidalgo Substation Expansion	1,560.82
Route Group 2 – Hidalgo Substation to Apache Substation	
Apache Substation Expansion	1,268.16
Route Group 3 – Apache Substation to Pantano Substation	
Adams Tap Substation Expansion	97.55
Pantano Substation Expansion	65.03
Route Group 4 – Pantano Substation to Saguaro Substation	
Vail Substation Expansion	390.20
Nogales Substation Expansion	195.10
Del Bac Substation Expansion	65.03
Tucson Substation Expansion	292.65
DeMoss Petrie Substation Expansion	121.40
Rattlesnake Substation Expansion	97.55
Marana Substation Expansion	97.55
Southline Saguaro Substation Expansion	109.47
Tortolita Substation Expansion	812.93
Total Emissions	**7,124.46**
GHG Reporting Threshold	**25,000**
Exceeds Threshold?	**No**

Route Group 1 – Afton Substation to Hidalgo Substation

Table 4.2-5 presents the estimated total fugitive dust, criteria, HAP, and GHG potential air emissions from proposed construction of the transmission lines from the Afton Substation to Hidalgo Substation (route group 1). For route group 1, fugitive dust from transmission line, staging area, and access road construction earth-moving and grading activities; off-road construction vehicle and commuter, vendor, and haul truck traffic exhaust emissions; and fugitive dust from vehicle travel on both paved and unpaved roads are all estimated on an annualized basis in table 4.2-5. Estimated emissions from proposed construction of various subroutes and local alternative routes are presented for comparative purposes.

Table 4.2-5. Route Group 1 Estimated Transmission Line Construction Annualized Emissions by Emission Source (tpy)

			Route Group 1 Local Alternatives				
	Subroute 1.1, Proponent Preferred	**Subroute 1.2, Proponent Alternative**	**DN1**	**A**	**B**	**C**	**D**
Total Miles	147.1	141.1	42.5	17.5	12.2	9.0	22.8
Fugitive Dust from Earth-moving and Grading Activities							
PM_{10}	1.00	0.96	0.21	0.12	0.08	0.06	0.15
$PM_{2.5}$	0.20	0.21	0.06	0.03	0.02	0.01	0.03
Construction Equipment Exhaust Emissions							
VOCs	1.09	1.06	0.35	0.13	0.09	0.07	0.17
CO	5.10	4.90	1.63	0.60	0.42	0.31	0.79
NO_x	13.81	13.25	4.43	1.64	1.15	0.84	2.14
SO_2	0.03	0.03	0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	0.97	0.94	0.32	0.12	0.08	0.06	0.15
$PM_{2.5}$	0.97	0.94	0.32	0.12	0.08	0.06	0.15
CO_2	2,718	2,607	872	323	226	166	421
Fugitive Dust from Access Road Construction							
PM_{10}	4.26	3.89	1.87	0.34	0.13	0.11	0.54
$PM_{2.5}$	0.89	0.82	0.39	0.07	0.03	0.02	0.11
Fugitive Dust from Travel on Paved and Unpaved Roads							
PM_{10}	0.54	0.52	0.17	0.06	0.05	0.03	0.08
$PM_{2.5}$	0.12	0.12	0.04	0.01	0.01	0.01	0.02

Table 4.2-5. Route Group 1 Estimated Transmission Line Construction Annualized Emissions by Emission Source (tpy), Continued

	Subroute 1.1, Proponent Preferred	Subroute 1.2, Proponent Alternative	Route Group 1 Local Alternatives				
			DN1	A	B	C	D
Traffic Exhaust Emissions							
VOCs	0.03	0.03	0.01	<0.01	<0.01	<0.01	<0.01
CO	0.47	0.44	0.16	0.06	0.04	0.03	0.07
NO_x	0.10	0.11	0.04	0.01	0.01	0.01	0.02
SO_2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$PM_{2.5}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CO_2	45	43	15	5	4	3	7
HAPs	0.0017	0.0016	0.0006	0.0002	0.0001	0.0001	0.0003

Temporary portable concrete batch plants would be constructed and operated approximately every 25 miles along the ROW, mainly at construction staging areas. The maximum number of concrete batch plants by subroute and the total anticipated emissions from construction and operation of batch plants are provided in table 4.2-6 (the use of local alternatives to substitute for line segments in route group 1 would not be expected to increase the quantity of concrete batch plants).

Table 4.2-6. Route Group 1 Estimated Concrete Batch Plant Construction and Operation Emissions (tpy)

	Maximum Quantity	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Subroute 1.1, Proponent Preferred	6	0.03	0.12	0.36	<0.01	3.36	0.60	76
Subroute 1.2, Proponent Alternative	9	0.05	0.18	0.54	<0.01	5.04	0.90	114

Quantifying proposed Project expected emissions for comparison to acceptable regulatory emission thresholds is further complicated by the number of possible Project configurations and the overall geographic dispersion of the proposed Project. Proposed Project construction and operation emissions are presented herein in such a manner as to facilitate comparison between the various alternatives even though such analysis makes comparison between the proposed Project and acceptable regulatory criteria more difficult. For example, route group 1 potentially crosses through four counties (Doña Ana, Grant, Hidalgo, and Luna); it is therefore unreasonable to assume that pollutant emissions from a backhoe operating in Afton, located in Doña Ana County, New Mexico, would impact pollutant concentrations in Hidalgo, located in Hidalgo County, New Mexico, approximately 100 miles away, yet both locations are within the same route group for comparison between proposed alternatives.

In order to demonstrate proposed Project criteria pollutant emissions against the conformity de minimis thresholds, estimated emissions for the route group have been aggregated by subroute along with all additional emission sources (substations and batch plants). Table 4.2-7 presents the summed total of

anticipated annualized emissions from all the transmission line construction activities from the various proposed alternatives in the Afton Substation to Hidalgo Substation route group.

Table 4.2-7. Route Group 1 Estimated Annualized Emissions by Alternative (tpy)

	Total Miles	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Subroute 1.1, Proponent Preferred	**147.1**	**1.12**	**5.57**	**13.91**	**0.03**	**6.78**	**2.19**	**2,763**	**0.0017**
Substations	–	0.48	3.08	5.47	0.01	1.68	0.67	1,079	0.0011
Batch Plants	–	0.03	0.12	0.36	<0.01	3.36	0.60	114	–
Total Emissions	**–**	***1.63***	***8.77***	***19.74***	***0.04***	***11.82***	***3.46***	***3,956***	***0.0028***
General Conformity Threshold Levels	**–**	**100**	**100**	**100**	**100**	**100**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Subroute 1.2, Proponent Alternative	141.1	1.09	5.34	13.36	0.03	6.31	2.08	2,650	0.0016
Substations	–	0.48	3.08	5.47	0.01	1.68	0.67	1,079	0.0011
Batch Plants	–	0.05	0.18	0.54	<0.01	5.04	0.90	114	–
Total Emissions		***1.61***	***8.60***	***19.37***	***0.04***	***13.03***	***3.65***	***3,843***	***0.0027***
Impact Threshold	**–**	**100**	**100**	**100**	**100**	**100**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Route Group 1 Local Alternatives									
DN1	42.5	0.36	1.79	4.46	0.01	2.65	0.81	887	0.0006
A	17.5	0.13	0.66	1.65	<0.01	0.64	0.23	329	0.0002
B	12.2	0.09	0.46	1.16	<0.01	0.33	0.14	230	0.0001
C	9.0	0.07	0.34	0.85	<0.01	0.26	0.10	169	0.0001
D	22.8	0.18	0.86	2.16	<0.01	0.93	0.31	428	0.0003

As can be seen from table 4.2-7, expected emissions for criteria pollutants from proposed Project construction regardless of the subroute or local substitutive alternative chosen would be well below de minimis conformity thresholds, even when aggregated over vast geographical distances and multiple regional airsheds. HAPs would also be well below the 25 tpy aggregated HAP threshold level. Additionally, proposed Project GHG emissions would be expected to be well below the 25,000 metric ton threshold. Cumulative impacts from GHG emissions are discussed further in section 4.21.

ROUTE GROUP 1 IMPACTS TO AMBIENT AIR QUALITY

As discussed in “Significant Impacts,” if the screening level modeling predicted exceedances of the SIL, the proposed Project impact would be added to a representative background concentration and the sum would be compared to the applicable air quality standard. Background concentrations were obtained from nearby ambient air monitoring sites. These background concentrations represent ambient concentrations

of air quality pollutants contributed by other air pollutant emission sources within the airshed. Table 4.2-8 presents a comparison of the expected maximum short-term AERSCREEN concentrations from proposed Project construction, representative background concentrations of NO_2, PM_{10}, and $PM_{2.5}$, and the applicable ambient air quality standards for route group 1.

Table 4.2-8. Route Group 1 Transmission Line and Substation Construction: Comparison of Estimated Maximum Air Pollutant Concentrations Plus Background with Applicable Ambient Air Standards

Pollutant	Averaging Period	Maximum 1-hour AERSCREEN Concentration* (µg/m^3)	Background Concentration (µg/m^3)	Project Impact and Background (µg/m^3)	NAAQS (µg/m^3)	NMAAQS (µg/m^3)	Below all AAQS?
NO_2	1-hour	59.91	38[†]	97.91	188.7	188.7	Yes
PM_{10}	24-hour	80.32	45.4[‡]	125.72	150	–	Yes
$PM_{2.5}$	24-hour	10.98	10.1[§]	21.08	35	–	Yes

Note: µg/m^3 = micrograms per cubic meter; AAQS = Ambient Air Quality Standards.

* Maximum AERSCREEN concentrations obtained from comparable and larger transmission line/substation construction projects (BLM 2013a, 2013n).

[†] Background concentrations of NO_2 from Deming air quality monitoring station in Luna County, New Mexico (NMED 2014b).

[‡] Background concentrations of PM_{10} from Deming air quality monitoring station in Luna County, New Mexico (NMED 2014b).

[§] Background concentrations for $PM_{2.5}$ from Silver City air quality monitoring station in Grant County, New Mexico (NMED 2014b).

As seen in table 4.2-8, the sum of the proposed Project impact and the background concentration would be below all applicable AAQS. The proposed Project would therefore not trigger any significant impact indicator for route group 1 and no significant impacts to air quality would result from the construction or operation and maintenance of the transmission lines and substations.

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

As can be seen from table 4.2-7, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

With the exception of SF_6 emissions from substation circuit breakers, potential Project operational air emissions were not analyzed as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

As can be seen from table 4.2-7, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

As with subroute 1.1, anticipated Project operational air emissions (with the exception of potential SF_6 emissions from substation circuit breakers) were not analyzed, since operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1. These local alternatives include DN1, A, B, C, and D.

Construction

The local alternatives are meant to be substitutive of portions of the main subroute chosen, and therefore any air emission contributions from local alternatives would not substantively contribute to proposed Project emissions since any additions to emissions from an alternative would substitute for emissions from the portion of the route it is replacing. While estimated emissions may be slightly higher or lower than the portion of the route substituted for, depending upon whether or not the substation extended or shortened overall line length, emissions would remain well below de minimis conformity levels as a result of the substitution of a local alternative, as demonstrated in table 4.2-7 above.

Operation and Maintenance

As with the subroutes, proposed Project operational air emissions from the local substitutive alternatives were not analyzed (with the exception of potential SF_6 emissions from substation circuit breakers) as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

ROUTE GROUP 1 IMPACT SUMMARY

None of the subroutes or substitutive alternatives in route group 1 would result in emissions that would be expected to exceed either conformity thresholds or ambient air quality standards for either construction or operation and maintenance activities. Therefore, impacts to air quality resources from route group 1 would be minor (i.e., impacts would occur but air quality would retain its existing character) and short-term (i.e., less than 5 years in duration) for construction activities, and minor and long-term (i.e., greater than 5 years in duration) for operational activities.

Route Group 2 – Hidalgo Substation to Apache Substation

Table 4.2-9 presents the total estimated fugitive dust, criteria, HAP, and GHG potential air emissions from the construction of the transmission lines from the Hidalgo Substation to the Afton Substation (route group 2).

For route group 2, fugitive dust from transmission line, staging area, and access road construction earth-moving and grading activities; off-road construction vehicle and commuter, vendor, and haul truck traffic exhaust emissions; and fugitive dust from vehicle travel on both paved and unpaved roads are all estimated on an annualized basis in table 4.2-9. Estimated emissions from various proposed construction scenarios, local alternative routes, and route variations are presented for comparative purposes.

Table 4.2-9. Route Group 2 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy)

			Route Group 2 Local Alternatives and Route Variations											
	Subroute 2.1, Proponent Preferred	Subroute 2.2, Proponent Alternative	LD1	LD2	LD3a	LD3b	LD4	LD4-Option 4	LD4-Option 5	WC1	P7a	P7b	P7c	P7d
Total Miles	**95.5**	**96.0**	**35.4**	**8.9**	**26.6**	**2.2**	**53.7**	**6.4**	**12.3**	**14.8**	**31.2**	**10.5**	**1.0**	**2.0**
Fugitive Dust from Earth-moving and Grading Activities														
PM_{10}	0.64	0.65	0.23	0.06	0.18	0.01	0.36	0.04	0.08	0.10	0.21	0.07	0.01	0.02
$PM_{2.5}$	0.12	0.14	0.06	0.01	0.04	<0.01	0.07	0.01	0.02	0.02	0.04	0.01	<0.01	<0.01
Construction Equipment Exhaust Emissions														
VOCs	0.71	0.72	0.27	0.06	0.19	0.01	0.45	0.05	0.10	0.11	0.24	0.08	0.01	0.02
CO	3.30	3.32	1.23	0.31	0.92	0.08	2.07	0.25	0.47	0.51	1.08	0.36	0.04	0.07
NO_x	8.96	9.02	3.33	0.83	2.50	0.21	5.60	0.67	1.28	1.39	2.93	0.98	0.09	0.18
SO_2	0.01	0.02	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	0.63	0.64	0.23	0.06	0.18	0.01	0.41	0.05	0.09	0.10	0.20	0.07	0.01	0.02
$PM_{2.5}$	0.63	0.64	0.23	0.06	0.18	0.01	0.41	0.05	0.09	0.10	0.20	0.07	0.01	0.02
CO_2	1,765	1,774	654	164	491	41	1,102	131	252	274	577	195	18	36

Table 4.2-9. Route Group 2 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy), Continued

			Route Group 2 Local Alternatives and Route Variations											
	Subroute 2.1, Proponent Preferred	Subroute 2.2, Proponent Alternative	LD1	LD2	LD3a	LD3b	LD4	LD4-Option 4	LD4-Option 5	WC1	P7a	P7b	P7c	P7d
Fugitive Dust from Access Road Construction														
PM_{10}	2.30	2.86	1.09	0.37	0.53	0.01	2.38	0.29	0.44	0.57	0.75	0.25	0.03	0.05
$PM_{2.5}$	0.48	0.60	0.23	0.07	0.11	<0.01	0.50	0.06	0.09	0.12	0.16	0.06	0.01	0.02
Fugitive Dust from Travel on Paved and Unpaved Roads														
PM_{10}	0.35	0.35	0.15	0.04	0.10	0.01	0.22	0.03	0.05	0.01	0.12	0.03	<0.01	<0.01
$PM_{2.5}$	0.08	0.08	0.03	0.01	0.02	<0.01	0.05	0.01	0.01	<0.01	0.02	0.01	<0.01	<0.01
Traffic Exhaust Emissions														
VOCs	0.02	0.03	0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
CO	0.30	0.31	0.12	0.03	0.09	0.01	0.20	0.02	0.05	0.05	0.10	0.03	<0.01	<0.01
NO_x	0.07	0.06	0.02	0.01	0.02	<0.01	0.04	0.01	0.01	0.01	0.02	0.01	<0.01	<0.01
SO_2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$PM_{2.5}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CO_2	29	29	11	3	9	1	19	2	4	5	10	3	<1	<1
HAPs	0.0011	0.0011	0.0009	0.0001	0.0003	<0.0001	0.0007	0.0001	0.0002	0.0002	0.0003	0.0001	<0.0001	<0.0001

Temporary portable concrete batch plants would be constructed and operated approximately every 25 miles along the ROW, mainly at construction staging areas. The maximum number of concrete batch plants by subroute and/or alternative and the total anticipated emissions from construction and operation of batch plants are provided in table 4.2-10 (local alternatives LD1, LD2, LD3a, LD4, LD4-Option 4, and LD4-Option5, and route variations P7a, P7b, P7c, and P7d, would not be expected to result in additional concrete batch plants for route group 2 line segments).

Table 4.2-10. Route Group 2 Estimated Concrete Batch Plant Construction and Operation Emissions (tpy)

	Maximum Quantity	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Subroute 2.1, Proponent Preferred	4	0.02	0.08	0.24	<0.01	2.24	0.40	51
Subroute 2.2, Proponent Alternative	5	0.03	0.10	0.30	<0.01	2.80	0.50	64
Local Alternative WC1	1	0.01	0.02	0.06	<0.01	0.56	0.10	13

As can be seen from the various tables above, emissions from any substitutions from the expected proposed Project would result in comparable emissions of criteria pollutants, HAPs, and GHGs. In order to demonstrate proposed Project criteria pollutant emissions against the conformity de minimis thresholds, estimated emissions for the route group have been aggregated by subroute along with all additional emission sources (substations and batch plants). Table 4.2-11 presents the summed total of anticipated annualized emissions from all the transmission line construction activities from the various proposed alternatives in the Hidalgo Substation to Apache Substation route group.

Table 4.2-11. Route Group 2 Estimated Annualized Emissions by Alternative (tpy)

	Total Miles	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Subroute 2.1, Proponent Preferred	95.5	0.73	3.61	9.03	0.01	3.91	1.31	1,794	0.0011
Substations	–	0.40	2.47	4.55	0.01	1.46	0.57	961	0.0007
Batch Plants	–	0.03	0.10	0.30	<0.01	2.80	0.50	64	–
Total Emissions	**–**	***1.16***	***6.18***	***13.88***	***0.02***	***8.17***	***2.38***	***2,819***	***0.0018***
Significant Impact Threshold	**–**	**100**	**100**	**100**	**100**	**100**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Subroute 2.2, Proponent Alternative	96.0	0.75	3.63	9.08	0.02	4.51	1.46	1,804	0.0011
Substations	–	0.40	2.47	4.55	0.01	1.46	0.57	961	0.0007
Batch Plants	–	0.03	0.12	0.36	<0.01	3.36	0.60	76	–
Total Emissions	**–**	***1.18***	***6.22***	***13.99***	***0.03***	***9.33***	***2.63***	***2,841***	***0.0018***
Impact Threshold	**–**	**100**	**100**	**100**	**100**	**100**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Table 4.2-11. Route Group 2 Estimated Annualized Emissions by Alternative (tpy), Continued

	Total Miles	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Route Group 2 Local Alternatives and Route Variations									
LD1	35.4	0.28	1.35	3.35	0.01	1.71	0.55	665	0.0009
LD2	8.9	0.06	0.33	0.84	<0.01	0.54	0.16	167	0.0001
LD3a	26.6	0.20	1.00	2.52	<0.01	0.98	0.35	499	0.0003
LD3b	2.2	0.01	0.09	0.21	<0.01	0.05	0.01	42	<0.0001
LD4	53.7	0.46	2.26	5.64	0.01	3.37	1.03	1,121	0.0007
LD4-Option 4	6.4	0.06	0.27	0.67	<0.01	0.40	0.12	134	0.0001
LD4-Option 5	12.3	0.11	0.52	1.29	<0.01	0.67	0.21	257	0.0002
WC1	14.8	0.11	0.56	1.40	<0.01	0.78	0.24	278	0.0002
P7a	31.2	0.24	1.18	2.95	<0.01	1.28	0.43	586	0.0003
P7b	10.5	0.08	0.40	0.99	<0.01	0.43	0.14	197	0.0001
P7c	1.0	0.01	0.04	0.09	<0.01	0.05	0.02	19	<0.0001
P7d	2.0	0.02	0.07	0.18	<0.01	0.09	0.04	38	<0.0001

As can be seen from table 4.2-11, expected emissions for criteria pollutants from proposed Project construction regardless of the subroute, local substitutive alternative, or route variation chosen would be well below de minimis conformity thresholds, even when aggregated over vast geographical distances and multiple regional airsheds. HAPs would also be well below the 25 tpy aggregated HAP threshold level. Additionally, proposed Project GHG emissions would be expected to be well below the 25,000 metric ton threshold. Cumulative impacts from GHG emissions are discussed further in section 4.21.

ROUTE GROUP 2 IMPACTS TO AMBIENT AIR QUALITY

Table 4.2-12 presents a comparison of the expected maximum short-term AERSCREEN concentrations from proposed Project construction, representative background concentrations of NO_2, PM_{10}, and $PM_{2.5}$, and the applicable ambient air quality standards for route group 2.

Table 4.2-12. Route Group 2 Estimated Transmission Line and Substation Construction: Comparison of Maximum Air Pollutant Concentrations Plus Background to Applicable Ambient Air Standards

Pollutant	Averaging Period	Maximum 1-hour AERSCREEN Concentration ($\mu g/m^3$)*	Background Concentration ($\mu g/m^3$)	Project Impact and Background ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	NMAAQS ($\mu g/m^3$)	Below all AAQS?
NO_2	1-hour	59.91	38[†]	97.91	188.7	188.7	Yes
PM_{10}	24-hour	80.32	45.4[‡]	125.72	150	–	Yes
$PM_{2.5}$	24-hour	10.98	10.1[§]	21.08	35	–	Yes

Note: $\mu g/m^3$ = micrograms per cubic meter.

* Maximum AERSCREEN concentrations obtained from comparable and larger transmission line/substation construction projects (BLM 2013a, BLM 2013n).

[†] Background concentrations of NO_2 from Deming air quality monitoring station in Luna County, New Mexico (NMED 2014b).

[‡] Background concentrations of PM_{10} from Deming air quality monitoring station in Luna County, New Mexico (NMED 2014b).

[§] Background concentrations for $PM_{2.5}$ from Silver City air quality monitoring station in Grant County, New Mexico (NMED 2014b).

As seen in table 4.2-12, the sum of the proposed Project impact and the background concentration would be below all applicable AAQS. The proposed Project would therefore not trigger any significant impact indicator for route group 2, and no significant impacts to air quality would result from the construction or operation and maintenance of the transmission lines and substations.

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

As can be seen from table 4.2-11, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

With the exception of SF_6 emissions from substation circuit breakers, potential Project operational air emissions were not analyzed, since operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

As can be seen from table 4.2-11, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

With the exception of potential SF_6 emissions from substation circuit breakers, anticipated Project operational air emissions were not analyzed as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives (LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1) and four route variations (P7a, P7b, P7c, and P7d) in route group 2.

Construction

The local alternatives and route variations are meant to be substitutive of portions of the main subroute chosen, and therefore any air emission contributions from local alternatives or route variations would not substantively contribute to proposed Project emissions since any additions to emissions from an alternative or variation would substitute for emissions from the portion of the route it is replacing. While estimated emissions may be slightly higher or lower than the portion of the route substituted for, depending upon whether or not the substation extended or shortened overall line length, emissions would not substantively increase as a result of the substitution of a local alternative or route variation, as demonstrated in table 4.2-11 above.

Operation and Maintenance

As with the subroutes, proposed Project operational air emissions from the local substitutive alternatives or route variations were not analyzed (with the exception of potential SF_6 emissions from substation circuit breakers) as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

ROUTE GROUP 2 IMPACT SUMMARY

None of the subroutes, local alternatives, or route variations in route group 2 would result in emissions that would be expected to exceed either conformity thresholds or ambient air quality standards for either construction or operation activities. Therefore, impacts to air quality resources from route group 2 would be minor (i.e., impacts would occur but air quality would retain its existing character) and short-term (i.e., less than 5 years in duration) for construction activities, and minor and long-term (i.e., greater than 5 years in duration) for operational activities.

Route Group 3 – Apache Substation to Pantano Substation

Table 4.2-13 presents the total estimated fugitive dust, criteria, HAP, and GHG potential air emissions from the construction of the transmission lines from the Apache Substation to Pantano Substation (route group 3). For route group 3, fugitive dust from transmission line, staging area, and access road construction earth-moving and grading activities; off-road construction vehicle and commuter, vendor, and haul truck traffic exhaust emissions; and fugitive dust from vehicle travel on both paved and unpaved roads are all estimated on an annualized basis in table 4.2-13. Estimated emissions from proposed construction or various subroutes and local alternative routes are presented for comparative purposes.

Table 4.2-13. Route Group 3 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy)

	Subroute 3.1, Proponent Preferred	**Route Group 3 Local Alternative H**
Total Miles	**70.3**	**19.3**
Fugitive Dust from Earth-moving and Grading Activities		
PM_{10}	1.22	0.33
$PM_{2.5}$	0.26	0.07
Construction Equipment Exhaust Emissions		
VOCs	0.62	0.17
CO	2.63	0.73
NO_x	7.17	1.97
SO_2	0.02	<0.01
PM_{10}	0.51	0.14
$PM_{2.5}$	0.51	0.14
CO_2	1,517	416

Table 4.2-13. Route Group 3 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy), Continued

	Subroute 3.1, Proponent Preferred	Route Group 3 Local Alternative H
Fugitive Dust from Access Road Construction		
PM_{10}	1.43	0.59
$PM_{2.5}$	0.30	0.12
Fugitive Dust from Travel on Paved and Unpaved Roads		
PM_{10}	0.30	0.08
$PM_{2.5}$	0.07	0.02
Traffic Exhaust Emissions		
VOCs	0.01	<0.01
CO	0.20	0.05
NO_x	0.06	0.02
SO_2	<0.01	<0.01
PM_{10}	<0.01	<0.01
$PM_{2.5}$	<0.01	<0.01
CO_2	26	7
HAPs	0.0009	0.0003

Temporary portable concrete batch plants would be constructed and operated approximately every 25 miles along the ROW, mainly at construction staging areas. The maximum number of concrete batch plants by subroute and the total anticipated emissions from construction and operation of batch plants are provided in table 4.2-14 (the use of the local alternative to substitute for a portion of the line segment in route group 3 would not be expected to increase the quantity of concrete batch plants).

Table 4.2-14. Route Group 3 Estimated Concrete Batch Plant Construction and Operation Emissions (tpy)

	Maximum Quantity	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Subroute 3.1, Proponent Preferred	4	0.02	0.08	0.24	<0.01	2.24	0.40	51

As can be seen from the various tables above, emissions from any substitutions from the expected subroute 3.1 would result in comparable emissions of criteria pollutants, HAPs, and GHGs. In order to demonstrate proposed Project criteria pollutant emissions against the conformity de minimis thresholds, estimated emissions for the route group have been aggregated by subroute and local alternative along with all additional emission sources (substations and batch plants). Table 4.2-15 presents the summed total of anticipated annualized emissions from all the transmission line construction activities from the various proposed alternatives in the Apache Substation to Pantano Substation route group.

Table 4.2-15. Route Group 3 Estimated Annualized Emissions by Alternative (tpy)

	Total Miles	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Subroute 3.1, Proponent Preferred	70.3	0.64	2.83	7.23	0.02	3.47	1.14	1,543	0.0009
Substations	–	0.31	1.90	3.62	0.01	1.06	0.44	718	0.0005
Batch Plants	–	0.02	0.08	0.24	<0.01	2.24	0.40	51	–
Total Emissions	**–**	***0.97***	***4.81***	***11.09***	***0.02***	***6.77***	***1.98***	***2,311***	***0.0014***
Significant Impact Threshold	**–**	**100**	**100**	**100**	**100**	**100**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Route Group 3 Local Alternatives									
H	19.3	0.18	0.78	1.98	<0.01	1.15	0.36	423	0.0003

As can be seen from table 4.2-15, expected emissions for criteria pollutants from proposed Project construction regardless of the subroute or local substitutive alternative chosen would be well below de minimis conformity thresholds, even when aggregated over vast geographical distances and multiple regional airsheds. HAPs would also be well below the 25 tpy aggregated HAP threshold level. Additionally, proposed Project GHG emissions would be expected to be well below the 25,000 metric ton threshold. Cumulative impacts from GHG emissions are discussed further in section 4.21.

ROUTE GROUP 3 IMPACTS TO AMBIENT AIR QUALITY

Table 4.2-16 presents a comparison of the expected maximum short-term AERSCREEN concentrations from proposed Project construction, representative background concentrations of NO_2, PM_{10}, and $PM_{2.5}$, and the applicable ambient air quality standards for route group 3.

Table 4.2-16. Route Group 3 Transmission Line and Substation Construction: Comparison of Estimated Maximum Air Pollutant Concentrations Plus Background to Applicable Ambient Air Standards

Pollutant	Averaging Period	Maximum 1-hour AERSCREEN Concentration ($\mu g/m^3$)*	Background Concentration ($\mu g/m^3$)	Project Impact and Background ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Below AAQS?
NO_2	1-hour	59.91	30[†]	89.91	188.7	Yes
PM_{10}	24-hour	80.32	58[†]	138.32	150	Yes
$PM_{2.5}$	24-hour	10.98	12[‡]	22.98	35	Yes

Note: $\mu g/m^3$ = micrograms per cubic meter.

* Maximum AERSCREEN concentrations obtained from comparable and larger transmission line/substation construction projects (BLM 2013a, BLM 2013n).

[†] Background concentrations of NO_2 and PM_{10} from ADEQ's Technical Support Document for Concrete Batch Plants (2010:table 11). Nonattainment value used for PM_{10}.

[‡] Background concentrations for $PM_{2.5}$ from Douglas Red Cross air quality monitoring station in Cochise County, Arizona (ADEQ 2014c).

As seen in table 4.2-16, the sum of the proposed Project impact and the background concentration would be below the NAAQS. The proposed Project would therefore not trigger any significant impact indicator for route group 3, and no significant impacts to air quality would result from the construction or operation and maintenance of the transmission lines and substations.

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

As can be seen from table 4.2-15, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

With the exception of SF_6 emissions from substation circuit breakers, potential Project operational air emissions were not analyzed, since operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

LOCAL ALTERNATIVES

There is one local alternative for route group 3: local alternative H.

Construction

The local alternatives are meant to be substitutive of portions of the main subroute chosen, and therefore any air emission contributions from local alternatives would not substantively contribute to proposed Project emissions since any additions to emissions from an alternative would substitute for emissions from the portion of the route it is replacing. While estimated emissions may be slightly higher or lower than the portion of the route substituted for, depending upon whether or not the substation extended or shortened overall line length, emissions would not substantively increase as a result of the substitution of a local alternative, as demonstrated in the table 4.2-15 above.

Operation and Maintenance

As with the subroutes, proposed Project operational air emissions from the local substitutive alternatives were not analyzed (with the exception of potential SF_6 emissions from substation circuit breakers) as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

ROUTE GROUP 3 IMPACT SUMMARY

Neither the subroute nor the substitutive alternative in route group 3 would result in emissions that would be expected to exceed either conformity thresholds or ambient air quality standards for either construction or operation activities. Therefore, impacts to air quality resources from route group 3 would be minor (i.e., impacts would occur but air quality would retain its existing character) and short-term (i.e., less than 5 years in duration) for construction activities, and minor and long-term (i.e., greater than 5 years in duration) for operational activities.

Route Group 4 – Pantano Substation to Saguaro Substation

Table 4.2-17 presents the total estimated fugitive dust, criteria, HAP, and GHG potential air emissions from the construction of the transmission lines from the Pantano Substation to the Saguaro Substation (route group 4).

Table 4.2-17. Route Group 4 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy)

		Route Group 4 Local Alternatives and Route Variations										
	Subroute 4.1, Proponent Preferred	MA1	TH1a	TH1b	TH1c	TH1-Option	TH3-Option A	TH3-Option B	TH3-Option C	TH3a	TH3b	U3aPC
Total Miles	**48.3**	**1.1**	**1.4**	**1.6**	**0.3**	**1.0**	**0.8**	**0.8**	**1.8**	**2.7**	**4.5**	**6.2**
Fugitive Dust from Earth-moving and Grading Activities												
PM_{10}	0.86	0.02	0.02	0.03	<0.01	0.02	0.01	0.01	0.03	0.05	0.08	0.11
$PM_{2.5}$	0.16	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.02
Construction Equipment Exhaust Emissions												
VOCs	0.43	0.01	0.01	0.01	<0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.06
CO	1.80	0.04	0.05	0.06	0.01	0.05	0.03	0.03	0.07	0.10	0.17	0.23
NO_x	4.89	0.11	0.14	0.16	0.03	0.09	0.08	0.08	0.18	0.28	0.46	0.63
SO_2	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	0.36	0.01	0.01	0.01	<0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.05
$PM_{2.5}$	0.36	0.01	0.01	0.01	<0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.05
CO_2	1,039	24	30	34	6	22	18	18	39	59	97	133
Fugitive Dust from Access Road Construction												
PM_{10}	0.77	0.01	0.01	0.01	<0.01	<0.01	0.02	0.01	0.05	0.06	0.07	0.10
$PM_{2.5}$	0.16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02

Table 4.2-17. Route Group 4 Estimated Transmission Line Construction Annualized Emissions by Activity (tpy), Continued

		Route Group 4 Local Alternatives and Route Variations										
	Subroute 4.1, Proponent Preferred	MA1	TH1a	TH1b	TH1c	TH1-Option	TH3-Option A	TH3-Option B	TH3-Option C	TH3a	TH3b	U3aPC
Fugitive Dust from Travel on Paved and Unpaved Roads												
PM_{10}	0.21	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.03
$PM_{2.5}$	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Traffic Exhaust Emissions												
VOCs	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CO	0.14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.02
NO_x	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
SO_2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PM_{10}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
$PM_{2.5}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CO_2	18	<1	1	1	<1	<1	<1	<1	1	1	2	2
HAPs	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001

For route group 4, fugitive dust from transmission line, staging area, and access road construction earth-moving and grading activities; off-road construction vehicle and commuter, vendor, and haul truck traffic exhaust emissions; and fugitive dust from vehicle travel on both paved and unpaved roads are all estimated on an annualized basis in table 4.2-17. Estimated emissions from proposed construction of various subroutes, local alternative routes, and route variations are presented for comparative purposes.

Temporary portable concrete batch plants would be constructed and operated approximately every 25 miles along the ROW, mainly at construction staging areas. The maximum number of concrete batch plants by subroute and the total anticipated emissions from construction and operation of batch plants are provided in table 4.2-18 (the use of local alternatives or route variations to substitute for line segments in route group 4 would not be expected to increase the quantity of concrete batch plants).

Table 4.2-18. Route Group 4 Estimated Concrete Batch Plant Construction and Operation Emissions (tpy)

	Maximum Quantity	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Subroute 4.1, Proponent Preferred	3	0.02	0.06	0.18	<0.01	1.68	0.30	38

As can be seen from the various tables above, emissions from any substitutions from subroute 4.1 would result in comparable emissions of criteria pollutants, HAPs, and GHGs. In order to demonstrate proposed Project criteria pollutant emissions against the conformity de minimis thresholds, estimated emissions for the route group have been aggregated by subroute, local alternatives, and route variations along with all additional emission sources (substations and batch plants). Table 4.2-19 presents the summed total of anticipated annualized emissions from all the transmission line construction activities from the various proposed alternatives in the Pantano Substation to Saguaro Substation route group.

Table 4.2-19. Route Group 4 Estimated Annualized Emissions by Alternative (tpy)

	Total Miles	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Subroute 4.1, Proponent Preferred	48.3	0.44	1.93	4.93	0.01	2.20	0.73	1,056	0.0007
Substations	–	0.84	4.85	10.01	0.02	1.68	0.94	1,928	0.0005
Batch Plants	–	0.02	0.06	0.18	<0.01	1.68	0.30	38	–
Total Emissions	**–**	***1.29***	***6.84***	***15.12***	***0.02***	***5.56***	***1.97***	***3,022***	***0.0011***
Significant Impact Threshold	**–**	**100**	**100**	**100**	**100**	**70**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Route Group 4 Local Alternatives and Route Variations									
MA1	1.1	0.01	0.04	0.11	<0.01	0.04	0.01	24	<0.0001
TH1a	1.4	0.01	0.05	0.14	<0.01	0.04	0.02	31	<0.0001
TH1b	1.6	0.01	0.06	0.16	<0.01	0.06	0.02	34	<0.0001
TH1c	0.3	<0.01	0.01	0.03	<0.01	0.01	<0.01	6	<0.0001
TH1-Option	1.0	0.01	0.05	0.09	<0.01	0.04	0.01	22	<0.0001
TH3-Option A	0.8	0.01	0.03	0.08	<0.01	0.04	0.01	18	<0.0001

Table 4.2-19. Route Group 4 Estimated Annualized Emissions by Alternative (tpy), Continued

	Total Miles	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Route Group 4 Local Alternatives and Route Variations, cont'd.									
TH3-Option B	0.8	0.01	0.03	0.08	<0.01	0.04	0.01	18	<0.0001
TH3-Option C	1.8	0.02	0.08	0.18	<0.01	0.10	0.03	39	<0.0001
TH3a	2.7	0.02	0.11	0.28	<0.01	0.14	0.04	60	<0.0001
TH3b	4.5	0.04	0.18	0.46	<0.01	0.20	0.07	99	0.0001
U3aPC	6.2	0.06	0.25	0.63	< 0.01	0.28	0.09	136	0.0001

As can be seen from table 4.2-19, expected emissions for criteria pollutants from proposed Project construction regardless of subroute, local alternative, or route variation chosen would be well below de minimis conformity thresholds, even when aggregated over vast geographical distances and multiple regional airsheds. Specifically, emissions are below de minimis thresholds for the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area. HAPs would also be well below the 25 tpy aggregated HAP threshold level. Additionally, proposed Project GHG emissions would be expected to be well below the 25,000 metric ton threshold. Cumulative impacts from GHG emissions are discussed further in section 4.21.

ROUTE GROUP 4 IMPACTS TO AMBIENT AIR QUALITY

Table 4.2-20 presents a comparison of the expected maximum short-term AERSCREEN concentrations from proposed Project construction, representative background concentrations of NO_2, PM_{10}, and $PM_{2.5}$, and the applicable ambient air quality standards for route group 4.

Table 4.2-20. Route Group 4 Transmission Line and Substation Construction: Comparison of Estimated Maximum Air Pollutant Concentrations Plus Background to Applicable Ambient Air Standards

Pollutant	Averaging Period	Maximum 1-hour AERSCREEN Concentration ($\mu g/m^3$)*	Background Concentration ($\mu g/m^3$)	Project Impact and Background ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Below AAQS?
NO_2	1-hour	59.91	30[†]	89.91	188.7	Yes
PM_{10}	24-hour	80.32	58[†]	138.32	150	Yes
$PM_{2.5}$	24-hour	10.98	12[‡]	22.98	35	Yes

* Maximum AERSCREEN concentrations obtained from comparable and larger transmission line/substation construction projects (BLM 2013a, 2013n).

[†] Background concentrations of NO_2 and PM_{10} from ADEQ's Technical Support Document for Concrete Batch Plants (2010:table 11). Nonattainment value used for PM_{10}.

[‡] Background concentrations for $PM_{2.5}$ from Douglas Red Cross air quality monitoring station in Cochise County, Arizona (ADEQ 2014c).

As seen in table 4.2-20, the sum of the proposed Project impact and the background concentration would be below all applicable AAQS. The proposed Project would not trigger any significant impact indicator for route group 4, and no significant impacts to air quality would result from the construction or operation and maintenance of the transmission lines and substations.

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

As can be seen from table 4.2-19, even assuming no geographic dispersion of air emissions, annual emissions from transmission line construction activities would be expected to be well below the de minimis thresholds for criteria pollutants and HAPs regardless of the combination of alternatives selected.

Operation and Maintenance

With the exception of SF_6 emissions from substation circuit breakers, potential Project operational air emissions were not analyzed, since operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are 10 local alternatives (MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C) and one route variation (U3aPC) in route group 4.

Construction

The local alternatives and route variations are meant to be substitutive of portions of the main subroute chosen, and therefore any air emission contributions from local alternatives and route variations would not substantively contribute to proposed Project emissions since any additions to emissions from an alternative or variations would substitute for emissions from the portion of the route it is replacing. While estimated emissions may be slightly higher or lower than the portion of the route substituted for, depending upon whether or not the substation extended or shortened overall line length, emissions would not substantively increase as a result of the substitution of a local alternative or route variations, as demonstrated in table 4.2-19 above.

Operation and Maintenance

As with the subroutes, proposed Project operational air emissions from local alternatives and route variations were not analyzed (with the exception of potential SF_6 emissions from substation circuit breakers) as operational emissions would be substantively lower than those expected from construction emissions, which are already demonstrated herein as being well below the significant impact thresholds.

ROUTE GROUP 4 IMPACT SUMMARY

Neither the subroute nor the substitutive local alternatives or route variations in route group 4 would result in emissions that would be expected to exceed either conformity thresholds or ambient air quality standards for either construction or operation activities. Therefore, impacts to air quality resources from route group 4 would be minor (i.e., impacts would occur but air quality would retain its existing character) and short-term (i.e., less than 5 years in duration) for construction activities, and minor and long-term (i.e., greater than 5 years in duration) for operational activities.

Agency Preferred Alternative

Emissions of air pollutants from construction activities from the Agency Preferred Alternative, even aggregated over vast geographic distances and multiple airsheds, would be substantively below the de minimis thresholds for criteria pollutants, GHGs, and HAPs. Emissions of air pollutants would not vary

substantively between the Agency Preferred Alternative and the other alternatives. Construction emissions would be transient, short-term, and spread over large distances and multiple airsheds. Operation and maintenance emissions would be long-term and similar, but substantively less than, construction emissions.

The Agency Preferred Alternative would cross the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area, both located in Pima County, Arizona. However, none of the alternatives to the Agency Preferred Alternative would avoid these non-attainment/maintenance areas. As can be seen from table 4.2-21, the total aggregated PM_{10} and CO emissions from construction of the Agency Preferred Alternative would be well within the de minimis conformity thresholds of the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area, even with the inclusion of proposed Project emissions from well outside of these areas.

Therefore, overall impacts to air quality resources from the Agency Preferred Alternative would be minor and short-term for construction activities, and minor and long-term for operation and maintenance activities.

Air quality impacts from the Agency Preferred Alternative are quantified by pollutant in table 4.2-21 below.

Table 4.2-21. Agency Preferred Alternative Estimated Annualized Emissions (tpy)

Route Group	Segments	Total Miles	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	HAPs
Route group 1	P1, P2, P3, and P4a	147.1	1.12	5.57	13.91	0.03	6.78	2.19	2,763	0.0017
Route group 2	P5b, P6a, P6b, P6c, P7, P8, LD3a, LD3b	98.8	0.96	4.68	11.67	0.02	5.89	1.90	2,317	0.0014
Route group 3	U1a, U1b, U2, U3a	65.4	0.60	2.63	6.74	0.02	3.23	1.06	1,437	0.0008
Route group 4	U3b, U3c, U3d, U3g, U3h, U3i, U3k, U3l, U3m, U4, MA1, TH1-a, TH1-Option, U3aPC	55.5	0.50	2.23	5.66	0.01	2.47	0.83	1,218	0.0008
Substations	–	–	1.59	9.60	18.64	0.03	4.27	1.99	3,641	0.0020
Batch Plants	–	–	0.10	0.38	1.14	<0.01	10.64	1.90	241	<0.0001
Total Emissions	–	***366.8***	***4.87***	***25.09***	***57.76***	***0.11***	***33.28***	***9.87***	***11,617***	***0.0067***
Lowest Significant Impact Threshold	**–**	**–**	**100**	**100**	**100**	**100**	**70**	**10**	**25,000**	**25**
Exceeds Threshold?	**–**	**–**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Residual Impacts

As the proposed Project would not require any additional PCEMs or mitigation measures, any residual impacts to air quality from the proposed Project would be minor and short-term.

Unavoidable Adverse Impacts

The proposed Project would result in some increase to ambient pollutant concentrations. Since adverse impacts to air quality from proposed Project emissions would dissipate with time, there would be no long-

term air quality impacts from proposed Project criteria and HAP emissions. GHG emissions, however, tend to be cumulative in nature. No Federal or State ambient air quality standards exist for GHGs. Furthermore, it is impossible to determine accurately the specific impacts on the environment that would be caused by a new source of GHGs. However, GHG emissions would result in an unavoidable adverse impact from the proposed Project.

The February 18, 2010 "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gases" from the CEQ proposed a threshold of 25,000 tpy CO_2e as a threshold for which further qualitative and quantitative evaluation may be warranted. CEQ notes that this threshold should be considered as "a useful indicator – rather than an absolute standard of insignificant effects" (CEQ 2010). CEQ draft GHG guidance states that NEPA environmental assessment and EIS documents for proposed Federal actions resulting in direct GHG emissions of 25,000 metric tons per year should include a GHG emissions analysis of alternatives (CEQ 2012).

The total combined GHG construction emissions are anticipated to be well below the 25,000 metric ton threshold, regardless of the subroutes or local alternatives chosen. As an example, the total GHG construction emissions from the use of all the Proponent Preferred subroutes would result in GHG emissions of approximately 12,000 tons (11,000 metric tons) of CO_2e. The substitution of other subroutes, alternatives, or route variations would not increase emissions above the CEQ threshold. Additionally, these projections are over the entire duration of proposed Project activities over several years and the entire geographic distance. Therefore, emissions from the proposed Project would be much less than the CEQ indicator and would be a tiny fraction of the existing annual Federal and State emissions.

Additionally, as stated in chapter 1, section 1.3.4, one of the intended goals of the proposed Project will be to encourage the development of renewable energy generation projects and provide a path to market for generation anticipated to be developed in the area of the proposed Project. To the extent that development were to occur and the addition of new renewables facilitate the retirement of existing fossil fuel-based generation or displace the construction of new fossil fuel generation, the proposed Project would have a positive impact on the net GHG emissions in the long term.

The total GHG operations emissions per year combined for the proposed Project due to potential SF_6 emission leaks would be approximately 7,124 metric tons of CO_2e per year, which is below the CEQ indicator of 25,000 metric tons. The total GHG operations emissions per year for any of the various substitutive alternatives would be comparable to those for the proposed segments.

Therefore, it is difficult to state with any certainty what impacts on climate change may result from GHG emissions, or to what extent the proposed Project would contribute to those climate change impacts. As a result, any attempt to analyze and predict the local or regional impacts of the proposed Project on GHG emissions cannot be done in any way that produces reliable results. On May 14, 2008, the Director of the FWS noted, "The best scientific data available today do not allow us to draw a causal connection between GHG emissions from a given facility and effects posed to listed species or their habitats, nor are there sufficient data to establish that such impacts are reasonably certain to occur" (FWS 2008:1–2).

Short-term Uses versus Long-term Productivity

The proposed Project would cause some short-term, minor deterioration in existing air quality during the construction of the transmission lines, substations, and ancillary facilities. Long-term impacts would be negligible because operation and maintenance of the proposed Project would not emit pollutants into the atmosphere in quantities that would exceed air pollution standards. Therefore, no effects on the maintenance and enhancement of long-term productivity related to air quality would occur because of the implementation of the proposed Project. Additionally, as stated in chapter 1, section 1.3.4, one of the

intended goals of the proposed Project is to encourage the development of renewable energy generation projects, possibly lowering net GHG emissions in the long-term.

Irreversible and Irretrievable Commitments of Resources

As the proposed Project would eventually be decommissioned, air quality would then be the same as the no action alternative and therefore the Project would not result in an irretrievable commitment to air resources. There may be an irreversible commitment of local ambient air quality if the transmission line enables the transmission of electricity generated from fossil fuels. However, an increase in the availability of renewable energy would presumably displace emissions from the generation of electricity from fossil fuels, and the transmission of electricity generated from renewable energy would potentially result in lowered air pollutant emissions and not result in an irreversible commitment to local ambient air quality.

GHG emissions from the construction, operation, and maintenance of the proposed Project (including potential SF_6 leaks from circuit breakers) would result in a minor (relative to local, national, and/or global GHG emissions) but irreversible and irretrievable increase in GHGs. Depending on the increase in availability of renewable energy made possible due to the proposed Project, an increase or decrease in the amount of GHGs from the generation of fossil fuels would occur.

4.3 NOISE AND VIBRATION

4.3.1 Introduction

Noise and vibration impacts are evaluated for all areas where sensitive receptors would be within the analysis area for the proposed Project. Impacts during construction would result from the use of equipment and vehicles but would be limited to the immediate vicinity of the proposed overhead line, along the proposed Project route, and along all transport access routes. Construction noise and vibration would be short-term and sporadic in nature. During operation, corona noise caused by operation of the new or upgraded transmission line would elevate the current ambient noise levels within the immediate vicinity of the edge of the ROW.

This section describes the potential impacts of noise and vibration associated with the construction and operation of the proposed transmission line, substations, and ancillary facilities. Impacts to noise are discussed in terms of noise levels expected to be produced by the proposed Project and compared to applicable laws and regulations. Potential impacts from vibration are only considered for construction, specifically for pile-driving activities, which are unlikely to be conducted.

4.3.2 Methodology and Assumptions

This section describes the noise analysis area, the assumption and methodology used to calculate noise impacts, a description of the impact approach, and identification of what would be considered a significant noise impact from the construction and operation of the transmission lines and substations.

Analysis Area

The analysis area for the evaluation of noise impacts is 1 mile on either side of the centerline for both the New Build Section and Upgrade Section, and any substation or access roads outside that corridor. The analysis area for the evaluation of proposed Project noise impacts is depicted in figures 3.3-1 and 3.3-2 in chapter 3.

Analysis Assumptions

The analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS) to bring noise levels below the guideline thresholds specified in section 3.3.4.

CONSTRUCTION

The noise levels expected to be generated by construction equipment have been calculated and published in various reference documents. The FHWA has published construction noise data for construction projects, which is used to determine construction noise impacts. Projected noise levels from proposed Project construction activities, including the expected noise attenuation due to distance from construction activities, are discussed further in appendix C. The values presented for estimated construction noise levels at the nearest new source review (NSR) are the expected maximum noise levels that the nearest NSR will experience during construction. Due to the short-term, temporary, and intermittent nature of construction activities, these values are conservative.

As stated in chapter 2, concrete batch plants are expected to operate for 3 to 6 months between the hours of 6 a.m. and 6 p.m., Monday through Saturday. While the duration of the operation of the concrete batch plants are short-term (i.e., during construction or up to 5 years), the concrete batch plants can be expected to remain in one location for a longer time than other types of construction equipment. Noise from concrete batch plants is incorporated into the proposed Project construction noise estimates.

Ground-borne vibration impacts are only expected to occur during pile-driving activities. At this time, it is not known whether pile-driving would be required. These activities would occur over a limited time period and be confined to daytime hours when noise-sensitive resources are nearby to minimize potential for disturbance. If pile-driving is required, there are two primary pile-driving methods: impact and vibratory. Impact pile drivers typically use a weight (sometimes referred to as a piston or hammer) to impact the top of pile to force it into the ground. Vibratory pile drivers are clamped to the pile and use motors to generate vibrations in the range of 2 to 25 hertz. The vibrations reduce the frictional grip of the soil and permit the soil at the tip of the pile to be displaced, which, coupled with the weight of the pile itself or additional dead weights, allows the pile to advance into the ground. The primary sources of noise associated with vibratory driving are the engine/motor and radiated noise from the vibrating pile. The noise from a vibratory driver is more of a continuous or steady noise. The radiated noise from the pile can be significant and has been reported to be louder than impact drivers when driving sheet or AZ-pile. The noise from pile-driving is incorporated into proposed Project construction noise estimates.

OPERATIONS AND MAINTENANCE

For substation noise, standard acoustical engineering methods were used to determine a range of anticipated sound levels based on the megavolt ampere rating of the substation. Predicted levels at distances of interest were calculated based on geometric spreading attenuation using International Organization for Standardization (ISO) 9613-2, “Acoustics—Sound Attenuation during Propagation Outdoors” (ISO 1996). Additional attenuation factors, such as intervening terrain, structures, barriers, and air absorption were not considered.

For corona noise, the Electric Power Research Institute (EPRI) ENVIRO computer model, containing the EPRI corona model algorithm, was used to calculate noise levels from the proposed transmission lines (in addition to the electric and magnetic fields). A total of 10 scenarios representing combinations of the proposed Project and alternatives with existing adjacent transmission lines was selected for corona modeling. Corona noise results from changes in electric charges that are minimal in fair weather

conditions and are increased during wet and humid conditions. Corona noise can increase when a transmission line is in proximity to other transmission lines and with the age and condition of equipment. Along the New Build Section of the proposed Project and alternatives, existing transmission lines cross or are within certain distances of the proposed Project that may have an effect on corona noise, and are included in the model.

Impact Indicators

Noise sensitive receptors, including any 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) are identified for each route. The length from the ROW to the NSR was used to determine estimated impacts from construction or operation and maintenance (substation and corona discharge) noise levels at the NSR. Vibratory impacts are not analyzed directly; instead, if a noise impact exists for a location, then a vibratory impact may be presumed to exist if pile-driving construction activities were to occur at that location.

As discussed in chapter 3, there are no Federal regulations that limit overall environmental noise levels. A number of agencies have issued guidance documents addressing exterior noise and regulations for specific sources. The most stringent noise regulations come from the EPA. The EPA's Noise Control Act of 1972 published guidelines that address the issue of community noise and contains goals for noise levels affecting residential land use of L_{dn} of less than 55 dBA for exterior levels and an L_{dn} of less than 45 dBA for interior levels. For purposes of this analysis, the exterior noise level guidelines of the Noise Control Act of 1972 for NSRs will be used (55 dBA).

Significant Impacts

For the purposes of this analysis, a significant impact on noise could result if any of the following were to occur from construction or operation of the proposed Project:

- Exceedance of local or Federal noise regulations or guidelines. If there are no local guidelines, then Federal guidelines (the Noise Control Act of 1972) will be used;
- Increased noise levels could impose restrictions on land currently planned for residential development; or
- Increased noise levels directly or indirectly could affect any places of traditional use that are NRHP listed or eligible, or identified as important to tribes.

A significant impact would constitute a "major" impact according to the impact description provided in table 4.1-1. The other impact descriptions provided in table 4.1-1 are also used herein for impacts less than major. Increases to noise levels that impose restrictions on land use or that affect NRHP listed or eligible sites are analyzed qualitatively herein. Noise is a potential issue to sites that are in current use by tribal members. The nearest NSRs to the proposed Project were identified; therefore, if operation and maintenance noise impacts affect these NSRs, then land use restrictions from increased noise levels or adverse impacts to NRHP sites could be presumed at these locations. Construction impacts would be of limited duration and therefore would not represent significant impacts to land use restrictions or NRHP sites, even if noise levels would be above impact thresholds.

4.3.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not issue a ROW permit and Western would not partner with Southline or uprate its existing lines as part of the proposed Project. Noise and vibration impacts from construction and operation and maintenance of the proposed Project transmission line and associated activities and facilities would not occur. Under the no action alternative, noise and vibration conditions would likely continue at current levels and trends, although it is uncertain whether other changes may occur that affect conditions.

Even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

CONSTRUCTION

Construction activities for both the New Build and Upgrade Sections of the proposed Project and alternatives would result in similar noise generation and impacts. As discussed in section 2.4.3, construction activities would be of short duration in any single area and generally would be limited to daytime hours. The majority of the New Build Section would pass through rural and open areas as well as around a number of small cities, including Deming and Lordsburg. As a result, a minimal number of receptors would be located along the New Build Section. The Upgrade Section would cross areas of rural and open lands and several small communities, including Benson, as well as high-density areas of Tucson and surrounding communities. Residents and commercial establishments would experience short-term noise increases in these areas during construction.

Vibratory impacts from pile-driving construction activities may be a concern for NSRs that are located near the ROW. Vibratory impacts are not analyzed directly; instead, if a noise impact exists for a location, then a vibratory impact may be presumed to exist if pile-driving construction activities were to occur at that location. Vibration from construction activities would be of even more limited duration than the construction activities themselves, since the use of pile-driving construction activities would represent a worst-case scenario and a fraction of total construction activity, if pile driving is required at all.

OPERATION AND MAINTENANCE

Corona noise would occur throughout the length of the proposed Project. The level of noise associated with the corona effect strongly depends on weather conditions as well as the condition of the transmission line. The proposed Project location is generally considered to have fair weather during most of the year; however, foul weather, or rain conditions, occurs periodically and seasonally. As noted in the Final WWEC PEIS (DOE and BLM 2008:3-143):

> In arid regions of the 11 western states, corona-generated audible noise would occur infrequently, as most of the areas adjacent to the proposed corridors on federal lands are undeveloped and sparsely populated. Whether occurring on federal or nonfederal land, corona noise would be scarcely discernible within ¼ mile or less from the center of the nearest transmission tower.

Corona noise for both the New Build and Upgrade Sections of the proposed Project and alternatives would be highest in areas where the new lines would be constructed in close proximity to existing

transmission lines. Overall, because of the relatively dry nature of the area crossed by the proposed Project, the overall level of operational noise would be minimal and would therefore represent a minor, but long-term impact to ambient soundscapes. Operational noise would decrease rapidly with distance from the transmission line. According to the EPRI ENVIRO model, the maximum corona noise for all modeled scenarios for both the New Build and Upgrade Sections on the edge of the ROW would be 52.4 dBA (in foul weather for two double-circuit transmission lines separated by a distance of 200 feet). This value is lower than the exterior noise level guidelines of the Noise Control Act of 1972 and the proposed Project is not expected to cause a significant impact with respect to corona noise.

Corona noise increases with aging, damaged equipment. For the Upgrade Section, where the proposed transmission line would be replacing the existing line with newer equipment, have an increased height above ground, and/or different arrangement of the equipment (e.g., vertical configuration of the double-circuit), corona noise from the proposed Project at the nearest NSR would be expected to decrease from currently existing line conditions. This change in noise due to the corona effect would most likely be minimal and would still be affected by other circumstances (i.e., adverse weather).

Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Maintenance activities are primarily inspection-related (for example, annual inspection of the transmission line from vehicles) and repair of damaged equipment. Actual maintenance activities would occur over a short period of time at any single location and typically would be of shorter duration than during initial construction activities.

Route Group 1 – Afton Substation to Hidalgo Substation

A summary of the noise resource inventory data for route group 1 is presented in table 4.3-1. Some segments have multiple land use descriptions that describe the segment's land use in greater detail. The expected range of baseline noise levels, estimated number of residential NSRs, the estimated closest distance to the NSR, and the estimated construction noise level at the nearest NSR are evaluated for each segment and land use type. Where there are no NSRs identified, the construction noise levels were not evaluated for that particular segment or land use.

Table 4.3-1. Route Group 1 Noise Resource Inventory Data

	Total Miles	Description/ Land Use	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 1.1, Proponent Preferred						
P1	5.1	Desert open space	0	–	8–45	–
P2	102	Desert open space	2	1300	8–45	63
		Follows highway (2,500 feet)	5	100	34–54	79
		Crosses highway (< 250 feet)	2	600	44–64	69
		Agricultural areas	0	–	30–52	–
		Near Deming, NM	40	100	40–67	79

Table 4.3-1. Route Group 1 Noise Resource Inventory Data (Continued)

	Total Miles	Description/ Land Use	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 1.1, Proponent Preferred, cont'd.						
P3	31.1	Desert open space	0	–	8–45	–
		Crosses highway (< 250 feet)	7	1100	44–64	63
P4a	8.9	Desert open space	0	–	8–45	–
Subroute 1.2, Proponent Alternative						
S1	13.4	Desert open space	1	2,100	8–45	58
S2	11.1	Desert open space	0	–	8–45	–
		Near highway (500 feet)	0	–	41–61	–
S3	12.9	Follows highway (500 feet)	0	–	41–61	–
		Crosses highway (< 250 feet)	0	–	44–64	–
S4	10.6	Desert open space	0	–	8–45	–
		Near highway (1,000 feet)	0	–	38–58	–
S5	29.7	Follows highway (500 feet)	0	–	41–61	–
		Near Columbus, NM	35	2,900	33–66	58
		Agricultural areas	2	1,300	30–52	63
		Desert open space	0	–	8–45	–
S6	7.4	Agricultural areas	1	500	30–52	69
		Near highway (1,000 feet)	0	–	38–58	–
		Desert open space	0	–	8–45	–
S7	41.5	Follows highway (250 feet)	2	300	44–64	74
		Crosses highway (< 250 feet)	0	–	44–64	–
		Near Hachita, NM	10	500	33–66	69
		Desert open space	1	<50	8–45	83
S8	14.6	Agricultural areas	3	2,200	30–52	58
		Crosses highway (< 250 feet)	0	–	44–64	–
		Desert open space	0	–	8–45	–

Table 4.3-1. Route Group 1 Noise Resource Inventory Data (Continued)

	Total Miles	Description/ Land Use	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Route Group 1 Local Alternatives						
DN1	42.5	Crosses highway (< 250 feet)	0	–	44–64	–
		Desert open space	1	100	8–45	79
		Agricultural areas	1	4,900	30–52	52
A	17.5	Follows highway (500 feet)	0	–	41–61	–
		Desert open space	0	–	8–45	–
B	12.2	Follows highway (500 feet)	0	–	41–61	–
C	9	Follows highway (250 feet)	2	300	44–64	74
		Crosses highway (< 250 feet)	0	–	44–64	–
D	22.8	Agricultural areas	3	3700	30–52	52
		Crosses highway (< 250 feet)	1	100	44–64	79
		Desert open space	0	–	8–45	–
		Near Lordsburg, NM	12	3,100	33–66	58
		Follows highway (2,500 feet)	1	4,900	34–54	52

Current and predicted noise from substations associated with route group 1 is presented in table 4.3-2.

Table 4.3-2. Route Group 1 Current and Predicted Noise from Substations

Substation	Distance to Closest NSR (in feet)	Approximate Substation Noise Based on Existing Conditions at NSR	Predicted Approximate Substation Noise Based on Future Conditions at NSR	Change in Noise at NSR
Afton	35,942	< 40 dBA	< 40 dBA	0 dBA
Hidalgo	15,120	< 40 dBA	< 40 dBA	0 dBA
Midpoint North	NA	NA	NA	NA
Midpoint South	NA	NA	NA	NA

Note: NA = not applicable.

Note that neither the Midpoint North nor Midpoint South substation alternatives are currently anticipated to have a transformer, the primary source of noise at the substations.

The New Build Section of the proposed Project and alternatives between the Afton Substation to Hidalgo Substation would pass by five non-residential noise-sensitive receptors and scattered residential areas, primarily near the community of Deming. However, this route group is predominantly open space and has very few noise-sensitive receptors. Non-residential NSRs in this route group are listed in appendix C.

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

There is an estimated total of 56 NSRs along subroute 1.1. The majority of estimated NSRs (40) are located in and around the city of Deming, New Mexico. NSRs identified in table 4.3-1 would be expected to experience noise levels of approximately 63 to 79 dBA during construction activities. NSRs specifically identified other than residences on this route include Holy Cross Cemetery near segment P2, which could experience construction noise levels of 52 dBA. The residential NSRs in subroute 1.1 could experience exceedances of the guidelines contained within the Noise Control Act of 1972, the most stringent regulatory criteria identified in chapter 3. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 1.1 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise for the Afton and Hidalgo substations would be expected to remain the same, with no change in noise levels at the distance to the closest NSR. Neither the Midpoint North nor Midpoint South substations are currently anticipated to have a transformer, the primary source of noise at the substations. The nearest NSRs all experience noise levels less than the guidelines in the Noise Control Act of 1972. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Fifty-five NSRs were identified along this subroute. The majority of estimated NSRs are located in the communities of Columbus and Hachita. The noise levels at those identified NSRs could range from 58 to 83 dBA, with one location that could experience an estimated construction noise level as high as 83 dBA. Three NSRs (other than residences) were identified along segment S7. These NSRs include two cemeteries (Victorio and Hachita Cemeteries) and a church (Hachita Baptist Church) that could experience construction noise levels ranging from 69 dBA (at Hachita Cemetery and Hachita Baptist Church) to 83 dBA (at Victorio Cemetery). These NSRs could experience exceedances of the guidelines contained within the Noise Control Act of 1972, the most stringent regulatory criteria identified in chapter 3. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 1.2 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise from this alternative would be expected to be the same as that from subroute 1.1. Maintenance activities associated with substations and transmission lines would be similar in noise level

to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1. These local alternatives include DN1, A, B, C, and D.

Construction

There are few NSRs, including residences, near any of the local alternatives. Alternative D includes the most NSRs (12) as it passes by Lordsburg, New Mexico. All other alternatives have been identified as having two or less NSRs. Noise levels at all these NSRs could be expected to range from 52 dBA to 79 dBA. These NSRs could experience exceedances of the guidelines contained within the Noise Control Act of 1972, the most stringent regulatory criteria identified in chapter 3. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from local alternatives could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from local alternatives for this route group would be minor and long-term for operation and maintenance activities.

Route Group 2 – Hidalgo Substation to Apache Substation

A summary of the noise resource inventory data for route group 2 is presented in table 4.3-3. Some segments have multiple land use descriptions that describe the segment's land use in greater detail. The expected range of baseline noise levels, estimated number of residential NSRs, the estimated closest distance to the NSR, and the estimated construction noise level at the nearest NSR are evaluated for each segment and land use type. Where there are no NSRs identified, the construction noise levels were not evaluated for that particular segment or land use.

Table 4.3-3. Route Group 2 Noise Resource Inventory Data

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 2.1, Proponent Preferred						
P4b	13.9	Crosses highway (< 250 feet)	0	–	44–64	–
		Desert open space	2	3,600	8–45	52

Table 4.3-3. Route Group 2 Noise Resource Inventory Data (Continued)

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 2.1, Proponent Preferred, cont'd.						
P4c	1.9	Desert open space	0	–	8–45	–
P5a	9.6	Desert open space	0	–	8–45	–
P5b	21.1	Desert open space	0	–	8–45	–
		Near highway (1,000 feet)	0	–	38–58	–
P6a	0.9	Near highway (1,000 feet)	0	–	38–58	–
P6b	22.5	Near highway (500 feet)	0	–	41–61	–
		Agricultural areas	1	<50	30–52	83
		Desert open space	0	–	8–45	–
P6c	2.8	Near highway (5,000 feet)	0	–	31–51	–
		Desert open space	0	–	8–45	–
P7	22.3	Near highway (5,000 feet)	0	–	31–51	–
		Desert open space	1	1,900	8–45	58
		Agricultural areas	1	800	30–52	63
P8	0.5	Agricultural areas	0	–	30–52	–
Subroute 2.2, Proponent Alternative						
E	31.8	Near highway (5,000 feet)	0	–	31–51	–
		Desert open space	0	–	8–45	–
		Agricultural areas	1	<50	30–52	83
		Near San Simon, AZ	>100	2,400	33–66	58
		Follows highway (2,500 feet)	0	–	34–54	–
F	25.3	Near highway (2,500 feet)	0	–	34–54	–
		Follows highway (5,000 feet)	0	–	31–51	–
		Agricultural areas	1	<50	30–52	83
		Near Bowie, AZ	>100	2,400	33–66	58
		Desert open space	1	600	8–45	69
		Follows highway (500 feet)	0	–	41–61	–

Table 4.3-3. Route Group 2 Noise Resource Inventory Data (Continued)

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 2.2, Proponent Alternative, cont'd.						
Ga	25.7	Near highway (500 feet)	o	–	41–61	–
		Desert open space	1	1,900	8–45	58
		Agricultural areas	8	<50	30–52	83
		Follows highway (250 feet)	0	–	44–64	–
		Crosses highway (< 250 feet)	0	–	44–64	–
Gb	1.1	Follows highway (2,500 feet)	0	–	34–54	–
Gc	7.4	Follows highway (2,500 feet)	0	–	34–54	–
		Crosses highway (< 250 feet)	0	–	44–64	–
		Near Cochise, AZ	25	300	33–66	74
		Agricultural areas	2	<50	33–66	83
I	2.3	Crosses highway (< 250 feet)	0	–	44–64	–
		Near highway (5,000 feet)	0	–	31–51	–
		Desert open space	0	–	8–45	–
J	2.3	Follows highway (5,000 feet)	2	1,000	31–51	63
		Follows highway (2,500 feet)	0	–	34–54	–
		Crosses highway (< 250 feet)	0	–	44–64	–
Route Group 2 Local Alternatives and Route Variations						
LD1	35.4	Desert open space	0	–	8–45	–
		Follows highway (250 feet)	0	–	44–64	–
		Crosses highway (< 250 feet)	5	<50	44–64	83
		Follows highway (1,000 feet)	80	800	38–58	63
		Follows highway (500 feet)	0	–	41–61	–
LD2	8.9	Desert open space	0	–	8–45	–

Table 4.3-3. Route Group 2 Noise Resource Inventory Data (Continued)

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Route Group 2 Local Alternatives and Route Variations, cont'd.						
LD3a	26.6	Crosses highway (< 250 feet)	0	–	44–64	–
		Desert open space	1	50	8–45	83
LD3b	2.2	Desert open space	0	–	8–45	–
LD4	53.7	Desert open space	0	–	8–45	–
		Crosses highway (< 250 feet)	0	–	44–64	–
		Agricultural areas	8	<50	30–52	83
LD4–Option 4	6.4	Desert open space	0	–	8–45	–
		Crosses highway (< 250 feet)	0	–	44–64	–
		Follows highway (2,500 feet)	0	–	34–54	–
		Follows highway (1,000 feet)	0	–	38–58	–
LD4–Option 5	12.3	Follows highway (2,500 feet)	0	–	34–54	–
		Desert open space	0	–	8–45	–
		Crosses highway (< 250 feet)	0	–	44–64	–
WC1	14.8	Near Willcox, AZ	>100	<50	40–67	83
		Follows highway (5,000 feet)	2	1,000	31–51	63
		Follows highway (1,000 feet)	0	–	38–58	–
		Follows highway (250 feet)	0	–	44–64	–
P7a	31.2	Desert open space	0	–	8–45	–
		Agricultural areas	15	<50	30–52	83
P7b	10.5	Agricultural areas	10	200	30–52	74
P7c	1.0	Agricultural areas	0	–	30–52	–
P7d	2.0	Agricultural areas	1	150	30–52	79

Current and predicted noise from substations associated with route group 2 is presented in table 4.3-4.

Table 4.3-4. Route Group 2 Current and Predicted Noise from Substations

Substation	Distance to Closest NSR (in feet)	Approximate Substation Noise Based on Existing Conditions at NSR	Predicted Approximate Substation Noise Based on Future Conditions at NSR	Change in Noise at NSR
Apache	2,736	40 dBA	37–47 dBA	0–7 dBA
Hidalgo	15,120	< 40 dBA	< 40 dBA	0

The closest residence to a substation in the New Build Section is located approximately 2,736 feet from the fence line of the Apache Substation. This residence is also located approximately 4,500 feet from an existing coal-fired power plant and approximately 1,800 feet from railroad tracks used to deliver coal to the power plant. For purposes of this analysis, it is assumed that the existing sound level at the residence closest to the proposed Apache Substation is 40 dBA. At this residence the noise level associated with the proposed Project and alternatives' two 650-megavolt ampere (MVA) transformers would be anticipated to be between 37 and 47 dBA. A range is provided, because the precise sound rating of the transformers would be determined during detailed design, as would their location and the location of any noise barriers.

There are six non-residential NSRs identified for this route group (five schools and one cemetery). Non-residential NSRs in this route group are listed in appendix C.

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

There are five identified potential NSRs for this subroute. Most are located greater than 1,000 feet from the edge of the ROW, but one residence is within 50 feet of the ROW. That residence could experience temporary construction noise levels as high as 83 dBA. The other residential NSRs could experience temporary construction noise levels ranging from 52 to 63 dBA. Some NSRs could therefore experience noise levels in excess of the guidelines published in the Noise Control Act of 1972, the most stringent regulatory criteria identified in chapter 3. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 2.1 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise for the Hidalgo Substation would be expected to remain the same, with no change in noise levels at the distance to the closest NSR. The NSR nearest the Apache Substation could experience an increase in noise levels by 0 to 7 dBA. The nearest NSRs would all experience noise levels less than the guidelines in the Noise Control Act of 1972. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

There are in excess of 100 identified potential NSRs in this subroute. All identified closest NSRs to the ROW could potentially have estimated construction noise levels over the recommended guidelines in the Noise Control Act of 1972. Non-residential NSRs associated with this Subroute would experience noise levels between 58 and 83 dBA, with four of the six non-residential NSRs below the guidelines of the Noise Control Act of 1972, the most stringent regulatory criteria identified in chapter 3. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 2.2 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise from this alternative would be expected to be the same as that from subroute 2.1. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives and four route variations available for route group 2. The local alternatives include LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. Route variations include P7a, P7b, P7c, and P7d.

Construction

Local alternative WC1 contains the most potential NSRs (over 1,000), as it passes through the city of Willcox, Arizona. The nearest NSRs would experience construction noise levels as high as 83 dBA. The second most number of estimated NSRs (85) is found in local alternative LD1, where sound levels would range from 64 to 83 dBA at the nearest NSR. Some local alternatives are desert open space with no identified potential NSRs (for local alternatives LD2, LD3b, LD4-Option 4, and LD4-Option 5). The other local alternatives (LD3a and LD4) and route variations (P7a, P7b, P7c, and P7d) have 15 or fewer NSRs each, and those nearest potential NSRs could experience construction noise levels between 74 and 83 dBA. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from local alternatives or route variations could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration.

Therefore, impacts to noise from local alternatives or route variations for this route group would be minor and long-term for operation and maintenance activities.

Route Group 3 – Apache Substation to Pantano Substation

A summary of the noise resource inventory data for route group 3 is presented in table 4.3-5. Some segments have multiple land use descriptions that describe the segment's land use in greater detail. The expected range of baseline noise levels, estimated number of residential NSRs, the estimated closest distance to the NSR, and the estimated construction noise level at the nearest NSR are evaluated for each segment and land use type. Where there are no NSRs identified, the construction noise levels were not evaluated for that particular segment or land use.

Table 4.3-5. Route Group 3 Noise Resource Inventory Data

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 3.1, Proponent Preferred						
U1a	16.1	Agricultural areas	8	<50	30–52	83
		Desert open space	0	–	8–45	–
		Near highway (250 feet)	0	–	44–64	–
U1b	2.9	Crosses highway (< 250 feet)	0	–	44–64	–
		Near highway (5,000 feet)	0	–	31–51	–
U2	15.8	Follows highway (5,000 feet)	0	–	31–51	–
		City of Benson, AZ	>100	<50	33–66	83
		Follows highway (2,500 feet)	5	<50	34–54	83
		Mescal, AZ	>100	<50	33–66	83
		Crosses highway	50	200	44–64	74
U3a	35.6	Follows highway (5,000 feet)	75	<50	31–51	83
		Desert open space	0	–	8–45	–
		Vail, AZ	>100	<50	33–66	83
		City of Tucson (near airport)	>100	<50	48–92	83
Route Group 3 Local Alternative						
H	19.3	Desert open space	0	–	8–45	–
		Agricultural areas	20	400	30–52	69
		Follows highway (250 feet)	0	–	44–64	–
		Crosses highway (< 250 feet)	0	–	44–64	–

Current and predicted noise from substations associated with route group 3 is presented in table 4.3-6. The Apache Substation NSR is discussed in route group 2.

Table 4.3-6. Route Group 3 Current and Predicted Noise from Substations

Substation	Distance to Closest NSR (feet)	Approximate Substation Noise Based on Existing Conditions at NSR	Predicted Approximate Substation Noise Based on Future Conditions at NSR	Change in Noise at NSR
Apache	2,736	40 dBA	37–47 dBA	0–7 dBA
Pantano	13,247	< 40 dBA	< 40 dBA	0
Adams Tap	11,977	< 40 dBA	< 40 dBA	0

There are 40 non-residential NSRs identified for this route group, which includes churches, schools, museums, libraries, and parks. Non-residential NSRs in this route group are listed in appendix C.

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

Subroute 3.1 reaches the southern fringe of the city of Tucson, and has many potential NSRs (greater than 100). Segment U1a has eight potential NSRs, around agricultural areas that could experience construction noise as high as 83 dBA. Segment U1b is completely vacant of NSRs. Segment U2 passes by the communities of Benson and Mescal, Arizona, and has many potential NSRs (greater than 100) within the Analysis Area. For the communities of Benson and Mescal and other land-use areas for segment U2, estimated construction noise levels would range between 74 and 83 dBA. As segment U3a reaches the City of Tucson, the number of potential NSRs increase. The NSRs located closest to the ROW would experience construction noise levels as high as 83 dBA. Most of the NSRs for this segment are also near the Tucson International Airport, and the baseline values for that area can range from 48-92 dBA. Approximately 40 non-residential NSRs are located within the area of analysis of this subroute.
The nearest non-residential NSR is located approximately 600 feet from the proposed Project ROW (both the Skyline Baptist Church located in Benson, Arizona, and the Desert Vista Library in Tucson, Arizona). These non-residential NSRs could be expected to experience construction noise levels as high as 69 dBA. Other non-residential NSRs could be expected to experience noise levels as high as 69 dBA. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 3.1 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise for the Pantano and Adams Tap substations would be expected to remain the same, with no change in noise levels at the distance to the closest NSR. The NSR nearest the Apache Substation would experience an increase in noise levels by 0 to 7 dBA. The nearest NSRs would experience noise levels less than the guidelines in the Noise Control Act of 1972. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

LOCAL ALTERNATIVES

There is one local alternative for route group 3: local alternative H.

Construction

Local alternative H has 20 identified potential NSRs. The nearest NSRs would experience construction noise levels as high as 69 dBA. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from local alternatives could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from the local alternative for this route group would be minor and long-term for operation and maintenance activities.

Route Group 4 – Pantano Substation to Saguaro Substation

A summary of the noise resource inventory data for route group 4 is presented in table 4.3-7. Some segments have multiple land use descriptions that describe the segment's land use in greater detail. The expected range of baseline noise levels, estimated number of residential NSRs, the estimated closest distance to the NSR, and the estimated construction noise level at the nearest NSR are evaluated for each segment and land use type. Where there are no NSRs identified, the construction noise levels were not evaluated for that particular segment or land use.

Table 4.3-7. Route Group 4 Noise Resource Inventory Data

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 4.1, Proponent Preferred						
U3b	0.5	City of Tucson (near airport)	>100	<50	48–92	83
U3c	1	City of Tucson (6 miles from airport)	>100	<50	44–69	83
U3d	3.4	City of Tucson (6 miles from airport)	>100	<50	44–69	83
U3e	0.9	City of Tucson (6 miles from airport)	>100	<50	44–69	83
U3f	0.7	City of Tucson (6 miles from airport)	>100	200	44–69	74
U3g	0.9	City of Tucson (6 miles from airport)	>100	<50	44–69	83
U3h	1.1	City of Tucson (6 miles from airport)	>100	<50	44–69	83

Table 4.3-7. Route Group 4 Noise Resource Inventory Data (Continued)

	Total Miles	Description	Estimated Number of NSRs	Estimated Closest Distance to NSR (feet)	Range of Baseline Noise Levels (dBA)	Estimated Construction Noise Levels at Nearest NSR (dBA)
Subroute 4.1, Proponent Preferred, cont'd.						
U3i	18.2	City of Tucson (6 miles from airport)	>100	<50	44–69	83
		City of Tucson (outskirts)	>100	<50	40–67	83
		Agricultural areas	0	–	30–52	–
U3j	0.9	Agricultural areas	0	–	30–52	–
U3k	16.7	Agricultural areas	10	<50	30–52	83
		Near Silverbell West	>100	100	30-52	79
		Near highway (250 feet)	0	–	44–64	–
U3l	1.6	Crosses highway (< 250 feet)	0	–	44–64	–
		Near highway (2,500 feet)	0	–	34–54	–
U3m	0.6	Crosses highway (< 250 feet)	0	–	44–64	–
U4	1.9	Desert open space	0	–	8–45	–
Route Group 4 Local Alternatives & Route Variations						
MA1	1.1	Agricultural areas	0	–	30–52	–
TH1a	1.4	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH1b	1.6	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH1c	0.3	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH1–Option	1.0	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH3–Option A	0.8	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH3–Option B	0.8	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH3–Option C	1.8	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH3a	2.7	City of Tucson (6 miles from airport)	>100	<50	44–69	83
TH3b	4.5	City of Tucson (6 miles from airport)	>100	<50	44–69	83
U3aPC	6.2	Near Summit, AZ	200	<50	40–67	83
		City of Tucson (6 miles from airport)	0	–	44–69	–

Current and predicted noise from substations associated with route group 4 is presented in table 4.3-8.

Table 4.3-8. Route Group 4 Current and Predicted Noise from Substations

Substation	Distance to Closest NSR (in feet)	Approximate Substation Noise Based on Existing Conditions at NSR	Predicted Approximate Substation Noise Based on Future Conditions at NSR	Change in Noise at NSR
Nogales	5,711	< 40 dBA	< 40 dBA	0
Vail	5,534	< 40 dBA	< 40 dBA	0
Rattlesnake	10,687	< 40 dBA	< 40 dBA	0
Tucson	934	41 dBA	43–49 dBA	2–8 dBA
Marana	512	<40 dBA	43–53 dBA	3–13 dBA
Saguaro/Tortolita	11,484	< 40 dBA	< 40 dBA	0
DeMoss Petrie	1,476	41 dBA	43–49 dBA	2–8 dBA

Note that the Del Bac and DeMoss Petrie substations are not currently anticipated to have a transformer, the primary source of noise at the substations. Based on a standard existing 100-MVA transformer at the Tucson Substation, the existing sound level at the closest NSR is estimated to be 41 dBA. These residences are also located approximately 1,900 feet from the I-10 freeway, which represents another existing source of noise. The addition of the proposed Project and alternatives' 287-MVA transformer is anticipated to result in a sound pressure level of between 43 and 49 dBA. A range is provided, because the precise number, size, and sound rating of the transformers would be determined during detailed design, as would their location and the location of any noise barriers. The nearby DeMoss Petrie Substation is located farther away (approximately 1,500 feet) from the residences and is also shielded by a long intervening brick building. The proposed Project and alternatives' modifications of the DeMoss Petrie Substation are therefore not anticipated to have an additive effect on the sound level at the NSRs.

No existing transformers were identified at the Marana Substation; therefore, the existing levels would be expected to be consistent with rural residential areas and may at times be less than 40 dBA. The proposed Project and alternatives' 287-MVA transformer at Marana Substation is anticipated to be between 43 and 53 dBA at the closest NSR. A range is provided, because the precise sound rating of the transformers would be determined during detailed design, as would their location and the location of any noise barriers.

Pinal County has an ordinance that addresses excessive noise, and specifically lists land use categories and times where certain limiting sound levels are allowed (see table 8-9 in chapter 3 of the ordinance). The EPA's Noise Control Act of 1972 is more stringent than these values and is used instead of the local regulations.

There are seventy-five non-residential NSRs identified for this route group (which includes parks, schools, churches, hospitals, libraries, and cemeteries). Non-residential NSRs in this route group are listed in appendix C.

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

The Upgrade Section would not pass any NSRs until it reaches the city of Tucson (Segment U3b through U3m) and its surrounding communities. The proposed Project and alternatives would traverse a partially urban area with scattered areas of residential development along the 2-mile study corridor. However, no hospitals, cemeteries, schools, or churches are within the 2-mile study corridor of the Upgrade Section.

Likewise, no wilderness areas or other public recreation spaces that require low noise limits are in this section either.

There are 1,350 identified potential NSRs for this subroute. Most NSRs may experience construction noise levels of between 74 and 83 dBA. There is one NSR on segment U3f that could experience construction noise levels of 69 dBA. Some segments (U3j, U3l, U3m, and U4) have no identified potential NSRs. Approximately 60 non-residential NSRs are located within the area of analysis of this subroute. Multiple non-residential NSRs are located on the proposed Project ROW (Joaquin Murrieta Northwest Park, Christopher Columbus Park, and Rattlesnake Ridge Elementary, all located in Tucson, Arizona). These non-residential NSRs could be expected to experience construction noise levels as high as 83 dBA. However, in the area of Rattlesnake Ridge Elementary, noise generation from construction activities could be mitigated by limiting construction to summer months when school is not in session. Other non-residential NSRs could be expected to experience noise levels as high as 83 dBA. Therefore, using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from subroute 4.1 could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be reduced using the proposed PCEMs to below thresholds and/or baseline conditions.

Operation and Maintenance

Substation noise for the Nogales, Vail, Rattlesnake, and Saguaro/Tortolita substations would be expected to remain the same, with no change in noise levels at the distance to the closest NSR. The nearest NSR to the Tucson, Marana, and DeMoss Petrie substations would all experience higher noise levels (between 2 and 13 dBA). The nearest NSRs would experience noise levels less than the guidelines in the Noise Control Act of 1972. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from this route group would be minor and long-term for operation and maintenance activities.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are 10 local alternatives (MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C) and one route variation (U3aPC) in route group 4.

Construction

There are more than 100 identified potential NSRs for each local alternative except for MA1, which has no identified potential NSRs. There are approximately 200 NSRs near route variation U3aPC. For all local alternatives and the route variation, the nearest NSRs could experience construction noise levels as high as 83 dBA. The closest non-residential NSRs were identified along alternative TH1a (Tolson Elementary School), TH1b (Greasewood Park), and TH3-Option C (Santa Cruz River Park). Each of these non-residential NSRs was identified on the ROW; therefore, proposed Project construction noise levels could be expected as high as 83 dBA. Other non-residential NSRs identified for the other alternatives could experience noise levels ranging from 58 to 83 dBA.

Using the significance criteria outlined in the beginning of this chapter in table 4.1-1, impacts to noise from local alternatives could be major (i.e., impacts would occur, and could represent a high degree of change over existing baseline conditions); however, construction noise would be short-term, temporary, and intermittent in nature. Therefore, construction noise would represent more of a nuisance and would be

reduced using the proposed design features and mitigation measures (PCEMs) to below thresholds and/or baseline conditions.

Operation and Maintenance

Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from local alternatives and route variations for this route group would be minor and long-term for operation and maintenance activities.

Agency Preferred Alternative

The Agency Preferred Alternative for route group 1 of the New Build Section would cross primarily desert open space; therefore, there would be few NSRs affected by noise from this alternative. The Agency Preferred Alternative would pass in and around the city of Deming, New Mexico, where several clusters of both residential and non-residential NSRs are located. The nearest identified sensitive receptors to the route group 1 preferred alternative would be located near the interstate (I-10) and in and around the city of Deming at a distance of approximately 100 feet from the proposed Project ROW. The estimated unmitigated noise levels could be as high as 79 dBA during Project construction; however, construction activities would be temporary and intermittent in nature, while operation and maintenance activities would be long-term but would involve less noise point sources and also be intermittent in nature. Additionally, standard construction mitigation measures, built-in design features, and incorporated mitigation measures (PCEMs) would further reduce noise levels below the predicted maximum. While some of the alternatives to the Agency Preferred Alternative would avoid the city of Deming, these alternatives would pick up additional NSRs (such as in and around Columbus, New Mexico) and, therefore, the amount and proximity of NSRs for these alternatives is not substantively different from those of the Agency Preferred Alternative.

The Agency Preferred Alternatives segments LD3a, LD3b, P5b, P6a, P6b, P6c, P7, and P8 for route group 2 of the New Build Section would cross primarily desert open space and agricultural areas with few NSRs. The choice of these alternatives avoids the towns and cities of the Proponent Alternative and another local alternative (WC1). While there were few identified NSRs near the Agency Preferred Alternative for route group 2, the nearest NSRs would be located close to the Project ROW (potentially within 50 feet of construction activities) and could experience noise levels as high as 83 dBA. As discussed, construction would be temporary and intermittent in nature, and proposed Project construction noise would be further ameliorated by the use of standard construction mitigation measures, built-in design features, and incorporated PCEMs. Project operation and maintenance activities would be long-term, but involve less noise point sources and also be intermittent in nature.

Segments U1a, U1b, U2, and U3a in route group 3 of the Agency Preferred Alternative have a large number of potential NSRs near the proposed Project in and near the towns and cities of Benson, Mescal, Vail, and Tucson in Arizona. Outside of these developed areas, the Agency Preferred Alternative would cross primarily desert open spaces and agricultural lands, with few NSRs. The nearest NSRs identified would be within approximately 100 feet of the proposed Project ROW and therefore could experience construction noise as high as 83 dBA. As discussed, Project construction, operation, and maintenance noise would be short-term and/or intermittent in nature and would be further mitigated through construction mitigation measures, built-in design features, and incorporated PCEMs.

As all of the route group 4 alternatives pass through a large urban area (the city of Tucson and outskirts), no substantive differences exist between the Agency Preferred Alternative and the other alternatives in

regards to noise impacts to sensitive receptors. The nearest identified receptors would be within 50 feet and would experience noise levels as high as 83 dBA under the Agency Preferred Alternative. Project construction, operation, and maintenance noise would be short-term and/or intermittent in nature and would be further mitigated through construction mitigation measures, built-in design features, and incorporated PCEMs.

Therefore, overall impacts to noise from the Agency Preferred Alternative for construction activities could be major; however, construction noise would be short-term, temporary, and intermittent in nature. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Therefore, impacts to noise from the Agency Preferred Alternative would be minor and long-term for operation and maintenance activities.

Residual Impacts

The proposed Project would result in temporary increases to ambient noise levels from the construction of the transmission lines, substations, and ancillary facilities. Some of these temporary increases would exceed local or Federal noise regulations or guidelines. The built-in design features, incorporated BMPs, and mitigation measures would reduce, but not altogether eliminate, proposed Project impacts to noise. Limited increases to ambient noise would result from proposed Project operation over the lifetime of the Project. The proposed Project would not be expected to increase noise levels to levels that could impose restrictions on land currently planned for residential development or affect any places of traditional use that are NRHP listed or eligible, or identified as important to tribes.

Unavoidable Adverse Impacts

The proposed Project could result in unavoidable increases in ambient noise levels over the life of the Project. Construction noise represents the largest increase in noise, but that noise is temporary. Operation and maintenance noise would persist through the life of the proposed Project, but is expected to be negligible. Additionally, operation and maintenance noise from the proposed Project can be expected to decrease for the Upgrade Section because there is expected to be less maintenance activity with the installation of a new transmission line; however, this change can be expected to be negligible. Substation noise at the nearest NSR would stay the same or increase slightly. In general, the DOE and BLM state in a PEIS titled “Designation of Energy Corridors on Federal Land in the 11 Western States” (DOE and BLM 2008) that the sound level at the edge of the ROW (200 feet from the transmission line) would be about 44 dBA and would fall to 35 dBA at 0.25 mile from the edge. As modeled for the proposed Project, corona noise can be expected to be as high as 52.4 dBA in foul weather and where the transmission lines are located near each other. However, in foul weather (e.g., rain and wind), any incremental corona noise increase may be masked by the meteorological conditions. Corona noise on the Upgrade Section of the proposed Project would be expected to decrease due to new equipment, the increased height from the ground, and configuration of the circuit.

Short-term Uses versus Long-term Productivity

The proposed Project would cause some short-term ambient noise level increase during the construction of the transmission lines, substations, and ancillary facilities. This increase in ambient noise would be reduced through the use of built-in design features, incorporated BMPs, and mitigation measures. Long-term impacts would be negligible because operation of the proposed Project would not create noise that would exceed any standard. Therefore, no effects on the maintenance and enhancement of long-term productivity related to noise would occur because of the implementation of the proposed Project.

Irreversible and Irretrievable Commitments of Resources

While there would be a limited amount of loss of lower ambient noise levels during proposed Project operation, there would not be any irreversible or irretrievable commitment of resources from the implementation of the proposed Project, as ambient soundscapes would be restored after proposed Project decommissioning.

4.4 GEOLOGY AND MINERAL RESOURCES

4.4.1 Introduction

This section describes the impacts to geological and mineral resources that could potentially occur during construction, operation, and maintenance of the proposed Project, and also addresses the impacts of geology on the proposed Project facilities. Impacts to geological and mineral resources are discussed in terms of whether the proposed Project and alternatives would result in significant effects on geological and mineral resources by analyzing the context and intensity of the change that would be introduced by the proposed Project, in accordance with CEQ regulations at 1508.27. This section also addresses the methodology for determining the impacts of geology on the proposed Project facilities. In order to facilitate the comparison of alternatives, potential environmental changes are described in terms of temporal scale, spatial extent, and significance.

4.4.2 Methodology and Assumptions

This section describes the area that was analyzed for determining the effects of the proposed Project on geological and mineral resources, how effects would be measured, the assumptions used when evaluating the effects, and what criteria must be met for an impact to be considered significant.

Analysis Area

For this analysis, a representative ROW has been developed which includes the corridor of the ROW, plus the footprints of substations and construction laydown areas located outside the ROW. The ROW for the New Build Section would be 200 feet wide, and the ROW for the Upgrade Section would be 100 to 150 feet wide. This representative ROW is sufficient for identifying resources that could be directly impacted by ground disturbance during construction and that would be encumbered by the transmission line ROW during operation and maintenance.

Analysis Assumptions

The following factors were assumed when evaluating the effects of the proposed Project on geological and mineral resources:

- A geotechnical engineering study would be completed prior to final design and construction of the proposed Project to identify site-specific geological conditions and potential geological hazards. The data collected from the study would be used to guide sound engineering practices, and foundation design would be consistent with geological conditions for each tower site.
- Existing fault lines, land subsidence areas, earth fissures, mining claims, oil/gas reserves, areas of mineral resources of economic value, and other pertinent geological and mineral-related features have been accurately mapped.

- Operation and maintenance of the proposed Project, as it relates to geological and mineral resources, would primarily be the presence of transmission towers and transmission lines and how they could preclude access to underground resources in the immediate vicinity.
- Transmission lines typically have little impact to mining operations. Span lengths are such that access to minerals can be accomplished between spans. Should open pit mining be planned, structures can be left on 'islands,' or the mining interests can have the transmission line locally re-routed (personal communication, Mark Wieringa, Western, 2013).

Additionally, the analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

The following indicators were considered when analyzing the effects on geology and mineral resources:

- Types of geological hazards and the potential of the proposed Project to aggravate existing hazards;
- Types of geological hazards and their potential for affecting the proposed Project;
- The potential for the proposed Project to negatively affect important geological resources, including important State-identified rock outcroppings and potential geothermal areas; and
- The potential for the proposed Project to negatively affect access to important mineral and petroleum resources.

While many of the potential impacts are difficult to quantify, "units of change" for the items above are based on the number of claims, leases, oil/gas wells, geological features, and locatable, leasable, and/or saleable mineral areas within the representative ROW; or the acreage of overlap between the representative ROW and certain resources. Measured impacts are followed by a binary determination regarding whether or not they are likely to be lost or occluded, and quantification of impacts when possible.

Significant Impacts

For the purposes of this analysis, a significant impact on geology and mineral resources could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- Areas of geological importance are lost or made inaccessible for future use;
- Important State-identified rock outcroppings are adversely affected;
- Known mineral resources of economic value are lost or made inaccessible;
- Proposed Project activity (construction, operation, or maintenance) would locate ROW over a mining claim located on or before July 23, 1955, or otherwise affect a valid existing mineral right;
- Proposed Project activity (construction, operation, or maintenance) would locate ROW over oil or gas well fields, reserves, or otherwise affect valid existing petroleum rights;
- Proposed Project would occur in an area of known geological hazard;
- Structures would fail or create hazards due to slope instability, the effects of earthquakes, or land subsidence; and

- Proposed Project would create geological hazards, particularly increases in the probability or magnitude of mass wasting events.

4.4.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the New Build Section would not be constructed. In the New Build Section, undisturbed areas and existing geology and mineral resources would remain undisturbed unless they are mined in unrelated actions. Access to underground resources would not be inhibited within the proposed Project ROW. Geological activity such as fault creep, earthquakes, landslides, and land subsidence and earth fissures would continue to occur.

Even under the no action alternative, Western still plans to upgrade the existing lines between Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).The Upgrade Section would remain in its current state as a disturbed ROW with transmission towers and transmission lines, until such time as Western upgrades the line.

Impacts Common to All Action Alternatives

Many of the potential impacts discussed in chapter 3 would universally apply to all action alternatives. Resources not present are discussed first, then potential impacts common to all alternatives are discussed below as they each relate to construction, operation, and maintenance of the proposed Project.

GEOLOGICAL FAULTS

As discussed in chapter 3, no active faults have been mapped in any alternatives in the representative ROW or broader analysis area.

VOLCANOES

As discussed in chapter 3, no potentially active volcanoes have been identified or are being monitored in the proposed Project vicinity.

AREAS OF UNIQUE GEOLOGICAL INTEREST

As discussed in chapter 3, no areas of unique geological interest, caves, rock outcroppings, or mineral collection areas of recreational or scientific importance have been identified within the representative ROW or broader analysis area.

OIL AND GAS WELLS AND COAL RESOURCES

As discussed in chapter 3, no wells in the broader analysis area are currently producing oil or gas, and there are no coal leases or known coal resources within the representative ROW or broader analysis area.

PRE-1955 MINING CLAIMS

As discussed in chapter 3, no known pre-1955 mining claims are present within the representative ROW or broader analysis area.

CONSTRUCTION

All action alternatives would involve drilling, blasting, excavation, etc., during construction. The potential impacts from construction include:

- areas of geological importance lost or made inaccessible for future use (direct);
- adversely affected important State-identified rock outcroppings (direct);
- known mineral resources of economic value or pre-1955 mining claims lost or made inaccessible (direct);
- affecting a valid existing mineral right by preclusion of access (direct);
- affecting oil or gas well fields, reserves, or otherwise affecting valid existing petroleum rights by preclusion of access (direct); and
- creation or exacerbation of geological hazards, particularly increases in the probability or magnitude of mass wasting events or hazards due to slope instability (indirect).

Land Subsidence

Most cases of land subsidence in the Southwest are caused by excessive groundwater pumping. This type of subsidence occurs very slowly over decades (AZGS 1993). Therefore, land subsidence would not have direct or indirect effects on the construction of any action alternative.

Earth Fissures

Existing earth fissures are discrete locations that are easily identified and that would be avoided during final Project design for tower placement. Although the exact location of a future fissure cannot be predicted, areas where fissures exist or are likely to form have been identified. These areas would be avoided where feasible, and appropriately engineered foundations would be installed to mitigate this potential hazard. For the purposes of actual construction activities, fissures are generally easy to fill, span, or drive around and would not pose challenges. Therefore, direct or indirect impacts from earth fissures would not be anticipated.

Earthquakes

As described in chapter 3, the seismic hazard is relatively low (“moderate to low” to “low”) for the region that encompasses all action alternatives. Because proposed Project activities would have no means of influencing seismicity, the frequency and magnitude of earthquakes would not be directly or indirectly impacted from construction of any action alternative.

Landslides

Areas with slopes greater than 25 percent were identified in chapter 3 as having the potential for landslides or mass wasting events. The proposed Project would be designed to avoid steep slopes where possible, and a preconstruction geotechnical study would identify areas that need engineered solutions to mitigate for the potential for mass wasting events. Therefore, the potential for landslides would not likely be changed by construction and direct or indirect effects to the potential for landslides would not be anticipated.

Karst and Cave Areas

The mapped karst and cave areas are places that "may have the potential" to contain underground fissures, tubes, and caves. If present, individual caves and voids would be identified during preconstruction geotechnical studies, and would be avoided if it is determined that there is a danger to humans, the environment, or proposed Project infrastructure. Because they would be avoided, no direct or indirect impacts would be anticipated from karst and cave areas during construction of any action alternative.

Mining Districts

Direct impacts to mining districts during construction would be immediate preclusion of access to underground resources within the ROW as the proposed Project is constructed. However, this impact would only have consequences in areas within active mining districts where active mines are located. It should be noted that mining districts are not mines; they are large areas within which mining occurs and within which specific mines are located. Because the final route would be sited such that impacts to active mining operations are avoided, construction would cause no direct impacts to operating mines and mining districts. Because construction would be limited to the ROW, construction-related indirect impacts would not be anticipated. Continued preclusion of access to these resources by virtue of the existence of the proposed Project is described below in the "Operation and Maintenance" section.

However, transmission lines typically have little impact to mining operations. Span lengths are such that access to minerals can be accomplished between spans. Should open pit mining be planned, structures can be left on 'islands,' or the mining interests can have the transmission line locally re-routed. Transmission line structures are routinely moved to accommodate surface mining (personal communication, Mark Wieringa, Western, 2013). While lines can and are routinely moved to accommodate development, the cost for moving lines is borne by those wishing to relocate them.

Geothermal Resources

No geothermal leases have ever been established on or near the representative ROW, and there has never been any commercial production anywhere in or near the representative ROW or broader analysis area. The moderate temperatures and limited geographic area likely preclude the potential for generating electricity, leaving only direct-use applications, like heating greenhouses. The potential for geothermal development in this area is "low to very low." No commercially viable geothermal resources are located on the Arizona portion of the representative ROW. For these reasons, no direct or indirect impacts to geothermal resources would be anticipated from construction of any action alternative.

OPERATION AND MAINTENANCE

Operation and maintenance of the proposed Project, as it relates to impacts to geological and mineral resources, would primarily consist of the presence of transmission towers, transmission lines, and maintenance roads and how they preclude access to underground resources in the immediate vicinity. Potential impacts from operation include:

- continued preclusion of access to mineral and petroleum resources (direct); and
- damage to the proposed Project from preexisting or exacerbated geological hazards such as mass wasting events, hazards due to slope instability, or the effects of earthquakes or land subsidence (direct).

Land Subsidence

Most cases of land subsidence in the Southwest are caused by excessive groundwater pumping. This type of subsidence occurs very slowly over decades and affects broad areas; as such, structures sink uniformly with the ground and are not damaged. Because the severity of subsidence increases from the edges to the center like a bowl, certain infrastructure like canals and sewers, which rely on slope, can be damaged or rendered inoperable (AZGS 1993). Transmission lines, however, are not slope-dependent and would not be affected in such a way. Therefore, no direct or indirect effects on the proposed Project would be anticipated from land subsidence.

Earth Fissures

Whereas isolated poles and towers have very narrow bases of support and may lean or fall in the case of a new fissure forming, poles that hold utility lines such as electric transmission lines may be prevented from falling or leaning by the support of adjacent poles and taut lines (AZGS 1993). Although the exact location of a future fissure cannot be predicted, areas where fissures exist or are likely to form have been identified. These areas would be avoided where feasible, and appropriately engineered foundations would be designed to mitigate for this potential hazard.

Earthquakes

As described in chapter 3, the seismic hazard is relatively low (“moderate to low” to “low”) for the region that encompasses all action alternatives. No direct or indirect impacts would be anticipated from earthquakes during operation and maintenance of any action alternative.

Landslides

Neither operation nor maintenance of the proposed Project would involve blasting, road-cutting, ground disturbance, or other activities that could exacerbate the potential for landslides and mass wasting. Therefore, operation and maintenance of the proposed Project would not be expected to have any direct or indirect effects on the potential for landslides.

Karst and Cave Areas

As discussed above, caves and voids would be identified during preconstruction geotechnical studies and would be avoided if it is determined that there is a danger to humans, the environment, or proposed Project infrastructure. Because they would be avoided, no direct or indirect impacts from karst and cave areas would be anticipated from operation and maintenance of any action alternative.

Mining Districts

During operation and maintenance of the proposed Project, underground resources would be physically precluded from access in the vicinity of the towers. Blasting would be restricted in the vicinity of the towers and anywhere within the ROW. The final route would be located such that impacts to active mining operations are avoided. Therefore, operation and maintenance of the proposed Project would not directly impact active mines or mining districts, but could have potential long-term indirect impacts because underground resources would be encumbered by the proposed transmission line ROW.

However, transmission lines typically have little impact to mining operations. Span lengths are such that access to minerals can be accomplished between spans. Should open pit mining be planned, structures can be left on ‘islands,’ or the mining interests can have the transmission line locally re-routed. Transmission

line structures are routinely moved to accommodate surface mining (personal communication, Mark Wieringa, Western, 2013).

Geothermal Resources

No geothermal leases have ever been established on or near the representative ROW, and there has never been any commercial production anywhere in or near the representative ROW or broader analysis area. The moderate temperatures and limited geographic area likely preclude the potential for generating electricity, leaving only direct-use applications, like heating greenhouses. The potential for geothermal development in this area is "low to very low." No commercially viable geothermal resources are located on the Arizona portion of the representative ROW. For these reasons, no direct or indirect impacts to geothermal resources would be anticipated during operation and maintenance of any action alternative.

SUMMARY OF IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Because the only potential impacts identified above are indirect impacts to mining districts during operation and maintenance, this topic will be discussed further below. Because the boundaries of mining districts are somewhat arbitrary and are not exact, the acreages and calculations described below are not intended to be interpreted as precise data. The other topics described above are not further discussed in this chapter. It should be kept in mind that as discussed above, transmission lines typically have little impact to mining operations.

Route Group 1 – Afton Substation to Hidalgo Substation

Several mining districts would be crossed by the various alternatives of route group 1, and table 4.4-1 below details the acres of overlap between the mining districts and the representative ROWs of the various alternatives. For each alternative, the types of impacts would be as described in the "Impacts Common to All Action Alternatives" section above, with only the amounts of impact (acres of overlap) varying between the alternatives.

Of the mining districts crossed by the alternatives in this route group, only the Aden district is known to be active (McLemore 1998; McLemore et al. 1996; McLemore et al. 2005). Table 4.4-1 describes the acres of each mining district crossed by segment within each alternative, and table 4.4-2 describes the acres of overlap by mining district within each alternative. Table 4.4-3 describes the commodities produced and present in each mining district.

Table 4.4-1. Route Group 1 Geology Resource Inventory Data by Segment

Segment	Total Miles	Mining Districts Crossed (acres)	Districts Crossed	Production Years (active or inactive)	Size of Mining District (acres)	Percentage of Mining District Affected
Subroute 1.1, Proponent Preferred						
P1	5.1	125	Aden	1950s to present (active)	514,300	0.02%
P2	102.0	590	Aden	1950s to present (active)	514,300	0.10%
P3	31.1	–	–	–	–	–
P4a	8.9	–	–	–	–	–

Table 4.4-1. Route Group 1 Geology Resource Inventory Data by Segment (Continued)

Segment	Total Miles	Mining Districts Crossed (acres)	Districts Crossed	Production Years (active or inactive)	Size of Mining District (acres)	Percentage of Mining District Affected
Subroute 1.2, Proponent Alternative						
S1	13.4	325	Aden	1950s to present (active)	514,300	0.06%
S2	11.1	205; 63	Aden; Potrillo Mountains	1950s to present (active); Unknown (inactive)	514,300; 16,822	0.040%; 0.37%
S3	12.9	121	Aden	1950s to present (active)	514,300	0.02%
S4	10.6	75	Camel Mountain–Eagle Nest	None (inactive)	13,967	0.54%
S5	29.7	–	–	–	–	–
S6	7.4	120	Carrizalillo Hills	Late 1800s, 1930–1956 (inactive)	41,438	0.29%
S7	41.5	4	Carrizalillo Hills	Late 1800s, 1930–1956 (inactive)	41,438	0.01%
S8	14.6	–	–	–	–	–
Route Group 1 Local Alternatives						
DN1	42.5	142	Fluorite Ridge	1909–1954 (inactive)	26,755	0.53%
A	17.5	265	Aden	1950s to present (active)	514,300	0.05%
B	12.2	54	Camel Mountain–Eagle Nest	None (inactive)	13,967	0.39%
C	9.0	108	Carrizalillo Hills	Late 1800s, 1930–1956 (inactive)	41,438	0.26%
D	22.8	58	Lordsburg	1870–1978 (inactive)	16,333	0.36%
Representative Staging Areas						
1	NA	17	Aden	1950s to present (active)	514,300	0.003%
S1	NA	20	Aden	1950s to present (active)	514,300	0.004%
S2	NA	20	Aden	1950s to present (active)	514,300	0.004%
S5	NA	20	Carrizalillo Hills	Late 1800s, 1930–1956 (inactive)	41,438	0.05%
Afton Substation Expansion	NA	20	Aden	1950s to present (active)	514,300	0.004%

Note: NA = not applicable (size of each staging area is approximately 20 acres, entirely within mining district).

Table 4.4-2. Route Group 1 Geology Resource Inventory Data by Mining District

Mining Districts Crossed	Production Years (active or inactive)	Acres of Overlap with ROW	Size of Mining District (acres)	Percentage of Mining District Affected
Subroute 1.1, Proponent Preferred				
Aden	1950s to present (active)	715	514,300	0.14%
Subroute 1.2, Proponent Alternative				
Aden	1950s to present (active)	651	514,300	0.13%
Potrillo Mountains	Unknown (inactive)	63	16,822	0.37%
Camel Mountain–Eagle Nest	None (inactive)	75	13,967	0.54%
Carrizalillo Hills	Late 1800s, 1930–1956 (inactive)	124	41,438	0.30%
Route Group 1 Local Alternatives				
Fluorite Ridge (DN1)	1909–1954 (inactive)	142	26,755	0.53%
Aden (A)	1950s to present (active)	265	514,300	0.05%
Camel Mountain–Eagle Nest (B)	None (inactive)	54	13,967	0.39%
Carrizalillo Hills (C)	Late 1800s, 1930–1956 (inactive)	108	41,438	0.26%
Lordsburg (D)	1870–1978 (inactive)	58	16,333	0.36%

Sources: McLemore (1998); McLemore et al. (1996); McLemore et al. (2005).

Table 4.4-3. Commodities Produced and Present in Mining Districts

Mining District	Commodities Produced (Present)
Aden	Scoria, basalt
Potrillo Mountains	Copper, gold, silver, lead (barium, fluorine)
Camel Mountain–Eagles Nest	Gold, silver, lead, zinc, fluorite, manganese
Carrizalillo Hills	Copper, lead, silver, gold, uranium, agate, geodes (manganese, tungsten, zinc, molybdenum, perlite, fluorine)
Fluorite Ridge	Fluorine, manganese, agate (barium, travertine)
Lordsburg Mesa	Uranium
Lordsburg	Copper, gold, silver, gravel, lead, zinc, perlite, fluorite

Source: McLemore et al. (2005).

SUBROUTE 1.1 – PROPONENT PREFERRED

This alternative would only cross through one mining district, the Aden district. This is an active mining district. Potential future mining on a total of 715 acres of the district would be encumbered by the proposed transmission line ROW—a long-term indirect impact. Although this represents 20 percent of the total ROW for this alternative, it represents only 0.14 percent of the Aden district. No active mines would be crossed.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

This alternative would cross through 913 acres of mining districts, 651 acres of which are within the active Aden district. The remainder would be within inactive districts. Potential future mining on a total of 913 acres would be encumbered by the proposed transmission line ROW—a long-term indirect impact. Although this represents 31 percent of the total ROW for this alternative, it represents only 0.16 percent of the 586,527 combined acres of the districts (0.13 percent of the Aden district, 0.37 percent of the Potrillo Mountain district, 0.54 percent of the Camel Mountain–Eagle Nest district, and 0.30 percent of the Carrizalillo Hills district). No active mines would be crossed.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1. These local alternatives include DN1, A, B, C, and D. Impacts to mining districts crossed by these alternatives would be long-term indirect impacts from preclusion from access for future mining.

Local alternative DN1 would impact 0.53 percent of the Fluorite Ridge mining district. Local alternative A would impact 0.05 percent of the Aden mining district; B would impact 0.39 percent of the Camel Mountain–Eagle Nest mining district, C would impact 0.26 percent of the Carrizalillo Hills mining district, and D would impact 0.36 percent of the Lordsburg Mesa mining district. The Aden district is the only active mining district among those impacted by the local alternatives. No active mines would be crossed.

REPRESENTATIVE STAGING AREAS

Representative staging areas 1, S1, and S2 would each overlap 20 acres (0.004 percent) or less of the active Aden mining district. Staging area S5 would overlap 20 acres (0.05 percent) of the Carrizalillo Hills district. No active mines would be located within the proposed footprint of any staging areas.

Route Group 2 – Hidalgo Substation to Apache Substation

Several mining districts are crossed by the various alternatives of route group 2. For each alternative, the types of impacts would be as described in the “Impacts Common to All Action Alternatives” section above, with only the amount of impact (acres of overlap) varying between the alternatives. Of the districts crossed by the alternatives in this route group, only the Bowie mining district is known to be active (McLemore 1998; McLemore et al. 1996; McLemore et al. 2005). Table 4.4-4 describes the acres of each mining district that would be crossed by segment within each alternative and the acres of overlap by mining district within each alternative. Table 4.4-5 describes the commodities produced and present in each mining district in route group 2.

Table 4.4-4. Route Group 2 Geology Resource Inventory Data by Segment

Segment	Total Miles	Mining Districts Crossed (acres)	Districts Crossed	Production Years (active or inactive)	Size of Mining District (acres)	Percentage of Mining District Affected
Subroute 2.1, Proponent Preferred						
P4b	13.9	35	Lordsburg Mesa	None (inactive)	34,579	0.10%
P4c	1.9	–	–	–	–	–
P5a	9.6	–	–	–	–	–

Table 4.4-4. Route Group 2 Geology Resource Inventory Data by Segment (Continued)

Segment	Total Miles	Mining Districts Crossed (acres)	Districts Crossed	Production Years (active or inactive)	Size of Mining District (acres)	Percentage of Mining District Affected
Subroute 2.1, Proponent Preferred, cont'd.						
P5b	21.1	77	Kimball	1875–1953 (inactive)	11,078	0.70%
P6a	0.9	–	–	–	–	–
P6b	22.5	–	–	–	–	–
P6c	2.8	–	–	–	–	–
P7	22.3	–	–	–	–	–
P8	0.5	–	–	–	–	–
Subroute 2.2, Proponent Alternative						
E	31.8	74	Kimball	1875–1953 (inactive)	11,078	0.67%
F	25.3	–	–	–	–	–
Ga	25.7	–	–	–	–	–
Gb	1.1	–	–	–	–	–
Gc	7.4	–	–	–	–	–
I	2.3	–	–	–	–	–
J	2.3	–	–	–	–	–
Route Group 2 Local Alternatives and Route Variations						
LD1	35.4	13	Kimball	1875–1953 (inactive)	11,078	0.12%
LD2	8.9	–	–	–	–	–
LD3a	26.6	125	Lordsburg Mesa	None (inactive)	34,579	0.36%
LD3b	2.2	–	–	–	–	–
LD4	53.7	123	Bowie	1960s to present	4,000 (estimated)	3.08%
LD4-Option 4	6.4	–	–	–	–	–
LD4-Option 5	12.3	–	–	–	–	–
WC1	14.8	–	–	–	–	–
P7a	31.2	–	–	–	–	–
P7b	10.5	–	–	–	–	–
P7c	1.0	–	–	–	–	–
P7d	2.0	–	–	–	–	–

Table 4.4-4. Route Group 2 Geology Resource Inventory Data by Segment (Continued)

Segment	Total Miles	Mining Districts Crossed (acres)	Districts Crossed	Production Years (active or inactive)	Size of Mining District (acres)	Percentage of Mining District Affected
Representative Staging Areas						
LD3	NA	18	Lordsburg Mesa	None (inactive)	34,579	0.05%
9	–	–	–	–	–	–
9a	–	–	–	–	–	–
E	–	–	–	–	–	–
Ga	–	–	–	–	–	–
Gb	–	–	–	–	–	–
LD1b	–	–	–	–	–	–
LD3b	–	–	–	–	–	–
P5	–	–	–	–	–	–
P6	–	–	–	–	–	–
Southline Apache Substation Expansion	–	–	–	–	–	–
SWTC Apache Substation Expansion	–	–	–	–	–	–
WC1	–	–	–	–	–	–

Note: NA = not applicable.

Table 4.4-5. Commodities Produced and Present in Mining Districts in Route Group 2

Mining District	Commodities Produced (Present)
Lordsburg Mesa	Uranium
Kimball	Copper, silver, gold, lead, zinc
Bowie	Lead, silver, copper, zeolites

Source: McLemore et al. (2005); Mining and Scientific Press (1917:746); Thrasher (2007).

SUBROUTE 2.1 – PROPONENT PREFERRED

This alternative would cross through 112 acres of mining districts, none of which are within active districts. Potential future mining on a total of 112 acres would be encumbered by the proposed transmission line ROW—a long-term indirect impact. Although this would represent 4.8 percent of the total ROW for this alternative, it would represent only 0.25 percent of the 45,657 combined acres of the districts crossed (0.10 percent of the Lordsburg Mesa district and 0.70 percent of the Kimball district). No active mines would be crossed.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

This alternative crosses through 74 acres of the Kimball mining district, an inactive district. Potential future mining on a total of 74 acres would be encumbered by the proposed transmission line ROW—a long-term indirect impact. Although this would represent 3.2 percent of the total ROW for this

alternative, it would represent only 0.67 percent of the 11,078 total acres of the district. No active mines would be crossed.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives and four route variations in route group 2, three (LD1, LD3a, and LD4) would cross through mining districts. Local alternative LD1 would cross through 13 acres (0.12 percent) of the inactive Kimball district, and local alternative LD3a would cross through 125 acres (0.36 percent) of the Lordsburg Mesa district. Local alternative LD4 would cross through approximately 123 acres (3.08 percent) of the Bowie Mining District. No active mines would be crossed.

REPRESENTATIVE STAGING AREAS

Representative staging area LD3 would cross through 18 acres (0.05 percent) of the inactive Lordsburg Mesa district. No other proposed staging areas would cross mining districts, and no active mines would be crossed. None of the proposed staging areas overlap with the Bowie or Kimball Mining Districts.

Route Group 3 – Apache Substation to Pantano Substation

Because the Upgrade Section would run primarily through broad alluvial basins, there are very few mineral resources in the vicinity of route group 3. No metal or nonmetallic mineral resources were specifically identified within the Upgrade Section. No known mines, active or inactive, would be crossed by the Upgrade Section. Therefore, the proposed Project would not have direct or indirect effects on mining in this route group.

Route Group 4 – Pantano Substation to Saguaro Substation

Because the Upgrade Section runs primarily through broad alluvial basins, there are very few mineral resources in the vicinity of route group 4. No metal or nonmetallic mineral resources were specifically identified within the Upgrade Section. No known mines, active or inactive, would be crossed by the Upgrade Section. Therefore, the proposed Project would not have direct or indirect effects on mining in this route group.

Agency Preferred Alternative

Because the Agency Preferred Alternative maximizes use of existing and proposed linear ROW by paralleling existing and proposed infrastructure and transmission lines, the impacts and acreage of mining districts crossed would be similar for all action alternatives, including the Agency Preferred Alternative. No known mines, active or inactive, would be crossed by the Agency Preferred Alternative. Impacts would be similar as described above under “Impacts Common to All Action Alternatives”. However, transmission lines typically have little impact to mining operations. Span lengths are such that access to minerals can be accomplished between spans. Should open pit mining be planned, structures can be left on ‘islands,’ or the mining interests can have the transmission line locally re-routed. Transmission line structures are routinely moved to accommodate surface mining (personal communication, Mark Wieringa, Western, 2013). While lines can and are routinely moved to accommodate development, the cost for moving lines is borne by those wishing to relocate them.

The Agency Preferred Alternative would cross approximately 917 acres (combined) of the active Aden Mining District (715 acres), the inactive Lordsburg Mesa Mining District (125 acres), and the inactive Kimball district (77 acres). This represents approximately 0.16 percent of the mining districts crossed.

Residual Impacts

It is anticipated that the mitigation described above would eliminate or reduce impacts to geology and mineral resources. However, as previously discussed, transmission lines typically have little impact to mining operations. Access to minerals can be accomplished between spans, or structures can be left on 'islands,' or the mining interests can have the transmission line locally re-routed. In this case, transmission lines would not produce obvious changes in the baseline condition of the resource; there would be no residual impacts. The area of this impact would vary with each alternative, subalternative, and combination of segments. If the area under the ROW was never intended to be mined even if the proposed Project did not exist, then there would be no residual impacts.

Unavoidable Adverse Impacts

Because transmission lines typically have little impact to mining operations, access to minerals can be accomplished between spans, and structures can be left on 'islands' or the mining interests can have the transmission line locally re-routed, there would be no unavoidable adverse impacts to geological and mineral resources.

Short-term Uses versus Long-term Productivity

Transmission lines may need to be locally re-routed to accommodate surface mining. However, this is only considered an adverse impact (1) in areas defined as mining districts, (2) only in specific locations within mining districts that are active or would have become active. Because only one of the several mining districts crossed by the proposed Project is active, because the proposed Project covers only a fraction of a percent of that mining district, and because that fraction of a percent is not currently being mined, the short-term loss of productivity would be minor if and when mining begins in those areas. There would be no long-term loss of productivity.

Irreversible and Irretrievable Commitments of Resources

Because underground resources would not be affected by the proposed Project and because the proposed Project could be decommissioned and removed, no proposed Project impacts to mineral or geological resources would be considered to be irreversible.

Because transmission lines typically have little impact to mining operations, no proposed Project impacts to mineral or geological resources would be considered to be irretrievable.

4.5 SOIL RESOURCES

4.5.1 Introduction

This section describes the impacts to soil resources in association with the construction, operation, and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to soil resources are discussed in terms of acreage impacted and percent of disturbance. The impacts described in this section are based on the resource data presented in Section 3.5, "Soil Resources," in chapter 3.

4.5.2 Methodology and Assumptions

Soils data used in this analysis were obtained from soil survey data from the NRCS Soil Survey Geographic (SSURGO) database, which contains more than 158 different soil data variables or attributes. This database provides geo-referenced data on the distribution of soil mapping units and corresponding data on soil properties and related attributes. A GIS data layer was developed, with soil mapping units and associated attributes overlain on the proposed analysis area. It should be noted that NRCS attribute data coverage did not encompass the entire analysis area for the proposed Project and alternatives, and the analyses presented here are based on existing data within the NRCS databases. No alternate sources of soils data outside the NRCS databases were identified.

The selection of the most appropriate soil attributes to consider in the soil resources analysis was coordinated with BLM staff (CH2M Hill 2013d). Soil data variables from this list for which data were available were downloaded for the mapping units within the proposed Project analysis area so that they could be summarized on an area (total acreage) basis. Of particular concern for soil resources were the potential hazards related to soil erosion by water and wind, potential losses to soil productivity, and loss of important farmlands.

The data were sorted by proposed Project segment and the total acreages were calculated corresponding to different classes. Where attributes were given as numerical values or indices, ranges of data were classified as “severe,” “moderate,” or “slight,” as described below.

Use of these data assumes mapped soil conditions are representative of actual conditions in the field. As with any mapped data, there is a certain amount of uncertainty related to the accuracy and scale of mapping; therefore, the actual soil conditions could vary substantially from those described at any particular location. The data used represent the best available information for evaluating soil resources. The inherent limitations of soil survey data are resolved with site-specific soil investigations within the actual proposed Project footprint that are part of the permitting and construction design process.

Soil Erosion

In order to determine impacts to soil resources from wind erosion the following variable was analyzed:

- Wind Erodibility Group (WEG).

The WEG index groups soils that have similar properties affecting their resistance to wind erosion. The total acreage for WEG included highly susceptible (1 and 2) and the moderately susceptible (3, 4, and 4L) classes.

Soil Productivity

Another key variable assessed when determining whether the proposed Project would have impacts to the soil resources is looking at the potential loss of soil productivity. In order to do this, the following variables were analyzed:

- T factor - “Sustainable” soil loss factor in tons
- Rangeland Productivity - Normal Year (RngProdNY); and
- Rangeland Productivity - Favorable Year (RngProdFY).

The T factor is a soil loss tolerance factor rate that is an estimate of the annual amount of soil loss from water and wind (expressed in tons) that can be sustained without long-term loss of soil productivity.

Therefore, the higher the T factor value the more resilient the soils are to both soil and water erosion. The classes included in this analysis are very severe (0 and 1 ton of soil loss), severe (2 and 3 tons of soil loss), and moderate (4 tons of soil loss).

The rangeland productivity attributes estimate the amount of natural vegetation that would be produced annually per acre (expressed in pounds (lb), dry weight). The total acreage for RngProdNY was divided into classes according to the following ranges: very highly productive (>2,000 lb/acre), highly productive (>1,000 to 2,000 lb/acre), and moderately productive (500 to 1,000 lb/acre) classes. The total acreage for RngProdFY was divided into the following classes: very highly productive (>4,000 lb/acre), highly productive (>2,000 to 4,000 lb/acre), and moderately productive (1,000 to 2,000 lb/acre). The moderate to very high productivity classes were used, as these rangelands are of most importance to domesticated and native wildlife.

Corrosion of Steel and Concrete

Another key variable assessed when determining the longevity of the proposed Project would be looking at the potential of the soil to corrode steel and concrete. In order to do this, the following variables were analyzed:

- Corrosion of Steel and Concrete

The corrosion of steel and concrete can be a concern during the construction and maintenance phase of the proposed Project. Only soils with a high probability of causing corrosion were used in this analysis.

Biological Soil Crusts

The current conditions and spatial extent of the biological soils crusts are not known, since no formal inventory or monitoring system is currently in place. However, all soils within the proposed Project analysis area have the ability to support soil biotic crust, and therefore biotic crusts could occur. The impacts that may occur as a result of this proposed Project will be assessed qualitatively because of the lack of quantitative data available.

Farmlands

The impacts to farmlands found within the analysis area are discussed in detail in the section on land use (section 4.11) and therefore will not be included in this section for analysis.

Other Soil Data

Other soil attribute data that were considered but not used in the resource evaluation (due to inherent difficulties with evaluation or inadequate spatial coverage) included attributes that could be used to assess potential difficulties for restoration of affected areas, such as Erosion Hazard off-road, off-trail; Topsoil Source; Potential for Seedling Mortality; and Depth to a Selected Soil Restrictive Layer. Attributes used to assess flooding or ponding frequency included Flooding Frequency Class and Ponding Frequency Class. Attributes used to assess potentially occurring important ecological habitats included Ecological Site ID and Ecological Site Name. These attributes are summarized for the proposed Project and alternatives (CH2M Hill 2013d).

Analysis Area

For this analysis, a representative ROW was developed for the purpose of evaluating impacts to soil resources in the corridor of the ROW, plus the footprints of substations and construction laydown areas

located outside the ROW. The ROW corridor for the New Build Section is 200 feet wide. The ROW corridor for the Upgrade Section is 150 feet wide, except in constricted areas (e.g., urban Tucson) where it would remain the existing 100-foot ROW. This representative ROW is sufficient to identify soil resources that could be directly impacted by ground disturbance during construction and during operation and maintenance of the proposed line. The New Build and Upgrade sections and route groups within those will be addressed separately for impact analysis. The New Build Section includes route group 1: Afton Substation to Hidalgo Substation, and route group 2: Hidalgo Substation to Apache Substation. The Upgrade Section includes route group 3: Apache Substation to Pantano Substation, and route group 4: Pantano Substation to Saguaro Substation.

Analysis Assumptions

Design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS). These PCEMs would reduce the impacts to the soil resources through conservation practices outlined in table 2-8. A majority of these practices are aimed at reducing soil erosion through preservation of top soil, increasing soil cover, and revegetation of disturbed areas.

Impact Indicators

The following impact indicators were considered when analyzing potential impacts to the soil resources: loss of topsoil due to construction, operation, and maintenance activities (i.e., removal or mixing of topsoil):

- soil compaction from vehicular traffic;
- soil erosion due to water and wind; and
- changes in soil productivity that could result from topsoil disturbance after construction and reclamation:
    - disturbance of sensitive soils (soils which may be difficult to reclaim); and
    - disturbance of biotic soil crusts due to surface disturbance due to proposed Project activities.

Significant Impacts

For the purposes of this analysis, a significant impact on soil resources would result if any of the following were to occur from construction, operation, or maintenance of the proposed Project:

- Any disturbance to the land surface which exposes the soil surface that was once covered with vegetation and results in accelerated erosion resulting in rill and gulley formation will be a significant impact.
- Any activity such as compaction or mixing of soils which would result in long-term loss of productivity or significantly alters current use or vegetative growth during restoration would be considered a significant impact.
- Loss of soils that uniquely support threatened or endangered plant species, or contamination of soils that support an existing sensitive ecosystem.

4.5.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, there would no direct or indirect impacts to soil resources in the New Build Section, because the transmission line would not be built or upgraded. For the Upgrade Section, even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

CONSTRUCTION

Direct impacts to soil resources as a result of construction activities include the loss of soil productivity due to the removal of soils during construction of access roads, and at structure and substation sites. Limited clearing of vegetation and topsoil, as well as grading, would be required and these activities could result in newly exposed, disturbed soils that could be subject to accelerated erosion by wind and water. Any soil removal associated with development of structure foundations and at substation sites would be permanent. One of the primary impacts of concerns for construction is disturbance to soil biological crusts. It is expected that all soils within the representative ROW have the ability to support soil biotic crust; therefore, it is expected that disturbance caused by excavation and compaction during construction may directly affect biological soil crusts. Clearing of the substation site and access roads could also adversely affect any soil biological crusts in the immediate vicinity. As described in chapter 2, large portions of the proposed Project have been routed to parallel existing linear infrastructure, thus reducing impacts to previously undisturbed soils. Additionally, during construction the use of roads already found within the representative ROW is expected to improve the soil resources within the representative ROW. Old roads which are not maintained are more susceptible to erosion by wind and water; therefore, any improvements to these roads would be a benefit to the soil resources.

Another important concern for construction impacts would be loss of soil productivity resulting in areas where soils are covered by support structures or other facilities where otherwise not available for production.

Indirect impacts associated with soil removal may include invasive plant colonization, soil erosion, and reduction of soil water retention. Construction may also cause disturbance to fragile biological crusts, which could increase wind and water erosion and delay reestablishment of plant communities post construction. Other indirect effects are associated with the sediment redistribution of the soil resource as a result of wind and water erosion, which could cause damages to WUS, prime farmlands, and air quality.

OPERATION AND MAINTENANCE

Impacts to soil resources as a result of operation and maintenance activities are expected to be minimal. Access roads will be maintained during operation and maintenance, which will result in less erosion occurring from wind and water than would be if these roads remained in their current state. Minimal soil resource management would be needed during transmission line operation and most inspection activities would be carried out aerially. On-the-ground inspection would cause minimal damage to existing soil resources if vehicle use is confined to existing roadways. No indirect effects are expected during the operation and maintenance activities.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Subroute 1.1 representative ROW comprises 3,566.1 acres of which 26 percent (941 acres) of the area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2).Within this proposed route the total temporary disturbance would result in 23.1 percent of the ROW being disturbed, and total permanent disturbance would result in 6.1 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-1 below.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Subroute 1.2 representative ROW comprises 3,423.5 acres of which 26 percent (883 acres) of the area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 23.1 percent of the ROW being disturbed, and total permanent disturbance would result in 5.8 percent being disturbed. The acreages of highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-1.

Table 4.5-1. Route Group 1 Soil Resources Inventory Data

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Subroute 1.1, Proponent Preferred							
P1	124.4	82	125 (42)	0	0	125	0
P2	2,471.9	884	1,946 (364)	43	324	2,469	0
P3	753.3	551	736 (535)	0	309	734	0
P4a	216.5	5	72 (0)	0	0	217	0
Subroute 1.2, Proponent Alternative							
S1	324.3	325	325 (20)	0	0	325	0
S2	268.6	241	230 (182)	23	7	253	0
S3	311.6	304	311 (290)	0	8	314	0
S4	257.8	120	213 (194)	85	0	211	0
S5	719.7	441	489 (134)	92	28	713	0
S6	182.2	43	7 (0)	45	45	153	0
S7	1,006.9	505	542 (63)	298	39	1,007	0
S8	352.5	0	191 (0)	139	0	352	0

Table 4.5-1. Route Group 1 Soil Resources Inventory Data (Continued)

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Route Group 1 Local Alternatives							
DN1	1,029.5	279	648 (228)	191	83	1012	0
A	422.9	422	423 (343)	0	0	422	0
B	291.5	139	269 (239)	49	0	191	0
C	215.7	34	0 (0)	48	48	215	0
D	551.1	109	197 (2)	80	111	551	0

Source: NRCS SSURGO Database intersected with representative ROW. Total acreages include moderate to very severe (or very susceptible) for erosion hazards; moderate to very high productivity; and all important farmlands.

Notes:

T factor = 'Sustainable' soil loss factor in tons. Acreage total includes moderate (4 tons); severe (2 and 3 tons); and very severe (0 and 1 tons).

WEG = Wind Erodibility Group. Acreage total includes moderately susceptible (WEGs 3, 4, and 4L) and (highly susceptible (WEGs 1 and 2).

RngProdNY = Rangeland Productivity - Normal Year. Acreage total includes moderate (500–1,000 lb/acre [dry weight]); high (1,000–2,000 lb/acre); and very high (>2,000 lb/acre).

RngProdFY = Rangeland Productivity - Favorable Year. Acreage total includes moderate (1,000–2,000 lb/acre [dry weight]); high (2,000–4,000 lb/acre); and very high (>4,000 lb/acre).

*Parenthetical numbers are acres categorized as WEG 1 or 2 - highly susceptible to wind erosion.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

Local alternative A is a short loop at the southeast end of the proposed Project that would provide an alternative connection between segments S1 and S3. The route comprises 422.9 acres. Total temporary disturbance from construction would result in 23.2 percent of the representative ROW being disturbed, and total permanent disturbance would result in 5.1 percent being disturbed. Local alternative B is a loop on the south edge of the proposed Project that would provide an alternative connection between segments S3 and S5, going along the north side of segment S4. Total temporary disturbance from construction would result in 23.4 percent of the representative ROW being disturbed, and total permanent disturbance would result in 2.5 percent being disturbed. Local alternative C is another short loop on the south edge of the proposed Project that would provide an alternative connection between segments S5 and S7. Total temporary disturbance from construction would result in 23.3 percent of the representative ROW being disturbed, and total permanent disturbance would result in 2.8 percent being disturbed.

Local alternative D provides an alternative connection from the Alternative Southern Route at segment S7 to the New Build Section at segment P5. Total temporary disturbance from construction would result in 23.1 percent of the representative ROW being disturbed, and total permanent disturbance would result in 5.1 percent being disturbed. Local alternative DN1 provides an alternate route just north and parallel to segment P2. Total temporary disturbance from construction would result in 23.1 percent of the representative ROW being disturbed, and total permanent disturbance would result in 9.0 percent being disturbed. Three of the five alternatives above contain a significant acreage of soils highly susceptible to

wind erosion (WEG class 1 or 2) with Alternative A having 343 acres (81 percent of ROW area), B having 239 acres (82 percent of ROW area), and DN1 with 228 acres (22 percent of ROW area).

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Subroute 2.1 representative ROW comprises 2,308.5 acres of which 4 percent (101 acres) of the area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 23.2 percent of the representative ROW being disturbed, and total permanent disturbance would result in 5.1 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-2 below.

Table 4.5-2. Route Group 2 Soil Resource Inventory Data

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Subroute 2.1, Proponent Preferred							
P4b	335.3	114	297 (37)	35	605	335	0
P4c	44.9	17	25 (13)	11	114	44	0
P5a	233.0	41	107 (10)	138	206	231	0
P5b	511.1	285	212 (0)	22	212	473	145
P6a	21.2	0	21 (0)	0	21	21	0
P6b	545.1	293	290 (0)	57	339	413	0
P6c	68.2	68	45 (0)	8	53	60	0
P7	540.8	244	309 (41)	321	469	486	244
P8	9.0	0	8 (0)	1	9	9	0
Subroute 2.2, Proponent Alternative							
E	766.6	263	349 (12)	219	510	754	127
F	611.1	401	378 (0)	150	489	457	68
Ga	622.4	328	268 (0)	171	519	465	0
Gb	25.9	0	0 (0)	0	25	25	0
Gc	179.6	12	103 (0)	27	180	179	0
I	55.4	51	5 (0)	33	37	22	0
J	55.6	55	21 (0)	21	43	34	0

Table 4.5-2. Route Group 2 Soil Resource Inventory Data (Continued)

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Route Group 2 Local Alternatives and Route Variations							
LD1	856.9	306	333 (8)	200	498	853	139
LD2	214.4	82	150 (33)	56	142	215	0
LD3a	644.3	126	527 (207)	7	67	644	0
LD3b	52.5	0	4 (0)	4	27	52	0
LD4	1300.3	612	560 (148)	260	663	1,203	165
LD4-Option 4	154.8	153	31 (0)	108	139	47	0
LD4-Option 5	296.1	283	44 (0)	143	182	154	0
WC1	358.3	278	220 (0)	237	355	358	240
P7a	755.8	267	289 (38)	162	722	754	79
P7b	251.8	78	104 (0)	45	252	252	1
P7c	24.1	23	11 (0)	0	24	24	0
P7d	47.9	31	1 (0)	16	50	48	0

Source: NRCS SSURGO Database intersected with the representative ROW.

Notes:

Total acreages include moderate to very severe (or very susceptible) for erosion hazards; moderate to very high productivity; and all important farmlands.

T factor = 'Sustainable' soil loss factor in tons. Acreage total includes moderate (4 tons); severe (2 and 3 tons); and very severe (0 and 1 tons).

WEG = Wind Erodibility Group. Acreage total includes moderately susceptible (WEGs 3, 4, and 4L) and (highly susceptible (WEGs 1 and 2).

RngProdNY = Rangeland Productivity - Normal Year. Acreage total includes moderate (500–1,000 lb/acre [dry weight]); high (1,000–2,000 lb/acre); and very high (>2,000 lb/acre).

RngProdFY = Rangeland Productivity - Favorable Year. Acreage total includes moderate (1,000–2,000 lb/acre [dry weight]); high (2,000–4,000 lb/acre); and very high (>4,000 lb/acre).

* Parenthetical numbers are acres categorized as WEG 1 or 2 - highly susceptible to wind erosion.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Subroute 2.2 representative ROW comprises 2,316.6 acres, of which <1 percent (12 acres) of the area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 23.2 percent of the ROW being disturbed, and total permanent disturbance would result in 6.3 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-2.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives and four route variations in route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1, and route variations P7a, P7b, P7c, and P7d. The route

variations would take the ROW away from the Willcox Playa, which consists of soils primarily composed of alluvial sedimentary deposits that when disturbed are highly erodible.

Construction

The alternative LD1 total representative ROW comprises 856.9 acres. Total temporary disturbance from construction would result in 23.1 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 6.6 percent being disturbed. The alternative LD2 total representative ROW comprises 214.4 acres. Total temporary disturbance from construction would result in 23.2 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 8.5 percent being disturbed. The alternative LD3a total representative ROW comprises 644.3 acres. Total temporary disturbance from construction would result in 23.1 percent of the ROW being disturbed, and total permanent disturbance would result in 6.8 percent being disturbed. The alternative LD3b total representative ROW comprises 52.2 acres. Total temporary disturbance from construction would result in nearly 23.2 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 8.4 percent being disturbed. The alternative LD4 total representative ROW comprises 1,300.3 acres. Total temporary disturbance from construction would result in 23.1 percent of the ROW being disturbed, and total permanent disturbance would result in 8.7 percent being disturbed. The alternative LD4-Option 4 total representative ROW comprises 154.8 acres. Total temporary disturbance from construction would result in nearly 23.3 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 9.2 percent being disturbed. The alternative LD4-Option 5 total representative ROW comprises 296.1 acres. Total temporary disturbance from construction would result in 23.2 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 7.5 percent being disturbed.

The alternative WC1 total representative ROW comprises 358.3 acres. Total temporary disturbance from construction would result in 23.2 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 7.9 percent being disturbed.

Only three of the alternatives above contain a significant acreage of highly erodible soils (>10 percent of area WEGs group 1 and 2);

- LD2, which is located in between two playas on the Lordsburg Playa, contains 33 acres (15 percent of ROW area) of highly erodible soils;
- LD3a, which is located to the west of the Lordsburg Playa, contains 207 acres (32 percent of ROW area); and
- LD4 with 148 acres (11 percent of the ROW area).

The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources across the local alternatives can be found in table 4.5-2 above.

The alternative route variations P7a through P7d go around the Willcox Playa and would result in total temporary disturbance from construction for all route variations. None of these alternatives have significant levels of soils that are highly erodible to wind. The acreages of highly erosive soils and other soil variables used to address the direct impacts to the soil resources under each alternative can be found in table 4.5-2 above.

Route Group 3 – Apache Substation to Pantano Substation

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

Subroute 3.1 representative ROW comprises 1,269.4 acres, of which 18 percent (223 acres) contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 28.3 percent of the representative ROW being disturbed, and total permanent disturbance would result in nearly 6.5 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-3.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H.

Table 4.5-3. Route Group 3 Soil Resource Inventory Data

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG (acres)*	RngProdNY (acres)	RngProdFY (acres)		
Subroute 3.1, Proponent Preferred							
U1a	291.9	129	148 (90)	16	234	152	0
U1b	52.7	34	53 (18)	1	18	18	0
U2	287.5	102	267 (115)	45	192	189	63
U3a	637.4	5,080	76 (0)	81	240	625	0
Route Group 3 Local Alternative							
H	350.2	237	282 (56)	58	112	159	136

Source: NRCS SSURGO Database intersected with the representative ROW.

Notes:

Total acreages include moderate to very severe (or very susceptible) for erosion hazards; moderate to very high productivity; and all important farmlands.

T factor = 'Sustainable' soil loss factor in tons. Acreage total includes moderate (4 tons); severe (2 and 3 tons); and very severe (0 and 1 tons).

WEG = Wind Erodibility Group. Acreage total includes moderately susceptible (WEGs 3, 4, and 4L) and (highly susceptible (WEGs 1 and 2).

RngProdNY = Rangeland Productivity - Normal Year. Acreage total includes moderate (500–1,000 lb/acre [dry weight]); high (1,000–2,000 lb/acre); and very high (>2,000 lb/acre).

RngProdFY = Rangeland Productivity - Favorable Year. Acreage total includes moderate (1–2,000 lb/acre [dry weight]); high (2,000–4,000 lb/acre); and very high (>4,000 lb/acre).

*Parenthetical numbers are acres categorized as WEG 1 or 2 - highly susceptible to wind erosion.

Construction

Local alternative H provides an alternative loop around the north side of Benson, Arizona, to connect segment U1 with segment U3. This route comprises 350.2 acres, of which 16 percent (56 acres) of the

area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 28.1 percent of the representative ROW being disturbed, and total permanent disturbance would result in 7.1 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-3.

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

Subroute 4.1 representative ROW comprises 722.8 acres, of which 2 percent (16 acres) of the area contains soils that are highly susceptible to wind erosion (WEG class 1 or 2). Within this proposed route the total temporary disturbance would result in 34.1 percent of the ROW being disturbed, and total permanent disturbance would result in 6.1 percent being disturbed. The acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-4.

Table 4.5-4. Route Group 4 Soil Resource Inventory Data

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Subroute 4.1, Proponent Preferred							
U3b	5.5	2	1 (0)	0	0	5	0
U3c	11.6	0	7 (1)	0	2	11	0
U3d	41.6	38	4 (0)	2	4	41	0
U3e	10.7	3	3 (0)	3	3	8	0
U3f	8.1	8	0 (0)	0	0	8	0
U3g	10.8	5	3 (0)	3	8	10	0
U3h	13.2	0	10 (0)	1	9	13	0
U3i	230	81	63 (1)	38	108	230	0
U3j	15.0	0	7 (0)	5	15	16	0
U3k	303.5	66	208 (14)	92	154	303	0
U3l	27.9	28	27 (0)	0	0	27	0
U3m	10.1	9	9 (0)	0	0	9	0
U4	34.7	14	7 (0)	14	24	34	0

Table 4.5-4. Route Group 4 Soil Resource Inventory Data (Continued)

Segment	Total Acreage within the ROW	Wind and Water Erosion		Productivity		Corrosion of Uncoated Steel (acres)	Corrosion of Concrete (acres)
		T factor (acres)	WEG* (acres)	RngProdNY (acres)	RngProdFY (acres)		
Route Group 4 Local Alternatives and Route Variations							
MA1	19.9	0	10 (0)	6	20	19	0
TH1a	17.1	7	0 (0)	0	0	17	0
TH1b	18.9	18	0 (0)	1	1	18	0
TH1c	3.1	0	0 (0)	2	3	3	0
TH1-Option	11.8	7.7	0 (0)	2	0	11	0
TH3-Option A	9.8	1	5 (2)	0	1	9	0
TH3-Option B	9.8	0	2 (0)	0	6	9	0
TH3-Option C	20.3	0	7 (6)	1	16	20	0
TH3a	33.0	15	6 (3)	0	7	33	0
TH3b	54.4	0	46 (24)	10	10	54	0
U3aPC	112.6	81	1 (0)	30	31	112	0

Source: NRCS SSURGO Database intersected with the representative ROW.

Notes:

Total acreages include moderate to very severe (or very susceptible) for erosion hazards; moderate to very high productivity; and all important farmlands.

T factor = 'Sustainable' soil loss factor in tons. Acreage total includes moderate (4 tons); severe (2 and 3 tons); and very severe (0 and 1 tons).

WEG = Wind Erodibility Group. Acreage total includes moderately susceptible (WEGs 3, 4, and 4L) and (highly susceptible (WEGs 1 and 2).

RngProdNY = Rangeland Productivity - Normal Year. Acreage total includes moderate (500–1,000 lb/acre [dry weight]); high (1,000–2,000 lb/acre); and very high (>2,000 lb/acre).

RngProdFY = Rangeland Productivity - Favorable Year. Acreage total includes moderate (1,000–2,000 lb/acre [dry weight]); high (2,000–4,000 lb/acre); and very high (>4,000 lb/acre).

*Parenthetical numbers are acres categorized as WEG 1 or 2 - highly susceptible to wind erosion.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, TH3-Option C, and route variation U3aPC.

Construction

The alternative TH1a total representative ROW comprises 17.1 acres. Total temporary disturbance from construction would result in 42.2 percent of the representative ROW being disturbed, and total permanent disturbance would result in 1.8 percent being disturbed. The alternative TH1b total representative ROW comprises 18.9 acres. Total temporary disturbance from construction would result in 42.4 percent of the representative ROW being disturbed, and total permanent disturbance would result in 6.0 percent being disturbed. The alternative TH1c total representative ROW comprises 3.1 acres. Total temporary disturbance from construction would result in 43.6 percent of the representative ROW being disturbed, and total permanent disturbance would result in 4.8 percent being disturbed. The alternative TH1-Option total representative ROW comprises 11.8 acres. Total temporary disturbance from construction would result in nearly 42.1 percent of the representative ROW being disturbed, and total permanent disturbance

would result in 1.2 percent being disturbed. The alternative TH3-Option A total representative ROW comprises 9.8 acres. Total temporary disturbance from construction would result in 43.3 percent of the representative ROW being disturbed, and total permanent disturbance would result in 9.0 percent being disturbed. The alternative TH3-Option B total representative ROW comprises 9.8 acres. Total temporary disturbance from construction would result in 42.6 percent of the representative ROW being disturbed, and total permanent disturbance would result in 6.4 percent being disturbed.

The alternative TH3-Option C total representative ROW comprises 20.3 acres. Total temporary disturbance from construction would result in 45.3 percent of the representative ROW being disturbed, and total permanent disturbance would result in 12.4 percent being disturbed. The alternative TH3a total representative ROW comprises 42.2 acres. Total temporary disturbance from construction would result in nearly 42.2 percent of the representative ROW being disturbed, and total permanent disturbance would result in nearly 8.1 percent being disturbed. The alternative TH3b total representative ROW comprises 54.4 acres. Total temporary disturbance from construction would result in nearly 42.2 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 6.1 percent being disturbed. The alternative MA1 total representative ROW comprises 19.9 acres. Total temporary disturbance from construction would result in nearly 28.1 percent of the ROW being disturbed, and total permanent disturbance would result in nearly 1.5 percent being disturbed.

The only alternative with a significant portion of soils that are highly susceptible to wind erosion within the representative ROW is TH3b which contains 24 acres (44 percent of ROW area). Acreages of soils highly susceptible to wind erosion (WEG class 1 or 2) and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-4.

The route variation U3aPC total representative ROW comprises 112.6 acres. Total temporary disturbance from construction would result in nearly 28.1 percent of the representative ROW being disturbed, and total permanent disturbance would result in nearly 5.1 percent being disturbed, with no soils within the representative ROW being highly erodible to wind. Acreages of the highly erodible soils and other soil variables used to address the direct impacts to the soil resources can be found in table 4.5-4.

Agency Preferred Alternative

Impacts to soils would generally be as described under “Impacts Common to All Action Alternatives,” as described above.

In terms of highly erodible soils, local alternatives LD3a and LD4 and LD4-Option 5 around Lordsburg Playa would cross 338 acres of highly erodible soils, compared to the Proponent Preferred route (segments P4b, P4c, P5b, P6a, P6b, and P6c), which would cross 60 acres of highly erodible soils south of the Lordsburg Playa. Around the Willcox Playa, the Agency Preferred Alternative (segment P7) would cross approximately 41 acres of highly erodible soils and 270 acres of moderately erodible soils. In comparison, segments Gb and Gc of the Proponent Alternative would not intersect any highly erodible soils.

Residual Impacts

Mitigation efforts would likely alleviate most all environmental impacts to the soil resources as a result of the proposed Project. Maintenance activities aimed at mitigating soil erosion will be ongoing; therefore, impacts will be negligible following the proposed Project construction.

Unavoidable Adverse Impacts

Minor environmental impacts would occur that are necessary for the proposed Project, and no mitigation measures were deemed necessary or feasible. Such impacts include permanent or long-term impact effects, such as the construction of substation enhancements, permanent access roads, and other permanent constructed features that would permanently impact the soil resources. The installation of proposed new transmission facilities would result in the unavoidable loss of soil productivity where structures and other facilities are located.

Short-term Uses versus Long-term Productivity

The productivity or function of soil resources would be affected by both short-term or temporary impacts, and long-term or permanent impacts. Temporary impacts to soil resources would be present until restoration is conducted. Following restoration, temporary impact effects would be alleviated to the soil resources given the proper climate conditions. Desert environments are typically slow to recover following disturbance unless adequate precipitation is received. Relative to temporary impacts, permanent loss of soil resources would be minimal in spatial scale.

Irreversible and Irretrievable Commitments of Resources

Environmental impacts that have irreversible negative effects on soil resources are situations where vegetation and topsoils are impacted and not restored. In most cases, restoration efforts would be made, and irreversible impacts to the soil resources and associated vegetation would be minor, including unavoidable adverse impacts and residual impacts discussed above. In limited areas, soil resources would be significantly impacted, but such areas would be minimal and would focus on low-sensitivity soils.

4.6 PALEONTOLOGICAL RESOURCES

4.6.1 Introduction

Concerns regarding paleontological resources consist of the loss of scientifically important fossils or loss of access to scientifically important fossils from the analysis area; however, encountering previously unknown fossil localities during construction may contribute to scientific knowledge. Scientifically important fossils are generally defined as vertebrate fossils, but may also include invertebrate fossils (BLM 2008f; Society of Vertebrate Paleontology 1995). Assessing a project's likelihood of encountering important fossils is conducted by using the BLM's PFYC system of predicting the sensitivity of a geological unit. Impacts are primarily assessed based on disturbance to geological units with a PFYC of 3 (moderate or unknown potential), 4 (high potential), and 5 (very high potential).

4.6.2 Methodology and Assumptions

The analysis was conducted by calculating the acreage of each PFYC class within the representative ROW by alternative. A paleontological sensitivity value was then assigned to segments or portions of segments based on their potential to produce important fossils. Although all attempts are made to quantify paleontological sensitivity in terms of acreage, sensitivity is a qualitative value.

Analysis Area

The analysis area for the New Build Section is 1 mile on either side of the centerline of all alternatives. The analysis area for the Upgrade Section is a 500-foot corridor (200 feet on either side of centerline of the existing 100-foot corridor).

A representative ROW was developed to be used in this analysis for both the New Build and Upgrade Sections which includes the ROW, substations, access roads, and construction staging areas. The following analysis will discuss resources found along the representative ROW.

Analysis Assumptions

The analysis was conducted under the following assumptions:

- the literature review and BLM PFYC is sufficient to characterize the fossil-bearing potential within the analysis area;
- because ground disturbance would result in the loss of or damage to paleontological resources if present, all direct impacts are permanent and long term; and
- all access routes, substations, and temporary construction easements are within the representative ROW.

Additionally, the analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

Loss of or restriction of access to scientifically important fossils would be the primary negative direct impact of the proposed Project on paleontological resources. The primary positive direct impact of the proposed Project would be the discovery of important fossils that would otherwise be unavailable for study as an inadvertent result of ground-disturbing activities. The relative impacts were assessed by assigning paleontological sensitivity values based on PFYC class and then comparing the acreage of land (both within the representative ROW and, as a subset, within the anticipated area of disturbance) falling within each paleontological sensitivity value among the various Project segments and alternatives.

The paleontological sensitivity values are as follows:

- Very Low to Low Sensitivity—Geological units with a PFYC of 1 or 2. These areas are unlikely to produce fossils or unlikely to produce important fossils.
- Moderate Sensitivity—Geological units with a PFYC of 3 (Moderate or Unknown). These areas may produce important fossils, or it is unknown whether they may produce important fossils.
- High Sensitivity—Geological units with a PFYC of 4. These areas have a high likelihood of producing important fossils.

Significant Impacts

For the purposes of this analysis, a significant impact on paleontological resources could result if any of the following were to occur from construction or operation of the proposed Project:

- Ground disturbance in areas with moderate paleontological sensitivity (PFYC 3) if they contain important fossils.

- Ground disturbance in areas with high paleontological sensitivity (PFYC 4) if they contain important fossils.
- Access restrictions to areas with moderate and high paleontological sensitivity.

4.6.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the New Build Section would not be constructed from the Afton to Apache substations. Even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

The existing transmission line route from Apache to Saguaro substation is almost entirely of Low Sensitivity (PFYC 1–2) for paleontological resources; only 28 acres of the route is classified as Moderate Sensitivity (PFYC 3). Ten of those 28 acres are expected to be disturbed. If fossils are present and if the areas cannot be avoided or mitigated in accordance with applicable regulations, minor direct and indirect are expected for no action alternative.

Impacts Common to All Action Alternatives

CONSTRUCTION

Direct impacts to paleontological resources during construction have the potential to occur during ground disturbance in areas with moderate or unknown sensitivity to high sensitivity. The severity of the disturbance to areas with moderate to high sensitivity would vary by alternative. Ground disturbance would occur with road construction or improvement, substation expansion and construction, and tower construction. Loss of access to paleontological resources during construction activities only would be the primary potential indirect impact; however, access restrictions would vary by alternative and are anticipated to be negligible.

Prior to construction Southline would implement the Paleontological Monitoring Plan (PCEM PAL-1) as described in table 2-8 to address the monitoring for paleontological resources. If scientifically significant fossils are encountered during construction, construction activities would be temporarily diverted away from the discovery and the authorized officer of the BLM would be notified. BLM would then implement the appropriate measures to avoid, protect, and/or recover the fossil remains (PCEM PAL-2).

Assessment and mitigation of adverse effects to paleontological resources would be conducted according to BLM manual H-8270-1, "General Procedural Guidance for Paleontological Resource Management" (BLM 2008f). Mitigation measures would be developed and designed to minimize adverse effects. According to the manual, mitigation may involve but is not limited no action, avoidance, or collection of fossils or samples of fossil with curation. Other mitigation could include education of construction and maintenance workers, covering fossil-bearing formations with sediment, and monitoring during construction.

OPERATION AND MAINTENANCE

No direct or indirect impacts to paleontological resources are expected during routine operation and maintenance. If during maintenance activities ground disturbance is to occur in areas beyond that

disturbed during construction or if access restrictions are imposed, they would be mitigated in accordance with all applicable regulations.

Route Group 1 – Afton Substation to Hidalgo Substation

Impacts to paleontological resources would primarily occur during construction activities. Impacts during operation and maintenance activities are not anticipated or are anticipated to be minor. Because all ground disturbance can result in the loss of scientifically valuable fossils if present, temporary and permanent ground disturbance are both considered permanent.

Table 4.6-1 presents the acreage/mileage of potential disturbance by PFYC class within the representative ROW of route group 1, Afton Substation to Hidalgo Substation. Table 4.6-2 presents the paleontological sensitivity within the representative ROW of route group 1, Afton Substation to Hidalgo Substation.

Table 4.6-1. Route Group 1 Paleontological Resource Inventory Data within the Representative ROW

	Total Miles	Acreage of PFYC 1	Acreage of PFYC 2	Acreage of PFYC 3	Acreage of PFYC 4	Total Acreage*
Subroute 1.1, Proponent Preferred						
P1	**5.1**	0	0	0	124.4	**124.4**
P2	**102.0**	1,522.1	49.0	0	900.7	**2,471.8**
P3	**31.1**	353.6	0	0	399.6	**753.2**
P4a	**8.9**	29.7	0	0	186.8	**216.5**
Subroute 1.2, Proponent Alternative						
S1	**13.4**	0	0	0	324.3	**324.3**
S2	**11.1**	36.5	0	0	232.1	**268.6**
S3	**12.9**	226.2	0	0	85.4	**311.6**
S4	**10.6**	90.6	0	0	167.2	**257.8**
S5	**29.7**	676.5	0	0	43.2	**719.7**
S6	**7.4**	165.3	17.0	0	0	**182.3**
S7	**41.5**	986.2	20.6	0	0	**1,006.8**
S8	**14.6**	316.3	0	0	36.1	**352.4**
Route Group 1 Local Alternatives						
DN1	**42.5**	808.0	77.1	0	144.4	**1,029.5**
A	**17.5**	77.9	0	0	345.0	**422.9**
B	**12.2**	171.6	0	0	119.9	**291.5**
C	**9.0**	187.6	28.1	0	0	**215.7**
D	**22.8**	542.0	9.1	0	0	**551.1**

*Please note that minor differences in acreage between total acreages in this section and total acreages in the FEIS overall are due to rounding error.

Table 4.6-2. Route Group 1 Paleontological Sensitivity by Acreage within the Representative ROW

	Total Miles	Percent Permanent and Temporary Disturbance*	Low Sensitivity Acreage (acreage total disturbance)	Moderate Sensitivity Acreage (acreage total disturbance)	High Sensitivity Acreage (acreage total disturbance)
Subroute 1.1, Proponent Preferred					
P1	**5.1**	31.5%	0 (0)	0 (0)	124.4 (39.2)
P2	**102.0**	28.6%	1,571.1 (449.3)	0 (0)	900.7 (257.6)
P3	**31.1**	31.5%	353.6 (111.5)	0 (0)	399.6 (125.9)
P4a	**8.9**	28.2%	29.7 (8.4)	0 (0)	186.8 (52.6)
Total	**147.1**	**NA**	**1,954.4 (569.2)**	**0 (0)**	**1,611.5 (475.3)**
Subroute 1.2, Proponent Alternative					
S1	**13.4**	29.8%	0 (0)	0 (0)	324.3 (96.6)
S2	**11.1**	31.5%	36.5 (11.5)	0 (0)	232.1 (73.1)
S3	**12.9**	25.8%	226.3 (58.4)	0 (0)	85.4 (22.0)
S4	**10.6**	31.4%	90.6 (28.4)	0 (0)	167.2 (52.5)
S5	**29.7**	27.3%	676.5 (184.7)	0 (0)	43.2 (11.7)
S6	**7.4**	30.1%	182.3 (49.8)	0 (0)	0 (0)
S7	**41.5**	28.3%	1,006.8 (284.9)	0 (0)	0 (0)
S8	**14.6**	31.5%	316.3 (99.6)	0 (0)	36.1 (11.4)
Total	**141.1**	**NA**	**2,535.3 (717.3)**	**0 (0)**	**888.3 (267.3)**
Route Group 1 Local Alternatives†					
DN1	**42.5**	32.1%	885.1 (284.1)	0 (0)	144.4 (46.4)
A	**17.5**	26.3%	77.9 (20.5)	0 (0)	345.0 (90.7)
B	**12.2**	25.9%	171.6 (44.4)	0 (0)	119.9 (31.1)
C	**9.0**	26.1%	215.7 (56.3)	0 (0)	0 (0)
D	**22.8**	28.2%	551.1 (155.4)	0 (0)	0 (0)

Note: NA = not applicable.

* Anticipated disturbance by segment; distribution of anticipated disturbance within each segment not currently known as project is still in engineering/design phase.

† Local alternatives are each considered separately and are not totaled.

SUBROUTE 1.1 – PROPONENT PREFERRED

Subroute 1.1 consists of segments P1, P2, P3, and P4a. Segment P1 connects the Afton Substation to an existing line to the southwest. Segments P2 and P4a form the primary route, which runs from the Afton Substation west and northwest past Deming to the Hidalgo Substation. Segment P3 is an interconnection route running north-south between I-10 and NM 9. Seventy-five percent of subroute 1.1 (segments P1, P2, P3, and P4a) is adjacent to or routed along existing infrastructure such as roads, pipelines, and transmission lines; portions of subroute 1.1 are routed along the yet to be constructed SunZia transmission line as well.

Major direct (loss of scientifically important fossils) and indirect (loss of access to scientifically important fossils) could occur with subroute 1.1 if fossils are present. Within the representative ROW for subroute 1.1, 1,612 acres is classified as high sensitivity (PFYC 4) for paleontological resources. It is anticipated that 475 acres would be disturbed by construction; however, 310 acres are within the portions of the subroute which parallel existing facilities and ROW which may already be disturbed. The remaining 1,954 acres is classified as low sensitivity (PFYC 1 or 2); it is anticipated that 569 acres would be disturbed.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Subroute 1.2 consists of segments S1 through S8. It begins at the Afton Substation and runs south and southwest to NM 9. It then continues west along Columbus Road and eventually runs south of the town of Columbus. It then runs west along NM 9 to the intersection of NM 9 and NM 146, and then runs northwest just east of the Luna and Grant County line. Segment S8 then runs north to segment P4a of subroute 1.1 and parallels an existing transmission line. Forty-four percent of subroute 1.2 (segments S1–S8) is adjacent to or routed along existing infrastructure.

Subroute 1.2 is less sensitive for paleontological resources than subroute 1.1; however, major direct and indirect impacts could still occur if fossils are present. Within the representative ROW for subroute 1.2, 888 acres is categorized as high sensitivity (PFYC 4). Disturbance is estimated to affect 267 of the 888 acres; however, because 44 percent of the route parallels existing infrastructure some of that acreage may already be disturbed. Low sensitivity (PFYC 1 or 2) acreage totals 2,535; 717 of the 2,535 acres is anticipated to be disturbed.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D. DN1 would run north of subroute 1.1 and parallel the yet to be constructed SunZia transmission line. Local alternative A would follow existing unpaved roads south and southeast of subroute 1.2. Local alternatives B and C both run parallel to NM 9 for 12 miles. Local alternative D runs from segment S7 to just south of Lordsburg, where it continues west and northwest to 1 mile north of I-10. Local alternatives A, B, C, and D are routed along existing roads or pipelines. The western portion of local alternative D would be within an existing energy corridor.

Moderate direct and indirect impacts would occur for local alternatives DN1, A, and B if fossils are present; however, in several areas where the local alternatives parallel existing infrastructure, disturbance may already be present. For local alternative DN1, 144 acres is categorized as high sensitivity (PFYC 4); 46 of those acres is expected to be disturbed. The remaining 885 acres, with 284 acres to be disturbed, is all categorized as low sensitivity (PFYC 1 or 2). Local alternative A has 345 acres with high sensitivity (PFYC 4); however, only 91 acres is expected to be disturbed. Seventy-eight acres of local alternative A is classified as low sensitivity (PFYC 1 or 2). A total of 120 acres of local alternative B is categorized as high sensitivity (PFYC 4); 31 acres of the 120 acres is expected to be disturbed. The remaining 172 acres of B is categorized as low sensitivity (PFYC 1 or 2).

All of local alternatives C (216 acres) and D (551 acres) is classified as low sensitivity (PFYC 1 or 2). No direct or indirect impacts would occur.

NEW SUBSTATIONS OR SUBSTATION EXPANSION

One new substation and expansion of two existing substations is planned for route group 1 (table 4.6-3). The new substation (Midpoint) would be located along subroute 1.1 (Midpoint North) or subroute 1.2 (Midpoint South). The existing stations are the Afton Substation and the Hidalgo Substation.

Table 4.6-3. Expected Acreage of Ground Disturbance by Substation in Route Group 1

Substation	Low Sensitivity Acreage – PFYC 1 and 2	Moderate or Unknown Sensitivity Acreage – PFYC 3	High Sensitivity Acreage – PFYC 4
Midpoint North (new)	8.8	0.0	68.0
Midpoint South (new)	0.0	0.0	326.6
Afton Substation	0.0	0.0	19.9
Hidalgo Substation	0.0	0.0	38.7

Midpoint North would have a moderate direct and indirect impact on paleontological resources; 68 acres classified as high sensitivity are expected to be disturbed.

Midpoint South would have a major direct and indirect impact on paleontological resources; 327 acres classified as high sensitivity are expected to be disturbed.

The expansion of the Afton and Hidalgo substations is expected to disturb 20 and 39 acres, respectively. If fossils are present, moderate direct and indirect impacts to paleontological resources are expected for both substations.

ROUTE GROUP 1 IMPACT SUMMARY

For route group 1, major direct and indirect impacts to paleontological resources could occur if fossils are present because of the presence of High Sensitivity Acreage within the representative ROW of subroutes 1.1 and 1.2. Subroute 1.2 is slightly less sensitive overall than subroute 1.1. For local alternatives DN1, A and B, moderate impacts could occur if fossils are present and no impacts are anticipated for local alternatives C and D. Primarily moderate impacts are expected for the substation construction and/or expansions. Segments of both subroutes and the local alternatives parallel existing facilities and the representative ROW and may be already disturbed; in these areas, the impact would be less if fossils are present. Although route group 1 has predicted major and moderate impacts, if fossils are present adverse impacts will be mitigated according to the appropriate regulations and the proposed Project's Paleontological Monitoring Plan.

Route Group 2 – Hidalgo Substation to Apache Substation

Table 4.6-4 presents acreage/mileage of potential disturbance by PFYC class within the representative ROW of route group 2, Hidalgo Substation to Apache Substation. Table 4.6-5 presents the paleontological sensitivity within the representative ROW of route group 2, Hidalgo Substation to Apache Substation.

Table 4.6-4. Route Group 2 Paleontological Resource Inventory Data within the Representative ROW

	Total Miles	Acreage of PFYC 1	Acreage of PFYC 2	Acreage of PFYC 3	Acreage of PFYC 4	Total Acreage
Subroute 2.1, Proponent Preferred						
P4b	**13.9**	333.8	1.4	0	0	**335.2**
P4c	**1.9**	37.4	7.5	0	0	**44.9**
P5a	**9.6**	233.0	0	0	0	**233.0**
P5b	**21.1**	422.8	66.7	0	21.6	**511.1**

Table 4.6-4. Route Group 2 Paleontological Resource Inventory Data within the Representative ROW (Continued)

	Total Miles	Acreage of PFYC 1	Acreage of PFYC 2	Acreage of PFYC 3	Acreage of PFYC 4	Total Acreage
Subroute 2.1, Proponent Preferred, cont'd.						
P6a	**0.9**	21.2	0	0	0	**21.2**
P6b	**22.5**	545.1	0	0	0	**545.1**
P6c	**2.8**	68.2	0	0	0	**68.2**
P7	**22.3**	514.7	26.0	0	0	**540.7**
P8	**0.5**	9.0	0	0	0	**9.0**
Subroute 2.2, Proponent Alternative						
E	**31.8**	672.7	77.7	0	16.2	**766.6**
F	**25.3**	611.1	0	0	0	**611.1**
Ga	**25.7**	622.4	0	0	0	**622.4**
Gb	**1.1**	25.9	0	0	0	**25.9**
Gc	**7.4**	166.8	12.8	0	0	**179.6**
I	**2.3**	55.4	0	0	0	**55.4**
J	**2.3**	55.6	0	0	0	**55.6**
Route Group 2 Route Variations						
P7a	**31.2**	755.8	0	0	0	**755.8**
P7b	**10.5**	251.8	0	0	0	**251.8**
P7c	**1.0**	24.1	0	0	0	**24.1**
P7d	**2.0**	47.9	0	0	0	**47.9**
Route Group 2 Local Alternatives						
LD1	**35.4**	772.7	84.8	0	0	**856.9**
LD2	**8.9**	214.4	0	0	0	**214.4**
LD3a	**26.6**	644.3	0	0	0	**644.3**
LD3b	**2.2**	52.5	0	0	0	**52.5**
LD4	**53.7**	1,300.3	0	0	0	**1,300.3**
LD4-Option 4	**6.4**	154.8	0	0	0	**154.8**
LD4-Option 5	**12.3**	296.1	0	0	0	**296.1**
WC1	**14.8**	358.3	0	0	0	**358.3**

Table 4.6-5. Route Group 2 Paleontological Sensitivity by Acreage within the Representative ROW

	Total Miles	Percent Permanent and Temporary Disturbance	Low Sensitivity Acreage (acreage total disturbance)	Moderate Sensitivity Acreage (acreage total disturbance)	High Sensitivity Acreage (acreage total disturbance)
Subroute 2.1, Proponent Preferred					
P4b	**13.9**	31.6%	335.2 (105.9)	0 (0)	0 (0)
P4c	**1.9**	31.7%	44.9 (14.2)	0 (0)	0 (0)
P5a	**9.6**	28.1%	233.0 (65.5)	0 (0)	0 (0)
P5b	**21.1**	27.3%	489.5 (133.6)	0 (0)	21.6 (5.8)
P6a	**0.9**	26.5%	21.2 (5.6)	0 (0)	0 (0)
P6b	**22.5**	27.8%	545.1 (151.5)	0 (0)	0 (0)
P6c	**2.8**	27.8%	68.2 (19.0)	0 (0)	0 (0)
P7	**22.3**	27.5%	540.8 (148.7)	0 (0)	0 (0)
P8	**0.5**	32.3%	9.0 (2.9)	0 (0)	0 (0)
Total	**95.5**	**NA**	**2,286.9 (646.9)**	**0 (0)**	**21.6 (5.8)**
Subroute 2.2, Proponent Alternative					
E	**31.8**	31.2%	750.4 (234.1)	0 (0)	16.2 (5.1)
F	**25.3**	28.6%	611.1 (174.8)	0 (0)	0 (0)
Ga	**25.7**	28.8%	622.4 (179.3)	0 (0)	0 (0)
Gb	**1.1**	29.5%	25.9 (7.6)	0 (0)	0 (0)
Gc	**7.4**	25.7%	179.6 (46.2)	0 (0)	0 (0)
I	**2.3**	32.0%	55.4 (17.7)	0 (0)	0 (0)
J	**2.3**	28.9%	55.6 (16.1)	0 (0)	0 (0)
Total	**96.0**	**NA**	**2,300.4 (675.8)**	**0 (0)**	**16.2 (5.1)**
Route Group 2 Route Variations					
P7a	**31.2**	27.5%	755.8 (207.8)	**0 (0)**	**0 (0)**
P7b	**10.5**	27.5%	251.8 (69.2)	**0 (0)**	**0 (0)**
P7c	**1.0**	27.5%	24.1 (6.6)	**0 (0)**	**0 (0)**
P7d	**2.0**	27.5%	47.9 (13.2)	**0 (0)**	**0 (0)**
Route Group 2 Local Alternatives					
LD1	**35.4**	29.7%	856.9 (254.5)	0 (0)	0 (0)
LD2	**8.9**	31.7%	214.4 (68.0)	0 (0)	0 (0)
LD3a	**26.6**	29.9%	644.3 (192.6)	0 (0)	0 (0)
LD3b	**2.2**	31.6%	52.4 (16.6)	0 (0)	0 (0)
LD4	**53.7**	31.8%	1,300.4 (413.5)	0 (0)	0 (0)
LD4-Option 4	**6.4**	32.5%	154.8 (50.3)	0 (0)	0 (0)
LD5-Option 5	**12.3**	30.7%	296.1 (90.9)	0 (0)	0 (0)
WC1	**14.8**	31.1%	358.3 (111.4)	0 (0)	0 (0)

Note: NA = not applicable.

SUBROUTE 2.1 – PROPONENT PREFERRED

Within route group 2, subroute 2.1 consists of segments P4b, P4c, P5a, P5b, P6a, P6b, P6c, P7, and P8. Beginning northeast of Lordsburg, subroute 2.1 travels west and south around Lordsburg. It then travels west across the New Mexico–Arizona State line and into Arizona, where it extends south and southwest around the eastern edge of Willcox Playa. Eighty-five percent of subroute 2.1 parallels existing infrastructure including roads, gas pipelines and transmission lines. Segment P4 is routed along the yet to be constructed SunZia transmission line.

Within the representative ROW for subroute 2.1, 22 acres is categorized as high sensitivity (PFYC 4); 6 of the 22 acres is expected to be disturbed during construction; however, because the majority of the route is routed along existing linear facilities, some of the high sensitivity areas may already be disturbed. The remaining 2,287 acres is categorized as low sensitivity (PFYC 1 or 2); 647 of the 2,287 acres is expected to be disturbed. Minor direct and indirect impacts could occur in the area of high sensitivity for paleontological resources if fossils are present.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Subroute 2.2 consists of E, F, Ga, Gb, Gc, I, and J. It begins south of the Lordsburg Playa and heads west across the New Mexico–Arizona State line and north of San Simon. The subroute then travels west-northwest to north of the Dos Cabezas Mountains and then northwest, west, and south around Willcox Playa. Approximately 55 percent of subroute 2.2 parallels existing infrastructure and segment Ga would be routed along the yet to be constructed SunZia transmission line.

Within the representative ROW for subroute 2.2, only 16 acres, with 5 acres disturbed, is categorized as high sensitivity (PFYC 4). Some of this acreage may already be disturbed. A total of 2,300 acres is categorized as low sensitivity (PFYC 1 or 2), with 678 acres expected to be disturbed. Minor direct and indirect impacts would occur in the area of high sensitivity for paleontological resources if fossils are present.

ROUTE VARIATIONS

All of the route variations (P7a–P7d) run along existing roads. For route variation P7a through P7d, all of the 1,080 acres in the representative ROW is categorized by low sensitivity (PFYC 1). P7a follows an existing gas pipeline for 10 of its 31 miles. Of the 756 acres in P7a, 208 acres would be disturbed; in P7b, 69 of 252 acres would be disturbed; in P7c, 7 of 24 acres would be disturbed; and in P7d, 13 of 48 acres would be disturbed. However, because all of the representative ROW is categorized as low sensitivity, no direct or indirect impacts to paleontological resources would occur for route variations P7a through P7d.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. LD1 starts east of Lordsburg, crosses the Peloncillo Mountains, and ends northwest of San Simon; it follows I-10 and two existing gas pipelines. LD2 starts northwest of Lordsburg and crosses the Lordsburg Playa between the north and south playa. LD3a and LD3b travel around the north sites of the Lordsburg Playa. LD4 crosses the Peloncillo Mountains and the San Simon Valley and ends northwest of Willcox and would be routed along the yet to be constructed SunZia transmission line. LD4-Option 4 begins in the foothills of the Peloncillo Mountains, travels south across I-10, and ends at the Dos Cabezas Mountains. LD5-Option 5 runs southwest between LD4 and P6c and follows an existing transmission line. WC1 runs roughly parallel to I-10 through Sulphur Springs Valley.

All of local alternatives LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1 are categorized as low sensitivity (PFYC 1 or 2). No direct or indirect impacts would occur.

NEW SUBSTATIONS OR SUBSTATION EXPANSION

Expansion of one existing substation, the Apache Substation, is proposed for route group 2. The expansion would occur over 69.4 acres of low sensitivity (PFYC 1 or 2) for paleontological resources. No direct or indirect impacts would occur.

ROUTE GROUP 2 IMPACT SUMMARY

For route group 2, minor direct and indirect impacts could occur if fossils are present for both subroute 2.1 and 2.2. In areas where the subroutes parallel existing roads, pipelines, or transmission lines the impact may be less if the areas are already disturbed. No impacts are anticipated for local alternatives LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1 or the expansion of the Apache substation. If fossils are present, adverse impacts will be mitigated according to the appropriate regulations and the proposed Project's Paleontological Monitoring Plan.

Route Group 3 – Apache Substation to Pantano Substation

Table 4.6-6 presents acreage/mileage of potential disturbance by PFYC class within the representative ROW of route group 3, Apache Substation to Pantano Substation. Table 4.6-7 presents the paleontological sensitivity within the representative ROW of route group 3, Apache Substation to Pantano Substation.

Table 4.6-6. Route Group 3 Paleontological Resource Inventory Data within the Representative ROW

	Total Miles	Acreage of PFYC 1	Acreage of PFYC 2	Acreage of PFYC 3	Acreage of PFYC 4	Total Acreage
Subroute 3.1, Proponent Preferred						
U1a	**16.1**	291.9	0	0	0	**291.9**
U1b	**2.9**	52.7	0	0	0	**52.7**
U2	**15.8**	259.8	0	27.7	0	**287.5**
U3a	**35.6**	637.4	0	0	0	**637.4**
Route Group 3 Local Alternative						
H	**19.3**	350.2	0	0	0	**350.2**

Table 4.6-7. Route Group 3 Paleontological Sensitivity by Acreage within the Representative ROW

	Total Miles	Percent Permanent and Temporary Disturbance	Low Sensitivity Acreage (acreage total disturbance)	Moderate Sensitivity Acreage (acreage total disturbance)	High Sensitivity Acreage (acreage total disturbance)
Subroute 3.1, Proponent Preferred					
U1a	16.1	34.6%	291.9 (101.0)	0 (0)	0 (0)
U1b	2.9	32.7%	52.7 (17.2)	0 (0)	0 (0)
U2	15.8	37.9%	259.8 (98.5)	27.7 (10.5)	0 (0)

Table 4.6-7. Route Group 3 Paleontological Sensitivity by Acreage within the Representative ROW (Continued)

	Total Miles	Percent Permanent and Temporary Disturbance	Low Sensitivity Acreage (acreage total disturbance)	Moderate Sensitivity Acreage (acreage total disturbance)	High Sensitivity Acreage (acreage total disturbance)
Subroute 3.1, Proponent Preferred, cont'd.					
U3a	35.6	33.6%	637.4 (214.2)	0 (0)	0 (0)
Total	**70.3**	**NA**	**1,241.8 (430.9)**	**27.7 (10.5)**	**0 (0)**
Route Group 3 Local Alternative					
H	19.3	35.2%	350.2 (123.8)	0 (0)	0 (0)

SUBROUTE 3.1 – PROPONENT PREFERRED

Subroute 3.1 consists of upgrade of the existing Western 115-kV line running from the Apache Substation west of Willcox Playa, east of the north end of the Dragoon Mountains, and through the San Pedro Valley.

Within the representative ROW for subroute 3.1, 28 acres is categorized as moderate sensitivity (PFYC 3); 11 of the 28 acres is expected to be disturbed during construction. The remaining 1,242 acres is categorized as low sensitivity (PFYC 1 or 2). Because subroute 3.1 is an existing transmission line, previous disturbance may have occurred. Disturbance within the representative ROW would result in a minor direct and indirect impact to paleontological resources if fossils are present.

LOCAL ALTERNATIVES

There is one local alternative for route group 3: local alternative H, which runs around the north side of Benson and is routed along or adjacent to existing roads or transmission lines.

Within the representative ROW, all of local alternative H is categorized as low sensitivity (PFYC 1 or 2). No direct or indirect effects on paleontological resources are expected for local alternative H.

NEW SUBSTATIONS OR SUBSTATION EXPANSION

Expansion of two existing substations, the Pantano and Adams Tap substations, is proposed for route group 3. The Pantano Substation expansion would occur over 25.4 acres of low sensitivity (PFYC 1 or 2) for paleontological resources; the Adams Tap Substation expansion would occur over 5.7 acres of low sensitivity. No direct or indirect impacts would occur for either expansion.

ROUTE GROUP 3 IMPACT SUMMARY

For route group 3, minor direct and indirect impacts could occur if fossils are present in subroute 3.1. No impacts are anticipated for local alternative H or the substation expansions. If fossils are present in subroute 3.1, adverse impacts will be mitigated according to the appropriate regulations and the proposed Project's Paleontological**Error! Bookmark not defined.** Monitoring Plan.

Route Group 4 – Pantano Substation to Saguaro Substation

Table 4.6-8 presents acreage/mileage of potential disturbance by PFYC class within the representative ROW of route group 4, Pantano Substation to Saguaro Substation. Table 4.6-9 presents the paleontological sensitivity within the representative ROW of route group 4, Pantano Substation to Saguaro Substation.

Table 4.6-8. Route Group 4 Paleontological Resource Inventory Data within the Representative ROW

	Total Miles	Acreage of PFYC 1	Acreage of PFYC 2	Acreage of PFYC 3	Acreage of PFYC 4	Total Acreage
Subroute 4.1, Proponent Preferred						
U3b	**0.5**	5.5	0	0	0	**5.5**
U3c	**1.0**	11.6	0	0	0	**11.6**
U3d	**3.4**	41.6	0	0	0	**41.6**
U3e	**0.9**	10.7	0	0	0	**10.7**
U3f	**0.7**	8.1	0	0	0	**8.1**
U3g	**0.9**	10.8	0	0	0	**10.8**
U3h	**1.1**	13.2	0	0	0	**13.2**
U3i	**18.2**	230.0	0	0	0	**230.0**
U3j	**0.9**	15.0	0	0	0	**15.0**
U3k	**16.7**	303.5	0	0	0	**303.5**
U3l	**1.6**	27.9	0	0	0	**27.9**
U3m	**0.6**	10.1	0	0	0	**10.1**
U4	**1.9**	34.7	0	0	0	**34.7**
Route Group 4 Route Variation						
U3aPC	**6.2**	112.6	0	0	0	**112.6**
Route Group 4 Local Alternatives						
MA1	**1.1**	19.9	0	0	0	**19.9**
TH1a	**1.4**	17.1	0	0	0	**17.1**
TH1b	**1.6**	18.9	0	0	0	**18.9**
TH1c	**0.3**	3.1	0	0	0	**3.1**
TH1-Option	**1.0**	11.8	0	0	0	**11.8**
TH3-Option A	**0.8**	9.8	0	0	0	**9.8**
TH3-Option B	**0.8**	9.8	0	0	0	**9.8**
TH3-Option C	**1.8**	20.3	0	0	0	**20.3**
TH3a	**2.7**	33.0	0	0	0	**33.0**
TH3b	**4.5**	54.4	0	0	0	**54.4**

Table 4.6-9. Route Group 4 Paleontological Sensitivity within the Representative ROW

	Total Miles	Percent Permanent and Temporary Disturbance	Low Sensitivity Acreage (acreage total disturbance)	Moderate Sensitivity Acreage (acreage total disturbance)	High Sensitivity Acreage (acreage total disturbance)
Subroute 4.1, Proponent Preferred					
U3b	**0.5**	47.5%	5.5 (2.6)	0 (0)	0 (0)
U3c	**1.0**	44.0%	11.6 (5.1)	0 (0)	0 (0)
U3d	**3.4**	48.7%	41.6 (20.3)	0 (0)	0 (0)
U3e	**0.9**	48.8%	10.7 (5.2)	0 (0)	0 (0)
U3f	**0.7**	49.9%	8.1 (4.0)	0 (0)	0 (0)
U3g	**0.9**	46.2%	10.8 (5.0)	0 (0)	0 (0)
U3h	**1.1**	43.3%	13.2 (5.7)	0 (0)	0 (0)
U3i	**18.2**	46.6%	230.0 (107.2)	0 (0)	0 (0)
U3j	**0.9**	34.6%	15.0 (5.2)	0 (0)	0 (0)
U3k	**16.7**	35.1%	303.5 (106.5)	0 (0)	0 (0)
U3l	**1.6**	33.0%	27.9 (9.2)	0 (0)	0 (0)
U3m	**0.6**	30.8%	10.1 (3.1)	0 (0)	0 (0)
U4	**1.9**	32.9%	34.7 (11.4)	0 (0)	0 (0)
Total	**48.3**	**NA**	**722.8 (290.5)**	**0 (0)**	**0 (0)**
Route Group 4 Route Variation					
U3aPC	**6.2**	33.1%	112.6 (37.3)	0 (0)	0 (0)
Route Group 4 Local Alternatives					
MA1	**1.1**	29.6%	19.9 (5.9)	0 (0)	0 (0)
TH1a	**1.4**	43.9%	17.1 (7.5)	0 (0)	0 (0)
TH1b	**1.6**	48.4%	18.9 (9.1)	0 (0)	0 (0)
TH1c	**0.3**	48.4%	3.1 (1.5)	0 (0)	0 (0)
TH1-Option	**1.0**	43.3%	11.8 (5.1)	0 (0)	0 (0)
TH3-Option A	**0.8**	52.3%	9.8 (5.1)	0 (0)	0 (0)
TH3-Option B	**0.8**	49.1%	9.8 (4.8)	0 (0)	0 (0)
TH3-Option C	**1.8**	57.7%	20.3 (11.7)	0 (0)	0 (0)
TH3a	**2.7**	50.3%	33.0 (16.6)	0 (0)	0 (0)
TH3b	**4.5**	48.3%	54.4 (26.3)	0 (0)	0 (0)

Note: NA = not applicable.

SUBROUTE 4.1 – PROPONENT PREFERRED

Subroute 4.1 begins at the Pantano Substation and travels northwest and north through Green Valley to Tucson. It runs around the Tucson International Airport to the Del Bac Substation and then heads north and northwest across Tumamoc Hill, connecting to the Tucson Substation. The line then continues north

and northwest, traveling northeast of the Tucson Mountains to Marana and ending at the Saguaro Substation.

Within the representative ROW, all of subroute 4.1 is categorized as low sensitivity (PFYC 1 or 2) and consists of existing previously disturbed ROW. No direct or indirect effects are expected for subroute 4.1.

ROUTE VARIATIONS

Approximately 80 percent of route variation U3aPC is routed along existing transmission lines or roads. All of the acreage within the representative ROW for route variation U3aPC is categorized as low sensitivity (PFYC 1). Because all of the representative ROW is categorized as low sensitivity, no direct or indirect impacts to paleontological resources would occur in route variation U3aPC.

LOCAL ALTERNATIVES

There are 10 local alternatives in route group 4: TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, TH3-Option C, and MA1. The nine TH alternatives are all options for replacing the existing line that currently runs across Tumamoc Hill. MA1 runs southwest of the Marana Regional Airport in an "L" shape to avoid the airport itself.

Within the representative ROW, all 10 local alternatives are categorized as low sensitivity (PFYC 1 or 2). No direct or indirect effects are expected for TH1a, TH1b, TH1c, TH3a, TH3b, TH3-Option A, TH3-Option B, TH3-Option C, and MA1.

NEW SUBSTATIONS OR SUBSTATION EXPANSION

The expansion of nine existing substations is planned for route group 4. The existing stations are Del Bac Substation, DeMoss Petrie Substation, Marana Substation, Nogales Substation, Pantano Substation, Rattlesnake Substation, Tortolita Substation, Tucson Substation, Vail Substation, and Saguaro Substation. Table 4.6-10 presents the ground disturbance acreage by substation.

Table 4.6-10. Expected Acreage of Ground Disturbance by Substation in Route Group 4

Substation	Low Sensitivity Acreage – PFYC 1 and 2	Moderate or Unknown Sensitivity Acreage – PFYC 3	High Sensitivity Acreage – PFYC 4
Del Bac Substation	5.7	0.0	0.0
DeMoss Petrie Substation	4.2	0.0	0.0
Marana Substation	14.5	0.0	0.0
Nogales Substation	10.2	0.0	0.0
Pantano Substation	25.4	0.0	0.0
Rattlesnake Substation	16.7	0.0	0.0
Saguaro Substation	0.1	0.0	0.0
Tortolita Substation	16.1	0.0	0.0
Tucson Substation	10.6	0.0	0.0
Vail Substation	27.7	0.0	0.0

The substation expansions (Del Bac Substation, DeMoss Petrie Substation, Marana Substation, Nogales Substation, Pantano Substation, Rattlesnake Substation, Tortolita Substation, Tucson Substation, Vail

Substation, and Saguaro Substation) are all located on areas of low sensitivity (PFYC 1 or 2) for paleontological resources. No direct or indirect impacts are expected.

ROUTE GROUP 4 IMPACT SUMMARY

For route group 4, no impacts to paleontological resources are expected for subroute 4.1, the local alternatives, or the substation expansions.

Agency Preferred Alternative

In the New Build Section, the Agency Preferred Alternative consists of segments P1, P2, P3, and P4a within route group 1 and of segments P5b, P6a, P6b, P6c, P7, P8, and local alternatives L3a and LD3b within route group 2. The Agency Preferred Alternative within route group 1 has the greatest acreage of potential disturbance within the representative ROW (475 acres) across geological formations with high sensitivity. The high sensitivity formations are the Upper Santa Fe Group and the Gila Group. These formations have produced dinosaur, mammal, avian, and reptilian fossils, although no fossil localities have been recorded in the analysis area or representative ROW of the Agency Preferred Alternative. The majority of route group 2 for the Agency Preferred Alternative would not cross geological formations with high sensitivity; however, P5b crosses areas of high sensitivity. Construction is expected to disturb 6 acres of high sensitivity Gila Group within the representative ROW of P5b.

In the Upgrade Section, the Agency Preferred Alternative consists of segments U1a, U1b, U2, and portions of U3a within route group 3 and consists of segments U3b, U3c, U3f, U3g, U3h, U3i, U3g, U3l, U3m, and U4, of route variation U3aPC, and local alternatives TH1a, TH1 Option, and MA1 within route group 4. Eleven acres of geological formations with moderate sensitivity is expected to be disturbed by construction within the representative ROW of segment U2 of route group 3. The moderate sensitivity geological formations are unnamed Quaternary deposits in the San Pedro River valley that have produced mammal fossils. No impacts to paleontological resources are expected for the remainder of route group 3 and all of route group 4 because they do not cross any geological formations with moderate or high sensitivity. This analysis has identified the following potential impacts to paleontological resources:

- In route group 1, the Agency Preferred Alternative representative ROW crosses the Upper Santa Fe and the Gila Group formations which have a high sensitivity. Although, no fossils localities have been recorded in the analysis area or representative ROW, these formations may produce important fossils. All segments in route group 1 cross high sensitivity formations.
- In route group 2, the Agency Preferred Alternative representative ROW of segment P5b crosses areas of high sensitivity (Gila Group) which may produce fossils.
- In route group 4, segment U2 crosses an area of unnamed Quaternary deposits in the San Pedro River valley with moderate sensitivity.

For the Agency Preferred Alternative, minor impacts to paleontological resources are anticipated if fossils are present. Much of the New Build Section parallels existing facilities and ROW which may already be disturbed; in the Upgrade Section, the majority of the route consists of existing and disturbed ROW. If fossils are present in the areas of high or moderate sensitivity within the Agency Preferred Alternative, any adverse impacts from construction would be mitigated according to all applicable laws and regulations and Southline's POD. These mitigation measures would also apply to inadvertent discoveries during operation and maintenance. If fossils are present, provided that all mitigation measures are followed, adverse impacts would be reduced to minor for the areas of concern outlined above.

Residual Impacts

If the mitigation measures detailed in the paleontological resources treatment plan are followed, there would be no residual impacts.

Unavoidable Adverse Impacts

If areas with moderate or high paleontological sensitivity cannot be avoided by the proposed Project design, disturbance to these areas may result in unavoidable adverse impacts due to loss of scientifically important fossils.

Short-term Uses versus Long-term Productivity

Construction of the Project would result in ground disturbance resources during construction. Ground disturbance that results in the loss of scientifically important fossils is considered a long-term impact. Impacts to scientifically important fossils are of concern primarily in the New Mexico portions of the Project; the majority of the representative ROW in Arizona has low sensitivity for paleontological resources.

During construction, the removal of fossils from areas of moderate or high sensitivity would alter the long-term productivity of those fossil sources because fossils are a finite and nonrenewable resource. However, the discovery and removal of previously unknown fossils can contribute to long-term productivity as well by: (1) allowing those fossils to be studied by the scientific community; and (2) potentially revealing new fossil beds for later research.

Loss of access to resources during construction would be reversed once construction was complete. However, any permanent facilities construction on areas with moderate or high sensitivity would restrict access until the line is decommissioned in 50 years.

Irreversible and Irretrievable Commitments of Resources

Although fossils are a finite and nonrenewable resource, provided that all mitigation measures are followed there are no irreversible or irretrievable commitments of resources.

4.7 WATER RESOURCES

4.7.1 Groundwater, Surface Water, and Wetlands – Introduction

This section describes the impacts to groundwater, surface water, floodplains, and wetlands associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Impacts to water resources are discussed primarily in terms of the number or acreage of waters impacted, and the potential for contamination to occur. Electronic data files reviewed include those for 100-year FEMA floodplains, wells (both Arizona and New Mexico), NWI wetlands, and USGS hydrography.

4.7.2 Methodology and Assumptions

Analysis Area

NEW BUILD SECTION

The environmental consequences for water resources for the New Build Section are based on a 200-foot-wide representative ROW, located along the centerline of the 2-mile-wide analysis area. The actual construction ROW would likely be configured to avoid certain environmental impacts, or for other logistical reasons. Therefore, specific water bodies impacted by the representative ROW could or could not be impacted by the final construction ROW, although the preferred approach would be to entirely avoid or span all water bodies. However, use of the representative ROW allows disclosure of the approximate magnitude of impacts associated with each route group and route segment.

Environmental consequences for water resources could extend beyond the representative ROW in order to incorporate the potential for indirect impacts to water resources aside from direct disturbance. For surface water this also includes any downstream drainages, limited to the downstream confluence of the next major watercourse. For groundwater this includes any aquifers that would be affected by changes in groundwater quantity or quality, but limited just to the area of the aquifer where any impacts would affect known or existing users, or where changes in groundwater quality might migrate.

UPGRADE SECTION

The environmental consequences for water resources for the Upgrade Section are based on a 150-foot representative ROW, located along the centerline of the 500-foot-wide analysis area. Similar to the New Build Section, the analysis area also includes downstream drainages and aquifers as described above.

Analysis Assumptions

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS). These are considered mandatory and must be in place before construction begins.

SURFACE WATER

There are three primary assumptions for analyzing impacts to surface waters. First, analysis of impacts assumes that all appropriate construction stormwater permits would be in place, that a SWPPP had been prepared and implemented, and that appropriate PCEMs would be in place and would be followed. Second, it is assumed that spill prevention and spill response would be in place as part of the SWPPP, and that minor accidental spills or discharges could and would be properly addressed. Third, it is assumed that there would be less risk of impact from stormwater runoff to ephemeral washes than perennial or flowing waters. Therefore, the analysis focuses on those areas where perennial surface water has been documented, or where special status waters are present or nearby; the potential for discharge to these waters would be considered an impact. Since the SWPPP, appropriate PCEMs, and spill prevention plans would be in place, the potential for discharge to ephemeral washes is not considered an impact.

FLOODPLAINS

It is assumed that any mapped floodplain (identified in chapter 3) crossed by the representative ROW would be impacted temporarily. It is assumed that permanent structures would potentially be present only for those floodplains whose span exceeds 900 feet (which is the approximate distance between poles for

both the New Build and Upgrade Sections) or for which known constraints exist that require placement within the floodplain. Not all permanent structures placed within floodplains would be considered an impact. In some cases, mapped floodplains represent areas of sheetflow or represent shallow playa lakes. Placement of permanent structures within these areas would not be considered an impact. Placement of permanent structures within well-defined flow channels would be considered an impact. Critical facilities such as electrical substations may not be placed within the 500-year floodplain. Since 500-year floodplains are not consistently mapped, placement of any substation within the 100-year floodplain could be considered a potential impact. However, as noted above, in some cases mapped floodplains represent areas of sheetflow or represent shallow playa lakes, and engineering design and appropriate floodplain permitting would likely protect both the substation and other structures that might be impacted by changes in flood patterns due to the substation. Therefore as before, only placement of substations within well-defined flow channels would be considered an impact.

Determining the actual significance of impacts to floodplains requires knowledge of detailed design plans, and potentially submittal of these plans to the designated floodplain administrator. This would be done prior to construction.

WETLANDS AND WATERS OF THE U.S.

Ephemeral drainages/washes are regulated under Section 404 of the Clean Water Act. Should an action associated with the proposed Project require the discharge of dredged or fill material into an ephemeral, intermittent, or perennial drainage, a Department of the Army discharge permit may be required. It is assumed that any linear water feature (identified in chapter 3) crossed by the representative ROW would be a potential WUS that could be impacted. It is also assumed that any wetland (identified in chapter 3) crossed by the representative ROW could be impacted. However, in both cases both the final placement of the ROW and the permitting process that is required under Section 404 of the CWA would have the goal of avoiding both wetlands and WUS. Therefore, while these features may be present within the ROW, there would only be an impact to wetlands and WUS if disturbance is unavoidable. A WUS or wetland would be considered unavoidable if it is large enough or configured such that it cannot be spanned. As noted, the approximate distance between poles is 900 feet.

GROUNDWATER

With respect to groundwater quantity and impacts to local well users, there is insufficient detail to know precisely from where construction water would be obtained, except that it would be obtained from existing sources. The amount of water needed for construction (dewatering, concrete mixing) is relatively minor compared to the large municipal and agricultural uses throughout the analysis area, and it would be widely distributed along the construction route and not concentrated in one area. For these reasons, impacts to groundwater quantity due to withdrawal of construction water are considered minimal and are not explicitly analyzed. Damage to any water infrastructure (wells, canals) from the proposed Project is not expected to occur. If occurring, infrastructure would be replaced or repaired. Therefore, these impacts are not explicitly analyzed.

With respect to groundwater quality, it is assumed that with PCEMs in place to prevent and respond to spills or other contamination, there is little risk to contamination of groundwater resources except in areas of known shallow groundwater (defined for this analysis as groundwater less than 20 feet bgs). Therefore, the analysis focuses on those areas where shallow groundwater has been documented.

Impact Indicators

SURFACE WATER

- Qualitative assessment of the potential for accidental or intentional release of contaminants to surface waters.
- Number of springs that occur within the ROW.
- Acreage of any specially designated waters, including impaired waters, Outstanding National Resource Waters (in New Mexico), and Outstanding Arizona Waters, that occurs within the ROW.
- Qualitative assessment of the effects on any specially designated waters, including impaired waters, Outstanding National Resource Waters (in New Mexico), and Outstanding Arizona Waters, including discharge of stormwater.
- Length of perennial or flowing waters that occur within the ROW.
- Qualitative assessment of the effects on any perennial or flowing waters, including discharge of stormwater.
- Number and type of water bodies that occur within the ROW with special management designation and restrictions.

FLOODPLAINS

- Acreage of disturbance within floodplains.
- Presence of any permanent physical structures within floodplains, excluding areas of sheetflow or shallow playa lakes.
- Presence of any substation within a well-defined flow channel.

WETLANDS AND WATERS OF THE U.S.

- Number and length of WUS for which disturbance would be unavoidable.
- Number, acreage, and type of wetlands or special aquatic sites for which disturbance would be unavoidable.
- Within Pima County (Upgrade Section only), the acres of RRH impacted within the categories of Hydroriparian, Mesoriparian, and/or IRA.

GROUNDWATER

- Qualitative assessment of the potential for accidental or intentional release of contaminants to shallow groundwater.

Significant Impacts

For the purposes of this analysis, a significant impact on water resources could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- A spring were located within the representative ROW, was unavoidable during final design, and was directly disturbed.
- An intentional or accidental release of contaminants were to enter a perennial or intermittent surface water.

- An intentional or accidental release of contaminants, including sediment, were to enter an Outstanding Arizona Water or Outstanding National Resource Water.
- An intentional or accidental release of contaminants were to impact an area of shallow groundwater.
- A WUS, wetland, or special aquatic site were unavoidable and disturbed by the representative ROW.
- Any permanent structures were located within floodplains with well-defined flow channels.
- Any substation were located within a well-defined flow channel.

4.7.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, no additional ground disturbance would occur in the New Build Section. Surface waters and wetlands in the analysis area would be subject to impacts from ongoing land management and climatic trends like drought or climate change. Groundwater use would continue in a similar manner to that observed at present. With regard to the Upgrade Section, even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

The potential for accidental or intentional release of contaminants to surface waters and shallow groundwater is common to all action alternatives.

CONSTRUCTION

Materials would be used during construction, including petroleum products (oil, gasoline, diesel) and other hazardous materials, that are potential contaminants that could impact surface water or shallow groundwater. The proposed Project includes control measures and PCEMs that are intended to minimize this risk (see table 2-8 in chapter 2). These are standard industry practices and are typically effective at minimizing the risk for accidental release of contaminants to surface water or shallow groundwater when implemented properly. The proposed Project does not include the intentional release of any potential contaminants.

The most common contaminant from construction activity is the movement of sediment by stormwater into nearby surface waters, due to ground disturbance. The proposed Project includes control measures and PCEMs that are intended to stabilize disturbed ground, control erosion from disturbed areas, and prevent sediment from entering surface waters. The SWPPP(s) required to be prepared for the construction activities would identify the specific structural control measures and PCEMs to be implemented. If implemented properly, as required under Section 402 of the CWA, these activities minimize the risk for erosion and movement of sediment in stormwater.

PCEMs and control measures are designed to be adapted to site-specific conditions. Some characteristics encountered for individual route segments represent special conditions that could need to be specially assessed. These are identified in the next section for each route group. Proposed structure locations would incorporate avoidance and PCEMs to avoid WUS and wetlands. Construction of access roads would

likely not impact wetlands if avoidance measures are incorporated. Specific wetlands or special aquatic sites that could be impacted are identified under each route group.

OPERATION AND MAINTENANCE

Similar PCEMs and control measures would be implemented during operation and maintenance, and overall minimize the risk for accidental release of potential contaminants and erosion and movement of sediment in stormwater due to ground disturbance.

If avoidance measures and PCEMs are incorporated, then most WUS and wetlands would not be affected by the operation and maintenance of the transmission line.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

There are no springs impacted for any segments within this subroute.

One segment crosses several WUS (P2); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts. No wetlands or special aquatic sites are impacted under this subroute (table 4.7-1).

Table 4.7-1. Route Group 1 Groundwater, Surface Water, and Wetlands Resource Inventory Data

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Subroute 1.1, Proponent Preferred							
P1	5.1	0	0	0	0	0	
P2	102.0	0	210	271.4 (16)	4 (889)	0	Mimbres River‡
P3	31.1	0	0	235.7 (2)	0	0	
P4a	8.9	0	0	0	0	0	
Subroute 1.2, Proponent Alternative							
S1	13.4	0	0	0	0	0	
S2	11.1	0	0	0	0	0	
S3	12.9	0	0	0	0	0	
S4	10.6	0	0	0	0	0	
S5	29.7	0	0	201.3 (4)	0	0	
S6	7.4	0	0	9.9 (1)	0	0	
S7	41.5	0	0	69.1 (4)	0	0	
S8	14.6	0	0	22.1 (2)	2 (439)	0	

Table 4.7-1. Route Group 1 Groundwater, Surface Water, and Wetlands Resource Inventory Data (Continued)

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Route Group 1 Local Alternatives							
DN1	42.5	0	202	95.4 (8)	3 (856)	2 (0.7)	Mimbres River‡
A	17.5	0	0	0	0	1 (0.3)	
B	12.2	0	0	0	0	0	
C	9.0	0	0	27.2 (2)	0	0	
D	22.8	0	0	8.8 (1)	2 (804)	0	
Substations and Staging Areas							
Midpoint North	NA	0	0	54.5 (1)	0	0	
Staging Area S4	NA	0	0	6.1	0	0	
Staging Area S6	NA	0	0	6.9	0	0	
Staging Area S7	NA	0	0	4.1	0	0	

Notes:

Boldfaced items identify a significant impact.

NA = not applicable.

* Number in parentheses indicates number of floodplain areas that are in excess of 900 feet wide, which is the average space between pole structures.

† Includes areas of shallow groundwater, perennial or intermittent surface water, presence of impaired water, Outstanding National Resource Water, Outstanding Arizona Water, or presence of special management area.

‡ The Mimbres River is an intermittent surface water. Surface flow may be present during construction.

The Mimbres River is crossed by one segment within this subroute (P2). The Mimbres River has intermittent flow and could have surface flow present during construction, which represents an increased risk of potential contamination of surface waters. Construction activities in this area could require special management practices or controls to minimize this risk.

Operation and Maintenance

The potential for delivery of sediment into the Mimbres River would be elevated after construction, but with implementation of stabilization and revegetation measures, this potential would decrease over time.

Permanent structures are likely to be located within the floodplains for two segments (P2, P3). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

There are no springs impacted for any segments within this subroute.

One segment crosses several WUS (S8); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts. No wetlands or special aquatic sites are impacted under this subroute.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for four segments (S5, S6, S7, S8). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

There are no springs impacted for any segments within these local alternatives.

Two segments cross WUS (DN1, D) and two segments (A, DN1) cross wetlands; all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts. The 0.3-acre wetland associated with segment A is a freshwater pond within Kilbourne Hole in Doña Ana County, New Mexico. The two wetlands associated with segment DN1 are also freshwater ponds in Doña Ana County. Proposed structure locations should incorporate avoidance and PCEMs to avoid the wetland; therefore the presence of this wetland is not considered a significant impact. These wetlands are likely upland swales where storm runoff drains and provides temporary drinking water for cattle and possibly local fauna. Construction of access roads would not impact the pond if avoidance measures are incorporated.

The Mimbres River is crossed by one segment within the local alternatives (DN1). The Mimbres River has intermittent flow and could have surface flow present during construction, which represents an increased risk of potential contamination of surface waters. Construction activities in this area could require special management practices or controls to minimize this risk.

Operation and Maintenance

The potential for delivery of sediment into the Mimbres River would be elevated after construction, but with implementation of stabilization and revegetation measures, this potential would decrease over time.

Permanent structures are likely to be located within the floodplains for three segments (DN1, C, D). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

SUBSTATIONS AND STAGING AREAS

Construction

There are no springs impacted for any substations or potential staging areas within this route group, and no WUS, wetlands, or special aquatic sites are impacted.

Three staging areas would temporarily impact floodplains, but would be unlikely to have permanent structures.

Operation and Maintenance

Permanent structures are likely to be located within the floodplain for the Midpoint North Substation. Placement of this structure would likely elevate flooding risk; permitting processes would ensure that flooding risk remains within allowable levels. Substations are considered critical facilities and placement within the 500-year floodplain is prohibited without special engineering; the boundaries of the 500-year floodplain are unknown at this location, but the possibility exists that placement of this substation would be within the 500-year floodplain. This is not considered a significant impact. Impacts would be minor and long-term.

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

There are no springs impacted for any segments within this subroute.

Two segments cross WUS (P5b, P6b) and one additional segment crosses two wetland areas (P7); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts (table 4.7-2). The two wetland areas impacted by segment P7 consist of the Willcox Playa and one additional smaller wetland in Cochise County, Arizona (111.8 acres). The Willcox Playa is classified as a dry ephemeral lake. It is located within the San Pedro Watershed and is known as a terminal or "interior draining" basin, containing approximately 30,000 acres. Willcox Playa is also known to be a remnant of the Pleistocene pluvial Lake Cochise. While the smaller wetland potentially could be spanned, Willcox Playa would be unavoidable and would be impacted by construction disturbance; this is considered a significant impact. Direct impacts associated with the wetlands include the construction of the transmission line structures and temporary access roads. These impacts would be minor and long-term. Proposed structure locations should incorporate avoidance and PCEMs to avoid the smaller wetland. Construction of access roads would likely not impact the smaller wetland if avoidance measures are incorporated.

Table 4.7-2. Route Group 2 Groundwater, Surface Water, and Wetlands Resource Inventory Data

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Subroute 2.1, Proponent Preferred							
P4b	13.9	0	0	0	0	0	
P4c	1.9	0	0	0	0	0	
P5a	9.6	0	0	0	0	0	Lordsburg Playa‡
P5b	21.1	0	0	9.2 (2)	1 (212)	0	
P6a	0.9	0	0	1.9	0	0	
P6b	22.5	0	0	55.2 (4)	2 (506)	0	
P6c	2.8	0	0	0	0	0	
P7	22.3	0	0	116.1 (2)	0	**2 (111.8)**	
P8	0.5	0	0	0	0	0	

Table 4.7-2. Route Group 2 Groundwater, Surface Water, and Wetlands Resource Inventory Data (Continued)

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status[†]
Subroute 2.2, Proponent Alternative							
E	31.8	0	0	6.6 (1)	1 (228)	0	Lordsburg Playa[‡]
F	25.3	0	0	50.3 (4)	1 (341)	0	
Ga	25.7	0	0	192.7 (5)	0	0	
Gb	1.1	0	0	3.6 (1)	0	0	
Gc	7.4	0	0	9.8 (2)	0	0	Willcox Playa[§]
I	2.3	0	0	2.0	1 (231)	0	
J	2.3	0	0	0	0	0	
Route Group 2 Route Variations							
P7a	31.2	0	0	42.5 (3)	0	0	
P7b	10.5	0	0	0	0	0	
P7c	1.0	0	0	0	0	0	
P7d	2.0	0	0	11.9 (1)	0	0	
Route Group 2 Local Alternatives							
LD1	35.4	0	0	89.3 (1)	**3 (4,788)**	0	
LD2	8.9	0	0	0	0	0	
LD3a	26.6	0	0	0	0	0	
LD3b	2.2	0	0	0	0	0	
LD4	53.7	0	0	123.9 (7)	4 (1,755)	0	
LD4-Option 4	6.4	0	0	0	0	0	
LD4-Option 5	12.3	0	0	11.6	1 (200)	0	
WC1	14.8	0	0	142.2 (3)	0	0	
Substations and Staging Areas							
Staging Area Ga	NA	0	0	15.9	0	0	
Staging Area P6	NA	0	0	2.3	0	0	

Notes:

Boldfaced items identify a significant impact.

NA = not applicable.

* Number in parentheses indicates number of floodplain areas that are in excess of 900 feet wide, which is the average space between pole structures.

[†] Includes areas of shallow groundwater, perennial or intermittent surface water, presence of impaired water, Outstanding National Resource Water, Outstanding Arizona Water, or presence of special management area.

[‡] Management direction for the Lordsburg Playa RNA excludes authorization of new ROWs.

[§] Management direction for the Willcox Playa NNL excludes authorization of new ROWs.

The Lordsburg Playa RNA is crossed by segment P5a, which has management restrictions on authorization of new ROWs.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for three segments (P5b, P6b, P7). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

There are no springs impacted for any segments within this subroute.

Three segments cross WUS (E, F, I); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts, including the largest, which is the San Simon River. No wetlands or special aquatic sites are impacted under this subroute.

The Lordsburg Playa RNA is crossed by segment E, and the Willcox Playa NNL is crossed by segment Gc, both of which have management restrictions on authorization of new ROWs.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for five segments (E, F, Ga, Gb, Gc). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. There are also four route variations available for route group 2: P7a, P7b, P7c, and P7d.

Construction

There are no springs impacted for any segments within the local alternatives.

Three segments cross WUS (LD1, LD4, LD4-Option 5); with the exception of LD1, all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts. Segment LD1 roughly parallels Stein’s Creek for almost 1 mile. At this location, the LD1 ROW parallels I-10 along the south side of the highway. Stein’s Creek also runs along the south side of the highway, confined between I-10 and low hills to the south. Due to the topography, it is not clear that this WUS could be avoided; therefore this represents a significant impact. This impact would be minor to moderate and long-term. No wetlands or special aquatic sites are impacted under this subroute.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for five segments (LD1, LD4, WC1, P7a, and P7d). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

SUBSTATIONS AND STAGING AREAS

Construction

There are no springs impacted for any substations or potential staging areas within this route group, and no WUS are impacted.

Two staging areas would temporarily impact floodplains, but would be unlikely to have permanent structures.

Operation and Maintenance

There would no permanent impacts to floodplains from substations or staging areas. No substations would be potentially located within the 500-year floodplain.

Route Group 3 – Apache Substation to Pantano Substation

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

There are no springs impacted for any segments within this subroute.

Three segments cross WUS (U1a, U2, U3a), and three wetland areas are also present within the ROW (U2); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts, including the San Pedro River (table 4.7-3). The wetland impacts consist of 2.4 acres of freshwater pond within the Ash Creek–San Pedro River complex and 0.7 acre of a riverine segment in Graham County, Arizona. Proposed structure locations should incorporate avoidance and PCEMs to avoid the wetlands; therefore, the presence of these wetlands is not considered a significant impact. Construction of access roads would likely not impact the pond if avoidance measures are incorporated.

The San Pedro River is crossed by one segment within the subroute (U2), along an existing transmission line crossing. The San Pedro River has perennial flow and is likely to surface flow present during construction, which represents an increased risk of potential contamination of surface waters. In addition, the area near the San Pedro River exhibits very shallow groundwater, which represents an increased risk of potential contamination of groundwater. Construction activities in this area could require special management practices or controls to minimize this risk. An existing transmission line crosses this drainage already, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Table 4.7-3. Route Group 3 Groundwater, Surface Water, and Wetlands Resource Inventory Data

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Subroute 3.1, Proponent Preferred							
U1a	16.1	0	187	0	2 (519)	0	Jordan Wash**
U1b	2.9	0	0	0	0	0	
U2	15.8	0	325	29.4 (2)	4 (642)	3 (3.1)	Pomerene Canal** San Pedro River‡
U3a	35.6	0	150	6.6	1 (150)	0	Cienega Creek§ (14.7)
Route Group 3 Local Alternative							
H	19.3	0	409	47.7 (5)	2 (563)	1 (2.6)	San Pedro River‡ (1.3)
Substations and Staging Areas							
Pantano Substation Expansion	NA	0	0	0	0	0	(0.5)

Note: NA = not applicable.

* Number in parentheses indicates number of floodplain areas that are in excess of 900 feet wide, which is the average space between pole structures.

† Includes areas of shallow groundwater, perennial or intermittent surface water, presence of impaired water, Outstanding National Resource Water, Outstanding Arizona Water, or presence of special management area. Numbers shown in parentheses represent acreage of Pima County RRH designated as either Hydroriparian or Important Riparian Area.

‡ The San Pedro River is a perennial surface water. Surface flow is likely to be present during construction. The San Pedro River also has an impaired water designation in the analysis area. The area around the San Pedro River also exhibits shallow groundwater (less than 20 feet bgs).

§ Cienega Creek is an intermittent surface water. Surface flow may be present during construction. Cienega Creek is also a designated Outstanding Arizona Water.

** Jordan Wash and Pomerene Canal are classified as intermittent waters.

Cienega Creek is crossed by one segment within the subroute (U3a), along an existing transmission line crossing. Cienega Creek has intermittent flow and may have surface flow present during construction, which represents an increased risk of potential contamination of surface waters. In addition, Cienega Creek has been designated an Outstanding Arizona Water. There are additional restrictions associated with obtaining an AZPDES stormwater permit because of the presence of the Outstanding Arizona Water, which has strict anti-degradation standards. Construction activities are very likely to require special management practices or controls to minimize this risk, and likely would also have to be reviewed and approved by the ADEQ prior to issuance of the permit. An existing transmission line crosses this drainage already, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Pima County RRH designated as either Hydroriparian or Important Riparian Area could potentially be impacted by one segment within subroute 3.1 (U3a). These areas may require protection or mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

The potential for delivery of sediment into the San Pedro River and Cienega Creek would be elevated after construction, but with implementation of stabilization and revegetation measures, this potential would decrease over time. An existing transmission line crosses these drainages already, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Permanent structures are likely to be located within the floodplains for one segment (U2). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

LOCAL ALTERNATIVES

There is one local alternative for route group 3: local alternative H.

Construction

There are no springs impacted by local alternative H.

Two WUS and one wetland area are crossed by local alternative H; all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts, including the San Pedro River. The wetland impacts consist of 2.6 acres of a riverine segment associated with the Ash Creek–San Pedro River complex. Proposed structure locations should incorporate avoidance and PCEMs to avoid the WUS; therefore the presence of these wetlands is not considered a significant impact. Construction of access roads would likely not impact the WUS if avoidance measures are incorporated.

The San Pedro River is crossed by local alternative H. The San Pedro River has perennial flow and is likely to surface flow present during construction, which represents an increased risk of potential contamination of surface waters. In addition, the area near the San Pedro River exhibits very shallow groundwater, which represents an increased risk of potential contamination of groundwater. Construction activities in this area could require special management practices or controls to minimize this risk.

Pima County RRH designated as either Hydroriparian or IRA could potentially be impacted by local alternative H. These areas may require protection or compensatory mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

The potential for delivery of sediment into the San Pedro River would be elevated after construction, but with implementation of stabilization and revegetation measures, this potential would decrease over time.

Permanent structures are likely to be located within the floodplains for local alternative H. These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact.

SUBSTATIONS AND STAGING AREAS

Construction

There would be no springs impacted for any substations or potential staging areas within this route group, and no WUS or floodplains are impacted.

Pima County RRH designated as either Hydroriparian or IRA could potentially be impacted by the Pantano Substation expansion. These areas may require protection or compensatory mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

There would be no structures located within the floodplain, and no expected impacts during operation and maintenance.

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

There are no springs impacted for any segments within this subroute.

Five segments cross WUS (U3c, U3d, U3h, U3i, U3k) and four additional segments cross riverine wetland areas (U3b, U3c, U3g, U3h); all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts, including multiple crossings of the Santa Cruz River (table 4.7-4). The Santa Cruz River is highly channelized in this area. All four riverine wetland segments are part of the Julian Wash–Santa Cruz River complex in Pima County, Arizona. The total acreage for all four segments is 1.4 acres. Proposed structure locations should incorporate avoidance and PCEMs s to avoid the riverine segments; therefore the presence of these wetlands is not considered a significant impact. Construction of access roads would likely not impact the riverine segments if avoidance measures are incorporated. The area around this drainage is already highly disturbed from development, channelization, and existing infrastructure, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Table 4.7-4. Route Group 4 Groundwater, Surface Water, and Wetlands Resource Inventory Data

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Subroute 4.1, Proponent Preferred							
U3b	0.5	0	0	0.2	0	1 (0.4)	(1.2)
U3c	1.0	0	0	2.4 (1)	2 (255)	1 (0.3)	(1.1)
U3d	3.4	0	0	1.5	1 (18)	0	(0.9)
U3e	0.9	0	0	4.1	0	0	
U3f	0.7	0	0	0.2 (1)	0	0	

Table 4.7-4. Route Group 4 Groundwater, Surface Water, and Wetlands Resource Inventory Data (Continued)

	Total Miles	Number of Springs	Length of Perennial or Intermittent Waters (feet)	Acres of Floodplains and Number of Areas with Permanent Structures within Floodplain*	Number and Length of WUS (feet)	Number and Acres of Wetlands	Special Status†
Subroute 4.1, Proponent Preferred, cont'd.							
U3g	0.9	0	0	5.5 (1)	0	0	
U3h	1.1	0	0	4.4 (2)	1 (136)	1 (0.4)	(1.0)
U3i	18.2	0	0	69.2 (6)	1 (148)	1 (0.3)	(62.1)
U3j	0.9	0	0	15.0 (1)	0	0	
U3k	16.7	0	0	136.8 (2)	1 (178)	0	
U3l	1.6	0	0	0	0	0	
U3m	0.6	0	0	0	0	0	
U4	1.9	0	0	0	0	0	(1.9)
Route Group 4 Route Variation							
U3aPC	6.2	0	0	3.6	0	0	
Route Group 4 Local Alternatives							
MA1	1.1	0	0	19.9 (1)	0	0	
TH1a	1.4	0	0	2.1	0	0	
TH1b	1.6	0	0	0	0	0	(0.4)
TH1c	0.3	0	0	0	0	0	
TH1-Option	1.0	0	0	3.1 (1)	0	0	
TH3-Option A	0.8	0	0	1.7	1 (111)	1 (1.4)	(3.6)
TH3-Option B	0.8	0	0	9.8 (1)	1 (817)	0	(0.8)
TH3-Option C	1.8	0	0	7.3 (1)	2 (1,121)	2 (3.1)	(6.2)
TH3a	2.7	0	0	2.5	1 (170)	0	(4.8)
TH3b	4.5	0	0	**31.3 (4)**	**1 (4,824)**	**5 (17.3)**	(48.5)
Substations and Staging Areas							
Marana Substation Expansion	NA	0	0	0.2 (1)	0	0	
Vail Substation Expansion	NA	0	0	0	0	0	(2.1)
Staging Area 13	NA	0	0	20.3	0	0	(19.5)

Notes:

Boldfaced items identify a significant impact.

NA = not applicable.

* Number in parentheses indicates number of floodplain areas that are in excess of 900 feet wide, which is the average space between pole structures.

† Includes areas of shallow groundwater, perennial or intermittent surface water, presence of impaired water, Outstanding National Resource Water, Outstanding Arizona Water, or presence of special management area. Numbers shown in parentheses represent acreage of Pima County RRH designated as either Hydroriparian or Important Riparian Area.

Pima County RRH designated as either Hydroriparian or IRA could potentially be impacted by six segments within the subroute (U3b, U3c, U3d, U3h, U3i, U4). These areas may require protection or mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for seven segments (U3c, U3f–U3k). These floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact. The area around this drainage is already highly disturbed from development, channelization, and existing infrastructure, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

ROUTE VARIATIONS AND LOCAL ALTERNATIVES

There are 10 local alternatives for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C. There is one route variation for route group 4: U3aPC.

Construction

There are no springs impacted for any segments within these local alternatives, or by route variation U3aPC.

Five segments cross WUS (TH3-Option A, TH3-Option B, TH3-Option C, TH3a, TH3b) and three additional segments cross wetland areas (TH3-Option A, TH3-Option C, TH3b); with the exception of segment TH3b, all of these WUS can be spanned or otherwise avoided, and do not constitute significant impacts. Segment TH3b roughly parallels the Santa Cruz River for approximately 4.5 miles.
The constraints on pole placement within this ROW are such that impacts to the Santa Cruz River would be unavoidable; this is considered a significant impact. These impacts would be minor to moderate and long-term. Several local alternatives cross riverine wetland segments and one wetland associated with the Julian Wash–Santa Cruz River complex in Pima County, Arizona. The total acreage for the riverine segments is 21.5 acres. Also, within local alternative TH3b is a 0.3-acre wetland. With the exception of segment TH3b, proposed structure locations should incorporate avoidance and PCEMs to avoid the WUS and the wetland; therefore, the presence of these wetlands is not considered a significant impact. Segment TH3b parallels the riverine wetland segments along the Santa Cruz River and impacts within this area would be unavoidable; this is considered a significant impact. These impacts would be minor to moderate and long-term. Construction of access roads would likely not impact the WUS or the wetland if avoidance measures are incorporated. The area around this drainage is already highly disturbed from development, channelization, and existing infrastructure, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Pima County RRH designated as either Hydroriparian or IRA could potentially be impacted by six segments within the subroute (TH1b, TH3-Option A, TH3-Option B, TH3-Option C, TH3a, TH3b). These areas may require protection or mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

Permanent structures are likely to be located within the floodplains for five segments (MA1, TH1-Option, TH3-Option B, TH3-Option C, TH3b). With the exception of segment TH3b, these floodplain areas largely consist of areas of sheetflow or overbank areas that would likely have very shallow water, or are urbanized watersheds. Placement of permanent structures within these areas does not elevate flooding risk or represent a significant impact. The area around this drainage is already highly disturbed from development, channelization, and existing infrastructure, and surface disturbance associated with access roads and vegetation removal would be less than with an undisturbed crossing location. This selected location would result in less impact overall to the watershed.

Segment TH3b would include the placement of multiple structures within the floodplain and defined channel of the Santa Cruz River; permitting processes would ensure that flooding risk remains within allowable levels. This is considered a significant impact. These impacts would be minor and long-term.

SUBSTATIONS AND STAGING AREAS

Construction

There are no springs impacted for any substations or potential staging areas within this route group, and no WUS are impacted.

One staging area would temporarily impact floodplains, but would be unlikely to have permanent structures.

Pima County RRH designated as either Hydroriparian or IRA could potentially be impacted by the Vail substation expansion and Staging Area 13. These areas may require protection or compensatory mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Operation and Maintenance

Permanent structures are likely to be located within the floodplain for the Marana substation. Placement of this structure would likely elevate flooding risk; permitting processes would ensure that flooding risk remains within allowable levels. Substations are considered critical facilities and placement within the 500-year floodplain is prohibited without special engineering; the boundaries of the 500-year floodplain are unknown at this location, but the possibility exists that placement of this substation is within the 500-year floodplain. However, the substation would not be located within a well-defined flow channel, therefore this is not considered a significant impact. Additionally, it is only a small portion of the Marana substation expansion area that is located within the mapped floodplain (less than 2 percent); it is highly likely the final design would not be located within the floodplain.

Agency Preferred Alternative

As described in “Impacts Common to All Action Alternatives,” the Agency Preferred Alternative would involve implementation of PCEMs s and control measures. If implemented properly, these activities minimize the risk for erosion and movement of sediment in stormwater, as well as the potential for spills or release of hazardous substances that could impact groundwater. Further, proposed structure locations should incorporate avoidance and PCEMs s to avoid WUS and wetlands. The only significant impacts identified involve areas where impacts to WUS or wetlands are unavoidable, and where permanent structures would be placed within well-defined flow channels. Three potential significant impacts were identified related to water resources: Willcox Playa (segment P7), Stein’s Creek (segment LD1), and the Santa Cruz River (TH3b).

The Agency Preferred Alternative avoids two significant impacts compared to the Proponent Alternative as well as other alternatives. By using segment LD3a, the Agency Preferred Alternative avoids significant impacts to WUS along Stein's Creek which would be unavoidable under segment LD1, which parallels Stein's Creek for approximately 1 mile. By using a variety of routes west of the Santa Cruz River, the Agency Preferred Alternative avoids significant impacts to WUS associated with segment TH3b, which closely follows the Santa Cruz River.

However, by using segment P7, the Agency Preferred Alternative has unavoidable significant impacts to WUS (two wetland areas). As noted previously, the two wetland areas impacted by segment P7 consist of the Willcox Playa and one additional smaller wetland in Cochise County, Arizona. Though segment P7 has not been micro-sited, the plan is to avoid all wetlands, but as micro-siting in this area progresses the possibility remains that impacts to some wetlands would not be able to be avoided. While the smaller wetland potentially could be spanned, Willcox Playa could potentially be unavoidable and would be impacted by construction disturbance; this is considered a significant impact. Direct impacts associated with the wetlands include the construction of the transmission line structures and temporary access roads. These impacts would be minor and long-term. The Agency Preferred Alternative preferentially follows pre-disturbed ROWs. Although segment P7 follows an existing transmission line around the east side of Willcox Playa, construction of additional structures adjacent to the existing ROW would unavoidably impact WUS. Typically, the major drainages crossed are already disturbed from existing infrastructure, and the impact associated with access roads and vegetation removal would be less than with an undisturbed crossing location, and would result in less impact overall to the watershed. Proposed structure locations would incorporate avoidance and PCEMs to avoid the smaller wetland. Construction of access roads would likely not impact the smaller wetland if avoidance measures are incorporated.

Residual Impacts

Permitting requirements, such as under Section 404 of the CWA, are sufficient to reduce impacts to the extent possible within wetlands and special aquatic sites. Additional mitigation could be applied during this permitting process to offset, compensate, or reduce impacts to wetlands or special aquatic sites.

Under CWA Section 404 permitting, required mitigation would be expected to offset or compensate for impacts to wetlands or special aquatic sites. Residual impacts would be expected to be minimal.

Unavoidable Adverse Impacts

Unavoidable adverse impacts could occur from the placement of permanent substation structures within floodplains. Permitting processes would ensure that flooding risk remains within allowable levels, but this would still represent an unavoidable adverse impact. There are numerous floodplain areas where full spanning of floodplains is not possible, based on initial design parameters. However, most of these represent single pole structures in areas of sheetflow or very shallow flood flow, and permanent impacts to floodplain function would not be expected.

It would be unavoidable adverse impacts to Pima County RRH designated as either Hydroriparian or Important Riparian. These areas may require protection or mitigation, pursuant to the Pima County Floodplain and Erosion Hazard Management Ordinance.

Short-term Uses versus Long-term Productivity

Long-term productivity of water resources would be affected by any long-term change in water quality attributable to the proposed Project. As indicated in the impact analysis, PCEMs and controls are largely

effective at reducing risks that would cause these changes; therefore, no impacts are likely to affect long-term productivity.

Irreversible and Irretrievable Commitments of Resources

As indicated in the impact analysis, PCEMs and controls are largely effective, if properly implemented, at reducing the risk of accidental discharge of pollutants, including sediment, into WUS. There are unlikely to be any irreversible commitment of groundwater or surface water resources.

Disturbance of WUS, wetlands, or special aquatic sites would generally be mitigated through the CWA Section 404 permitting process. However, there could be an interim time period when aquatic resources have exhibited some temporary impact, before stabilization, restoration, or replacement would occur. This time period would represent an irretrievable commitment of water resources.

Placement of permanent structures within the floodplain would represent an impact to floodplain resources. However, floodplain permitting requirements ensure that the floodplains continue to function for flood conveyance without undue harm to existing structures or landowners. Therefore, there are neither irretrievable nor irreversible impacts to floodplain resources.

Floodplain Statement of Findings

Executive Orders 11988 “Floodplain Management” (May 24, 1977) and 11990 “Protection of Wetlands” (May 24, 1977) direct Federal agencies to undertake various actions to protect floodplains and wetlands, including preparing floodplain or wetland assessment for any action proposed in a floodplain and new construction proposed in a wetland. DOE’s regulations implementing these Executive Orders, Compliance with Floodplain and Wetland Environmental Review Requirements (10 CFR 1022), require that any floodplain or wetland assessment normally be included in an Environmental Assessment or EIS, if one is being prepared (10 CFR 1022.13(b)). A floodplain or wetland assessment includes a description of the proposed action, a discussion of its potential effects on the floodplain or wetland (including a discussion of floodplain or wetland values), and consideration of alternatives (10 CFR 1022.4). The outcome of a floodplain assessment is documented in a floodplain statement of findings, which may be incorporated into a final EIS or record of decision (10 CFR 1022.14(c)). A wetland statement of findings may be similarly prepared for a wetland assessment but is not required.

In accordance with DOE regulations contained at 10 CFR 1022, Compliance with Floodplain and Wetlands Environmental Review Requirements, this EIS includes a floodplain assessment and statement of findings that analyzes the potential floodplain impacts associated with the proposed Project as described above in this section discussing potential impacts.

OVERVIEW OF FLOODPLAINS PRESENT IN PROJECT AREA

There are five perennial or intermittent streams within the proposed Project analysis area (Mimbres River, Jordan Wash, Pomerene Canal, San Pedro River, and Cienega Creek); there are a large number of ephemeral washes. Flow in the ephemeral washes can be substantial during rainfall events and may result in flash flooding in the washes and floodplains. The 100-year floodplains associated with the perennial and intermittent features are relatively small, but the mapped 100-year floodplains associated with ephemeral drainages, playa lakes, and wide areas of sheetflow are substantial throughout the analysis area.

IMPACTS TO FLOODPLAINS

The average span between poles for the transmission line is 900 feet. For the various alternative routes, most active channels can be spanned and avoided completely, although potential placement could occur for some alternatives along two channels: Stein's Creek and the Santa Cruz River. For the Agency Preferred Alternative, all active channels are spanned and avoided completely. However, there are numerous mapped 100-year floodplains throughout the project area that exceed 900 feet in width, and structures would have to be placed within these floodplains.

Construction disturbance and permanent access roads would also cross and alter floodplains. These roads would not be hard-surfaced and appropriate controls on sediment and stormwater would be implemented during construction. Since active channels can be spanned, structures and roads would be located in sheetwash areas where any potential flooding would be shallow and water velocities low. Project facilities would not impede flows, collect debris, or cause an increase in flooding area. With respect to permanent structures, the Midpoint North Substation and the Marana Substation expansion would both impact mapped 100-year floodplains. The Marana Substation impact is minor (less than 2 percent of the area of the substation lies within the floodplain), and final design could avoid the floodplain entirely.
The Midpoint North Substation is located within a wide area of sheetflow associated with the Mimbres River drainage. Drainage from the northeast approaches this area in defined channels, but disperses into sheetflow about 1 mile upstream from the Midpoint North substation. Flow does not appear to channelize again until it reaches the Mimbres River, 5 miles downstream. Approximately 54 acres out of the 77-acre footprint of the Midpoint North Substation are within the 100-year mapped floodplain. Both facilities would be designed and constructed in accordance with utility standards for construction in a floodplain.

JUSTIFICATION FOR LOCATING THE PROJECT IN A FLOODPLAIN

Pole structures would be placed outside of active channels, but it is not physically possible to fully span all floodplains in the area, some of which are extensive. The relatively narrow-diameter base of the vertical transmission towers would not have a significant effect in diminishing the capacity of the floodplains, and thus would not exacerbate flood conditions, alter flood patterns, or increase flood risk. This is particularly true for the types of shallow sheetflow experienced throughout the analysis area.

With sediment and erosion control measures in place, construction disturbance and access roads would not be expected to significantly alter runoff conditions on the floodplain, and thus would not exacerbate flood conditions, alter flood patterns, or increase flood risk.

The proposed Midpoint North Substation is located by necessity at the junction of two segments (P2 and P3), and this portion of the proposed transmission line was intentionally sited to parallel existing disturbed ROWs associated with existing transmission lines. While there would be some flexibility with siting the footprint of the proposed Midpoint North Substation, it must remain in the same general vicinity to fulfill its purpose. Siting anywhere in the near vicinity and still meeting the criteria for which this substation was placed would also impact the same floodplain.

CONFORMANCE WITH FLOODPLAIN PROTECTION

PCEMs would be implemented to minimize potential harm to or within the floodplain. For construction disturbance, access roads, and pole structures, Western has concluded that the proposed Project conforms to applicable floodplain protection standards.

Once final design is achieved, the proposed Midpoint North Substation would require additional permitting to ensure conformance with floodplain protection requirements. The placement of a permanent structure potentially impacting 54 acres of a mapped 100-year floodplain (Zone A) would elevate

flooding risk. However, given the nature of surface flow at this location with typically shallow sheetflow conditions, the increase in flooding risk is unlikely to be substantial once design features and any mitigation measures are considered and implemented. The proposed Midpoint North Substation lies within Luna County, and would be subject to county regulation of floodplains (Flood Damage Prevention Ordinance No. 81), and structures would be subject to the approval of the designated floodplain administrator (Luna County Flood Plain Manager, located within the Luna County Planning and Community Development Department). Western has concluded that the proposed Project is consistent with the policies set forth in EO 11988 and EO 11990 and 10 CFR 1022, and conforms to applicable floodplain protection standards, provided local approval by the floodplain administrator is received and permitting conditions are followed.

4.8 BIOLOGICAL RESOURCES

4.8.1. Vegetation

This section describes impacts to vegetation associated with the construction, operation, and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to vegetation are discussed in terms of impacts on vegetation communities, special status species, and noxious weeds and are based on the vegetation analysis presented in chapter 3. Direct (same time and place that the action is performed) and indirect (later in time or farther from the initial action) effects, and short-term or temporary (5 years or less) and long-term (greater than 5 years) or permanent (life of the Project, 50 years) impacts are evaluated relative to vegetation resources. Cumulative effects also will be evaluated; impacts added to the impacts of past, present, and foreseeable future actions, regardless of the cause or source of other impacts. The vegetation resources are partitioned into: (1) vegetation communities, (2) special status species, and (3) noxious weeds and other exotic invasive plant species. Impacts could affect each of those vegetation resources in different ways.

Methodology and Assumptions

ANALYSIS AREA

The analysis area for the purpose of evaluating effects and impacts to vegetation resources is the representative ROW which includes the footprint of the proposed Project, the ROW, as well as disturbance areas such as access roads, substation expansion areas, staging areas, etc. The representative ROW for the New Build Section is 200 feet wide, and the representative ROW for the Upgrade Section is 150 feet wide; however, work in route group 4 of the Upgrade Section would primarily remain in the existing 100-foot-wide Western transmission line ROW. This analysis area is sufficient to identify vegetation resources that could be directly impacted by ground disturbance during construction.

ANALYSIS ASSUMPTIONS

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS) to minimize, mitigate, and/or restore vegetation disturbance.

IMPACT INDICATORS

Vegetation Communities

The following indicators were considered when analyzing potential impacts to vegetation:

- Long-term loss of natural (native species dominated) vegetation communities or associations.
- Direct loss of wetland and/or riparian areas caused by degradation of water quality, diversion of water sources, or erosion or sedimentation from altered drainage patterns.

Special Status Species

The potential for occurrence of special status species within the analysis area was categorized using the following criteria:

- None – proposed Project is well outside the known geographic and elevational range, or lacks suitable habitat necessary for the species, or both. Plants with highly restricted ranges are considered to have no potential to occur if the analysis area is outside its known range, even if the required habitat characteristics are present onsite.
- Unlikely – proposed Project could contain suitable habitat for this species but is outside its known geographic and/or elevational range.
- Possible – proposed Project is within the geographic and elevational range and has suitable habitat for the species.
- Present – The species was observed during limited field investigations in 2012 for this proposed Project by CH2M Hill (CH2M Hill 2013g) and in 2014 during BLM surveys. A listing of special status plant species that have the potential to occur within the analysis area are presented in table D-1 in appendix D.

The following indicators were considered when analyzing potential impacts to special status plant species:

- Direct loss to any population of special status plants that would jeopardize the continued existence of that population
- Loss to any population of plants or an activity that would result in a species being listed or proposed for listing as endangered or threatened

Noxious Weeds

The following indicators were considered when analyzing potential impacts to native vegetation resources:

- Introduction or increased spread of noxious weeds and other invasive exotic weed species into the proposed Project footprint and perimeter area
- Using the indicator listed above, each category for each phase of the proposed Project (construction and operations and maintenance) would be analyzed as to how vegetation could be impacted by the proposed Project (e.g., acreage and linear feet of land colonized by non-native species (change through time))

SIGNIFICANT IMPACTS

For the purposes of this analysis, a significant impact on vegetation could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- Long-term loss of riparian vegetation or sensitive plants; loss to any population of special status plant species that would jeopardize the continued existence of that population
- Introduction or increased spread of noxious weeds per EO 13112 – Invasive Weed Species

- Loss to any population of plants that would result in a species being listed or proposed for listing as endangered or threatened
- An activity that would result in a plant species being listed or proposed for listing as endangered or threatened
- An activity that would result in an indirect loss of wetland and riparian vegetation, caused by degradation of water quality, diversion of water sources, or erosion and sedimentation from altered drainage patterns

Impacts Analysis Results

NO ACTION ALTERNATIVE

Under the no action alternative, the proposed Project would not be developed. No construction would take place in the New Build Section; therefore, there would be no impacts to vegetation resources. Although the existing transmission line would remain in place in the Upgrade Section, ongoing maintenance activities would occur which could result in impacts to vegetation resources. Even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 1-year capital improvement plan (Western 2012a).

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

The proposed Project would include construction and operation and maintenance of the transmission line as well as upgrades to and new construction of substations. All these activities would have the potential to impact (1) vegetation communities, (2) special status species, and (3) noxious weeds and other exotic invasive plant species. Impacts to each are discussed below for both the New Build and Upgrade sections. The relative cover of plant associations crossed by the representative ROW for the entire proposed Project is summarized in table 4.8-1 below.

Table 4.8-1. Relative Percentage of Cover within the Representative ROW of SWReGAP Plant Associations

Plant Association	Total Acres	Area (%)
Apacherian-Chihuahuan Piedmont Semidesert Grassland and Steppe	8,848.7	38.29
Apacherian-Chihuahuan Mesquite Upland Scrub	4,109.7	17.78
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	4,047.6	17.52
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	2,449.0	10.60
Chihuahuan Mixed Salt Desert Scrub	925.3	4.00
Sonoran Paloverde-Mixed Cacti Desert Scrub	703.6	3.05
Agriculture	469.5	2.03
Developed, Medium to High Intensity	383.6	1.66
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	338.5	1.47
North American Warm Desert Active and Stabilized Dune	211.9	0.92
North American Warm Desert Volcanic Rockland	79.2	0.34
Chihuahuan Sandy Plains Semidesert Grassland	72.0	0.31
Developed, Open Space to Low Intensity	62.9	0.27
North American Warm Desert Riparian Mesquite Bosque	62.7	0.27
North American Warm Desert Wash	53.9	0.23

Table 4.8-1. Relative Percentage of Cover within the Representative ROW of SWReGAP Plant Associations (Continued)

Plant Association	Total Acres	Area (%)
Chihuahuan Succulent Desert Scrub	41.1	0.18
Madrean Juniper Savanna	35.6	0.15
North American Arid West Emergent Marsh	33.5	0.14
Sonoran Mid-Elevation Desert Scrub	29.5	0.13
Mogollon Chaparral	22.1	0.10
Madrean Pinyon-Juniper Woodland	21.6	0.09
North American Warm Desert Bedrock Cliff and Outcrop	21.1	0.09
North American Warm Desert Riparian Woodland and Shrubland	18.4	0.08
Madrean Encinal	19.3	0.08
Barren Lands, Non-specific	17.3	0.07
North American Warm Desert Pavement	13.2	0.06
North American Warm Desert Playa	6.0	0.03
Chihuahuan Gypsophilous Grassland and Steppe	6.7	0.03
Inter-Mountain Basins Semidesert Shrub Steppe	3.2	0.01
Open Water	1.2	0.01
Total	**23,107.8**	**100**

Construction

New Build Section

Eleven special status species have potential to be present within the New Build Section. Of these, three are listed as endangered by the State of New Mexico, three are listed as sensitive by the BLM, and eight are listed as salvage restricted by the ANPL (three species are listed with multiple statuses).
The occurrence of each vegetation type in the New Build Section is presented by segment in tables 4.8-2 through 4.8-6, along with the potential for occurrence of special status species and noxious weeds.

Vegetation Communities

All action alternatives would involve the removal of vegetation during construction activities resulting in the direct loss of plant communities. The primary direct and indirect impacts to vegetation during construction and operation and maintenance of the proposed Project would be associated with:

- removal and/or crushing of natural, native-species dominated vegetation communities or associations from construction of transmission lines, substations, temporary work areas, and access roads;
- decreased plant productivity from fugitive dust; and
- plant community fragmentation.

Vegetation removal could have a variety of effects on vegetation communities ranging from changes in community structure and composition along the ROW to alteration of soil moisture or nutrient regimes. The degree of impact depends on the type and amount of vegetation affected, and the rate at which vegetation would regenerate after construction. Ultimately, these direct and indirect effects could reduce

or change the functional qualities of vegetation, including habitat and forage. Fugitive dust from construction and maintenance traffic has the potential to affect photosynthetic rates and decrease plant productivity. Potential impacts from fugitive dust caused by Project activities would be highest near the ROW and occur during construction activities. The overall impact on vegetation from fugitive dust would be localized along the representative ROW and would be reduced below significance once construction activities are completed. These impacts would only occur during occasional maintenance activities and would be insignificant after construction activities are complete.

Indirectly, removal of vegetation could cause increased soil desiccation, and would also expose soil to potential wind and water erosion. This could result in further loss of soil and vegetation, as well as increased sediment input to water resources. This impact would occur in areas of disturbance, localized in the representative ROW; however, as the proposed Project would occur in an area with an arid climate and large existing areas with low vegetation density the impacts from soil desiccation would be localized and minimal. Increased potential for erosion would occur but would be minimized through PCEMs to limit erosion.

There would also be indirect effects resulting from the fragmentation of connected vegetation types and creation of edge areas. Edge areas have different microclimatic conditions and structure, which could lead to different species composition than interior areas. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects would be greatest. However, portions of the New Build Section occur in areas with low vegetation density. In these areas impacts from fragmentation and edge effects would be minimal. The introduction and colonization of disturbed areas by invasive exotic plant species also would lead to changes in vegetation communities, including the possible shift to more wildfire-prone vegetation that favors invasive exotic species over native species.

Much of the New Build Section is collocated with existing roads, railroads, pipelines, existing transmission lines, and the yet to be constructed SunZia Transmission Line. In areas where the proposed transmission line would be collocated with existing infrastructure impacts on vegetation would be less than in areas where there is no collocation of facilities. Impacts to native plant associations throughout these collocated portions of the proposed route would therefore be minimal relative to the existing undeveloped portions of the proposed route.

The proposed Project could have direct and indirect impacts on vegetation resources located within areas disturbed by construction activity. These potential impacts would be mitigated through implementation of PCEM VEG-1, VEG-2, VEG-3, VEG-4, VEG-5, or VEG-6 (see section 8-8 of the POD).

PCEM VEG-1 states that every effort would be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access would not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations would be selected to avoid special status vegetation to the greatest extent feasible.

PCEM VEG-2 states that Southline and its construction contractor would develop a Reclamation, Vegetation, and Monitoring Plan that would guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan would address all land disturbances, regardless of ownership. It would be developed in consultation with appropriate agencies and landowners and would be provided to these entities for review and concurrence. The plan would identify reclamation zones based on the biotic communities within the Project area and reclamation levels based on the construction activity and type of disturbance. The plan would provide 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.

PCEM VEG-4 states that removal of riparian scrubland vegetation would be avoided where possible. Natural regeneration of native plants would be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.

Special Status Species

The primary direct and indirect impacts to special status species during construction and operation and maintenance of the proposed Project would be associated with:

- removal and/or crushing of special status plants from construction of transmission line, substations, temporary work areas, and access roads; and
- direct and indirect impacts on special status species from increased access by OHVs over newly constructed transmission line access roads.

Vegetation removal could have a variety of effects on special status species ranging from alteration of soil moisture or nutrient regimes to population loss to the extent that continued existence of the population is threatened. Any changes to the habitats of special status species may negatively affect individuals of those species, including altering soils, microenvironments, and introducing invasive weeds and increasing wildfire potential. These potential impacts would be minimal due to the implementation of PCEMs to avoid individual plants as well as habitat for special status species.

Pre-construction surveys for the species with the potential to occur in the ROW could allow direct impacts to be avoided. Furthermore, application of measures PCEM VEG 1-6 described above would be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts; and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species would also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3). Measures that reduce ground disturbance and aid reclamation would also reduce any detrimental effects on sensitive biological soil crusts. Specific mitigation measures for the protection of soil crusts are proposed in section 4.5.

Application of PCEMs to reduce the transfer of invasive species on construction vehicles (as directed under PCEM VEG-5: Noxious Weed Management Plan and PCEM VEG-6 regarding equipment washing) should also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds during construction. Adherence to measures included in these plans would result in short-term, minor impact to special status species.

As noted in table 2-8 (VEG-3), measures to conserve and restore special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan. Special status plants, including Pima pineapple cactus, would be restored by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regarding in compliance with local ordinances (State of Arizona, Pima County) and/or measures in the BO and amendment.

Reclamation activities would utilize plant species that are reflective of the local ecosystem and habitat types (see section 2.4.6 and table 2-8 for PCEMs and agency mitigation measures).

Compensatory mitigation planning would be developed as part of the Plant and Wildlife Species Conservation Measures Plan. Compensatory mitigation planning would address residual impacts anticipated following application of the Reclamation, Vegetation, and Monitoring Plan. The plan would be developed in accordance with BLM regulations and approval.

Preconstruction presence/absence surveys would be required in areas where special status species are expected to occur. In consultation with the BLM and Western, Southline would hire qualified biologists

to conduct preconstruction surveys in ground-disturbance areas within suitable habitat for appropriate special status species and their habitats.

Noxious Weeds

The primary direct and indirect impacts to noxious weeds during construction of the proposed Project would be associated with:

- introduction or increased spread of noxious weeds and other invasive exotic weed species; and
- direct and indirect impacts on native vegetation and special status species.

The proposed Project would directly affect noxious weeds through soil and native vegetation disturbance. Since noxious weeds are typically effective competitors with native plants, disturbance of vegetative cover that facilitates their introduction, spread and proliferation, could alter plant community composition, reduce native plant species cover, and produce monocultures that could alter natural fire regimes. Noxious weeds are often fire-adapted and so perpetuate increased fire risk once established or following a fire. If present in the ROW, species like Russian thistle, kochia, and Lehmann lovegrass are heavily favored by disturbance and could disperse seed across long distances. As infestations develop, they could displace the herbaceous resident vegetation, reducing species biodiversity and transforming soil properties and hydrology.

Some noxious weeds may exist in the region (for example, buffelgrass is a noxious species known to occur outside the ROW in many segments) but may not be currently present in the proposed Project footprint. An influx of vehicles and machinery from outside the representative ROW could facilitate noxious weed introduction into the proposed Project footprint. Because the rate of seed production and seed dispersal (i.e., the likelihood of introduction) differs for each particular noxious and invasive species, it is difficult to define the exact area that would be affected. This impact would likely occur in disturbed portions of the representative ROW and possibly into adjacent habitats. Restoration of disturbed areas and other PCEMs would decrease but not eliminate the likelihood of noxious weeds becoming established or spreading in the representative ROW.

Development of a Noxious Weed Management Plan (see PCEM VEG-5) and PCEM-VEG 6: Equipment Washing would be applied in order to address impacts resulting from the introduction and spread of noxious weeds. This would decrease the likelihood of introducing and/or spreading noxious weeds. Adherence to measures included in these plans would result in short- and long-term, minor impact from noxious weeds.

PCEM VEG-5 states that in consultation with local BLM field offices and local resource agencies, Southline and its construction contractor would develop and implement a Noxious Weed Management Plan.

PCEM VEG-6 states that equipment would be washed prior to entering work areas to minimize the spread of invasive weed species.

Upgrade Section

In total, 22 special status species have potential to occur within the Upgrade Section (tables 4.8-7 through 4.8-11). Of these species, two are listed as endangered by the FWS, five are listed as sensitive by the BLM, two are listed as sensitive by Coronado National Forest, three are listed as highly safeguarded by the ANPL, 15 are listed as salvage restricted by the ANPL, and four are listed as SDCP species (seven species have multiple statuses).

The Upgrade Section would consist of rebuilding an existing transmission line, mostly within the existing Western transmission line ROW utilizing existing access roads, thus greatly minimizing the amount of currently undisturbed vegetation potentially impacted. Much of route group 4 in the Upgrade Section would occur within an urban setting with exotic plantings and irrigation and minimal native vegetation component. Construction of the Upgrade Section would therefore have minor direct and indirect impacts on native vegetation resources within areas disturbed by this activity, and minor short-term impacts to exotic and cultivated plantings in back yard settings. Since most of the ROW for this section of the proposed Project has been previously analyzed for impacts for the existing transmission line; additional impacts would be limited to new ROW. These impacts would be reduced through use of PCEM VEG-1, VEG-2, VEG-3, VEG-4, VEG-5, or VEG-6.

Vegetation Communities

Impacts on vegetation communities in the Upgrade Section would be similar in nature to those described above for the New Build Section. Direct and indirect impacts to vegetation communities would occur at a reduced level in comparison to the New Build Section since the construction activities would occur within the existing disturbance area for the existing Western transmission line where communities have already undergone fragmentation. Impacts from habitat fragmentation would be very minimal in the Upgrade Section due to the presence of the existing Western line. Potential impacts on vegetation communities in the Upgrade Section would be minimal and short-term where alternatives follow the existing Western transmission line. Where new facilities are constructed in the Upgrade Section impacts would be similar to those described for the New Build Section and would be minor and both short- and long-term.

Application of measures PCEM VEG 1-6 discussed above would be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts; PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan, and PCEM VEG-4: Vegetation Clearing. Adherence to these measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Impacts on special status species in the Upgrade Section would be similar in nature to those described above for the New Build Section. Direct and indirect impacts to special status species in the Upgrade Section would be the same as described above for the New Build Section but at a reduced level since the construction activities would occur within an existing disturbance area where alternatives follow the existing Western transmission line and where communities have already undergone fragmentation. Application of measures PCEM VEG 1-6 discussed above would be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts, and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species would also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3).

Application of PCEMs to reduce the transfer of invasive species on construction vehicles (as directed under PCEM VEG-5: Noxious Weed Management and PCEM VEG-6: Equipment Washing) would also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds during construction.

Adherence to these measures would result in short-term, minor impacts to special status species in the Upgrade Section where the proposed Project would follow the existing Western transmission line.
In areas that do not follow the existing transmission line impacts would be similar to those described for the New Build Section and would be minor and both short- and long-term impacts on special status plant species.

Noxious Weeds

The proposed Project would directly affect noxious weeds through soil and native vegetation disturbance associated with the transmission line rebuild and associated upgrades to facilities. Direct and indirect impacts to noxious weeds in the Upgrade Section would be the same as described above for the New Build Section but at a reduced level since the construction activities are occurring within existing disturbance areas.

Development of a Noxious Weed Management Plan (see PCEM VEG-5) and PCEM-VEG 6: Equipment Washing would be applied in order to address impacts resulting from the introduction and spread of noxious weeds. Adherence to measures included in these plans would result in short-term, minor impact to noxious weeds where the alternatives follow the existing Western transmission line.
In areas that do not follow the existing transmission line impacts would be similar to those described for the New Build Section. Potential impacts in areas not within the ROW for the existing Western transmission line would be minor and both short- and long-term impacts from noxious and invasive weed species.

Operation and Maintenance

New Build Section

Following Project construction, operation and maintenance of the new line and facilities would commence. Operation and maintenance activities would consist of ground and aerial inspections, vegetation management, electrical equipment repair, structure and conductor repair, overland travel or on existing two-track roads and on routes designated in the ROW grant by maintenance workers, and regeneration station operation and maintenance. These activities are expected to result in minimal impact to vegetation resources. Overland travel would have fewer impacts to vegetation than improving existing roads or developing new roads, and would primarily occur on roads previously used during construction activities. Due to the nature of much of the vegetation within the representative ROW, minimal vegetation management activities would be required to maintain the operating transmission line. Aerial inspection would not have any impacts on vegetation resources. Ground inspection would not be likely to have any additional impacts, direct or indirect, on vegetation resources because no new access would be required for operation and maintenance. Repairs to the transmission structures and conductors could have short-term, minor direct and indirect impacts on vegetation resources within areas disturbed by this activity. Impacts would be reduced by implementing PCEMs VEG-1, VEG-2, VEG-3, VEG-4, VEG-5, or VEG-6.

Vegetation Communities

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to vegetation communities. Application of measures PCEM VEG 1-6 as discussed above would be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts, PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan, and PCEM VEG-4: Vegetation Clearing. Adherence to these measures would result in short-term, minor impacts to vegetation communities.

Special Status Species

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to special status plant species. Application of measures PCEM VEG 1-6 as previously discussed would be used to mitigate these impacts particularly PCEM VEG-1: Minimize Vegetation Impacts and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species would also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3).

Application of PCEMs to reduce the transfer of invasive species on vehicles (as directed under PCEM VEG-5: Noxious Weed Management Plan and PCEM VEG-6: Equipment Washing) should also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds. Adherence to these measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Routine operation and maintenance activities could introduce or reintroduce additional invasive weed species in the long-term. Application of PCEM VEG-5: Development of a Noxious Weed Management Plan (see PCEM VEG-5) and PCEM VEG-6: Equipment Washing would be applied in order to address this impact. Adherence to measures included in these plans would result in short-term, minor impact to noxious weeds.

Upgrade Section

Following construction of the proposed Project, operation and maintenance of the upgraded line and facilities would commence. As noted in chapter 1, upgrading the existing Western Saguaro–Tucson and Tucson–Apache 115-kV transmission lines would involve replacing aging wooden structures with steel structures and would reduce maintenance activity. Operation and maintenance activities would consist of ground and aerial inspections, vegetation management, electrical equipment repair, transmission structure and conductor repair, and regeneration station operation and maintenance. Direct and indirect impacts resulting from operation and maintenance activities are expected to be the same as described above for the New Build Section. Impacts would be reduced by implementing PCEM VEG-1, VEG-2, VEG-3, VEG-4, VEG-5, or VEG-6, and restricting off-road driving.

Vegetation Communities

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to vegetation communities. Application of measures PCEM VEG 1-6 described above would be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts, PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan, and PCEM VEG-4: Vegetation Clearing. Adherence to these measures would result in short-term, minor impacts to vegetation communities.

Special Status Species

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to special status plant species as well as impact vegetation through overland travel that could damage or crush individual plants. Potential impacts from overland travel would be less than if new access roads were created or existing access roads were improved.

Application of previously described measures PCEM VEG 1-6 would be used to mitigate these impacts particularly PCEM VEG-1: Minimize Vegetation Impacts and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species would also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3).

Application of PCEMs to reduce the transfer of invasive species on construction vehicles (as directed under PCEM VEG-5: Noxious Weed Management Plan and PCEM VEG-6: Equipment Washing) should also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds during construction. Adherence to these measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Routine operation and maintenance activities could introduce or reintroduce additional invasive weed species in the long term.

PCEM VEG-5: Development of a Noxious Weed Management Plan (see PCEM VEG-5) and PCEM VEG-6: Equipment washing would be applied in order to address this impact. Adherence to measures included in these plans would result in short-term, minor impacts from noxious weeds.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Subroute 1.1 representative ROW acreage totals 3,566.0 acres. Total temporary disturbance, which includes acres for structure sites, tensioning and pulling sites, and spur roads (associated with construction activities), would result in approximately 23 percent (824 acres) of the representative ROW being disturbed. Total permanent disturbance, which includes acres for access and structure foundations (associated with operation and maintenance of the facilities), would result in approximately 6 percent of the representative ROW being disturbed (221 acres). An additional approximate 120 acres would be temporarily disturbed for construction staging areas and substations, with permanent disturbance to 35 acres.

Vegetation Communities

The representative ROW for subroute 1.1 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (242.8 acres); Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (1,528.4 acres); Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (640.8 acres); and Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (944.8 acres) (see table 4.8-2). Existing impacts to the cover type include transmission lines, gas and oil pipelines, railroads, grazing, and road networks. The proposed line would follow existing impacts for approximately 75 percent of the proposed ROW in subroute 1.1.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species are considered to have the potential to occur along segments P1, P2, P3, or P4a; however, three sensitive plant species—dune pricklypear, Gregg night-blooming cereus, and Parish’s alkali grass—have potential to occur in the representative ROW for subroute 1.1 (see table 4.8-3).

Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Table 4.8-2. Route Group 1 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment

Segment	Total Miles	Vegetation Communities: Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Gypsophilous Grassland and Steppe	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Sandy Plains Semi-Desert Grassland	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Chihuahuan Succulent Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space Low Intensity	Inter-Mountain Basins Semi-Desert Shrub Steppe	Madrean Encinal	Madrean Juniper Savanna	Madrean Pinyon-Juniper Woodland	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Active and Stabilized Dune	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Lower Montane Riparian Woodland and Shrubland	North American Warm Desert Pavement	North American Warm Desert Playa	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Riparian Woodland and Shrubland	North American Warm Desert Volcanic Rockland	North American Warm Desert Wash	Open Water	Rocky Mountain Lower Montane-Foothill Shrubland
Subroute 1.1, Proponent Preferred																													
P1	5.1	0	10.5	0	10.6	0	0	0	103.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P2	102.0	0	184.7	1,126.8	422.0	0	41.7	48.1	618.0	0	2.6	1.6	0	0	2.6	0.1	0	0	2.9	3.0	0	4.2	1.2	0	0	12.5	0	0	0
P3	31.1	5.6	31.1	243.3	175.0	5.3	29.7	0.2	220.3	29.1	1.4	0	0	0	0	0	0	0	9.8	0	0	0	1.4	0	1.1	0	0	0	0
P4a	8.9	0	16.5	158.3	33.2	0	0	0	3.0	0	5.2	0	0	0	0	1.0	0	0	0	0	0	2.1	0	0	0	0	0	0	0
Subroute 1.2, Proponent Alternative																													
S1	13.4	0	104.3	0.4	46.4	0	43.9	0	120.6	0	0	0	2.9	0	0	0	0	0	5.8	0	0	0	0	0	0	0	0	0	0
S2	11.1	0	62.1	4.3	94.7	0	0.1	0	91.0	0	0	0	0	0	0	0	0	0	16.0	0.5	0	0	0	0	0	0	0	0	0
S3	12.9	0	105.0	6.4	91.5	0	1.6	0	78.6	0	0	0	0	0	0	0	0	0	28.3	0	0	0	0	0	0.3	0	0	0	0
S4	10.6	0	14.7	10.9	62.5	0	2.1	0	103.9	0	0	0	0	0	0	0	0	0	63.8	0	0	0	0	0	0	0	0	0	0
S5	29.7	42.4	47.5	342.6	143.9	0	45.8	0	80.7	10.6	0	0	0	4.0	0	0	0	0	0	0.2	0	0	1.9	0	0	0	0	0	0
S6	7.4	12.7	1.6	61.9	42.2	0	0	0.7	42.3	0	0	0	0	0	20.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S7	41.5	0	6.2	543.7	415.5	0	0.7	0.4	36.3	0	0	0	0	0	1.1	0	0	0	0	0	0	2.9	0	0	0	0	0	0	0
S8	14.6	0	4.5	284.6	7.4	0	0.7	3.6	17.3	0	2.0	0	0	0	0	0.2	1.3	0	0	0	0	0	0	0	0	22.3	8.5	0	
Route Group 1 Local Alternatives																													
DN1	42.5	0	12.1	763.1	147.6	0	3.1	0.6	57.7	0	0	0	0	2.2	0	0	0	0	0	0	0	0	0	0.0	0	43.0	0	0	0
A	17.5	0	94.6	6.5	92.8	0	0	0	197.7	0	0	0	0	0	0	0	0	0	26.5	3.3	0	0	1.5	0	0	0	0	0	0
B	12.2	0	13.0	12.3	99.1	0	2.4	0	104.4	1.4	0	0	0	0	0	0	0	0	58.7	0	0	0	0	0	0	0	0	0	0
C	9.0	5.8	0.8	114.6	78.3	0	0	0.1	16.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	22.8	20.9	3.5	380.1	135.1	0	4.0	0	3.3	0	1.9	0	0	0	0	0	0	0	0	0	0	1.8	0	0	0	0	0.5	0	0

Note: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

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Table 4.8-3. Route Group 1 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds

Segment	Total Miles	Special Status Species				Noxious Weeds/ Invasive Exotic Weeds	
		Dune Pricklypear	Gregg Night-blooming Cereus	Parish's Alkali Grass	Chihuahua Scurfpea	Noxious Weeds	Invasive Exotic Weeds
Subroute 1.1, Proponent Preferred							
P1	5.1	X	X				X
P2	102.0	X	X	X			X
P3	31.1	X	X	X			X
P4a	8.9	X	X	X			X
Subroute 1.2, Proponent Alternative							
S1	13.4	X	X				X
S2	11.1	X	X				X
S3	12.9	X	X				X
S4	10.6	X	X				X
S5	29.7	X	X				X
S6	7.4	X	X				X
S7	41.5	X	X		X		X
S8	14.6	X	X	X			X
Route Group 1 Local Alternatives							
DN1	42.5	X	X				X
A	17.5	X	X				X
B	12.2	X	X				X
C	9.0	X	X				X
D	22.8	X	X	X			X

Noxious Weeds

African rue and starthistle are the primary noxious weeds of concern across the Afton to Hidalgo route group. Based on brief, one-time site visits (and without protocol-level surveys), none of these species were observed in sections P1, P2, P3, or P4a. Some exotic invasive species, not classified noxious, were found in P1, P2, P3, and P4a, including Russian thistle, filaree, and mustards. The invasive exotics Lehmann lovegrass and kochia also occur in the region, and readily colonize disturbed soils. Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described in "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Total permanent disturbance within subroute 1.1 would result in approximately 6 percent of the representative ROW being disturbed, or approximately 221.0 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Subroute 1.2 (segments S1 through S8) comprises the primary alternative route, following a path close to the international border from Afton to Hachita and then heading north to Lordsburg. The total length is 141.1 miles with total area in the representative ROW3, 423.5 acres. The majority of the segments are currently impacted by grazing, and a variety of gravel and dirt roads. Within subroute 1.2 approximately 44 percent of the representative ROW is collocated with existing infrastructure. Total temporary disturbance from construction would result in nearly 23.1 percent of the representative ROW being disturbed and total permanent disturbance would result in nearly 6 percent being disturbed, or approximately 790.1 acres and 199.7 acres, respectively. An additional 180 acres would be temporarily disturbed for substations and staging areas, including 35 acres of permanent disturbance.

Vegetation Communities

Segments S1- S4 are characterized by the following dominant vegetation communities: Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (570.7 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (904.1 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (345.8 acres), and North American Warm Desert Active and Stabilized Dune (113.8 acres) plant associations (see table 4.8-2). In addition to smaller amounts of the associations found in segments S1–S4, segments S5–S8 are also characterized by large percentages of Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (1,254.8 acres). The majority of the segments are currently impacted by grazing and a variety of gravel and dirt roads.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species are considered to have the potential to occur along subroute 1.2. Among the other sensitive listed plant species, the dune pricklypear and Gregg night-blooming cereus, have potential to occur throughout subroute 1.2. Additionally, Parish's alkali grass has potential to occur within segment S8, and the Chihuahua scurfpea in segment S7 (see table 4.8-3).

Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

African rue and starthistle are the primary noxious weeds of concern across the Afton to Hidalgo route group. Tamarisk was observed in sections S1–S8. Some exotic invasive species, not classified noxious, were found in segments S1–S8, including Russian thistle, filaree, and mustards (see table 4.8-3). The invasive exotics Lehmann lovegrass and kochia also occur in the region, and readily colonize disturbed soils.

Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Tamarisk is known to occur in segment S5. Tamarisk can disrupt the structure and stability of native plant communities by outcompeting and replacing native plant species, salinizing soils, monopolizing limited sources of moisture, and increasing the frequency, intensity, and effect of fires and floods. Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Subroute 1.2 comprises 3,423.5 acres. Total permanent disturbance within subroute 1.2 would result in approximately 6 percent of the representative ROW being disturbed, or approximately 199.7 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: A, B, C, D, and DN1. Table 4.8-4 lists the acres of potential temporary and permanent disturbance to the representative ROW proposed under the route group 1 local alternatives.

Table 4.8-4. Temporary and Permanent Disturbance Acreages for Route Group 1 Local Alternatives

Local Alternative	Total Acres within Representative ROW	Temporary Disturbance (percent of ROW)	Temporary Disturbance (acres)	Permanent Disturbance (percent of ROW)	Permanent Disturbance (acres)
A	422.9	23.1	98.0	5.1	21.5
B	291.5	23.4	68.2	2.5	7.2
C	215.7	23.3	50.3	2.8	6.1
D	551.1	23.2	127.6	5.1	28.1
DN1	1,029.5	23.1	238.2	9.0	92.9

Source: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Construction

Table 4.8-4 lists the acres of temporary and permanent disturbance proposed under the route group 1 local alternatives.

Vegetation Communities

Local alternative A is a short loop at the southeast end of the proposed Project that would provide an alternative connection between segments S1 and S3. The route is characterized by the Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (197.7 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (92.8 acres), and Apacherian-Chihuahuan Mesquite Upland Scrub (94.6 acres) plant associations (see table 4.8-2). Local alternative A would be collocated with existing infrastructure on approximately 50 percent of the length of the representative ROW.

Local alternative B is a loop on the south edge of the Project that would provide an alternative connection between segments S3 and S5, going along the north side of segment S4. The route is characterized by the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (99.1 acres) and North American Warm Desert Active and Stabilized Dune (58.7 acres) plant associations (see table 4.8-2). Local alternative B would be collocated with existing infrastructure on approximately 100 percent of the length of the representative ROW.

Local alternative C is another short loop on the south edge of the Project that would provide an alternative connection between segments S5 and S7. The route is characterized by the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (78.3 acres) and Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (16.1 acres) plant associations (see table 4.8-2). Local alternative C would be collocated with existing infrastructure on approximately 100 percent of the length of the representative ROW.

Local alternative D provides an alternative connection from the subroute at segment S7 to the New Build Section at segment P5. The route is characterized by the Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (380.1 acres) and the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (135.1 acres) plant associations (see table 4.8-2). Local alternative D would be collocated with existing infrastructure on approximately 6.5 percent of the length of the representative ROW.

Local alternative DN1 provides an alternate route just north and parallel to segment P2. The route is characterized by Apacherian-Chihuahuan Piedmont Semi-desert Grassland and Steppe (763.1 acres), Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (57.7 acres), and Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (147.6 acres) plant associations (see table 4.8-2). Local alternative DN1 would be collocated with existing infrastructure on approximately 100 percent of the length of the representative ROW.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species are considered to have the potential to occur along the local alternatives in route group 1. Among the other sensitive listed plant species, the dune pricklypear and Gregg night-blooming cereus have potential to occur throughout the local alternatives in route group 1. Additionally, among non-ESA listed plant species, Parish's alkali grass has potential to occur within local alternative C (see table 4.8-3). Due to the proximity of local alternative DN1 to segment P2, special status species would likely be similar to segment P2. Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

African rue and starthistle are the primary noxious weeds of concern across the local alternatives in route group 1. None were observed within the route group 1 local alternatives, however some exotic invasive species, not classified noxious, were found including Russian thistle, filaree, and mustards (see table 4.8-3). The invasive exotic Lehmann lovegrass also occurs in the region, and it readily colonizes disturbed soils. Due to the proximity of local alternative to segment P2, special status species would likely be similar to segment P2. Construction impacts from noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Table 4.8-4 lists the potential permanent disturbance acres for the route group 1 local alternatives that would result from operation and maintenance of the facilities.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives."

Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Subroute 2.1 comprises 2,308.5 total acres. Total temporary disturbance from construction would result in nearly 23.2 percent of the representative ROW being disturbed and total permanent disturbance would result in nearly 5.1 percent being disturbed, or approximately 534.5 acres and 118.5 acres, respectively. An additional approximate 100 acres of temporary disturbance and 53 acres of permanent disturbance would occur for substations and construction staging areas.

Vegetation Communities

Subroute 2.1 comprises route segments P4b, P4c, P5a, P5b, P6a, P6b, P6c, P7, and P8. The proposed line would follow existing infrastructure for approximately 84 percent of the proposed ROW in subroute 2.1.

The representative ROW within Subroute 2.1 comprises 2,308.5 acres and is characterized by the following dominant plant associations: Apacherian-Chihuahuan Piedmont Semi-desert Grassland and Steppe plant association (1,069.1 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (684.4 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (277.5 acres), and Chihuahuan Mixed Salt Desert Scrub (135.6 acres) (see table 4.8-5).

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species have potential to occur along subroute 2.1. Of the other sensitive plant species considered in this analysis, the Gregg night-blooming cereus, Parish's alkali grass, button cactus, devilthorn hedgehog cactus, playa spider plant, San Carlos wild-buckwheat, slender needle corycactus, varied fishhook cactus, Chihuahua scurfpea, and Wilcox pincushion cactus have some potential to occur in the representative ROW in segments P4–P8 (see table 4.8-6). Pre-construction surveys for Chihuahua scurfpea and other special status plant species would occur in suitable habitat and ground disturbance in occupied habitat would be avoided to the extent practicable.

Table 4.8-5. Route Group 2 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment

Segment	Total Miles	Vegetation Communities: Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Sandy Plains Semi-Desert Grassland	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Chihuahuan Succulent Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Madrean Juniper Savanna	Madrean Pine-Oak Forest and Woodland	Madrean Juniper Savanna	Madrean Pinyon-Juniper Woodland	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Active and Stabilized Dune	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Lower Montane Riparian Woodland and Shrubland	North American Warm Desert Pavement	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Volcanic Rockland	North American Warm Desert Wash	Open Water	Sonoran Mid-Elevation Desert Scrub	Sonoran Paloverde-Mixed cactus Desert Scrub
Subroute 2.1, Proponent Preferred																												
P4b	13.9	0	1.3	234.8	33.8	12.6	5.2	41.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.7	0	0	0
P4c	1.9	0	0	21.7	10.6	9.6	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
P5a	9.6	0	0.1	215.5	2.5	12.3	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P5b	21.1	0	187.9	142.8	90.3	79.1	0	2.9	0	0	0	0	0.4	0	0	0	0	0	0	7.1	0.6	0	0	0	0	0	0	0
P6a	0.9	0.2	12.1	4.1	0	1.8	0	0	0	1.2	0	0	0	0	0	0	0	0.6	0	0	0	0	1.2	0	0	0	0	0
P6b	22.5	49.8	311.0	59.4	103.6	12.2	0	1.0	0	0	0	0	0	0	0	2.0	0.5	5.0	0	0	0	0	0.5	0	0	0	0	0
P6c	2.8	0	45.9	20.3	1.2	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P7	22.3	0	124.3	367.3	31.4	8.0	0	8.3	0	0	0	0	0	0	0	0	0.2	0	0	0	0	1.2	0	0.1	0	0	0	0
P8	0.5	0	1.9	3.0	4.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subroute 2.2, Proponent Alternative																												
E	31.8	62.7	136.7	317.6	133.1	91.0	0	12.2	0	0	0	1.4	0	0	0	0	0	0	0	0.2	0	0	10.9	0	0.8	0	0	0
F	25.3	1.9	327.8	123.4	124.4	6.1	0	0.5	0	1.0	0	1.8	0	0	0	0	0.6	11.0	0	0	0	0	11.9	0	0.6	0	0	0
Ga	25.7	6.2	257.6	314.7	34.1	0.3	0	0	0	1.7	0	0	0	0	0	0.9	0.0	0	0	0	0	0	0	0	6.9	0	0	0
Gb	1.1	0	8.5	17.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gc	7.4	0	132.0	46.1	0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I	2.3	0	12.0	31.1	10.5	0	0	0	0	1.2	0	0	0	0	0	0.3	0.4	0	0	0	0	0	0	0	0	0	0	0
J	2.3	0	12.4	34.6	7.0	0	0	0	0	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4.8-5. Route Group 2 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment (Continued)

Segment	Total Miles	Vegetation Communities: Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Sandy Plains Semi-Desert Grassland	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Chihuahuan Succulent Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Madrean Juniper Savanna	Madrean Pine-Oak Forest and Woodland	Madrean Juniper Savanna	Madrean Pinyon-Juniper Woodland	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Active and Stabilized Dune	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Lower Montane Riparian Woodland and Shrubland	North American Warm Desert Pavement	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Volcanic Rockland	North American Warm Desert Wash	Open Water	Sonoran Mid-Elevation Desert Scrub	Sonoran Paloverde-Mixed cactus Desert Scrub
Route Group 2 Route Variations																												
P7a	31.2	45.9	218.1	420.5	49.2	9.3	0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.3	0	0	0
P7b	10.5	5.3	86.8	154.1	4.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	0	0	0
P7c	1.0	1.4	6.3	10.9	4.5	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P7d	2.0	12.0	12.6	23.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Route Group 2 Local Alternatives																												
LD1	35.4	69.1	171.7	260.8	210.8	45.7	1.0	42.3	0	27.9	0	0	0.1	0	0	0	0	13.5	0	0	0	0.4	12.4	0	1.1	0	0	0
LD2	8.9	0	3.8	170.0	20.1	20.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LD3a	26.6	0	10.0	390.1	105.4	29.7	5.8	98.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.9	0	0	0
LD3b	2.2	0	0	37.7	14.7	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	0	0	0
LD4	53.7		300.5	235.6	424.6	264.1	0	28.3	0	0	0	11.0	6.5	0	0	16.9	8.5	0	0	0	0	0	2.2	1.2	0.0	0	0	0.9
LD4-Option 4	6.4	0	17.0	98.1	31.4	5.1	0	0	0	2.1	0	1.0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
LD4-Option 5	12.3	0	48.3	152.1	68.9	14.0	0	4.0	0	1.6	0	0.6	0	0	0	0	6.7	0	0	0	0	0	0	0	0	0	0	0
WC1	14.8	0	85.1	251.2	0.3	11.5	0	0.5	0	7.6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0

Note: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Table 4.8-6. Route Group 2 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds

Segment	Total Miles	Special Status Species												Noxious Weeds/ Invasive Exotics	
		Gregg Night-blooming Cereus	Chihuahua Scurfpea	Parish's Alkali Grass	Slender Needle Corycactus	Devilthorn Hedgehog Cactus	Wilcox Pincushion Cactus	San Carlos Wild-Buckwheat	Varied Fishhook Cactus	Button Cactus	Playa Spider Plant	Dune Pricklypear	Needle-spined Pineapple Cactus	Tamarisk	Invasive Exotic Weeds
Subroute 2.1, Proponent Preferred															
P4b	13.9	X	x	X											X
P4c	1.9	X		X											X
P5a	9.6	X		X	X	X	X	X						X	X
P5b	21.1	X		X	X	X	X	X							X
P6a	0.9	X			X	X	X	X							X
P6b	22.5	X			X	X	X	X	X						X
P6c	2.8	X			X	X	X	X	X						X
P7	22.3				X	X	X	X	X		X				X
P8	0.5				X	X	X	X	X	X	X				X
Subroute 2.2, Proponent Alternative															
E	31.8	X		X	X	X	X	X							X
F	25.3	X			X	X	X	X	X						X
Ga	25.7					X	X	X	X	X	X		X		X
Gb	1.1					X	X	X	X	X	X		X		X
Gc	7.4					X	X	X	X	X	X		X		X
I	2.3					X	X	X		X			X		X
J	2.3					X	X	X		X			X		X

Table 4.8-6. Route Group 2 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds (Continued)

Segment	Total Miles	Special Status Species												Noxious Weeds/ Invasive Exotics	
		Gregg Night-blooming Cereus	Chihuahua Scurfpea	Parish's Alkali Grass	Slender Needle Corycactus	Devilthorn Hedgehog Cactus	Wilcox Pincushion Cactus	San Carlos Wild-Buckwheat	Varied Fishhook Cactus	Button Cactus	Playa Spider Plant	Dune Pricklypear	Needle-spined Pineapple Cactus	Tamarisk	Invasive Exotic Weeds
Route Group 2 Route Variations															
P7a	31.2	X			X	X		X	X	X		X	X		X
P7b	10.5	X			X	X		X	X	X		X	X		X
P7c	1.0	X			X	X			X	X		X	X		X
P7d	2.0				X	X			X	X			X		X
Route Group 2, Local Alternatives															
LD1	35.4	X		X											X
LD2	8.9	X		X											X
LD3a	26.6	X	X	X											X
LD3b	2.2	X		X											X
LD4	53.7	X	X		X	X	X	X	X					X	X
LD4-Option 4	6.4	X			X	X	X	X	X					X	X
LD4-Option 5	12.3	X			X	X	X	X	X					X	X
WC1	14.8					X	X	X	X	X	X			X	X

Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Primary noxious weeds of concern in the region of the proposed Project in New Mexico are African rue and starthistles. Tamarisk is known to occur in segment P5 and in the San Simon Creek vicinity (NIISS 2013) (see table 4.8-6). The primary noxious weed of concern in the vicinity of the Project in Arizona is buffelgrass. This species is not currently known to occur within subroute 2.1 representative ROW. Hoary cress has been documented in the Lordsburg vicinity (NIISS 2013). Other exotic, invasive species, including Russian thistle, filaree, mustards, kochia, and Lehmann lovegrass occur throughout route group 2, but these species are not classified as noxious weeds.

Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Subroute 2.1 comprises 2,308.5 total acres. Total permanent disturbance would result in nearly 5.1 percent being disturbed, or approximately 118.5 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Subroute 2.2 totals 2,316.6 acres. Total temporary disturbance from construction would result in nearly 23.2 percent of the representative ROW being disturbed and total permanent disturbance would result in nearly 6.2 percent being disturbed, or approximately 537.4 acres and 144.0 acres, respectively. An additional approximately 100 acres would be temporarily disturbed with 53 acres of permanent disturbance for substations and construction laydown areas.

Vegetation Communities

Subroute 2.2 segments E, F, Ga, Gb, Gc, I, and J all provide alternative route connections. All seven segments are characterized by the Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (884.9 acres), the Apacherian-Chihuahuan Mesquite Upland Scrub (886.9 acres), and the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (309.1 acres) plant associations (see table 4.8-5). These segments are currently impacted by a mixture of grazing, agriculture, railroads, transmission lines, a pipeline, and a variety of roads. Within subroute 2.2 the representative ROW would be collocated with existing infrastructure on approximately 55 percent of the subroute.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species have potential to occur along subroute 2.2. Of the other sensitive plant species considered in this analysis, the Gregg night-blooming cereus, Parish's alkali grass, button cactus, devilthorn hedgehog cactus, playa spider plant, San Carlos wild-buckwheat, slender needle corycactus, varied fishhook cactus, needle-spined pineapple cactus, and Wilcox pincushion cactus have some potential to occur in segments E, F, Ga, Gb, Gc, I, and J (see table 4.8-6).

Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Primary noxious weeds of concern in the region of the proposed Project in New Mexico are African rue and starthistles. The primary noxious weed of concern in the vicinity of the Project footprint in Arizona is buffelgrass. This species is not known to occur along the representative ROW for subroute 2.2. Hoary cress has been documented in the Lordsburg vicinity (NIISS 2013). Other exotic, invasive species, including Russian thistle, filaree, and mustards, kochia, and Lehmann lovegrass occur throughout route group 2, but these species are not classified as noxious weeds (see table 4.8-6).

Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Subroute 2.2 totals 2,316.6 acres. Total permanent disturbance would result in nearly 6.2 percent of the representative ROW being disturbed, or approximately 144.0 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

ROUTE VARIATIONS

Construction

For each of the route variations, nearly 23.2 percent of the representative ROW would be temporarily disturbed and total permanent impacts would result in nearly 4.4 percent being disturbed.

Route variation P7a comprises 755.8 acres, of which 174.6 would be temporarily disturbed (plus 20 acres for staging areas and substations) and 34.8 acres would be permanently disturbed. Route P7a would increase the amount of disturbance over Subroute 2.1 due to the increased length of the transmission line.

Route variation P7b comprises 251.8 acres, of which 58.7 acres would be temporarily disturbed and 11.6 acres would be permanently disturbed. Route P7b would increase the amount of disturbance over subroute 2.1 due to the increased length of the transmission line.

Route variation P7c comprises 24.1 acres, of which 5.7 acres would be temporarily disturbed and 0.5 acre would be permanently disturbed. Route P7c would increase the amount of disturbance over subroute 2.1 due to the increased length of the transmission line.

Route variation P7d comprises 47.9 acres, of which 11.3 acres would be temporarily disturbed and 1.5 acres would be permanently disturbed. Route P7d would increase the amount of disturbance over subroute 2.1 due to the increased length of the transmission line.

Vegetation Communities

Route variation P7a is characterized by the Agriculture (45.9 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (218.1 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (420.5 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (49.2 acres), Chihuahuan Mixed Salt Desert Scrub (9.3 acres), Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (1.5 acres), and North American Warm Desert Wash (11.3 acres) plant associations (see table 4.8-5). Route variation P7a would follow existing infrastructure on approximately 78 percent of the representative ROW.

Route variation P7b is characterized by the Agriculture (5.3 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (86.8 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (154.1 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (4.4 acres), and North American Warm Desert Wash (1.2 acres) plant associations (see table 4.8-5). Route variation P7b would follow existing infrastructure on approximately 59 percent of the representative ROW.

Route variation P7c is characterized by the Agriculture (1.4 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (6.3 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (10.9 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (4.5 acres), and Chihuahuan

Stabilized Coppice Dune and Sand Flat Scrub (1.0 acre) plant associations (see table 4.8-5). Route variation P7c would follow existing infrastructure on 100 percent of the representative ROW.

Route variation P7d is characterized by the Agriculture (12.0 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (12.6 acres), and Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (23.4 acres) plant associations (see table 4.8-5). Route variation P7d would follow existing infrastructure on 100 percent of the representative ROW.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same for all route variations as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

None of the plant species listed under the ESA have the potential to be present in route variations P7a, P7b, P7c, and P7d (see table 4.8-6). Of the other sensitive plant species considered in this analysis, slender needle corycactus, devilthorn hedgehog cactus, varied fishhook cactus, button cactus, and needle-spined pineapple cactus have some potential to occur in route variations P7a, P7b, P7c, and P7d. In addition, dune pricklypear and Gregg night-blooming cereus have some potential to occur in route variations P7a, P7b, and P7c. San Carlos wild buckwheat may have some potential to occur in route variations P7a and P7b. Chihuahua scurfpea has potential to occur along route variation P7a.

Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

The primary noxious weed of concern in the vicinity of the route variations is buffelgrass. This species is not currently known to occur within the analysis area (see table 4.8-6).

Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

For route variations in route group 2, total permanent disturbance would result approximately 4.4 percent of the representative ROW being disturbed. Route variation P7a comprises 755.8 acres, of which 34.8 acres would be permanently disturbed. Route variation P7b comprises 251.8 acres, of which 11.6 acres would be permanently disturbed. Route variation P7c comprises 24.1 acres, of which 0.5 acre would be permanently disturbed. Route variation P7d comprises 47.9 acres, of which 1.5 acres would be permanently disturbed.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the route variations already have a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. Table 4.8-7 lists the acres of temporary and permanent disturbance proposed within the representative ROW under the route group 2 local alternatives.

Table 4.8-7. Temporary and Permanent Disturbance Acreages, Route Group 2 Local Alternatives

Alternative	Total Acres within Representative ROW	Temporary Disturbance (percent of ROW)	Temporary Disturbance (acres)	Permanent Disturbance (percent of ROW)	Permanent Disturbance (acres)
LD1	856.9	23.1	198.1	6.6	56.5
LD2	214.4	23.2	49.7	8.5	18.1
LD3a	644.3	23.1	148.8	6.8	43.9
LD3b	52.5	23.2	12.2	8.4	4.4
LD4	1,300.3	23.1	300.6	8.7	113.1
LD4-Option 4	154.8	23.3	36.0	9.2	14.2
LD4-Option 5	296.1	23.2	68.7	7.5	22.2
WC1	358.3	23.2	83.0	7.9	28.3

Source: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Construction

Table 4.8-7 lists the acres of temporary and permanent disturbance proposed under the route group 2 local alternatives.

Vegetation Communities

The local alternative segments are all characterized by the Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe, Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub and Apacherian-Chihuahuan Mesquite Upland Scrub plant associations. Existing impacts are associated with grazing, agriculture, a pipeline, and a variety of roads, including an interstate across local alternative LD1.

Local alternative LD1 is characterized by the following dominant plant associations: Agriculture (69.1 acres), Apacherian-Chihuahuan Mesquite Upland Scrub (171.7 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (260.8 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (210.8 acres), and Chihuahuan Mixed Salt Desert Scrub (45.7 acres) (see table 4.8-5).

Local alternative LD1 would follow existing infrastructure on approximately 70 percent of the representative ROW.

Local alternative LD2 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (170.0 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (20.1 acres), and Chihuahuan Mixed Salt Desert Scrub (20.6 acres) (see table 4.8-5). Local alternative LD2 would not follow existing infrastructure.

Local alternative LD3a is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (10.0 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (390.1 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (105.4 acres), and Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (98.4) (see table 4.8-5). Local alternative LD3a would follow existing infrastructure on approximately 69 percent of the representative ROW.

Local alternative LD3b is characterized by the following dominant plant associations: Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (37.7 acres) and Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (14.7 acres) (see table 4.8-5). Local alternative LD3b would not follow existing infrastructure.

Local alternative LD4 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (300.5 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (235.6 acres), Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (424.6 acres), Chihuahuan Mixed Salt Desert Scrub (264.1 acres), Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub (28.3 acres), and Madrean Pinyon-Juniper Woodland (6.5 acres) (see table 4.8-5). Local alternative LD4 would follow existing or planned infrastructure on approximately 100 percent of the representative ROW.

Local alternative LD4-Option 4 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (17.0 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (98.1 acres) and Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (31.4 acres) (see table 4.8-5). Local alternative LD4-Option 4 would follow existing infrastructure on approximately 24 percent of the representative ROW.

Local alternative LD4-Option 5 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (48.3 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (152.1 acres) and Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (68.9 acres) (see table 4.8-5). Local alternative LD4-Option 5 would follow existing infrastructure on approximately 100 percent of the representative ROW.

Local alternative WC1 is characterized by the following dominant plant associations: Apacherian-Chihuahuan Mesquite Upland Scrub (85.1 acres), Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (251.2 acres) (see table 4.8-5). Local alternative WC1 would follow existing infrastructure on approximately 16 percent of the representative ROW.

Construction impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species have potential to occur along the local alternatives in route group 2. Of the other sensitive plant species considered in this analysis, the Gregg night-blooming cereus, Parish's alkali grass, button cactus, devilthorn hedgehog cactus, playa spider plant, San Carlos wild-buckwheat, slender needle corycactus, varied fishhook cactus, needle-spined pineapple cactus, and Wilcox pincushion cactus have some potential to occur in all the local alternative segments in route group 2 (see table 4.8-6). In 2014, BLM surveys identified a previously unknown population of Chihuahua scurfpea approximately 0.6 mile south of local alternative LD3a. Potential habitat for the species occurs along LD3a as well as LD4. Pre-construction surveys for Chihuahua scurfpea would occur in suitable habitat and ground disturbance in occupied habitat would be avoided to the extent practicable. Construction impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Primary noxious weeds of concern in the region of the proposed Project in New Mexico are African rue and starthistles. Tamarisk could be present on segment LD1. The primary noxious weed of concern in the vicinity of the Project in Arizona is buffelgrass. This species is not known to occur along the local alternative segments in route group 2. Hoary cress has been documented in the Lordsburg vicinity (NIISS 2013), and it could be present on local alternative LD3a. Other exotic, invasive species, including Russian thistle, filaree, mustards, kochia, and Lehmann lovegrass occur throughout the local alternatives in route group 2, but these species are not classified as noxious weeds (see table 4.8-6).

Construction impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Table 4.8-7 lists the potential permanent disturbance acres for the route group 2 local alternatives that would result from operation and maintenance of the facilities.

Vegetation Communities

Operation and maintenance impacts to vegetation communities and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Route Group 3 – Apache Substation to Pantano Substation

SUBROUTE 3.1 – PROPONENT PREFERRED

C*O*nstruction

Subroute 3.1 totals 1,269.4acres and is 70.3 miles in length. Total temporary disturbance from construction would result in nearly 28.3 percent of the ROW being disturbed and total permanent disturbance would result in nearly 6.5 percent being disturbed, or approximately 358.7 acres and 82.1 acres, respectively. An additional approximately 80 acres would be temporarily disturbed with 5.7 acres of permanent disturbance from substations and construction staging areas.

Vegetation Communities

Subroute 3.1 comprises route segments U1a, U1b, U2, and U3a. The representative ROW in the subroute segments is characterized by the Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (255.9 acres), the Apacherian-Chihuahuan Mesquite Upland Scrub (407.7 acres), and the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (132.8) plant associations (see table 4.8-8). Existing impacts are associated with urban development, highways, ranches, grazing, agriculture, transmission lines, and a railroad. Subroute 3.1 would be collocated with existing infrastructure, primarily the existing Western ROW, for approximately 100 percent of the length of the representative ROW.

Construction impacts to vegetation communities relating to the Upgrade Section, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species are considered to have the potential to occur along segment U1.
The Huachuca water umbel, listed as endangered under the ESA, has limited potential to be present on segment U2, if habitat becomes suitable on this portion of the San Pedro River where the Project footprint crosses the upper portions of Cienega Creek. This species is known to be present on other parts of the San Pedro River and along Cienega Creek but not in the proposed Project area. The crossings of the San Pedro River and Cienega Creek would occur at existing ROW crossings of the existing Western transmission line. The proposed Project may affect, and is not likely to adversely affect the Huachuca water umbel based on effects to individuals and habitat being discountable, as neither currently occurs in the proposed Project area; effects to designated critical habitat would be discountable as it is approximately 12 miles upstream of the proposed Project (FWS 2014d).

Pima pineapple cactus has the potential to occur on the San Xavier Indian Reservation on segment U3a. Potential impacts on the Pima pineapple cactus from the proposed Project include direct loss of individual plants and changes to habitat from the establishment and spread of invasive plants. Ground disturbance to Pima pineapple cactus habitat would occur during the construction phase of the proposed Project from the construction of new access roads, pulling and tensioning sites, and structure work areas. Ground disturbance may directly affect the Pima pineapple cactus through direct loss of individual plants and may indirectly affect the species by facilitating the establishment and spread of invasive plant species. Ground-disturbing activities could lead to increased establishment and spread of invasive plant species, which can compete with the Pima pineapple cactus for space and resources and could modify fire regimes in habitat that could lead to increased mortality for the species and degradation of habitat. Measures to minimize the establishment and spread of invasive plant species would minimize the potential for indirect effects on the

Pima pineapple cactus from the proposed Project. Effects to individuals would be minimized through implementation of conservation measures, including purchasing credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the occupied area of disturbance to Pima pineapple cactus habitat; flagging individuals prior to the commencement of work to avoid accidental damage during construction; and relocating any Pima pineapple cactus that cannot be avoided, if possible.

Pima County–protected species would be inventoried and conserved, including saguaro, ironwood, and Pima pineapple cactus.

Of the other sensitive plant species considered in this analysis, the broadleaf groundcherry, button cactus, Chihuahuan scurfpea, devilthorn hedgehog cactus, magenta-flowered hedgehog cactus, giant sedge, Kelvin cholla, littleleaf false tamarind, magenta-flowered hedgehog cactus, needle-spined pineapple cactus, night-blooming cereus, San Carlos wild-buckwheat, San Pedro River wild-buckwheat, staghorn cholla, Tumamoc globeberry, varied fishhook cactus, and Wilcox pincushion cactus have some potential to occur in the representative ROW along all the segments in subroute 3.1 (see table 4.8-9). Construction impacts to special status species relating to subroute 3.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

The primary noxious weed of concern in the vicinity of route group 3 is buffelgrass, which is not known to occur in segments U1, U2, or U3a. The exotic, invasive species Russian thistle, mustards, kochia, Lehman lovegrass, and filaree occur throughout the route group (see table 4.8-9).

Construction impacts to noxious species relating to subroute 3.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Subroute 3.1 totals 1,269.4 acres. Total permanent disturbance would result in nearly 6.5 percent being disturbed, or approximately 82.1 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities relating to subroute 3.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species relating to subroute 3.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." In addition, no impacts on the Huachuca water umbel from operation and maintenance are anticipated. Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Table 4.8-8. Route Group 3 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment

Segment	Total Miles	Vegetation Communities: Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Riparian Mesquite Bosque	Open Water	Sonoran Paloverde-Mixed Cactus Desert Scrub	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Sonoran Mid-Elevation Desert Scrub
Subroute 3.1, Proponent Preferred																		
U1a	16.1	14.5	88.4	125.2	50.5	9.1	0	0	0	0.0	3.8	0	0	0.3	0	0	0	0
U1b	2.9	0	18.5	14.7	14.4	2.4	0	2.7	0	0	0	0	0	0	0	0	0	0
U2	15.8	14.8	101.1	56.5	56.3	23.1	0	12.5	16.7	0	0	3.4	2.4	0	0.7	0	0	0
U3a	35.6	0	199.7	59.4	11.5	3.3	0	41.8	8.5	0.1	0	0	1.2	1.6	0	209.3	86.8	14.1
Route Group 3, Local Alternative																		
H	19.3	9.3	198.1	62.8	38.3	35.3	0.6	1.7	0	1.3	0	0	0	2.8	0	0	0	0

Table 4.8-9. Route Group 3 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds

		Special Status Species																			Noxious Weeds/ Invasive Exotic Weeds	
Segment	Total Miles	Button Cactus	Chihuahua Scurfpea	Devilthorn Hedgehog Cactus	Giant Sedge	Needle-spined Pineapple Cactus	San Pedro River Wild Buckwheat	Wilcox Pincushion Cactus	Broadleaf Ground Cherry	Littleleaf False Tamarind	San Carlos Wild Buckwheat	Varied Fishhook Cactus	Huachuca Water Umbel	Magenta Flowered Hedgehog Cactus	Kelvin Cholla	Night-blooming Cereus	Pima Indian Mallow	Pima Pineapple Cactus	Staghorn Cholla	Tumamoc Globeberry	Buffelgrass	Invasive Exotic Weeds
Subroute 3.1, Proponent Preferred																						
U1a	16.1	X	X	X	X	X	X	X	X	X	X	X										X
U1b	2.9	X	X	X		X	X	X	X	X	X	X	X									X
U2	15.8			X	X	X	X			X	X	X	X	X								X
U3a	35.6				X	X				X	X	X	X	X	X	X	X	X	X	X	X	X
Route Group 3, Local Alternative																						
H	19.3			X	X	X	X	X		X	X	X	X									X

Note: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Noxious Weeds

Operation and maintenance impacts to noxious species relating to subroute 3.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H.

Construction

This local alternative comprises 350.2 acres. Total temporary disturbance from construction would result in nearly 28.1 percent of the ROW being disturbed and total permanent disturbance would result in nearly 7.1 percent being disturbed, or approximately 98.4 acres and 24.8 acres respectively.

Vegetation Communities

Local alternative H comprises 350.2 acres and is characterized by the Apacherian-Chihuahuan Mesquite Upland Scrub (198.1 acres), the Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (62.8 acres), and the Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub (38.3 acres) plant associations (see table 4.8-8). Existing impacts are associated with a variety of roads, ranches, grazing, agriculture, transmission lines, and a railroad. Local alternative H would be collocated with existing infrastructure for approximately 100 percent of the length of the representative ROW.

Construction impacts to vegetation communities relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

The Huachuca water umbel, listed as endangered under the ESA, has limited potential to be present on local alternative H, if suitable habitat is available on this portion of the San Pedro River. This species is known to be present on other parts of the San Pedro River but not in the proposed Project area. A new crossing would occur where local alternative H would cross the San Pedro River. Of the other sensitive plant species considered in this analysis, the devilthorn hedgehog cactus, giant sedge, littleleaf false tamarind, needle-spined pineapple cactus, San Carlos wild-buckwheat, San Pedro River wild-buckwheat, varied fishhook cactus, and Wilcox pincushion cactus have some potential to occur in local alternative H (see table 4.8-9).

Construction impacts to special status species relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Potential impacts on the Huachuca water umbel would be as described above for subroute 3.1 and would be unlikely to occur and insignificant as the species is not known from the location where local alternative H would cross the San Pedro River. Adherence to mitigation measures would reduce impacts and could result in short- and long-term, minor/negligible impacts to special status species.

Noxious Weeds

The primary noxious weed of concern in the vicinity of route group 3 is buffelgrass, which is not known to occur in local alternative H. Exotic, invasive species Russian thistle, mustards, and filaree occur throughout route group 3 (see table 4.8-9).

Construction impacts to noxious species relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

This local alternative comprises 350.2 acres. Total permanent disturbance would result in nearly 7.1 percent being disturbed, or approximately 24.8 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Since the subroute already has a significant amount of existing disturbance, any additional disturbance could be reduced by adherence to mitigation measures that would result in short-and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Potential impacts on Huachuca water umbel would be as described above for subroute 3.1. Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species relating to local alternative H, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Route segments U3b, U3c, U3d, U3e, U3f, U3g, U3h, U3i, U3j, U3k, U3l, U3m. and U4, make up subroute 4.1.

Construction

Subroute 4.1 comprises 722.8 acres. Total temporary disturbance from construction would result in 34.1 percent of the ROW being disturbed plus 76 acres for staging areas and substations, and total permanent disturbance of 6.1 percent being disturbed, or approximately 322.2 acres and 44.3 acres respectively.

Vegetation Communities

The representative ROW for subroute 4.1 is characterized by the Sonoran Paloverde-Mixed Cacti Desert Scrub plant association, which covers approximately 293.2 acres. The Sonora-Mojave Creosote-White

Bursage Desert Scrub (123.9 acres) and the Apacherian-Chihuahuan Mesquite Upland Scrub plant (2.9 acres) are also present in the segment (table 4.8-10). Low-, medium-, and high-density urban development occur on approximately 181.0 acres. Existing impacts are associated with urban development, agriculture, a variety of roads and highways, transmission lines, and pipelines. Subroute 4.1 would be collocated with existing infrastructure, primarily the existing Western ROW, for approximately 100 percent of the length of the representative ROW.

Construction impacts to vegetation communities relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." The subroute already has a significant amount of existing disturbance, most notably urban development with accompanying exotic plantings and urban yards, therefore the relative portion of the subroute that comprises native vegetation associations is reduced. Any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

The Pima pineapple cactus, listed as endangered under the ESA, has potential to be present on the southern parts of segments U3 and U4. This species is known to be present in this vicinity from approximately the Pantano Substation to the Del Bac Substation. Recent spring surveys in 2013 have documented the Pima pineapple cactus between I-19 and Davidson Canyon in the existing Western ROW (personal communication, Johnida Dockens, BLM, 2013). Additionally, the Huachuca water umbel, listed as endangered under the ESA, has slight potential to be present in segment U3, if suitable habitat is present where it crosses arroyos that feed into Cienega Creek to the north of the Project footprint.

The Huachuca water umbel is not known from the project area but is known to be present along other portions of Cienega Creek. Of the other sensitive plant species considered in this analysis, the desert barrel cactus, Engelmann pricklypear, giant sedge, littleleaf false tamarind, magenta-flowered hedgehog cactus, needle-spined pineapple cactus, night-blooming cereus, Pima Indian mallow, San Carlos wild-buckwheat, San Pedro River wild buckwheat, staghorn cholla, Thornber fishhook cactus, Tumamoc globeberry, varied fishhook cactus, and hybrid Kelvin cholla have some potential to occur in the representative ROW in subroute 4.1 (see table 4.8-11). Segments U3e and U3f would pass through Tumamoc Hill, which has long-term monitoring plots for Tumamoc globeberry. Southline will work with the species experts to determine locations of known plants and to craft effective surveys, and avoid all known locations of the plant.

As noted in section 3.8.1, tribally sensitive species for the Tohono O'odham Nation were considered in the EIS when they were also protected under a Federal, State, or County law. For those species that are not specifically addressed in the EIS, Western and Southline would coordinate with the Tohono O'odham Nation to determine appropriate mitigation.

Pima County protected species would be inventoried and conserved, including saguaro, ironwood and Pima pineapple cactus.

Construction impacts to special status species relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Potential impacts on Huachuca water umbel would be as described above for subroute 3.1. Special status plants, including the Pima pineapple cactus and Tumamoc globeberry, would be avoided. As noted in table 2-8, preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups would be conducted to minimize impacts to Tumamoc globeberry monitoring plots and plants on Tumamoc Hill. Where avoidance is not possible, special status plants would 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, etc.). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan. Adherence to PCEMs would result in short-term, minor impacts to special status plant species.

Noxious Weeds

The primary noxious weed of concern in the vicinity of route group 4 is buffelgrass, which has been documented in the Tucson vicinity (NIISS 2013). It is known to be present in segments U3b through U3m, and likely to occur in segment U4. Other invasive species in this route group include Russian thistle, filaree, and mustards, but these are not classified as noxious weeds (see table 4.8-11).

Construction impacts to noxious species relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Subroute 4.1 comprises 722.8 acres. Total permanent disturbance would result in nearly 6.1 percent being disturbed, or approximately 44.3 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." The subroute already has a significant amount of existing disturbance, most notably urban development with accompanying exotic plantings and urban yards, therefore the relative portion of the subroute that comprises native vegetation associations is reduced. Any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Potential impacts on Huachuca water umbel would be as described above for subroute 3.1. The Pima pineapple cactus could be negatively impacted by direct impacts to individuals and the vegetation community habitat, and by the establishment of invasive weeds such as buffelgrass that increase wildfire. Adherence to PCEMs would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species relating to subroute 4.1, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Table 4.8-10. Route Group 4 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment

		Vegetation Communities																	
Segment	**Total Miles**	**Agriculture**	**Apacherian-Chihuahuan Mesquite Upland Scrub**	**Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe**	**Barren Lands, Non-Specific**	**Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub**	**Chihuahuan Mixed Salt Desert Scrub**	**Developed, Medium – High Intensity**	**Developed, Open Space – Low Intensity**	**Madrean Encinal**	**Madrean Juniper Savanna**	**North American Warm Desert Bedrock Cliff and Outcrop**	**North American Warm Desert Riparian Mesquite Bosque**	**North American Warm Desert Riparian Woodland and Shrubland**	**North American Warm Desert Wash**	**Open Water**	**Sonora-Mojave Creosotebush-White Bursage Desert Scrub**	**Sonoran Mid-Elevation Desert Scrub**	**Sonoran Paloverde-Mixed Cacti Desert Scrub**
Subroute 4.1, Proponent Preferred																			
U3b	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.5
U3c	1.0	0	0	0	0	0	0	5.7	0	0	0	0	0	0	0	0	0.2	0.2	5.6
U3d	3.4	0	0.0	0	0	0	0	24.5	3.7	0	0	0	0	0	0	0	0	1.6	11.8
U3e	0.9	0	0	0	0	0	0	2.6	0	0	0	0	1.6	0	0	0	0	0	6.6
U3f	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.1
U3g	.9	0	0	0	0	0	0	10.3	0	0	0	0	0	0	0	0.0	0	0	0.6
U3h	1.1	0	0	0	0	0	0	13.2	0	0	0	0	0	0	0	0.0	0	0	0
U3i	18.2	19.0	0.4	0	0.2	0	0	78.6	17.2	0	0	0	2.2	1.7	0	0.5	21.9	0.8	87.4
U3j	0.9	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U3k	16.7	34.6	2.5	0	10.2	0	0	0.1	13.9	0	0	0	14.5	15.3	1.1	0	78.0	0	133.3
U3l	1.6	0	0	0	3.7	0	0	1.1	0	0	0	0	0	0	0	0	20.4	0	2.7
U3m	0.6	0	0	0	0	0	0	10.1	0	0	0	0	0	0	0	0	0.1	0	0.0
U4	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3	0	31.6
Route Group 4 Route Variation																			
U3aPC	6.2	0	13.6	0	0	0	0	9.0	0	0	0	0	0	0	0	0	53.4	1.2	35.4

Table 4.8-10. Route Group 4 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Alternative Segment (Continued)

Segment	Total Miles	Vegetation Communities: Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Barren Lands, Non-Specific	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Developed, Medium – High Intensity	Developed, Open Space – Low Intensity	Madrean Encinal	Madrean Juniper Savanna	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Riparian Woodland and Shrubland	North American Warm Desert Wash	Open Water	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Sonoran Mid-Elevation Desert Scrub	Sonoran Paloverde-Mixed Cacti Desert Scrub
Route Group 4, Local Alternatives																			
MA1	1.1	19.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH1a	1.4	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0	0	0	0	11.2
TH1b	1.6	0	0	0	0	0	0	7.9	0	0	0	0	0	0	0	0	0	0	11.0
TH1c	0.3	0	0	0	0	0	0	3.1	0	0	0	0	0	0	0	0	0	0	0
TH1-Option	1.0	0	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	16.2
TH3-Option A	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	0	8.6
TH3-Option B	0.8	0	0.8	0	0	0	0	4.2	0	0	0	0	0	0	0	0	0.2	0.3	4.3
TH3-Option C	1.8	0	0.0	0	0	0	0	5.0	0	0	0	0	0	0	0	0	0	1.4	13.9
TH3a	2.7	0	0	0	0	0	0	14.5	0	0	0	0	0	0	0	0	0	1.2	17.3
TH3b	4.5	0	0	0	0	0	0	48.7	0	0	0	0	0	0	0	0	0.8	0.4	4.6

Note: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Table 4.8-11. Route Group 4 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds

		Special Status Species																		Noxious Weeds/ Invasive Exotic Weeds	
Segment	**Total Miles**	**San Pedro River wild-buckwheat**	**Varied fishhook cactus**	**Button cactus**	**Littleleaf false tamarind**	**San Carlos wild-buckwheat**	**Thornber fishhook cactus**	**Huachuca water umbel**	**Magenta flowered hedgehog cactus**	**Kelvin cholla**	**Night-blooming cereus**	**Pima Indian mallow**	**Pima pineapple cactus**	**Staghorn cholla**	**Tumamoc globeberry**	**Desert barrel cactus**	**Engelmann pricklypear (var. *flavispina*)**	**Giant sedge**	**Slender needle corycactus**	**Buffelgrass**	**Invasive exotic weeds**
Subroute 4.1 Proponent Preferred	48.3																				
U3b	0.5				X		X		X	X	X	X		X	X	X	X		X	X	
U3c	1.0				X		X		X	X	X	X		X	X	X	X		X	X	
U3d	3.4				X		X		X	X	X	X		X	X	X	X		X	X	
U3e	0.9				X		X		X	X	X	X		X	X	X	X		X	X	
U3f	0.7				X		X		X	X	X	X		X	X	X	X		X	X	
U3g	0.9				X		X		X	X	X	X		X	X	X	X		X	X	
U3h	1.1																			X	
U3i	18.2				X		X		X	X	X	X		X	X	X	X		X	X	
U3j	0.9				X		X		X	X	X	X		X	X	X	X		X	X	
U3k	16.7				X		X		X	X	X	X		X	X	X	X		X	X	
U3l	1.6				X		X		X	X	X	X		X	X	X	X		X	X	
U3m	0.6				X		X		X	X	X	X		X	X	X	X		X	X	
U4	1.9	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Table 4.8-11. Route Group 4 Vegetation Resource Inventory Data for Special Status Species and Noxious Weeds (Continued)

		Special Status Species																		Noxious Weeds/ Invasive Exotic Weeds	
Segment	**Total Miles**	**San Pedro River wild-buckwheat**	**Varied fishhook cactus**	**Button cactus**	**Littleleaf false tamarind**	**San Carlos wild-buckwheat**	**Thornber fishhook cactus**	**Huachuca water umbel**	**Magenta flowered hedgehog cactus**	**Kelvin cholla**	**Night-blooming cereus**	**Pima Indian mallow**	**Pima pineapple cactus**	**Staghorn cholla**	**Tumamoc globeberry**	**Desert barrel cactus**	**Engelmann pricklypear (var. *flavispina*)**	**Giant sedge**	**Slender needle corycactus**	**Buffelgrass**	**Invasive exotic weeds**
Route Group 4 Route variation																					
U3aPC	6.2		X						X	X			X	X	X					X	
Route Group 4 Local Alternatives																					
MA1	1.1																				X
TH1a	1.4								X	X	X	X		X	X	X				X	X
TH1b	1.6								X	X	X	X		X	X	X				X	X
TH1c	0.3								X	X	X	X		X	X	X				X	X
TH1-Option	1.0								X	X	X	X		X	X	X				X	X
TH3-Option A	0.8								X	X	X	X		X	X	X				X	X
TH3-Option B	0.8								X	X	X	X		X	X	X				X	X
TH3-Option C	1.8								X	X	X	X		X	X	X				X	X
TH3a	2.7								X	X	X	X		X	X	X				X	X
TH3b	4.5								X	X	X	X		X	X	X				X	X

ROUTE VARIATION

Construction

Route variation U3aPC comprises 112.6 acres. Total temporary disturbance from construction would result in nearly 28.1 percent of the ROW being disturbed and total permanent disturbance would result in nearly 5.1 percent being disturbed, or approximately 31.6 acres and 3.2 acres, respectively. This route variation would not follow the existing Western transmission line and ROW, and thus would have greater impacts on vegetation communities than subroute 4.1.

Vegetation Communities

Route variation U3aPC comprises 112.6 acres and is characterized by the Apacherian-Chihuahuan Mesquite Upland Scrub (13.7 acres), Developed, Medium – High Intensity (9.0 acres), Sonora-Mojave Creosotebush-White Bursage Desert Scrub (53.4 acres), and Sonoran Paloverde-Mixed Cactus Desert Scrub (35.4 acres) plant associations (see table 4.8-10). Existing impacts are associated with a variety of roads and development. Route variation U3aPC would be collocated with existing infrastructure on approximately 81 percent of the representative ROW.

Construction impacts to vegetation communities relating to this route variation, and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” There is existing disturbance along the route variation, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

The Pima pineapple cactus, listed as endangered under the ESA, has some potential to be present on route variation U3aPC. Of the other sensitive plant species considered in this analysis, the magenta-flowered hedgehog cactus, Kelvin cholla, staghorn cholla, Tumamoc globeberry, and varied fishhook cactus have some potential to occur in route variation U3aPc.

As noted in table 2-8, special status plants would be avoided. Where avoidance is not possible, special status plants would 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, etc.). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan.

Construction impacts to special status species relating to this route variation, and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” In addition, impacts on Pima pineapple cactus would be as described for subroute 3.1. This route variation would not follow the existing transmission line and thus would have greater impacts on vegetation communities than subroute 4.1. Adherence to PCEMs would avoid or reduce impacts on special status species and would result in short-term, minor impacts.

Noxious Weeds

The primary noxious weed of concern in the vicinity of route variation U3aPC is buffelgrass. Exotic, invasive species Russian thistle, mustards, and filaree occur throughout route group 4 (see table 4.8-11).

Construction impacts to noxious species relating to U3aPC, and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Route variation U3aPc comprises 112.6 acres. Total permanent disturbance would result in 5.1 percent being disturbed, or approximately 33.1 acres.

Vegetation Communities

Operation and maintenance impacts to vegetation communities relating to this route variation, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." As there is limited existing disturbance along the route variation, any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species relating to this route variation, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species relating to the Upgrade Section, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

LOCAL ALTERNATIVES

There are 10 local alternatives available for route group 4: TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, TH3-Option C, and MA1. Table 4.8-12 lists the acres of disturbance proposed under the route group 4 local alternatives.

Table 4.8-12. Temporary and Permanent Disturbance Acreages for Route Group 4 Local Alternatives

Alternative	Total Acres within Representative ROW	Temporary Disturbance (percent of ROW)	Temporary Disturbance (acres)	Permanent Disturbance (percent of ROW)	Permanent Disturbance (acres)
TH1a	17.1	42.2	7.2	1.8	0.3
TH1b	18.9	42.4	8.0	6.0	1.1
TH1c	3.1	43.6	1.3	4.8	0.1
TH1-Option	11.8	42.1	5.0	1.2	0.1
TH3-Option A	9.8	43.3	4.2	9.0	0.9
TH3-Option B	9.8	42.6	4.2	6.4	0.6
TH3-Option C	20.3	45.3	9.2	12.4	2.5
TH3a	33.0	42.2	13.9	8.1	2.7
TH3b	54.4	42.2	23.0	6.1	3.3
MA1	19.9	28.1	5.6	1.5	0.3

Note: Data come from SWReGAP GIS desktop analysis and not actual ground surveys.

Construction

Table 4.8-12 lists the acres of temporary and permanent disturbance proposed under the route group 4 local alternatives.

Vegetation Communities

The majority of the local alternatives for route group 4, with the exception of MA1, are characterized by Sonoran Paloverde-Mixed Cacti Desert Scrub and Developed, Medium – High Intensity plant associations. Existing impacts are associated with a transmission line, commercial and residential development, and a variety of roads. With the exception of sections MA1, TH1c, and TH3-Option B, all local alternatives in route group 4 would be collocated with existing infrastructure on approximately 100 percent of the representative ROW. Local alternatives MA1, TH1c, and TH3-Option B would not be collocated with existing infrastructure.

Local alternative TH1a is characterized by Sonoran Paloverde-Mixed Cacti Desert Scrub (16.2 acres) (see table 4.8-10). The alternative TH1b is characterized by Sonoran Paloverde-Mixed Cacti Desert Scrub (11.0 acres) and Developed, Medium - High Intensity 7.9 acres).

Local alternative TH1c is characterized by Developed, Medium - High Intensity (3.1 acres) (see table 4.8-10). The alternative TH1 Option is characterized by Sonoran Paloverde-Mixed Cacti Desert Scrub (11.2 acres). The alternative TH3-Option A is characterized by Sonora-Mojave Creosotebush-White Bursage Desert Scrub (1.2 acres) and Sonoran Paloverde-Mixed Cacti Desert Scrub (8.6 acres).

Local alternative TH3-Option B is characterized by Developed, Medium - High Intensity (4.2 acres) and Sonoran Paloverde-Mixed Cacti Desert Scrub (4.3 acres) (see table 4.8-10). Local alternative TH3-Option C is characterized by Developed, Medium - High Intensity (5.0 acres), Sonoran Mid-Elevation desert scrub (1.4 acres), and Sonoran Paloverde-Mixed Cacti Desert Scrub (13.9 acres). The alternative TH3a is characterized by Developed, Medium - High Intensity (14.5 acres), Sonoran Mid-Elevation desert scrub (1.2 acres), and Sonoran Paloverde-Mixed Cacti Desert Scrub (17.3 acres). The alternative TH3b is characterized by Developed, Medium - High Intensity (48.7 acres), Sonora-Mojave Creosotebush-White Bursage Desert Scrub (0.8 acre), and Sonoran Paloverde-Mixed Cacti Desert Scrub (4.6 acres). Route segment MA1 is characterized by the Agriculture plant association (19.9 acres) (see table 4.8-10).

Construction impacts to vegetation communities relating to the route group 4 local alternatives, and implementation and effects of mitigation measures would be the same as described for “Impacts Common to All Action Alternatives.” The subroute already has a significant amount of existing disturbance, most notably urban development with accompanying exotic plantings and urban yards, therefore the relative portion of the subroute that comprises native vegetation associations is reduced. Any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long-term, minor impacts to vegetation communities.

Special Status Species

No ESA-listed plant species are considered to have the potential to occur along local alternatives TH1a, TH1b, TH1c, TH3a, TH3b, and TH1 Option. Of the other sensitive plant species considered in this analysis, the desert barrel cactus, magenta-flowered hedgehog cactus, night-blooming cereus, Pima Indian mallow, staghorn cholla, Tumamoc globeberry, and hybrid Kelvin cholla have some potential to occur in local alternatives TH1a, TH1b, TH1c, TH1-Option, TH3a, and TH3b (see table 4.8-11). Segment TH1a would avoid the existing long-term monitoring plots for Tumamoc globeberry and would have fewer impacts on habitat for the species than segments U3e and U3f.

Construction impacts to special status species relating to route group 4 local alternatives, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." The Pima pineapple cactus could be negatively impacted by direct impacts to individuals and the vegetation community habitat, and by the establishment of invasive weeds such as buffelgrass that provide increased fuel for wildfire. Adherence to PCEMs would result in short-term, minor impacts to special status species.

Noxious Weeds

The primary noxious weed of concern in the vicinity of route group 4 is buffelgrass, which has been documented in the Tucson vicinity (NIISS 2013). It is known to be present in all route group 4 local alternative. Two other noxious weed species, field bindweed and hydrilla, have also been documented near the Santa Cruz River on the west edge of Tucson (NIISS 2013) and could be present in local alternative TH3a. Other invasive species that may be present include Russian thistle, filaree, and mustards, but these are not classified as noxious weeds (see table 4.8-11).

Construction impacts to noxious species relating to the route group local alternatives, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." In addition, bindweed, if present in the ROW, can spread prolifically, even when aboveground portions of the plant are removed; continued maintenance is often required in order to control the species. The greatest impacts from bindweed could be felt in adjacent agricultural lands, particularly in segment MA1 which is predominantly agricultural; indirect impacts of the disturbance in these areas could be reduced crop yields due to bindweed infestation. Hydrilla is an aquatic species that will grow with less light and is more efficient at taking up nutrients than native species, therefore outcompeting native aquatic species. Indirect impacts of hydrilla resulting from disturbance could have effects to recreation and destruction of habitat. Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Operation and Maintenance

Table 4.8-12 lists the potential permanent disturbance acres for the route group 4 local alternatives that would result from operation and maintenance of the facilities.

Vegetation Communities

Operation and maintenance impacts to vegetation communities relating to the route group 4 local alternatives, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." The subroute already has a significant amount of existing disturbance, most notably urban development with accompanying exotic plantings and urban yards, therefore the relative portion of the subroute that comprises native vegetation associations is reduced. Any additional disturbance could be reduced by adherence to mitigation measures that would result in short- and long term, minor impacts to vegetation communities.

Special Status Species

Operation and maintenance impacts to special status species relating to the route group 4 local alternatives, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." The Pima pineapple cactus could be negatively impacted by direct impacts to individuals and the vegetation community habitat, and by the establishment of invasive weeds such as buffelgrass that increase fuel for wildfire. Adherence to PCEMs would result in short-term, minor impacts to special status species.

Noxious Weeds

Operation and maintenance impacts to noxious species relating to the route group 4 local alternatives, and implementation and effects of mitigation measures would be the same as described for "Impacts Common to All Action Alternatives." In addition the aquatic noxious weed hydrilla might be easily introduced into streams and ponds by transporting small pieces of the living plants on equipment, and noxious field bindweed seeds are easily transported in soils on construction equipment. Adherence to mitigation measures would result in short-term, minor impacts from noxious weeds.

Agency Preferred Alternative

Impacts from the Agency Preferred Alternative would include the removal of vegetation during construction activities resulting in the direct loss of plant communities, these impacts are described below.

Vegetation Communities

The Agency Preferred Alternative would involve the removal of vegetation during construction activities resulting in the direct loss of vegetation. The primary potential direct and indirect impacts to vegetation during construction and operation and maintenance of the proposed Project would be associated with:

- removal and/or crushing of natural, native-species dominated vegetation communities or associations from construction of transmission lines, substations, temporary work areas, and access roads;
- decreased plant productivity from fugitive dust; and
- plant community fragmentation.

The Agency Preferred Alternative would temporarily disturb approximately 1,994.1 acres of vegetation communities during construction activities. After reclamation activities, permanent disturbance would occur on approximately 473.3 acres. Table 4.8-13 shows acreage of disturbance for the Agency Preferred Alternative.

Table 4.8-13. Acres of Disturbance for the Agency Preferred Alternative Right-of-Way by Route Group

Route Group	Temporary Disturbance (acres)	Permanent Disturbance (acres)
1	824.0	221.0
2	553.5	123.4
3	333.6	82.1
4	283.1	46.8
Total	**1,994.1**	**473.3**

Potential impacts from vegetation removal would be minimized through implementation of PCEMs and collocation of the proposed line along existing and planned infrastructure including roads, railroads, pipelines, transmission lines, and the yet to be constructed SunZia transmission line.

In the Upgrade Section impacts to vegetation communities would be less than those in the New Build Section due to the presence of the existing Western transmission line and ROW, access roads, and other infrastructure. Ground disturbance in the Upgrade Section would primarily occur within the existing

100-foot ROW whenever possible. In areas where the Agency Preferred Alternative does not follow the existing transmission line it would follow existing roads.

As efforts are made to minimize initial impacts to sensitive vegetation communities and special status species, those impacts would be shifted to less sensitive communities and species. Revegetation would produce vegetation communities similar to those disturbed, but actual species composition and vegetation spatial patterns would likely differ from pre-impact conditions. Vegetation communities in areas of permanent disturbance would be impacted long-term. The Agency Preferred Alternative would have short- and long-term, minor impacts to vegetation communities from the removal of vegetation and plant community fragmentation, and short-term, localized, minor impacts during construction from fugitive dust.

Special Status Species

The primary direct and indirect impacts to special status species during construction and operation and maintenance of the proposed Project would be associated with:

- removal and/or crushing of special status plants from construction of transmission line, substations, temporary work areas, and access roads; and
- direct and indirect impacts on special status species from increased access by OHVs over newly constructed transmission line access roads.

No ESA-listed species have the potential to occur within the New Build Section of the Agency Preferred Alternative. However, the following sensitive species—button cactus, dune pricklypear, Gregg night-blooming cereus, slender needle corycactus, devilthorn hedgehog cactus, Wilcox pincushion cactus, San Carlos wild-buckwheat, varied fishhook cactus, playa spider plant, Chihuahuan scurfpea, and Parish's alkali grass—have potential to occur along the Agency Preferred Alternative in the New Build Section.

Within the Upgrade Section of the Agency Preferred Alternative, the Huachuca water umbel, listed as endangered under the ESA, is not currently known but may have limited potential to be present along segment U2, at the existing crossing of the San Pedro River. The Agency Preferred Alternative would cross the San Pedro River at the location of the existing Western transmission line. No additional impacts plant removal along the line are anticipated as there is an existing crossing associated with the existing Western transmission line at this location.

The Huachuca water umbel species is known to be present on other parts of the San Pedro River but not in the proposed Project representative ROW. Additionally, the Huachuca water umbel is not currently known but may have some potential to be present in segment U3, where it crosses Cienega Creek. The Agency Preferred Alternative would cross Cienega Creek at the location of the existing Western Transmission line. No additional impacts or plant removal along the line are anticipated as there is an existing crossing associated with the existing Western transmission line at this location. This species is known to be present on other parts of Cienega Creek but not within the proposed Project representative ROW.

In the BO and amendment for the proposed Project, the FWS (2014d) concurred that the Agency Preferred Alternative may affect, and is not likely to adversely affect the Huachuca water umbel or its critical habitat based on the following reasons:

- Effects to individuals or habitat are discountable because none occurs in or near the project area,
- Effects to critical habitat are discountable because the nearest critical habitat is approximately 12 miles upstream of the project area (FWS 2014d).

The Pima pineapple cactus, listed as endangered under the ESA, has potential to be present on the southern parts of segments U3, U3aPC, and U4. This species is known to be present in this vicinity. Recent spring surveys in 2013 have documented the Pima pineapple cactus between I-19 and Davidson Canyon in the existing Western ROW (personal communication, Johnida Dockens, BLM, 2013). In the BO and amendment, the FWS (2014d) found that the proposed project was "not likely to jeopardize the continued existence of the Pima pineapple cactus" due to the following mitigation measures:

- Individual plants will be avoided whenever possible. If avoidance is not possible, individual plants will be relocated.
- Credits will be purchased in a FWS-approved conservation bank, corresponding to the area of disturbance to Pima pineapple cactus habitat resulting from the proposed action (FWS 2014d).

Of the other sensitive plant species considered in this analysis, the broadleaf groundcherry, button cactus, Chihuahua scurfpea, devilthorn hedgehog cactus, desert barrel cactus, Engelmann pricklypear, magenta-flowered hedgehog cactus, giant sedge, littleleaf false tamarind, needle-spined pineapple cactus, Pima pineapple cactus, San Carlos wild-buckwheat, littleleaf false tamarind, San Pedro River wild-buckwheat, staghorn cholla, Thornber fishhook cactus, Tumamoc globeberry, varied fishhook cactus, night-blooming cereus, Pima Indian mallow, hybrid Kelvin cholla, and Wilcox pincushion cactus have some potential to occur in the Upgrade Section of the Agency Preferred Alternative.

Adherence to mitigation measures and avoidance of individual special status species and their habitat would result in short-term, minor impacts to special status species from the Agency Preferred Alternative due to disturbance to habitat.

Acres of impacts to vegetation communities and the potential for the occurrence of special status plant species are given below in tables 4.8-14 to 4.8-21.

Noxious Weeds

The primary direct and indirect impacts from noxious weeds during construction and operation and maintenance of the proposed Project would be associated with:

- introduction or increased spread of noxious weeds and other invasive exotic weed species; and
- direct and indirect impacts on native vegetation and special status species.

Primary noxious weeds of concern in the region of the proposed Project in New Mexico are African rue and starthistles. Tamarisk is known to occur in segments P5a, P5b, and in the San Simon Creek vicinity (NIISS 2013). The primary noxious weed of concern in the vicinity of the proposed Project in Arizona is buffelgrass. This species is not currently known to occur within the analysis area. Hoary cress has been documented in the Lordsburg vicinity (NIISS 2013) and potentially along segment LD3a. Other exotic, invasive species, including Russian thistle, filaree, mustards, kochia, and Lehmann lovegrass, occur throughout the New Build Section of the Agency Preferred Alternative, but these species are not classified as noxious weeds.

The primary noxious weed of concern along the Upgrade Section of the Agency Preferred Alternative is buffelgrass, which has been documented in the Tucson vicinity (NIISS 2013). It is known to be present in segment U3, and likely to occur in segment U4. Other invasive species of concern along the Upgrade Section of the Agency Preferred Alternative are Russian thistle, filaree, and mustards, but these are not classified as noxious weeds.

Mitigation efforts to prevent noxious and other exotic invasive weeds from colonizing disturbed soils could be ineffective in some cases. In areas where some noxious weeds are particularly likely to have

indirect effects on sensitive vegetation communities or special status species, additional post-construction monitoring would be conducted, and decisions would be made as to provide or not provide control measures for noxious weed encroachment on sensitive vegetation resources. Adherence to mitigation measures would result in short-term, minor impacts to vegetation communities from noxious weeds due to increased potential for spread and the associated potential to create changes to native vegetation communities and special status species' habitat.

Acres of impacts to vegetation communities and the potential for the occurrence of noxious weed species are given below in tables 4.8-14 to 4.8-21.

Compensatory Mitigation

As noted above and in chapter 2, the Plant and Wildlife Species Conservation Measures Plan would address mitigation for impacted species as well as calculations of compensation ratios and mitigation acreages for special status plant species requiring compensatory mitigation. Compensatory mitigation could include payment of an in lieu fee; acquiring mitigation land or conservation easements; or a combination of the two. As established in the BO and amendment (see appendix M), for Pima pineapple cactus that cannot be avoided Southline will purchase credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of disturbance to occupied Pima pineapple cactus habitat (see also table 2-8 in chapter 2). Alternatively, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.

Residual Impacts

Mitigation efforts would not alleviate all environmental impacts to vegetation. Despite attempts to minimize temporary and permanent environmental disturbance to vegetation, minor short-term and long-term impacts would occur.

VEGETATION COMMUNITIES

As efforts are made to minimize initial impacts to sensitive vegetation communities and special status species, those impacts would be shifted to less sensitive communities and species. Revegetation would produce vegetation communities similar to those disturbed, but actual species composition and vegetation spatial patterns would likely differ from pre-impact conditions.

SPECIAL STATUS SPECIES

Special status species would be avoided or restored by relocating plants and/or restoring habitats. Avoidance of individual plants would be the preferred approach to mitigation. Such restoration efforts would help and would likely save individual special status plants, but restored habitats would likely be different than the original natural habitats and transplanted special status plants would be moved to different environments where survival rates may be greater or less than the natural setting. Efforts would be made to monitor such mitigation efforts as outlined in the Proponent prepared/agency approved restoration plan in order to verify the success or failure of such restoration efforts for special status species.

NOXIOUS WEEDS

Mitigation efforts to prevent noxious and other exotic invasive weeds from colonizing disturbed soils could possibly not be effective in some cases. In areas where some noxious weeds are particularly likely to have indirect effects on sensitive vegetation communities or special status species, additional post

construction monitoring would be conducted, and decisions would be made as to provide or not provide control measures for noxious weed encroachment on sensitive vegetation resources.

Unavoidable Adverse Impacts

The Proponent has selected the route analysis area to avoid areas of critical environmental concern and sensitive habitat; however, some environmental impacts resulting from the proposed Project would be unavoidable, and no mitigation measures were deemed feasible. Such impacts include permanent or long-term impact effects, such as the construction of substation enhancements, permanent access roads, and other permanent constructed features which would destroy vegetation communities to some extent.

VEGETATION COMMUNITIES

In cases where adverse impacts to vegetation are unavoidable, those impacts would be planned in such a way as to affect less environmentally sensitive vegetation resources. For example, common and widespread vegetation communities would be negatively impacted instead of sensitive plant communities. Specifically how such mitigation will be implemented will depend upon each situation where a sensitive vegetation resource is encountered and alternate disturbance plans will be developed. The initial analysis of vegetation resources indicates that such alterations of disturbance plans will be minor.

SPECIAL STATUS SPECIES

Locations that do not support special status species would be impacted instead of areas that do support special status species. The negative adverse impacts would occur, but not at the expense of any special status species.

NOXIOUS WEEDS

Locations that support sensitive plant communities or special status species would not be impacted, so the introduction and colonization of those locations should be averted. However, noxious and other exotic invasive weeds could increase in other impacted areas with less-sensitive vegetation resources.

Short-term Uses versus Long-term Productivity

The productivity or function of vegetation would be affected by both short-term or temporary impacts, and long-term or permanent impacts.

VEGETATION COMMUNITIES

Temporary impacts to vegetation communities would be present until restoration is conducted, resulting in short-term production loss. Following restoration, temporary impact effects would be alleviated to vegetation communities and long-term productivity will be reestablished. Restoration of herbaceous vegetation (e.g., perennial native grasses) should take less than 5 years, depending on climate during that time. Long-term establishment of native woody species (e.g., shrubs and riparian trees) would take longer periods of time, from 5 to 20 years to restore long-term woody vegetation productivity. Relative to temporary impacts that would include both short-term and long-term restoration of native vegetation production, permanent loss of vegetation communities would be minimal in spatial scale. Vegetation of semi-arid regions generally takes years (herbaceous) to decades (woody) to recover from disturbances that impact the aboveground plants themselves, but not the topsoils. Such recovery is very dependent on rainfall and temperature conditions during the recovery period.

Table 4.8-14. Route Group 1 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Segment of the Agency Preferred Alternative

Segment	Total Miles	Vegetation Communities																										
		Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Gypsophilous Grassland and Steppe	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Sandy Plains Semi-Desert Grassland	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Chihuahuan Succulent Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space Low Intensity	Inter-Mountain Basins Semi-Desert Shrub Steppe	Madrean Encinal	Madrean Juniper Savanna	Madrean Pinyon-Juniper Woodland	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Active and Stabilized Dune	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Lower Montane Riparian Woodland and Shrubland	North American Warm Desert Pavement	North American Warm Desert Playa	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Riparian Woodland and Shrubland	North American Warm Desert Volcanic Rockland	North American Warm Desert Wash	Open Water	Rocky Mountain Lower Montane-Foothill Shrubland
Route Group 1, Agency Preferred																												
P1	5.1	0	10.5	0	10.6	0	0	0	103.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P2	102.0	0	184.7	1,126.8	422.0	0	41.7	48.1	618.0	0	2.6	1.6	0	0	2.6	0.1	0	0	2.9	3.0	0	4.2	1.2	0	0	12.5	0	0	0
P3	31.1	5.6	31.1	243.3	175.0	5.3	29.7	0.2	220.3	29.1	1.4	0	0	0	0	0	0	0	9.8	0	0	0	1.4	0	1.1	0	0	0	0
P4a	8.9	0	16.5	158.3	33.2	0	0	0	3.0	0	5.2	0	0	0	0	1.0	0	0	0	0	0	2.1	0	0	0	0	0	0	0

Table 4.8-15. Route Group 1 Vegetation Resource Inventory Data for the Agency Preferred Alternative for Special Status Species and Noxious Weeds

Segment	Total Miles	Special Status Species				Noxious Weeds/ Invasive Exotic Weeds	
		Dune Pricklypear	Gregg Night-blooming Cereus	Parish's Alkali Grass	Chihuahua Scurfpea	Noxious Weeds	Invasive Exotic Weeds
Subroute 1.1, Proponent Preferred							
P1	5.1	X	X				X
P2	102.0	X	X	X			X
P3	31.1	X	X	X			X
P4a	8.9	X	X	X			X

Table 4.8-16. Route Group 2 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Segment of the Agency Preferred Alternative

Segment	Total Miles	Vegetation Communities																								
		Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Sandy Plains Semi-Desert Grassland	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Chihuahuan Succulent Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Madrean Juniper Savanna	Madrean Pine -Oak forest and woodland	Madrean Juniper Savanna	Madrean Pinyon-Juniper Woodland	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Active and Stabilized Dune	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Lower Montane Riparian Woodland and Shrubland	North American Warm Desert Pavement	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Volcanic Rockland	North American Warm Desert Wash	Open Water	Sonoran Mid-Elevation Desert Scrub	Sonoran Paloverde-Mixed cactus Desert Scrub
Route Group 2, Agency Preferred																												
LD3a	26.6	0	10.0	390.1	105.4	29.7	5.8	98.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.0	0	0	0
LD3b	2.2	0	0	37.7	14.7	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P5b	21.1	0	187.9	142.8	90.3	79.1	0	2.9	0	0	0	0	0.4	0	0	0	0	0	0	7.1	0.6	0	0	0	0	0	0	0
P6a	0.9	0.2	12.1	4.1	0	1.8	0	0	0	1.2	0	0	0	0	0	0	0	0.6	0	0	0	0	1.2	0	0	0	0	0
P6b	22.5	49.8	311.0	59.4	103.6	12.2	0	1.0	0	0	0	0	0	0	0	2.0	0.5	5.0	0	0	0	0	0.5	0	0	0	0	0
P6c	2.8	0	45.9	20.3	1.2	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P7	22.3	0	124.3	367.3	31.4	8.0	0	8.3	0	0	0	0	0	0	0	0	0.2	0	0	0	0	1.2	0	.1	0	0	0	0
P8	0.5	0	1.9	3.0	4.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4.8-17. Route Group 2 Vegetation Resource Inventory Data for the Agency Preferred Alternative for Special Status Species and Noxious Weeds

Segment	Total Miles	Special Status Species												Noxious Weeds/ Invasive Exotics	
		Gregg Night-blooming Cereus	Chihuahua Scurfpea	Parish's Alkali Grass	Slender Needle Corycactus	Devilthorn Hedgehog Cactus	Wilcox Pincushion Cactus	San Carlos Wild-Buckwheat	Varied Fishhook Cactus	Button Cactus	Playa Spider Plant	Dune Pricklypear	Needle-spined Pineapple Cactus	Tamarisk	Invasive Exotic Weeds
Route Group 2, Agency Preferred															
LD3a	26.6	X	X	X											X
LD3b	2.2	X		X											X
P5b	21.1	X		X	X	X	X	X							X
P6a	0.9	X			X	X	X	X							X
P6b	22.5	X			X	X	X	X	X						X
P6c	2.8	X			X	X	X	X	X						X
P7	22.3				X	X	X	X	X		X				X
P8					X	X	X	X	X	X	X				

Table 4.8-18. Route Group 3 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Segment of the Agency Preferred Alternative

Segment	Total Miles	Vegetation Communities																
		Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Mogollon Chaparral	North American Arid West Emergent Marsh	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Riparian Mesquite Bosque	Open Water	Sonoran Paloverde-Mixed Cactus Desert Scrub	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Sonoran Mid-Elevation Desert Scrub
Route Group 3, Agency Preferred																		
U1a	16.1	14.5	88.4	125.2	50.5	9.1	0	0	0	0.0	3.8	0	0	0.3	0	0	0	0
U1b	2.9	0	18.5	14.7	14.4	2.4	0	2.7	0	0	0	0	0	0	0	0	0	0
U2	15.8	14.8	101.1	56.5	56.3	23.1	0	12.5	16.7	0	0	3.4	2.4	0	0.7	0	0	0
U3a	30.6	0	199.7	59.4	11.5	3.3	0	41.8	8.5	0.1	0	0	1.2	1.6	0	209.3	86.8	14.1

Table 4.8-19. Route Group 3 Vegetation Resource Inventory Data for the Agency Preferred Alternative for Special Status Species and Noxious Weeds

		Special Status Species																			Noxious Weeds/ Invasive Exotic Weeds	
Segment	**Total Miles**	**Button Cactus**	**Chihuahua Scurfpea**	**Devilthorn Hedgehog Cactus**	**Giant Sedge**	**Needle-spined Pineapple Cactus**	**San Pedro River Wild Buckwheat**	**Wilcox Pincushion Cactus**	**Broadleaf Ground Cherry**	**Littleleaf False Tamarind**	**San Carlos Wild Buckwheat**	**Varied Fishhook Cactus**	**Huachuca Water Umbel**	**Magenta Flowered Hedgehog Cactus**	**Kelvin Cholla**	**Night-blooming Cereus**	**Pima Indian Mallow**	**Pima Pineapple Cactus**	**Staghorn Cholla**	**Tumamoc Globeberry**	**Buffelgrass**	**Invasive Exotic Weeds**
Route Group 3, Agency Preferred																						
U1a	16.1	X	X	X	X	X	X	X	X	X	X	X										X
U1b	2.9	X	X	X		X	X	X	X	X	X	X	X									X
U2	15.8			X	X	X	X			X	X	X	X	X								X
U3a	30.6				X	X				X	X	X	X	X	X	X	X	X	X	X	X	X

Table 4.8-20. Route Group 4 Vegetation Resource Inventory Data Showing Acres of each Vegetation Type in each Segment of the Agency Preferred Alternative

		Vegetation Communities																	
Segment	Total Miles	Agriculture	Apacherian-Chihuahuan Mesquite Upland Scrub	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	Barren Lands, Non-Specific	Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	Chihuahuan Mixed Salt Desert Scrub	Developed, Medium - High Intensity	Developed, Open Space - Low Intensity	Madrean Encinal	Madrean Juniper Savanna	North American Warm Desert Bedrock Cliff and Outcrop	North American Warm Desert Riparian Mesquite Bosque	North American Warm Desert Riparian Woodland and Shrubland	North American Warm Desert Wash	Open Water	Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Sonoran Mid-Elevation Desert Scrub	Sonoran Paloverde-Mixed Cacti Desert Scrub
Route Group 4, Agency Preferred																			
U4	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3	0	31.6
U3aPC	6.2	0	13.6	0	0	0	0	9.0	0	0	0	0	0	0	0	0	53.4	1.2	35.4
U3b	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.5
U3c	1.0	0	0	0	0	0	0	5.7	0	0	0	0	0	0	0	0	0.2	0.2	5.6
U3d	3.4	0	0.0	0	0	0	0	24.5	3.7	0	0	0	0	0	0	0	0	1.6	11.8
TH1a	1.4	0	0	0	0	0	0	0.8	0	0	0	0	0	0	0	0	0	0	16.2
TH1-Option	1.0	0	0	0	0	0	0	0.6	0	0	0	0	0	0	0	0	0	0	11.2
U3g	0.9	0	0	0	0	0	0	10.3	0	0	0	0	0	0	0	0.0	0	0	0.6
U3h	1.1	0	0	0	0	0	0	13.2	0	0	0	0	0	0	0	0.0	0	0	0
U3i	18.2	19.0	0.4	0	0.2	0	0	78.6	17.2	0	0	0	2.2	1.7	0	0.5	21.9	0.8	87.4
MA1	1.1	19.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U3k	16.7	34.6	2.5	0	10.2	0	0	0.1	13.9	0	0	0	14.5	15.3	1.1	0	78.0	0	133.3
U3l	1.6	0	0	0	3.9	0	0	1.1	0	0	0	0	0	0	0	0	20.4	0	2.7
U3m	0.6	0	0	0	0	0	0	10.1	0	0	0	0	0	0	0	0	0.1	0	0.0

Table 4.8-21. Route Group 4 Vegetation Resource Inventory Data for the Agency Preferred Alternative for Special Status Species and Noxious Weeds

		Special Status Species																		Noxious Weeds/ Invasive Exotic Weeds	
Segment	**Total Miles-**	**San Pedro River wild buckwheat**	**Varied fishhook cactus**	**Button cactus**	**Littleleaf false tamarind**	**San Carlos wild-buckwheat**	**Thornber fishhook cactus**	**Huachuca water umbel**	**Magenta flowered hedgehog cactus**	**Kelvin cholla**	**Night-blooming cereus**	**Pima Indian mallow**	**Pima pineapple cactus**	**Staghorn cholla**	**Tumamoc globeberry**	**Desert barrel cactus**	**Engelmann pricklypear (var. *flavispina*)**	**Giant sedge**	**Slender needle corycactus**	**Buffelgrass**	**invasive exotic weeds**
Route Group 4. Agency Preferred																					
U4	1.9	X			X		X		X	X	X	X		X		X	X		X	X	
U3aPC	6.2		X						X	X			X	X	X					X	
U3b	0.5	X			X		X		X	X	X	X	X	X		X	X		X	X	
U3c	1.0	X			X		X		X	X	X	X	X	X		X	X		X	X	
U3d	3.4	X		X	X		X		X	X	X	X		X		X	X		X	X	
TH1a	1.4								X	X	X	X		X	X	X				X	X
TH1-Option	1.0								X	X	X	X		X	X	X				X	X
U3g	0.9	X			X		X		X	X	X	X		X		X	X		X	X	
U3h	1.1																			X	
U3i	18.2	X		X	X		X		X	X	X	X		X	X	X	X	X	X	X	
MA1	1.1																			X	X
U3k	16.7	X			X		X		X	X	X	X		X		X	X		X	X	
U3l	1.6	X			X		X		X	X	X	X		X		X	X		X	X	
U3m	0.6	X			X		X		X	X	X	X		X		X	X		X	X	

SPECIAL STATUS SPECIES

As noted in chapter 2, the Reclamation, Vegetation, and Monitoring Plan would be prepared for the BLM and Western to address the reconstruction of disturbed ecosystems by returning the land to a stable and productive condition. If restoration and relocation methods are employed for any special status plant species, the temporary impacts would be during the restoration activities. Productivity of such plants would be reduced in the short-term, but would be unaffected in the long-term once such plants have become reestablished. Permanent impacts to those plant species (individuals) would be based on survival of transplanted individuals, and persistence of restored habitat. Long-term loss of productivity would result if such plants do not survive, or suffer reduced growth following relocation. Given the importance of special status species, all efforts would be made to ensure the survival and continued productivity levels of such plants.

NOXIOUS WEEDS

The introduction and colonization of noxious weeds and other exotic invasive plant species would be temporary if monitoring and control are performed. Colonization of noxious weeds and other exotic invasive plant species would be permanent if such monitoring and control measures are not implemented.

Irreversible and Irretrievable Commitments of Resources

Environmental impacts that have irreversible negative effects on vegetation are situations where vegetation and topsoils are impacted and not restored. In most cases, restoration efforts would be made, and irreversible impacts to vegetation would be minor, including unavoidable adverse impacts and residual impacts discussed above.

VEGETATION COMMUNITIES

In areas of substation expansions, vegetation communities and their habitat (topsoils) would be destroyed, but these structure foundations would be minimal in extent, and vegetation community loss minimal relative to the acreage of each community in the region, and would focus on low-sensitivity or low-value communities. Vegetation would take many decades to recover in such locations, and may never recover under current climate regimes without soil nutrient enhancements.

SPECIAL STATUS SPECIES

Although environments of special status species throughout the analysis area have been recognized and would be avoided to the greatest extent, avoidance of every individual of all special status species is unlikely. Where individuals would be impacted, restoration should mitigate such impacts, but relocation to suboptimal habitats or inadequate habitat restoration could result in permanent declines for the species in those locations.

NOXIOUS WEEDS

Despite restoration and control efforts, introduction and colonization of noxious weeds and other exotic invasive plant species could occur and persist in some areas.

4.8.2 Wildlife

Introduction

This section describes the impacts to wildlife and special status wildlife species associated with the construction, operation and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to wildlife and special status wildlife species are discussed in terms of impacts on the species and their habitat(s). Temporary effects (end with completion of construction activities); short-term (less than 5 years) and long-term (greater than 5 years) impacts are evaluated relative to wildlife resources. Cumulative effects are also evaluated; impacts added to the impacts of past, present, and reasonably foreseeable future actions, regardless of the cause or source of other impacts.

Methodology and Assumptions

ANALYSIS AREA

For this analysis a representative ROW has been developed, which includes the ROW, staging areas, substations, and access roads. This area is used to identify resources that could be directly impacted by ground disturbance and where construction materials, equipment, and workers may be present. The ROW for the New Build Section is 200 feet wide, and the ROW for the Upgrade Section is 150 feet wide except in route group 4 through urban Tucson where the ROW is 100 feet wide. The representative ROW is sufficient to identify wildlife habitat that could be directly impacted by ground disturbance during construction, operation and maintenance of the proposed line. Some indirect impacts to wildlife could occur outside of the representative ROW but these would occur within the analysis area given in chapter 3. Indirect impacts are described below in "Impacts Common to All Action Alternatives."

ANALYSIS ASSUMPTIONS

The primary assumption for analyzing impacts to wildlife is that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS) and would be in place and would limit impacts on wildlife and wildlife habitat.

IMPACT INDICATORS

- Loss or degradation of habitat:
  - Loss or degradation of terrestrial habitat from clearing of vegetation during construction.
  - Degradation of terrestrial habitat due to increased soil erosion or introduction of invasive non-native plants.
  - Degradation of aquatic and wetland habitat from increased soil erosion and/or chemical contamination.
- Increased risk of predation due to operation of linear transmission line.
- Increased risk of vehicular mortality (direct and indirect) due to construction activities.
- Displacement or decrease in fitness due to noise and human activity associated with all aspects of construction, operation, and maintenance.
- Decreased forage availability and foraging habitat quality due to the spread of invasive and noxious weed species and the removal of habitat.
- Indirect impacts related to loss of habitat or direct loss of wildlife individuals due to increased risk of wildfire from the introduction of invasive and noxious weed species.

- Habitat fragmentation, including a decrease in function to wildlife corridors, due to the construction of linear features (power lines and roads) and large areas of habitat (power facilities).

SIGNIFICANT IMPACTS

A significant impact to wildlife special status species and/or special designation areas would result if any of the following were to occur:

- Loss to any population of special status species that would jeopardize the continued existence of that population;
- Loss to any population of special status species that would result in the species being listed or proposed for listing as endangered or threatened;
- Introduction of constituents into a water body in concentrations that could cause adverse effects on wildlife;
- Interference with the movement (including special designation areas such as wildlife corridors) of any native, resident, or migratory special status species for more than two reproductive seasons;
- Local loss of special status species habitat and/or special designation areas (as compared to total available resources within the area) or habitat productivity;
- Any activity that would violate the ESA, MBTA, or the BGEPA;
- Adverse modification of designated critical habitat;
- Adverse modification of habitat used by special status species for breeding, rearing, foraging, and dispersal;
- Interference with nesting or breeding periods of any species; and
- Reduction in the range of occurrence of any special status species.

Impacts Analysis Results

NO ACTION ALTERNATIVE

Under the no action alternative, the proposed Project would not be developed. No construction would take place in the New Build Section; therefore, there would be no additional impacts to wildlife, wildlife habitat, or special status species habitat. The existing transmission line would remain in place in the Upgrade Section and ongoing maintenance activities would occur which could result in impacts to wildlife and wildlife habitat. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Construction

Potential construction-related impacts from the proposed Project common to all wildlife groups would include the loss, degradation, and/or fragmentation of breeding, rearing, foraging, and dispersal habitats; collisions with and crushing by construction vehicles; loss of burrowing animals in burrows in areas where grading would occur, increased invasive and noxious weed establishment and spread; and increased noise/vibration levels. PCEMs and collocation of the transmission line, substations, and access

road with existing infrastructure, and routing of the line to avoid sensitive areas would reduce these impacts and they would be minor/negligible and short-term to long-term.

Construction of the proposed transmission line and associated access roads has the potential to create temporary impacts associated with the presence of workers and equipment that may cause species to avoid using work areas during construction activities. These potential impacts would be temporary and would cease with the completion of construction activities. As such they would be unlikely to be significant at the population level.

Noise and vibration associated with construction activities may temporarily change habitat use patterns for some species. Some individuals would move away from the source(s) of the noise/vibration to adjacent or nearby habitats; which may increase competition for resources within these areas. Noise/vibration and other disturbances may also lead to increased stress on individuals, which could decrease their overall fitness due to increased metabolic expenditures. These effects would be temporary and of short duration and would cease with the completion of construction activities. Impacts from noise/.vibration would likely be limited to individuals, would be minor and short-term and could lead to reproductive failure for one season. However, given the temporary nature of noise/vibration impacts they would not be significant at the population level.

Design features and mitigation (PCEMs) for wildlife in table 2-8 in chapter 2 would apply and reduce the amount of habitat that would be lost or degraded/fragmented during construction activities. Some of the habitat would be restored or reconstructed elsewhere after the completion of construction activities; however, restoration in arid environments is difficult and slow and may require 50 to 100 or more years. The habitat types affected are abundant in the representative ROW and the broader analysis area. As such, impacts from ground disturbance would be minor and long-term.

A Project speed limit for construction areas and spur roads would be implemented to reduce the potential for construction activities leading to wildlife collisions with construction equipment. Burial of some individuals could occur during ground-disturbing activities. Given the amount of habitat in the representative ROW and broader analysis area, implementation of PCEMs, the temporary nature of construction activities, and the ability of many species to leave impacted areas it is unlikely that there would be population level impacts. The presence of construction-related trash and debris would be an attractant for some wildlife species. This would be minimized by PCEM HAZ-6. As such, impacts from construction would be short- and long-term and minor.

Proponent proposed measures PCEM VEG-4 and PCEM VEG-5 would minimize the introduction and spread of invasive and noxious weeds within the representative ROW or to adjacent areas from construction equipment. Minimization of ground-disturbing activities (PCEM VEG-1) would decrease conditions that favor the establishment and spread of invasive and noxious weed species. These species could adversely modify wildlife habitat by changing vegetation composition and altering fire regimes. In areas that are not adapted to fire, increased frequency and intensity of fires could lead to dramatic changes in the overall vegetation community and available habitat for wildlife. Impacts from fire would be minimized through PCEM HEA-3. Given that vegetation types that would be disturbed are common in the representative ROW and broader analysis area and the implementation of PCEMs, impacts from the establishment and spread of invasive and noxious weeds would be short- and long-term and minor.

Operation and Maintenance

Potential impacts from operation and maintenance activities would be similar in nature to those previously described above for construction activities. However, the scope of impacts would be lower in magnitude than those for construction as there would be less equipment and fewer people working. Operation and maintenance impacts would be temporary and would occur sporadically over the life of the

proposed Project. It is estimated that maintenance activities would occur once or twice a year under normal circumstances. Given the temporary, and limited maintenance activities impacts to wildlife would be minor/negligible and short-term.

Impacts from the operation and maintenance of the proposed Project would be minor/negligible and long-term. These would include habitat loss, fragmentation and degradation; changes to species movement corridors; and increased access for OHV users. The transmission line ROW would serve as a movement corridor for some species and as a barrier to others. Because total permanent ground disturbance would be less than total temporary disturbance, permanent impacts to wildlife and special status species habitat would be to a minimal proportion of the available habitat in the representative ROW and broader analysis area as well as within wildlife linkages and natural movement corridors. Transmission structures may provide some of the only available shade and nesting/perching structures in the area for some species. This could be a beneficial impact for those species that would utilize the structures and a negative impact on prey species near the ROW.

The proposed Project would increase the amount of edge habitat along the ROW. Effects from increased amounts of edge would 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 utilize edge habitats or have more general habitat requirements. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects would be greatest. However, as portions of the representative ROW occur in areas with low vegetation density or in areas with existing development (i.e., near Tucson) impacts from habitat fragmentation and edge effects would be minor and short-term.

Proponent proposed measure PCEM REC-2 to provide spur and access road closure signage at the entrances to these roads would reduce the potential for impacts from habitat disturbance, OHV collisions with wildlife, and increased fire ignition sources from increased OHV access along access and spur roads. While mitigation would minimize OHV use along the transmission line and access roads, trespass use of the area could still occur. The increased potential for fire ignition could lead to fires that dramatically modify habitat over large areas, especially in habitat types that are not adapted to fire. These impacts would be minor and both short- and long-term.

ADDITIONAL IMPACTS

Mammals

Potential impacts on mammals from the proposed Project would include those described above as “Impacts Common to All Action Alternatives.” Small mammals that shelter underground would be susceptible to being crushed by construction equipment. Potential impacts on mammals would be short- and long-term and minor/negligible for most mammal species. The lesser long-nosed bat and Mexican long-nosed bat would experience minor, short- and long-term effects from removal of foraging habitat. However, foraging by the species would continue in the general area at current levels because of the relatively small area of forage that would be affected. As such, the proposed Project may affect, and is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through temporary loss of forage plants.

These and other bat species could be impacted by noise and vibration from blasting activities. Potential impacts on bat species would include causing adult bats to leave maternity roosts during daytime hours. This could lead to infant bats being dropped or knocked to the ground, resulting in mortalities. The PCEM mitigation measure WILD-8 for seasonal restrictions on blasting near the known bat roost near the

Vulture Mine, noise restrictions for blasting at the Ina Road Bridge and the distance from the proposed ROW to these roosts would avoid impacting roosting bats.

Operation and maintenance impacts would be minor/negligible and long-term for mammal species.

Birds

Potential impacts on bird species from the proposed Project would include those described above as "Impacts Common to All Action Alternatives." Additional impacts to bird species outside of the ROW would occur and would include temporary disturbance from noise as well as changes to habitat use. Noise-related construction activities could affect nesting, roosting, and foraging activities. Changes to behavior could include increased alertness, turning toward the disturbance, fleeing the disturbance, changes in activity patterns, and nest abandonment. Raptors would be especially susceptible to noise disturbance early in the breeding season, when it can cause nest abandonment and failure for up to one season. Measures to avoid working in sensitive habitats during the breeding season would reduce these impacts (PCEM WILD-5) and they would be minor and short-term. Potential impacts from operation and maintenance would be from birds striking electrical transmission lines and towers. With the application of PCEMs, operation and maintenance impacts would be reduced and would be long-term and minor/negligible.

Proponent proposed measures to design the transmission lines and structures in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012), utilizing the existing Western transmission line ROW, and route siting would minimize the potential for bird collisions with transmission lines or poles (PCEM WILD-6). However, during poor weather conditions and along elevated terrain migrating birds and raptors would be at greater risk for collisions as they would fly nearer to transmission line facilities. While some individuals could be impacted these impacts would be unlikely to reach population levels. They would be minor and long-term. Small and mobile bird species, including southwestern willow flycatcher, would be anticipated to have a very low potential for collisions.

Electrocution is not a potential issue for birds as the proposed transmission lines would have conductor spacing that is much larger than the largest wingspan of bird species that could occur in the area. Types of mitigation described by APLIC include collision monitoring, line marking, changing line configurations, and increasing wire diameters (2012). Mitigation measures would be provided in the Avian Protection Plan and would be tailored to Project-specific conditions. With the application of PCEMs, there would be no impact on birds from electrocution.

The presence of transmission poles would provide perches as well as nesting habitat for some species. In some areas the transmission poles may be the only suitable nesting structures for some species. This would allow some species to utilize areas that would otherwise be unsuitable. This would be a beneficial impact to species that utilize the transmission line and could increase impacts on prey species near the ROW.

The increased amount of edge habitat created by the proposed Project would allow for an increase in species that use edge habitats, such as brown-headed cowbirds (*Molothrus ater*). This would change the species composition of the ROW area and impact species that utilize larger blocks of habitat as they would be subject to increased predation and nest parasitism. Other species that utilize edge habitats or have more general habitat requirements would benefit from the increased amount of edge habitat. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects would be greatest. However, as portions of the proposed project area occur in areas with low vegetation density or in areas with existing development (i.e., near Tucson) impacts from habitat fragmentation and edge effects would be minor and short-term.

Fish

All aquatic sites would be spanned and construction equipment would be kept out of flowing stream channels and active drainages to the extent possible to avoid directly impacting fish habitat (PCEM WAT-2). Potential construction impacts on fish species would be short-term and minor/negligible. No operational or maintenance impacts on fish species are anticipated.

Increases in soil erosion from ground-disturbing activities would be avoided through the development and implementation of a SWPPP (PCEM WAT-1). A spill prevention plan (PCEM HAZ-5) would be developed that would limit the potential for construction equipment to leak any hazardous materials that could impact water quality. Proponent proposed measures PCEMs VEG-6 and WAT-2 requiring equipment to be washed prior to entering the ROW and avoiding flowing stream channels would minimize the potential for construction equipment to spread non-native species such as crayfish from one water body to another.

Areas of ground disturbance would be restored to the extent possible upon completion of construction activities. If restoration activities were successful potential erosion would be minimized. However, if restoration activities were not successful erosion could continue to impact water quality for fish species throughout the operation and maintenance of the transmission line.

Reptiles

Potential impacts on reptile species from the proposed Project would include those described above as "Impacts Common to All Action Alternatives." In addition, reptile species that shelter underground would be susceptible to being crushed by construction equipment. Construction-related trash may attract reptile predators such as ravens (*Corvus corax*) and raptor species. The presence of the transmission line and poles could provide perching and nesting habitat for ravens and other species, which may increase raven and other reptile predator numbers along the transmission line. Potential construction impacts on reptiles would be short- and long-term and minor. Impacts from the operation and maintenance of the proposed Project on reptiles would be long-term and minor/negligible.

Amphibians

Potential impacts on amphibian species from the proposed Project would include those described above as "Impacts Common to All Action Alternatives." Amphibian species would also be affected by any changes to water quality. Potential construction impacts on amphibian species would be short-term and minor/negligible. No operational or maintenance impacts on amphibians are anticipated.

Increases in erosion from ground-disturbing activities would be avoided through the development and implementation of a SWPPP (PCEM WAT-1). A spill prevention plan (PCEM HAZ-5) would be developed that would limit the potential for construction equipment to leak any hazardous materials that could impact water quality. Proponent proposed measures PCEM VEG-6 and WAT-2 requiring equipment to be washed prior to entering the ROW and avoiding flowing stream channels would minimize the potential for construction equipment to spread non-native species such as crayfish and diseases such as Chytridiomycosis from one water body to another.

Areas of ground disturbance would be restored to the extent possible upon completion of construction activities. If restoration activities were successful potential erosion would be minimized. However, if restoration activities were not successful erosion could continue throughout the life of the transmission line operation and maintenance, which may contribute to long-term impacts to water quality for amphibian species.

Invertebrates

Potential impacts on invertebrate species from the proposed Project would include those described above as "Impacts Common to All Action Alternatives," such as habitat loss and collisions with construction equipment. Impacts on aquatic invertebrates would be similar in nature to those described above such as changes to water quality from increased erosion and direct habitat loss. However, habitat loss would be a greater impact on some invertebrates that have very limited geographic distributions, limited localized populations, and specific foraging and reproductive requirements. Potential construction impacts on invertebrates would be short-term and minor/negligible. No operational or maintenance impacts on invertebrates are anticipated.

Route Group 1 – Afton Substation to Hidalgo Substation

Tables 4.8-22 and 4.8-23 give the amount of each habitat type within the representative ROW for route group 1 which includes associated substations and staging areas. Within route group 1 the estimated percentage of the ROW to be disturbed would be approximately 23.1 percent. Acres of impacts for general wildlife and special status species throughout route group 1 were determined by comparing the SWReGAP vegetation communities in the representative ROW with species' known habitats (AGFD 2002, 2003, 2004; CH2M Hill 2013h).

Table 4.8-22. Route Group 1 Wildlife Habitat Type Resource Inventory Data

Habitat Type	Subroute 1.1	Subroute 1.2	DN1	A	B	C	D
Agriculture	5.6	55.1	-	-	-	5.8	20.9
Apacherian-Chihuahuan Mesquite Upland Scrub	242.8	345.9	12.1	94.6	13.0	0.8	3.5
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	1,528.4	1,254.8	763.1	6.5	12.3	114.6	380.1
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	640.8	904.1	147.6	92.8	99.1	78.3	135.1
Chihuahuan Gypsophilous Grassland and Steppe	5.3	-	-	-	-	-	--
Chihuahuan Mixed Salt Desert Scrub	71.4	94.9	3.1	-	2.4	-	4.0
Chihuahuan Sandy Plains Semi-Desert Grassland	48.3	4.7	0.6	-	-	0.1	-
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	944.8	570.7	57.7	197.7	104.4	16.1	3.3
Chihuahuan Succulent Desert Scrub	29.1	10.6	-	-	1.4	-	-
Developed, Medium - High Intensity	9.2	2.0	-	-	-	-	1.9
Developed, Open Space - Low Intensity	1.6	-	-	-	-	-	-
Inter-Mountain Basins Semi-Desert Shrub Steppe	-	2.9	-	-	-	-	-
Madrean Encinal	-	-	2.2	-	-	-	-
Madrean Juniper Savanna	2.6	21.9	-	-	-	-	-
Madrean Pinyon-Juniper Woodland	1.1	0.2	-	-	-	-	-
Mogollon Chaparral	-	1.3	-	-	-	-	-
North American Warm Desert Active and Stabilized Dune	12.7	113.9	-	26.5	58.7	-	-

Table 4.8-22. Route Group 1 Wildlife Habitat Type Resource Inventory Data (Continued)

Habitat Type	Subroute 1.1	Subroute 1.2	DN1	A	B	C	D
North American Warm Desert Bedrock Cliff and Outcrop	3.0	0.7	-	3.3	-	-	-
North American Warm Desert Pavement	6.3	2.9	-	-	-	-	1.8
North American Warm Desert Playa	2.6	1.9	-	1.5	-	-	-
North American Warm Desert Riparian Mesquite Bosque	-	-	0*	-	-	-	-
North American Warm Desert Riparian Woodland and Shrubland	1.1	0.3	-	-	-	-	-
North American Warm Desert Volcanic Rockland	12.5	22.3	43.0	-	-	-	-
North American Warm Desert Wash	-	8.5	-	-	-	-	0.5

0* = greater than zero but less than 0.1

Table 4.8-23 shows impacts by habitat type for substations and staging areas for route group 1.

Table 4.8-23. Route Group 1 Wildlife Resource Habitat Type Data for Substations and Staging Areas

Habitat Types	Subroute 1.1	Subroute 1.2
Apacherian-Chihuahuan Mesquite Upland Scrub	19.0	26.3
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	76.0	108.6
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	143.2	111.1
Chihuahuan Gypsophilous Grassland and Steppe	1.3	-
Chihuahuan Mixed Salt Desert Scrub	11.4	12.3
Chihuahuan Sandy Plains Semi-Desert Grassland	5.3	0.4
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	279.5	242.7
Intermountain Basins Semi-Desert Shrub Steppe	-	0.2
North American Warm Desert Active and Stabilized Dune	0.2	-
North American Warm Desert Bedrock Cliff and Outcrop	3.3	-
North American Warm Desert Wash	-	2.4

Acres of impacts on general wildlife and special status species from route group 1 are given in table 4.8-24.

SUBROUTE 1.1 – PROPONENT PREFERRED

General Wildlife

Construction

Impacts on general wildlife species would be as described above in the “Impacts Common to All Action Alternatives” and “Additional Impacts” sections. Acres of impacts are given in table 4.8-24.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 1.1 would include those described above for the "Impacts Common to All Action Alternatives" and "Additional Impacts" sections.

Special Status Species

Federally Listed Species

The northern aplomado falcon (*Falco femoralis septentrionalis*) and the Sprague's pipit (*Anthus spragueii*) were identified as possible to occur because this subroute would be within the species' range and habitat parameters would be present. In addition, the interior population of the least tern (*Sterna antillarum*) would be considered unlikely to occur because although it could migrate through the area, habitat parameters would not be present. Therefore, the proposed Project activities in subroute 1.1 would have no effect to the populations of interior least tern or its habitat.

The northern aplomado falcon is listed as a 10(j) non-essential, experimental population. This listing type treats the species as threatened within National Wildlife Refuges and National Parks. Outside of these areas these populations are treated as proposed for listing. There proposed Project would not cross any National Wildlife Refuges or National Parks; thus the species is treated as proposed for listing throughout the project area.

Construction

Potential impacts on northern aplomado falcon and Sprague's pipit from construction activities would include those described above as "Additional Impacts" to bird species. Northern aplomado falcon could be impacted through potential habitat loss and fragmentation and from noise; however, with implementation of PCEMs, the amount of available, unoccupied habitat for the species in the representative ROW and broader analysis area, and the naturally low densities of the species, impacts would be insignificant due to proportionally small areas of habitat loss. The proposed Project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of the northern aplomado falcon (FWS 2014d). Acres of impacts are given in table 4.8-24.

Potential impacts on Sprague's pipit would include habitat loss and degradation. These impacts would be minor/negligible based on the implementation of PCEMs and the amount of available habitat in the representative ROW and broader analysis area. As such, there would be no effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential impacts on northern aplomado falcon and Sprague's pipit from operation and maintenance activities would include those described above as "Additional Impacts" to bird species. Northern aplomado falcon could be impacted through changes to habitat use from maintenance-related noise. These impacts would be temporary, occur rarely, and would have a negligible impact on habitat use by the species. There would be no detectable effects on the viability of Sprague's pipit or contribution toward a downward population trend or listing of this species as threatened or endangered.

Table 4.8-24. Route Group 1 Acres of Impacts on Special Status Wildlife Species

			Local Alternatives				
Common name	**Subroute 1.1**	**Subroute 1.2**	**A**	**B**	**C**	**D**	**DN1**
General Wildlife Species	944.0	970.1	98.1	68.2	50.3	147.6	238.2
Federally Listed Species							
Northern aplomado falcon	348.1	290.9	1.5	2.9	26.7	87.8	176.4
Sprague's pipit	348.1	290.9	1.5	2.9	26.7	87.8	176.4
BLM Sensitive Species							
Allen's big-eared bat	1.1	6.0	-	-	-	-	-
Big free-tailed bat	148.3	216.6	21.5	23.2	18.2	31.2	34.1
Cave myotis	171.2	233.2	21.5	23.8	18.2	32.1	34.8
Fringed myotis	535.3	524.1	23.0	27.0	45.0	119.9	211.2
Little brown myotis	171.5	233.2	21.5	23.8	18.2	32.1	34.8
Long-legged myotis	171.5	233.2	21.5	23.8	18.2	32.1	34.8
Mexican long-tongued bat	364.2	290.9	1.5	2.9	26.7	87.8	176.4
Pale Townsend's big-eared bat	171.2	233.5	21.5	23.8	18.2	32.1	34.8
Spotted bat	171.8	233.3	21.5	23.8	18.2	32.1	34.8
Western small-footed myotis	364.2	290.9	1.5	2.9	26.7	87.8	176.4
Yuma myotis	171.5	233.3	21.5	23.8	18.2	32.1	34.8
Loggerhead shrike	172.5	246.0	21.5	24.1	19.6	37.0	34.8
Western burrowing owl (New Mexico population)	365.5	303.7	1.5	2.9	26.7	87.8	92.6
White-faced ibis	1.3	0.1	0	0	1.4	4.8	0
Texas horned lizard	535.3	524.1	23.0	27.0	45.0	119.9	211.2
Colorado River toad (aka Sonoran desert toad)	536.1	530.2	23.0	27.0	45.0	119.9	211.7

Table 4.8-24. Route Group 1 Acres of Impacts on Special Status Wildlife Species (Continued)

			Local Alternatives				
Common name	**Subroute 1.1**	**Subroute 1.2**	**A**	**B**	**C**	**D**	**DN1**
State of New Mexico Wildlife Conservation Act Species							
Desert bighorn sheep	0.7	0.8	0.8	-	-	-	-
Abert's towhee	2.2	2.5	0	0	0	0.5	0
American peregrine falcon	536.0	524.6	23.8	27.0	45.0	119.9	211.2
Bell's vireo	53.9	79.9	22.0	3.0	0.2	0.8	2.8
Gila woodpecker	171.5	233.2	21.5	23.8	18.2	32.1	34.8
Lucifer hummingbird	535.3	524.1	23.0	27.0	45.0	119.9	211.2
Varied bunting	56.0	81.9	22.0	3.0	0.2	0.9	2.8
Gila monster	535.3	524.4	23.0	27.0	45.0	119.9	211.2
Great Plains narrow-mouthed toad	353.1	290.9	1.5	2.9	26.7	87.8	176.4
State of New Mexico Species of Greatest Conservation Need							
Pocketed free-tailed bat	0.3	0.2	0	0	0	0	0
Western red bat	0.3	0.1	0	0	0	0	0
American bittern	0	0	0	-	-	-	-
Bank swallow	0.3	0.1	0	0	0	0	0
Bendire's thrasher*	171.2	233.2	21.5	23.8	18.2	32.1	34.8
Common black hawk	0.3	0.2	-	-	-	0.1	-
Eared grebe	0	0	0	-	-	-	-
Northern harrier	536.6	536.9	23.0	27.0	46.4	124.4	211.2
Northern pintail	0	0	0	-	-	-	-
Painted bunting	171.2	233.2	21.5	23.8	18.2	32.1	34.8
Sandhill crane	353.7	304.1	1.9	2.9	28.1	92.6	176.3
Yellow warbler	171.2	233.2	21.5	23.8	18.2	32.1	34.8

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive for this region, 16 species were identified as possible to occur because the representative ROW would be within their range and habitat parameters would be present. These species include the Colorado River toad also known as the Sonoran desert toad (*Anaxyrus alvarius*), Texas horned lizard (*Phrynosoma cornutum*), New Mexico population of the burrowing owl, loggerhead shrike (*Lanius ludovicianus*), white-faced ibis (*Plegadis chihi*), Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat (*Euderma maculatum*), Allen's big-eared bat (*Idionycteris phyllotis*), western small-footed myotis (*Myotis ciliolabrum melanorhinus*), little brown myotis (*Myotis lucifugus occultus*), fringed myotis (*Myotis thysanodes thysanodes*), cave myotis (*Myotis velifer*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis yumanensis*), and big free-tailed bat (*Nyctinomops macrotis*).

Construction

Potential impacts on BLM Sensitive Species would be as described in "Impacts Common to All Action Alternatives" and "Additional Impacts" sections. Acres of impacts on BLM Sensitive Species are given in table 4.8-24.

Potential impacts on Colorado River toad from construction activities would include those described above as "Additional Impacts" to amphibian species. While impacts to habitat and individuals could occur, there would be no detectable effect at the population level on the viability of this species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on Texas horned lizard from construction-related activities would include those described above as "Additional Impacts" to reptile species. Based on the amount of available Texas horned lizard habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on western burrowing owl from construction activities in this subroute would include those described above as "Additional Impacts" to bird species. As this species shelters underground impacts could include burial in burrows during ground disturbing activities. In addition, burrows of this ground-nesting bird have the potential to occur within portions of the representative ROW in this subroute. In order to minimize impacts on burrowing owls, PCEM WILD-7 would be implemented. Additionally, in New Mexico the NMDGF protocols for surveying for burrowing owls would be followed in areas where the species could potentially occur (NMDGF 2007).Based on the amount of available burrowing owl habitat in the representative ROW and broader analysis area and implemented PCEM, construction-related activities would have no detectable effect on the viability of this species or to contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on loggerhead shrike from construction activities would include those described above as "Additional Impacts" to bird species. Based on the amount of available foraging habitat in the analysis area, construction-related activities would have no detectable effect on the viability of this species or contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on white-faced ibis from construction activities would include those described above as "Additional Impacts" to bird species. Individuals may experience impacts common to migratory birds during migration as they move through the subroute during construction with the potential for strikes to transmission lines and structures (see migratory species impacts describe below). However, construction-

related activities would have no detectable effect on the viability of this species or to contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on the 11 bat species noted above from construction activities would include disturbance to habitat and a decrease in potential foraging habitat. However, there would be no potential roost sites in the representative ROW for subroute 1.1 that would provide shelter for these species. Based on the amount of available foraging habitat in the broader analysis area, construction-related activities would have no detectable effect on the viability of these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

White-faced ibis, burrowing owl, and loggerhead shrike impacts would include the potential for strikes to transmission lines and structures. These impacts are not anticipated to reach population levels or lead to the species being listed as threatened or endangered.

There would be no operational or maintenance impacts detectable at the population level for the Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, Allen's big-eared bat, western small-footed myotis, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, and big free-tailed bat, Colorado River toad, and Texas horned lizard.

State of New Mexico Wildlife Conservation Act Species

Eleven New Mexico Wildlife Conservation Act species were identified as possibly occurring within subroute 1.1. These would include the spotted bat, Gila monster, Gila woodpecker (*Melanerpes uropygialis*), Lucifer hummingbird (*Calothorax lucifer*), Bell's vireo, varied bunting (*Passerina versicolor*), Abert's towhee, northern aplomado falcon, and American peregrine falcon (*Falco peregrinus*). Impacts on northern aplomado falcon and spotted bat are addressed above in "Federally Listed Species" and "BLM Sensitive Species" sections, respectively. Impacts on the remaining seven species are given below.

Construction

Potential impacts on State of New Mexico Wildlife Conservation Act bird species would be as described above in "Additional Impacts."

Potential impacts on the Gila monster would include those described above as "Impacts Common to All Action Alternatives" and specifically to reptiles as described above in "Additional Impacts." As this species spends the majority of its life underground, it would be more susceptible than non-burrowing species to burial during construction activities. Based on the amount of habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described above in the "Impacts Common to All Action Alternatives" and "Additional Impacts" sections.

State of New Mexico Species of Greatest Conservation Need

Sixteen New Mexico SGCN were identified as possibly occurring in subroute 1.1. Of these 16, five are addressed above (white-faced ibis, spotted bat, and Allen's big-eared bat are addressed in the "BLM Sensitive Species" section and Bell's vireo and American peregrine falcon are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). The other 11 species and Bendire's thrasher are addressed below.

Construction

Potential impacts on SGCN mammal species in subroute 1.1 would include those described above as "Impacts Common to All Action Alternatives" and specifically to mammals as described above in "Additional Impacts." Mammal species impacts would include western red bat and pocketed free-tailed bat (*Nyctinomops femorosacca*).

Potential impacts on SGCN bird species in subroute 1.1 would include those described above as "Impacts Common to All Action Alternatives" and specifically to birds as described above in "Additional Impacts." Bird species impacted would include Bendire's thrasher, common black hawk, yellow warbler (*Setophaga petechia*), northern pintail (*Anas acuta*), American bittern (*Botaurus lentiginosus*), eared grebe (*Podiceps nigricollis*), bank swallow (*Riparia riparia*), northern harrier (*Circus cyaneus*), sandhill crane, and painted bunting (*Passerina ciris*). Impacts on American bittern and eared grebe habitat would be avoided by placing structures and access roads outside of wetland and open water areas.

Impacts on sandhill cranes would include impacts to habitat, including migratory and stopover habitat. Based on the amount of migratory/stopover habitat for this species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Based on the amount of habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described in "Impacts Common to All Action Alternatives" and "Additional Impacts" above. Acreages of potential impacts on species habitat would be as described above in "Construction" for the areas to be disturbed.

Migratory Birds

Construction

Impacts on migratory birds would include those described above for additional impacts on birds.

The representative ROW would contain approximately 1.1 acres of North American Warm Desert Riparian Woodland and Shrubland, 5.6 acres of Agricultural, and 2.6 acres of North American Warm Desert Playa, all of which may have higher concentrations of birds than other habitat types during nesting, wintering, or migration. No open water would be found in this subroute. A total of approximately 944 acres of migratory bird habitat would be disturbed by subroute 1.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

The proposed ROW would also cross approximately 94.9 acres of sandhill crane wintering habitat with disturbance to approximately 21.9 acres, and 1,262.3 acres of sandhill crane migratory corridors with disturbance to approximately 291.6 acres. Impacts on migrating sandhill cranes would be as described above under State of New Mexico Species of Greatest Conservation Need.

Operation and Maintenance

The habitats mentioned above may harbor higher concentration of migratory birds than surrounding areas, and may be associated with an elevated risk of collision events. However, that risk would still be unlikely to reach population-level impacts given the amount of available habitat in the broader analysis area. Population-level impacts would be those impacts that would limit the ability of a species to maintain significant numbers to sustain reproduction and genetic viability as well as be resilient to outside stressors and events that could reduce population numbers.

Wildlife Special Designation Areas

Construction

Wildlife designated habitat for the northern aplomado falcon and the Big Burro Mountains to Cedar Mountains Potential Cougar Corridor would be crossed by the ROW for subroute 1.1. Northern aplomado falcon habitat areas are recognized as avoidance areas by the Mimbres RMP. Disturbance would occur on approximately 30.7 acres. An additional 4.6 acres for a staging area would also be disturbed. This would total approximately 35.3 acres of disturbance to designated aplomado falcon habitat from subroute 1.1. Potential impacts on northern aplomado falcon habitat would include habitat loss, degradation, and fragmentation as well as potential increased OHV access due to the presence of access roads. This could lead to increased use of areas by OHV users, which could conflict with management objectives. Based on the amount of designated habitat in the analysis area, there would be no detectable effect on the function of those habitats.

The proposed ROW would cross the Big Burro Mountains to Cedar Mountains Potential Cougar Corridor on approximately 316 acres of the ROW, of which approximately 73.1 acres would be disturbed. Impacts on the potential cougar corridor would include habitat loss, degradation, and fragmentation as well as increased OHV access due to the presence of access roads. Habitat fragmentation creates more isolated and smaller patches of habitat. In addition the proposed ROW would intersect approximately 493.3 acres of the Luna County Grasslands Bird Habitat Conservation Area with disturbance to approximately 113.9 acres.

The proposed transmission line would have towers with approximately 1,200-foot spans. Andren (1994) stated that the negative effects of habitat fragmentation may not occur until the landscape consists of only 10 to 30 percent of the original habitat. Disturbance from the proposed Project would leave sufficient undisturbed habitat to allow species movement corridors to function. The maximum width of the ROW would be 200 feet with approximately 77 percent of the ROW to remain undisturbed. Adjacent habitats on either side of the ROW would remain intact.

While the removal of vegetation could decrease cover in linkage areas and other natural movement corridors, the total portion of these areas to be impacted is minimal and retains large areas of existing habitat. Most crossings of wildlife movement and linkage areas would be perpendicular to those areas and would retain landscape features to allow for species movement and should not significantly impact wildlife movement.

As cougars are a wide-ranging species and impacts would occur on a small portion of the corridor, it is not anticipated that the proposed Project would create a barrier to cougar movement along the corridor.

Based on the amount of designated habitat and the area of the potential cougar corridor in the analysis area, there would be no detectable effect on the function of those habitats or wildlife corridors.

Operation and Maintenance

Potential operational and maintenance impacts on northern aplomado falcon designated habitat areas would include habitat loss, degradation, and fragmentation as described above for construction. Impacts on the cougar corridor would include habitat loss, degradation and fragmentation, and potential barriers to movement along the corridor. Impacts on special designations, including designated northern aplomado falcon habitat, are analyzed in section 4.12.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. Acres of impacts are given in table 4.8-24. Disturbance to habitat would be long-term.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 1.2 would include those described above subroute 1.1. Based on the amount of habitat for these species in the analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Special Status Species

Federally Listed Species

Construction

The construction impact types and intensities to northern aplomado falcon and Sprague's pipit would be the same as described above for subroute 1.1. Acres of habitat impacted are given in table 4.8-24.

Operation and Maintenance

The operation and maintenance impact types and intensities to northern aplomado falcon and Sprague's pipit would be the same as described under subroute 1.1.

BLM Sensitive Species

Construction

The construction impact types and intensities to the BLM Sensitive Species Colorado River toad (also known as Sonoran desert toad), Texas horned lizard, New Mexico population of the burrowing owl, loggerhead shrike, white-faced ibis, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, Allen's big-eared bat, western small-footed myotis, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, and big free-tailed bat would be the same as described under subroute 1.1. Acres of impacts are given in table 4.8-24.

Operation and Maintenance

The operation and maintenance impact types and intensities to BLM sensitive species would be the same as described under subroute 1.1.

State of New Mexico Wildlife Conservation Act Species

Eleven New Mexico Wildlife Conservation Act species were identified as possibly occurring in route group 1. All of these species could potentially occur within subroute 1.2. These would include desert bighorn sheep (*Ovis canadensis mexicana*), spotted bat, Gila woodpecker, Lucifer hummingbird, Bell's vireo, varied bunting, Abert's towhee, northern aplomado falcon, peregrine falcon, Gila monster, and Great Plains (western) narrow-mouthed toad (*Gastrophryne olivacea*). Impacts on northern aplomado falcon and spotted bat are addressed above in "Federally Listed Species" and "BLM Sensitive Species" sections, respectively. Impacts on the remaining species are given below; acres of impacts are given in table 4.8-24.

Construction

Potential impacts on desert bighorn sheep, State of New Mexico Wildlife Conservation Act bird species, Gila monster, and Great Plains narrow-mouthed toad would be as described for subroute 1.1.

Based on the amount of habitat for these species in the analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described for subroute 1.1.

State of New Mexico Species of Greatest Conservation Need

Twelve New Mexico SGCN were identified as possible to occur in subroute 1.2. Of these 12, six are addressed above (white-faced ibis, spotted bat, and Allen's big-eared bat are addressed in the "BLM Sensitive Species" section and Bell's vireo, peregrine falcon, and desert bighorn sheep are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). The remaining five species and Bendire's thrasher are addressed below. Acres of impacts are given in table 4.8-24.

Construction

Potential impacts on the western red bat and SGCN bird species would be as described for subroute 1.1.

A sandhill crane migratory flyway and a wintering site near Columbus, New Mexico would be located in subroute 1.2 (Mitchusson 2003). Sandhill crane migratory/stopover habitat would be crossed by the ROW on approximately 585.0 acres of which 135.1 acres would be disturbed. The proposed ROW would also cross approximately 191.4 acres of sandhill crane wintering habitat with disturbance to approximately 44.2 acres. In addition the proposed ROW would intersect approximately 1,555.9 acres of the Luna County Grasslands Bird Habitat Conservation Area with disturbance to approximately 359.4 acres.

Operation and Maintenance

Sandhill crane mortality by collision with power lines has been documented in several recent studies. Between March 5 and April 18, 2008 and again between March 3 and April 13, 2009, Wright et al. (2009) recorded 61 carcasses of sandhill cranes during twice-weekly searches below two 69-kV power line arrays that cross the Platte River at the National Audubon Society's Lillian Rowe Sanctuary. This area has perennial water and is highly braided with numerous sand bars and islands. It differs from the project area in that it is made up of larger areas of playa where bird densities may be less than the study site. In 2009, they searched more intensively and, after accounting for several potential detectability biases, estimated 165 to 219 sandhill cranes were killed by colliding with the power lines (Wright et al. 2009). While the proposed transmission lines would be larger than the 69-kV lines in the study there would be more lines, they would be larger and likely more visible. The movement of sandhill cranes along segment S5 would be associated with a risk of collision with the proposed transmission lines.

Migratory Birds

Construction

Impacts on migratory birds would be as described above for subroute 1.1. However, the representative ROW for subroute 1.2 would cross a greater number of crane migration corridors and wintering areas than subroute 1.1 and could have increased levels of impacts. The representative ROW contains approximately 0.3 acre of North American Warm Desert Woodland and Shrubland, 57.1 acres of Agricultural, and 1.9 acres of North American Warm Desert Playa, all of which may have higher concentrations of birds than other habitat types during nesting, wintering, or migration. Avian protection areas and bird habitat conservation areas would be crossed by approximately 1,522.5 acres of subroute 1.2 with 351.7 acres of disturbance. No open water would be found in this subroute. A total of approximately 970.1 acres of migratory bird habitat would be affected by subroute 1.2. This would be 26.1 acres less than disturbance levels for subroute 1.1.

Operation and Maintenance

The habitats mentioned above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. That risk would still be unlikely to reach population-level impacts.

Impacts on the sandhill crane migratory flyway and a wintering site near Columbus, New Mexico are described above in State of New Mexico SGCN.

The representative ROW lies within close proximity of several high ridges and low passes (table 4.8-25), which would increase the possibility of somewhat higher impacts on migratory birds.

Table 4.8-25. Route Group 1 Proximity of Mountain Ridges and Low Passes to the ROW of Proposed Subroutes

Subroutes	Ridge or Low Pass	Distance (miles)
Subroute 1.1, Proponent Preferred	Highest ridge in the Aden Hills	0.94
Subroute 1.2, Proponent Alternative	Nearest high ridge in the East Potrillo Mountains	0.27
	Highest ridge of Camel Mountain	0.27
	Highest ridge of the Carrizalillo Hills	1.17
	Lowest pass in the Carrizalillo Hills	0.36

Table 4.8-25. Route Group 1 Proximity of Mountain Ridges and Low Passes to the ROW of Proposed Subroutes (Continued)

Subroutes	Ridge or Low Pass	Distance (miles)
Subroute 1.2, Proponent Alternative, cont'd.	Nearest high ridge in the Cedar Mountains	2.18
	High ridges in the Flat Hill	0.86
Route Group 1 Local Alternatives		
Local Alternatives for Subroute 1.2		
Local Alternative C	Nearest ridges in the Cedar Mountains	1.21
	Nearest ridges in the Carrizalillo Hills	0.80
	Low pass between the Cedar Mountains and the Carrizalillo Hills	0.00
Local Alternative D	Nearest high ridge in the Pyramid Mountains	0.62
	Nearest low pass in the Pyramid Mountains	0.15
Local Alternatives for Subroute 1.2	NA*	NA

Note: NA = not applicable.

* No ridge or low pass is present near any of the segments of the proposed subroute's ROW.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described above for subroute 1.1.

Construction

The representative ROW for subroute 2.1 would intersect wildlife designated habitat for the northern aplomado falcon and suitable/occupied bighorn habitat. Bighorn habitat within the representative ROW is suitable but is not currently occupied by the species and is over 50 miles from the nearest occupied habitat. Disturbance would occur on approximately 33.5 acres of aplomado falcon habitat and 4.7 acres of suitable/occupied bighorn habitat. This would be a decrease of 1.8 acres from subroute 1.1 for aplomado falcon and an increase of 4.7 acres for suitable/occupied bighorn habitat. Impacts on special designations would not be significant when compared to the total area of this resource along subroute 1.2.

Operation and Maintenance

Potential operational and maintenance impacts on northern aplomado falcon and suitable/occupied bighorn habitat areas would be as described above for subroute 1.1. Impacts on special designations, including designated northern aplomado falcon and suitable/occupied bighorn habitat, are analyzed in section 4.12.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1. These local alternatives include DN1, A, B, C, and D.

General Wildlife

Construction

Construction-related impacts for the local alternatives would be similar to those described above for subroute 1.1. Acres of impacts are given in table 4.8-24.

Operation and Maintenance

Impacts from the operation and maintenance of the local alternatives would include those described above for subroute 1.1.

Special Status Species

Federally Listed Species

Construction

The construction impact types and intensities to northern aplomado falcon and Sprague's pipit would be the same as described under subroute 1.1 for all local alternatives. Acres of impacts are given in table 4.8-24.

Operation and Maintenance

The operation and maintenance impact types and intensities to both the northern aplomado falcon and Sprague's pipit would be the same as described under subroute 1.1 for all local alternatives.

BLM Sensitive Species

The construction impact types and intensities to the BLM Sensitive Species Colorado River toad, Texas horned lizard, New Mexico population of the burrowing owl, loggerhead shrike, white-faced ibis, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, Allen's big-eared bat, western small-footed myotis, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, and big free-tailed bat would be the same as described under subroute 1.1 for all the local alternatives. Acres of impacts are given in table 4.8-24.

Construction

Under local alternative DN1 Texas horned lizard, burrowing owl, loggerhead shrike, and bat species habitat would be impacted as described for subroute 1.1.

Under local alternative A Texas horned lizard, burrowing owl, loggerhead shrike, white-faced ibis, and bat species habitat would be impacted as described for subroute 1.1.

Under local alternative B Texas horned lizard, burrowing owl, loggerhead shrike, and bat species habitat would be impacted as described for subroute 1.1.

Under local alternative C Texas horned lizard, burrowing owl, loggerhead shrike, white-faced ibis, and bat species habitat would be impacted as described for subroute 1.1.

Under local alternative D Texas horned lizard, burrowing owl, loggerhead shrike, white-faced ibis, and bat species habitat would be impacted as described for subroute 1.1.

Operation and Maintenance

The operation and maintenance impact types and intensities to BLM Sensitive Species would be the same as described under subroute 1.1. The representative ROW under all the local alternatives (DN1, A, B, C, and D) would be greater than the corresponding segments (portion of P2, S2, S4, S6, and S8, respectively). Therefore there would be a slightly greater chance for impacts to BLM sensitive avian species from striking the transmission lines and structures under all the local alternatives.

State of New Mexico Wildlife Conservation Act Species

Eleven New Mexico Wildlife Conservation Act species were identified as possibly occurring on the local alternatives. The northern aplomado falcon was previously described in the "Federally Listed Species" section above and the spotted bat was described in the "BLM Sensitive Species" above. The remaining nine species are addressed below. Impacts on these species would be as described for subroute 1.1 for each of the local alternatives. Acres of impacts are given in table 4.8-24.

Construction

Local alternative DN1 would intersect habitat for the Great Plains narrow-mouthed toad, Gila monster, peregrine falcon, Gila woodpecker, Lucifer hummingbird, varied bunting, and Bell's vireo.

Local alternative A would intersect with habitat for Great Plains narrow-mouthed toad, Gila monster, desert bighorn, peregrine falcon, Lucifer hummingbird, Gila woodpecker, varied bunting, and Bell's vireo.

Local alternative B and C would intersect with habitat for Great Plains narrow-mouthed toad, Gila monster, peregrine falcon, Lucifer hummingbird, varied bunting, and Bell's vireo.

Local alternative D would intersect with habitat for Great Plains narrow-mouthed toad, Gila monster, peregrine falcon, Lucifer hummingbird, varied bunting, Bell's vireo, Abert's towhee, and Gila woodpecker.

Operation and Maintenance

Potential operation and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described above for subroute 1.1.

State of New Mexico Species of Greatest Conservation Need

Sixteen New Mexico SGCN were identified as possible to occur on the local alternatives. Of these, five are addressed above (white-faced ibis, spotted bat, and Allen's big-eared bat are addressed in the "BLM Sensitive Species" section and Bell's vireo and American peregrine falcon are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). The other 11 species and Bendire's thrasher are addressed below. Impacts on these species would be as previously described for subroute 1.1. Based on the amount of habitat for these species in the representative ROW for each of the local alternatives and broader analysis area it is not anticipated that local alternatives DN1, A, B, C, or D would cause any significant population-level impacts for these species.

Local alternative DN1 could impact habitat for pocketed free-tailed bat, western red bat, band swallow, northern harrier, Bendire's thrasher, painted bunting, sandhill crane, and yellow warbler.

Local alternative A would intersect with habitat for pocketed free-tailed bat, western red bat, bank swallow, Bendire's thrasher, northern harrier, sandhill crane, northern pintail, American bittern, eared grebe, painted bunting, and yellow warbler. Habitat for eared grebe, northern pintail and American bittern would be avoided. No migratory/stopover habitat for sandhill cranes would be impacted by local alternative A.

Local alternative B would intersect with habitat for pocketed free-tailed bat, western red bat, band swallow, Bendire's thrasher, northern harrier, yellow warbler, and painted bunting as well as migratory/stopover habitat for sandhill crane. Migratory/stopover habitat would be crossed on 16.1 acres, of which 3.7 acres would be disturbed.

Local alternative C would intersect with habitat for pocketed free-tailed bat, western red bat, band swallow, Bendire's thrasher, northern harrier, painted bunting, sandhill crane and yellow warbler.

Local alternative D would intersect with habitat for pocketed free-tailed bat, western red bat, band swallow, Bendire's thrasher, common black hawk, northern harrier, bank swallow, painted bunting, and yellow warbler as well as migratory/stopover habitat for sandhill crane. Migratory/ stopover habitat would be crossed by the ROW on 180.3 acres, of which 41.6 acres would be disturbed.

Construction

Impacts on migratory birds would include those described above for subroute 1.1 for all local alternatives. Local alternative DN1 would occur on approximately 1,029.5 acres, approximately 238.2 acres of which would be disturbed.

Local alternative A would occur on approximately 422.9 acres, which would include 1.5 acres of playa habitat that could have a higher concentration of migratory birds. The potential area to be disturbed would be approximately 98.1 acres.

Local alternative B would occur on approximately 291.5 acres with a disturbance area of 68.2 acres.

Local alternative C would occur on approximately 215.7 acres, including 5.8 acres of Agricultural lands, which could have a higher concentration of migratory birds. The approximate area of disturbance would be 70.2 acres. This entire local alternative would intersect the Cedar Mountain Range/Continental Divide Avian Protection Area for raptor species.

Local alternative D would occur on approximately 551.1 acres, including 20.9 acres of Agriculture and 0.5 acre of riparian woodland and shrubland, which could have a higher concentration of migratory birds. Disturbance would occur on approximately 127.6 acres.

Operation and Maintenance

The habitat mentioned above may harbor higher concentrations of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. Other impacts would be as described above for subroute 1.1.

The representative ROW for local alternative C crosses a low pass between the Cedar Mountains and the Carrizalillo Hills (see table 4.8-25), raising the possibility of somewhat higher impacts on migratory birds.

The representative ROW for local alternative D lies near a low pass in the Pyramid Mountains (see table 4.8-25), raising the possibility of somewhat higher impacts on migratory birds.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described above for subroute 1.1.

Construction

The representative ROW for local alternative DN1 would cross the Big Burro Mountains to Cedar Mountains Potential Cougar Corridor on approximately 140.3 acres; of this area approximately 32.4 acres would be disturbed. The proposed ROW would cross Luna County Grasslands Bird Habitat Conservation Area on approximately 215.6 acres with disturbance to approximately 49.7 acres. The ROW would cross northern aplomado falcon habitat on under 0.1 acre. Local alternative C would cross 47.0 acres of desert bighorn potential/occupied habitat with disturbance to approximately 10.9 acres. No other local

alternatives intersect with special designation areas. Based on the area of northern aplomado falcon and desert bighorn habitat in the area it is not anticipated that impacts from local alternative DN1 would reach population levels. As cougars are a wide-ranging species and impacts would occur on a small portion of the corridor, it is not anticipated that the local alternative in route group 1 would create a barrier to cougar movement along the corridor.

Operation and Maintenance

Impacts on wildlife special designation areas from operation and maintenance would be as described for subroute 1.1.

Route Group 2 – Hidalgo Substation to Apache Substation

Approximately 23 percent of the representative ROW would be disturbed within route group 2. Approximate acreage of habitat types that would be within the representative ROW for route group 2 are provided in table 4.8-26 for New Mexico and in table 4.8-27 for Arizona.

Table 4.8-26. Route Group 2 Wildlife Resource Inventory Data for New Mexico

			Local Alternatives							
Habitat Type	**Subroute 2.1 (acres)**	**Subroute 2.2 (acres)**	**LD1 (acres)**	**LD2 (acres)**	**LD3a (acres)**	**LD3b (acres)**	**LD4 (acres)**	**LD4-Option 4 (acres)**	**LD4-Option 5 (acres)**	**WC1 (acres)**
Apacherian-Chihuahuan Mesquite Upland Scrub	2.1	0.5	3.0	3.8	10.0	-	10.1	-	-	-
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	547.5	246.5	231.6	170.0	390.1	37.7	54.1	-	-	-
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	74.3	55.2	108.5	20.1	105.4	14.7	77.4	-	-	-
Chihuahuan Mixed Salt Desert Scrub	35.0	37.9	4.9	20.6	29.7	-	0.8	-	-	-
Chihuahuan Sandy Plains Semi-Desert Grassland	5.2		1.0	-	5.8	-	-	-	-	-
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	47.9	5.1	42.3	-	98.4	-	-	-	-	-
Developed, Medium - High Intensity	-	-	27.9	-	-	-	-	-	-	-
Mogollon Chaparral	-	-	-	-	-	-	-0.8	-	-	-
Madrean Juniper Savanna	-	-	0.1	-	-	-		-	-	-
North American Warm Desert Bedrock Cliff and Outcrop	2.4	0*	-	-	-	-	-	-	-	-
North American Warm Desert Pavement	-	-	0.4	-	-	-	-	-	-	-
North American Warm Desert Wash	5.7	0.8	-	-	4.9	-		-	-	-

* Greater than 0 but less than 0.1 acre.

Table 4.8-27. Route Group 2 Wildlife Resource Inventory Data for Arizona

Habitat Type	Subroute 2.1 (acres)	Subroute 2.2 (acres)	Route Variations				Local Alternatives							
			P7a (acres)	P7b (acres)	P7c (acres)	P7d (acres)	LD1 (acres)	LD2 (acres)	LD3a (acres)	LD3b (acres)	LD4 (acres)	LD4-Option 4 (acres)	LD4-Option 5 (acres)	WC1 (acres)
Agriculture	50.0	70.9	45.9	5.3	1.4	12.0	69.1	-	-	-	-	-	-	-
Apacherian-Chihuahuan Mesquite Upland Scrub	682.4	886.4	218.1	86.8	6.3	12.6	168.7	-	-	-	290.4	17.0	48.3	85.3
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	521.5	638.4	420.5	154.1	10.9	23.4	29.2	-	-	-	181.5	98.1	152.1	251.2
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	203.4	253.9	49.2	4.4	4.5	-	102.3	-	-	-	347.2	31.4	68.9	0.3
Chihuahuan Mixed Salt Desert Scrub	100.6	60.9	9.3	-	-	-	40.8	-	-	-	263.3	5.1	14.0	11.5
Chihuahuan Sandy Plains Semi-Desert Grassland	0.7	-	-	-		-	-	-	-	-	-	-	-	-
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	12.2	7.5	1.5	-	1.0	-	0*	-	-	-	28.3	-	4.0	0.5
Developed, Medium - High Intensity	1.2	5.5	-	-	-	-		-	-	-	-	2.1	1.6	7.6
Developed, Open Space - Low Intensity	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
Madrean Encinal	-	3.3	-	-	-	-	-	-	-	-	11.0	1.0	0.6	-
Madrean Pinyon-Juniper Woodland	-	1.2	-	-	-	-	-	-	-	-	16.9	0.1	-	-
Madrean Juniper Savanna	2.0	-	-	-	-	-	-	-	-	-	6.5	-	-	-

Table 4.8-27. Route Group 2 Wildlife Resource Inventory Data for Arizona (Continued)

Habitat Type	Subroute 2.1 (acres)	Subroute 2.2 (acres)	Route Variations				Local Alternatives							
			P7a (acres)	P7b (acres)	P7c (acres)	P7d (acres)	LD1 (acres)	LD2 (acres)	LD3a (acres)	LD3b (acres)	LD4 (acres)	LD4-Option 4 (acres)	LD4-Option 5 (acres)	WC1 (acres)
Mogollon Chaparral	0.6	1.0	-	-	-	-	-	-	-	-	7.8	-	6.7	-
North American Arid West Emergent Marsh	5.6	11.0	-	-	-	-	13.5	-	-	-	-	-	-	-
North American Warm Desert Bedrock Cliff and Outcrop	4.7	0.2	-	-	-	-	-	-	-	-	-	-	-	-
North American Warm Desert Pavement	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
North American Warm Desert Riparian Mesquite Bosque	2.3	22.8	-	-	-	-	12.4	-	-	-	2.2	-	-	-
North American Warm Desert Volcanic Rockland	0.1	-	-	-	-	-	-	-	-	-	1.2	-	-	-
North American Warm Desert Wash	-	7.5	11.3	1.2	-	-	1.1	-	-	-	0*	-	-	0.9
Sonoran Paloverde-Mixed Cacti Desert Scrub	-	-	-	-	-	-	-	-	-	-	0.9	-	-	-

* Greater than 0 but less than 0.1 acre.

Approximate acreage of habitat types that would be within the staging areas and substations for route group 2 in New Mexico and Arizona are provided in tables 4.8-28 and 4.8-29, respectively. Acres of impacts on general wildlife and special status species for route group 2 are provided in Table 4.8-30.

Table 4.8-28. Route Group 2 Wildlife Resource Inventory Data for Staging Areas and Substations in New Mexico

Habitat Types	Subroute 2.1 (acres)	Subroute 2.2 (acres)	Local Alternative LD1 (acres)	LD3a (acres)	LD3b (acres)
Apacherian-Chihuahuan Mesquite Upland Scrub	0.6	-	-	-	
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	12.7	9.0	19.7	-	17.5
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	22.1	10.8	-	-	1.3
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	-	-	-	19.9	-
Developed, Medium - High Intensity	3.2	-	-	-	-
North American Warm Desert Pavement	0.6	-	-	-	-
North American Warm Desert Wash	5.4	1.0	-	-	1.0

Table 4.8-29. Route Group 2 Wildlife Resource Inventory Data for Staging Areas and Substations in Arizona

Habitat Types	Subroute 2.1 (acres)	Subroute 2.2 (acres)	Local Alternative LD1 (acres)	Local Alternative WC1 (acres)
Agriculture	-	-	0.3	-
Apacherian-Chihuahuan Mesquite Upland Scrub	94.3	63.7	2.3	17.7
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	54.0	3.1	-	-
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	-	-	-	-
Chihuahuan Mixed Salt Desert Scrub	0.4	11.8	17.0	-
Developed, Medium - High Intensity	-	-	-	0.6
North American Warm Desert Riparian Mesquite Bosque	-	-	0*	-
North American Warm Desert Wash	-	-	-	1.5

Note: No staging areas or substations are proposed for route variations P7a, P7b, P7c, or P7d.

* Greater than 0 but less than 0.1 acre.

SUBROUTE 2.1 – PROPONENT PREFERRED

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. Acres of impacts are given in table 4.8-30. Some of the habitat would be restored after the completion of construction activities; however, restoration in arid environments would be difficult and slow and as such, there would be short-term impact in areas where restoration activities would be successful, and long-term impact in areas where they would be unsuccessful. Based on the amount of available habitat in the representative ROW and broader analysis area it is not anticipated that subroute 2.1 would significantly impact general wildlife populations or contribute to a need to list species as threatened or endangered.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 2.1 would be as described above for subroute 1.1.

Special Status Species

Federally Listed Species

Within this route group, six federally listed species were identified as possible to occur because the representative ROW would be within their range and habitat parameters would be present. These species include the Chiricahua leopard frog (*Lithobates chiricahuensis*), southwestern willow flycatcher (*Empidonax traillii extimus*), Sprague's pipit, lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), Mexican long-nosed bat (*Leptonycteris nivalis*), and the northern aplomado falcon. Acres of impacts to federally listed species are given in table 4.8-30.

In addition, three other species—the Sonoran desert tortoise, the interior population of the least tern, and the ocelot (*Leopardus pardalis*)—could also occur but would be considered unlikely to occur, because although habitat parameters may be present, the representative ROW within this route group would not be within the species' typical range. Therefore the proposed Project activities would have no effect on the populations of Sonoran desert tortoise, interior least tern, or ocelot.

Construction

Potential impacts to Chiricahua leopard frog from construction activities would include those described above as "Additional Impacts" to amphibian species. There would be no perennial or intermittent waterways in this subroute representative ROW that would be similar to those used by this species, and pole structures and laydown areas would not be placed in ephemeral waterways that could provide dispersal habitats for Chiricahua leopard frogs. Therefore, construction-related impacts would primarily be to the potential for crushing by vehicles, especially after precipitation events when this species could be active. There would be no effect on this species' designated critical habitat and no detectable effect on the viability of this species from Project-related activities.

Table 4.8-30. Route Group 2 Acres of Impacts on Wildlife

			Route Variations				Local Alternatives							
Common name	**Subroute 2.1 (acres)**	**Subroute 2.2 (acres)**	**P7a (acres)**	**P7b (acres)**	**P7c (acres)**	**P7d (acres)**	**LD1 (acres)**	**LD2 (acres)**	**LD3a (acres)**	**LD3b (acres)**	**LD4 (acres)**	**LD4-Option 4 (acres)**	**LD4-Option 5 (acres)**	**WC1 (acres)**
General wildlife	634.5	637.4	194.7	58.2	5.7	11.3	258.1	49.8	168.8	32.2	300.6	36.1	68.7	103.0
Federally Listed Species														
Lesser long-nosed bat	406.5	363.3	113.2	36.6	3.6	5.4	126.5	48.9	142.7	12.2	213.7	31.9	54.9	63.1
Mexican long-nosed bat	237.1	303.6	13.5	36.6	3.6	5.4	126.5	48.9	122.7	12.2	213.7	31.9	54.9	63.1
Northern aplomado falcon	255.7	205.3	97.1	35.6	2.5	5.4	60.5	39.4	108.7	8.7	54.4	22.9	35.3	58.3
Southwestern willow flycatcher	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sprague's pipit	195.7	205.3	107.7	36.8	2.8	8.2	76.5	39.4	91.4	8.8	54.4	22.9	35.3	58.3
Chiricahua leopard frog	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLM Sensitive Species														
Allen's big-eared bat	0.9	0.2	-	-	-	-	2.9	-	-	-	4.4	0.0	-	-
Big free-tailed bat	199.7	94.7	107.7	1.0	1.0	-	75.2	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Cave myotis	111.8	96.4	13.5	1.0	1.0	-	59.2	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Fringed myotis	318.1	299.9	110.6	36.6	3.6	5.4	119.7	48.9	91.4	12.2	213.7	31.4	54.5	61.0
Greater western mastiff bat	111.8	96.4	13.5	1.0	1.0	-	59.2	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Little brown myotis	111.8	96.4	13.5	1.0	1.0	-	62.1	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Long legged-myotis	112.1	96.4	13.5	1.0	1.0	-	62.1	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Mexican long-tongued bat	249.5	205.3	97.1	35.6	2.5	5.4	60.5	39.4	91.4	8.8	54.4	22.9	35.3	58.3
Pale Townsend's big-eared bat	111.8	94.6	13.5	1.0	1.0	-	59.2	9.4	31.2	3.4	161.3	8.5	20.7	2.7
Spotted bat	205.0	96.4	13.5	1.0	1.0	-	59.2	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Yuma myotis	111.8	94.7	13.5	1.0	1.0	-	59.2	9.4	31.2	3.4	159.3	8.5	19.2	2.7
Burrowing owl (New Mexico population)	240.8	78.8	-	-	-	-	79.9	122.7	12.2	30.6	-	-	-	-
Loggerhead shrike	111.8	111.2	24.1	2.2	1.4	2.8	75.2	9.6	31.2	3.4	159.3	8.5	19.2	2.7
White-faced ibis	11.5	21.7	10.6	1.2	0.3	2.8	16.0	-	-	-	0.5	-	-	-
Desert ornate box turtle	294.2	221.7	107.8	36.0	2.9	8.2	66.4	48.9	122.7	12.2	213.7	31.4	54.5	58.3
Texas horned lizard	350.9	221.7	110.6	36.6	2.9	8.2	66.4	48.9	122.7	12.2	213.7	31.4	54.5	61.0
Colorado River toad (aka Sonoran desert toad).	310.3	221.7	110.6	36.6	1.0	5.4	59.2	48.9	122.7	12.2	213.7	31.4	54.5	58.3
Lowland leopard frog	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Mexico Wildlife Conservation Act Species- Acreages given are for the portion of route group 2 in New Mexico														
Desert bighorn sheep	41.0	21.6	-	-	-	-	26.2	9.4	31.2	3.4	18.1	-	-	-
Abert's towhee	0	0.2	-	-	-	-	6.5	-	-	-	-	-	-	-
American peregrine falcon	158.8	78.8	-	-	-	-	79.9	48.9	122.7	12.2	30.6	-	-	-
Arizona grasshopper sparrow	117.7	57.2	-	-	-	-	53.7	48.9	91.5	8.8	12.5	-	-	-
Bell's vireo	2.5	0.1	-	-	-	-	0.7	0.9	2.3	-	2.3	-	-	-
Gila woodpecker	41.0	21.6	-	-	-	-	26.2	9.4	31.2	3.4	18.1	-	-	-

Table 4.8-30. Route Group 2 Acres of Impacts on Wildlife (Continued)

			Route Variations				Local Alternatives							
Common name	**Subroute 2.1 (acres)**	**Subroute 2.2 (acres)**	**P7a (acres)**	**P7b (acres)**	**P7c (acres)**	**P7d (acres)**	**LD1 (acres)**	**LD2 (acres)**	**LD3a (acres)**	**LD3b (acres)**	**LD4 (acres)**	**LD4-Option 4 (acres)**	**LD4-Option 5 (acres)**	**WC1 (acres)**
Lucifer hummingbird	158.8	78.8	-	-	-	-	79.9	48.9	122.7	12.2	30.6	-	-	-
Varied bunting	2.5	0.1	-	-	-	-	0.7	0.9	2.3	-	2.3	-	-	-
Gila monster	355.7	21.6	-	-	-	-	26.2	9.4	31.2	318.1	3.4	-	-	-
State of Arizona Wildlife Species of Concern- Acreages given are for the portion of route group 2 in Arizona														
Pocketed free-tailed bat	128.4	5.3	2.6	0.3	-	-	3.2	-	-	-	0.5	-	-	-
Abert's towhee	0.3	8.3	2.6	0.3	-	-	3.2	-	-	-	0.5	0.5	19.2	2.3
Bank swallow	0	5.3	-	-	-	-	2.9	-	-	-	-	-	-	-
Bell's vireo	147.3	211.0	53.0	20.0	1.4	-	41.9	-	-	-	67.0	4.0	11.2	19.8
Gila woodpecker	68.6	78.4	13.5	1.0	1.0	-	35.9	-	-	-	141.5	8.5	19.2	2.7
Northern harrier	189.9	295.1	110.6	36.6	3.9	8.2	55.8				183.1	31.4	35.3	61.0
Yellow warbler	57.5	73.0	13.5	1.0	-	-	33.0	-	-	-	141.1	8.5	19.2	2.7
State of New Mexico Species of Greatest Conservation Need- Acreages given are for the portion of route group 2 in New Mexico														
Pocketed free-tailed bat	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Western red bat	0	-	-	-	-	-	-	-	-	-	-	-	-	-
American bittern	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Bank swallow	--	-	-	-	-	-	-	-	-	-	-	-	-	-
Bendire's thrasher	3.7.6	21.6	-	-	-	-	26.2	9.4	31.2	-	18.1	-	-	-
Eared grebe	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Northern harrier	158.8	78.8	-	-	-	-	79.9	48.9	122.7	12.2	30.6	-	-	-
Northern pintail	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandhill crane	117.7	57.2	-	-	-	-	53.7	39.4	91.5	8.8	12.5	-	-	-
Varied bunting	2.5	0.1	-	-	-	-	0.7	0.9	2.3	-	2.3	-	-	-
Yellow warbler	41.0	21.6	-	-	-	-	26.2	9.4	31.2	3.4	18.1	-	-	-
State of Arizona Species of Greatest Conservation Need- Acreages given are for the portion of route group 2 in Arizona														
Desert bighorn sheep	48.5	73.3	13.5	-	1.0	-	33.0	-	-	-	141.1	31.4	19.2	2.7
American bittern	0	-					-	-	-	-	-	-	-	-
American peregrine falcon	98.9	278.7	110.6	36.6	3.6	5.4	42.7	-	-	-	141.1	31.4	35.3	61.0
Eared grebe	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Northern harrier	82.4	241.2	96.9	35.4	2.5	5.4	62.9	-	-	-	182.6	31.3	46.2	61.1
Northern pintail	0	-					-	-	-	-	-	-	-	-
Sandhill crane	129.3	222.1	107.8	36.8	2.9	8.2	22.7	-	-	-	41.9	22.9	35.3	58.3

Potential impacts on southwestern willow flycatcher from construction activities would include those described above as "Additional Impacts" to bird species. However, there would be no perennial or intermittent waterways in this subroute that would provide nesting habitat for this species and this subroute would not intersect with any designated critical habitat for this species. Individuals could experience impacts common to migratory birds during migration as they move through the area during construction with the potential for strikes to transmission lines and structures (see migratory species impacts described below). As such construction activities may affect, and are likely to adversely affect, the southwestern willow flycatcher.

Potential impacts on Sprague's pipit would include habitat loss and degradation. These impacts would be minor/negligible based on the implementation of PCEMs and the amount of available habitat in the representative ROW and broader analysis area. As such, there would be no effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on the lesser long-nosed bat and Mexican long-nosed bat from construction activities would include those described above for mammals. There are no known mines, caves, or lesser long-nosed bat roost sites within the representative ROW for the proposed Project. However, a known roost is located within 0.7 mile of the ROW. Given the distance from the ROW and intervening topography and the PCEM to limit construction activities only during April 1 to May 30, impacts on roosting bats from construction activities would be avoided. As such, no potential impacts on roost sites or individual bats are anticipated. Habitat for these species along subroute 2.1 is within 40 miles of known roost sites in the Peloncillo and Chiricahua Mountains and is therefore within the foraging range of these species. This subroute would cross approximately 1,495 acres of foraging habitat for lesser long-nosed bat and Mexican long-nosed bat. However, there would be no roost sites in the 200-foot-wide representative ROW that would provide shelter for these species. Foraging by the species would continue in the general area at current levels because of the relatively small area of forage that would be affected. The proposed Project may affect, and is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through temporary loss of forage plants.

Northern aplomado falcon could be impacted through potential habitat loss and fragmentation and from noise; however, with implementation of PCEMs, the amount of available, unoccupied habitat for the species in the representative ROW and broader analysis area, and the naturally low densities of the species, impacts would be insignificant resulting from proportionally small areas of habitat loss. The proposed Project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of the northern aplomado falcon (FWS 2014d).

Operation and Maintenance

Potential impacts to Chiricahua leopard frog from operation and maintenance activities would include those described above for construction activities. As such, there would likely not be operational and maintenance impacts to individual Chiricahua leopard frogs, or to any populations of Chiricahua leopard frogs, or to their designated critical habitat.

Potential impact to southwestern willow flycatcher from operation and maintenance activities would include those described above for construction activities. As such, operation may affect, is likely to adversely affect the southwestern willow flycatcher.

There would be no detectable operational or maintenance impacts on lesser long-nosed bat and Mexican long-nosed bat and there would be no impact on the viability of these species.

Potential impacts on Sprague's pipit from operation and maintenance activities would be as described for subroute 1.1. However, impacts would be minor/negligible based on the implementation of PCEMs and the amount of available habitat in the representative ROW and broader analysis area. As such, there would be no effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on northern aplomado falcon from operation and maintenance activities would be as described for subroute 1.1. Northern aplomado falcon could be impacted through potential habitat loss and fragmentation and from noise; however, with implementation of PCEMs the proposed Project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of the northern aplomado falcon (FWS 2014d).

BLM Sensitive Species

In total, 17 BLM Sensitive Species were identified as possible to occur because the representative ROW would be within the species' range and habitat parameters for the species would be present. These species include the Colorado River toad (also known as Sonoran desert toad), , Texas horned lizard, desert ornate box turtle (present in the San Simon and Sulphur Springs valleys), New Mexico population of the burrowing owl, loggerhead shrike, white-faced ibis, Mexican long-tongued bat, pale Townsend's big-eared bat (roost in the Volcano Mine complex), spotted bat, Allen's big-eared bat, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, big free-tailed bat, and greater western mastiff bat (*Eumops perotis californicus*). Acres of impacts on these species are given in table 4.8-30. Based on the amount of available habitat for these species in the representative ROW and broader analysis area, construction- and operation and maintenance related activities would have no detectable effect on the viability of these species, or contribute toward a downward population trend or listing of these species as threatened or endangered.

An additional seven BLM Sensitive species—the Slevin's bunchgrass lizard (*Sceloporus slevini*), Baird's sparrow (*Ammodramus bairdii*), desert pocket gopher (*Geomys arenarius arenarius*), desert sucker (*Catostomus clarki*), giant spotted whiptail, ferruginous hawk (*Buteo regalis*), and yellow-nosed cotton rat (*Sigmodon ochrognathus*)—could also occur but would be considered unlikely to occur because although habitat parameters may be present, the representative ROW would not be within the species' typical range. There would be no effect on habitat for these seven species and no detectable effect on the viability of these species from proposed Project-related activities, or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Potential impacts on Colorado River toad and lowland leopard frog from construction activities would include those described above as "Additional Impacts" to amphibian species. However, there would be no perennial or intermittent waterways in this subroute and pole structures and laydown areas would not be placed in ephemeral waterways that could provide dispersal habitats for Colorado River toads.

Potential impacts on Texas horned lizard, western burrowing owl, loggerhead shrike, white-faced ibis, and the 12 bat species from construction-related activities would be as described above for subroute 1.1. There would be no impacts on roosting bats at the Volcano Mine complex due to the distance from the ROW, intervening topography, and the PCEM to limit construction activities with loud noise (i.e., blasting) within 0.5 mile of the complex to between April 1 and May 30. This would prevent noise impacts to hibernating bats in the Volcano Mine complex.

Potential impacts on desert ornate box turtle from construction-related activities would include those described above as "Additional Impacts" to reptile species. The species is known to be present in the San

Simon and Sulphur Springs valleys; impacts would likely be highest there. Pre-construction surveys for ornate box turtles would be conducted in suitable habitat. Based on the amount of available habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the white-faced ibis would be related to individuals striking the transmission lines and structures. Colorado River toad, Texas horned lizard, New Mexico population of the burrowing owl, loggerhead shrike and bat species would likely not experience operational and maintenance impacts detectable at the population level.

State of New Mexico Wildlife Conservation Act Species

Sixteen New Mexico Wildlife Conservation Act species were identified as possibly occurring in route group 2. Of these 16 species, 10 could potentially occur within subroute 2.1. These would include the Gila monster, Gila woodpecker, Bell's vireo, varied bunting, Arizona grasshopper sparrow (*Ammodramus savannarum ammolegus*), northern aplomado falcon, peregrine falcon, Lucifer hummingbird, desert bighorn sheep, and lesser long-nosed bat. Impacts on northern aplomado falcon and lesser long-nosed bat are addressed above in the "Federally Listed Species" section. Impacts on the remaining 8 species are given below. Acres of impacts on these species are given in table 4.8-30. Based on the amount of habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Potential impacts on desert bighorn sheep and State of New Mexico Wildlife Conservation Act bird species would be as described above for subroute 1.1.

Preconstruction surveys would be required in areas where Gila monsters are expected to occur (see table 2-8). In consultation with the BLM and Western, Southline and its construction contractor would hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species. If present, as identified during preconstruction surveys, potential impacts on the Gila monster would include those described above as "Impacts Common to All Action Alternatives" and specifically to reptiles as described above. As this species spends the majority of its life underground it would be more susceptible than non-burrowing species to burial during construction activities.

Operation and Maintenance

Potential operational and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described above for subroute 1.1.

State of Arizona Wildlife Species of Concern

Seven Arizona listed Wildlife Species of Concern were identified as possibly occurring in subroute 2.1. One of these species, white-faced ibis is addressed in the "BLM Sensitive Species" section. The other six species are addressed below. Acres of impacts on these species are given in table 4.8-30.

Construction

Potential impacts on Arizona Wildlife Species of Concern mammal species from the proposed Project would include those described above as "Impacts Common to All Action Alternatives" and specifically to mammals as described above in "Additional Impacts." Mammal species impacts would include impacts to pocketed free-tailed bat and western red bat. Construction-related impacts would be short-term with impacts on habitat being long-term.

Potential impacts on Arizona Wildlife Species of Concern bird species would include those described above as "Impacts Common to All Action Alternatives" and specifically to birds as described above in "Additional Impacts." Bird species impacted would include Bell's vireo, Abert's towhee, Gila woodpecker, bank swallow, and yellow warbler.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona Wildlife Species of Concern would be as described above in the "Impacts Common to All Action Alternatives" and "Additional Impacts" sections.

State of New Mexico Species of Greatest Conservation Need

Twelve New Mexico SGCN were identified as possibly occurring in subroute 2.1. Of these, seven are addressed above (white-faced ibis and spotted bat are addressed in the "BLM Sensitive Species" section and Bell's vireo, Abert's towhee, Gila woodpecker, peregrine falcon and desert bighorn sheep are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). The other five species and Bendire's thrasher are addressed below. Acres of impacts on these species are given in table 4.8-30.

Construction

Potential impacts on SGCN mammal species and the Arizona toad from the proposed Project would be as described above for subroute 1.1. Mammal species impacted would be western red bat and pocketed free-tailed bat.

Potential impacts on SGCN bird species would include those described above as "Impacts Common to All Action Alternatives" and specifically to birds as described above in "Additional Impacts." Bird species impacted would include yellow warbler, northern pintail, American bittern, eared grebe, bank swallow, northern harrier and sandhill crane. Habitat for American bittern and eared grebe would be avoided.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described above in the "Impacts Common to All Action Alternatives" and "Additional Impacts" sections.

State of Arizona Species of Greatest Conservation Need

Six Arizona SGCN were identified as possibly occurring in subroute 2.2. Of these, 2 are addressed above (the southwestern willow flycatcher is addressed in the "Federally Listed Species" section and the spotted bat is addressed in the "BLM Sensitive Species" section). The other 4 species are addressed below.

Construction

Potential impacts on desert bighorn sheep would include those described above as "Impacts Common to All Action Alternatives" and specifically to mammals as described above for subroute 1.1. Potential impacts on the Arizona toad would include those described above as "Impacts Common to All Action Alternatives" and specifically to amphibians as described above in "Additional Impacts."

Potential impacts on SGCN bird species would include those described above as "Impacts Common to All Action Alternatives" and specifically to birds as described above in "Additional Impacts." Bird species impacted would include northern harrier, peregrine falcon, eared grebe, northern pintail, sandhill crane, and American bittern.

No habitat for the American bittern, eared grebe, and northern pintail would be crossed by the ROW.

The representative ROW would cross habitat for the sandhill crane; potential impacts on sandhill crane from striking transmission lines and structures could occur at Willcox Playa. Acres of impacts on sandhill cranes are given in table 4.8-30. Near Willcox Playa, segment P7 would also pass northwest of Crane Lake and through the AGFD managed Willcox Playa Wildlife Area, paralleling the existing SWTC transmission line. While impacts would be minimized with the use of existing access roads, the proposed P7 segment would be in conflict with AGFD management goals and objectives for the Willcox Playa Wildlife Area. Impacts to viewers of wildlife in the Willcox Playa are expected to be low because of existing transmission lines in the area (see section 4.10.3).

PCEMs requested by the AGFD include (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 would be implemented to reduce the intensity of impacts to habitat in the Willcox Playa Wildlife Area and to mitigate impacts to AGFD management goals. Sandhill cranes are particularly vulnerable during takeoff and landing and during low-altitude flight between roosting and nearby foraging areas. Implementing PCEMs such as the relocation of Crane Lake (see above), along with installation of line marking devices, would decrease the potential for birds striking transmission lines near Willcox Playa. As a result, impacts on the species would be minor and both short- and long-term. As such there would be no detectable effect on the viability of these species from subroute 2.1 or contribution toward a downward population trend or listing of these species as threatened or endangered.

Based on the potential impacts of subroute 2.1, as well as feedback from the public and cooperating agencies on the Draft EIS (see chapter 8), proposed PCEMS and new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. The potential impacts of the route variations and Agency Preferred Alternative are discussed below.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described above in the "Impacts Common to All Action Alternatives" and "Additional Impacts" sections.

Potential impacts on sandhill cranes could occur during operation/maintenance. Sandhill cranes make a daily migration during wintering from Willcox Playa to the agricultural fields to the east. Subroute 2.1 would cross northwest of Crane Lake and while outside the direct route to the agricultural fields to the east, cranes have sometimes been observed flying across the existing line and subroute 2.1 alignment when they leave or return to Crane Lake. Since cranes are known to cross the existing SWTC Apache–Redtail 230-kV transmission line located parallel to the proposed subroute 2.1 alignment, operation of the proposed line could lead to increased numbers of collisions of sandhill cranes with transmission lines/structures. SWTC is aware of only two known sandhill crane mortalities along the existing Apache–

Redtail transmission line. The known mortalities occurred in the 1990s and were discovered by SWTC crews but not documented. Hence, the exact location and cause of the mortalities is not known. The existing SWTC transmission line does not utilize any line marking devices or bird diverters, as to date there have been no documented bird collisions on the Apache–Redtail transmission line (personal communication, Kevin Barnes, SWTC, to Johnida Dockens, Western, July 24, 2015).

Given the low number of known sandhill crane mortalities in this area, the lack of documented collision mortalities does not disprove that collision mortalities occur. Sandhill crane collision mortality numbers with the proposed transmission line would likely be similar to those with the existing line and could occur throughout the life of the proposed Project. Impacts would occur to individual cranes but would be unlikely to reach levels that would affect the wintering population at Willcox Playa or management of the species by AGFD and/or conflict with the AGFD conservation mission. The risk of collision of sandhill cranes and other birds with the proposed transmission line in the Willcox Playa area would be minimized through implementation of PCEMs requested by AGFD utilization of line marking devices. While proposed PCEMs and marking devices may reduce collision risk, residual mortality could still occur (Brown and Drewien 1995; Murphy et al. 2009). With proposed mitigation and line siting, impacts on sandhill cranes would be minor and both short- and long-term.

Migratory Birds

Impacts on migratory birds would be as described above for subroute 1.1.

Construction

The representative ROW for subroute 2.1 contains a total of 50.0 acres, of which 11.6 acres would be disturbed.

The ROW would cross North America Warm Desert Riparian Mesquite Bosque in subroute 2.1 on a total of 1.7 acres of which 0.4 acre would be disturbed.

No bodies of perennial water would be present in subroute 2.1 representative ROW. The ROW would cross approximately 5.6 acres of Arid West Emergent Marsh along segments P6a and P6b. According to the NWI, two wetlands totaling 111.8 acres occur within the ROW along segment P7. These features would be associated mainly with the Willcox Playa (109.6 acres).

Proposed structure locations would incorporate avoidance and PCEMs to avoid these wetlands, any playa, and open water. Construction of access road would likely not impact these features within the ROW if avoidance measures were incorporated and with the implementation of PCEMs.

Subroute 2.1 would cross approximately 84.6 acres of the Lordsburg Playa avian protection area. Approximately 19.5 acres of this area would be disturbed. Line marking devices would be utilized near Lordsburg Playa to minimize the risk of bird collisions with the proposed transmission line.

Operation and Maintenance

Under this alternative, a significant risk of collision would exist for the many species of waterfowl, waders, and shorebirds documented at Willcox Playa. Sandhill cranes, waterfowl, and migrant shorebirds can be found throughout Willcox Playa depending on the presence of water. However, AGFD pumps water into Crane Lake to ensure the lake does not dry. As a result, birds consistently use the lake as a roost, including sandhill cranes. When cranes take flight from the lake, they initially circle it before turning toward their preferred foraging areas (agricultural fields) to the southeast. Sandhill cranes usually leave and return at least twice a day. The risk of collision of sandhill cranes and other birds with the

proposed transmission line in the Willcox Playa area would be reduced through utilization of line marking devices. While marking devices may reduce collision risk, residual mortality would still occur (Murphy et al. 2009). With mitigation, impacts on sandhill cranes and other birds at Willcox Playa would be minor/negligible and both short- and long-term.

Subroute 2.1 falls within close proximity of a low pass in the Peloncillo Mountains (segment P5) and another in the Dos Cabezas Range (segments P7 and P8), which would increase the possibility of somewhat higher impacts on migratory birds (table 4.8-31).

Table 4.8-31. Route Group 2 Proximity of Mountain Ridges and Low Passes to the ROW of Proposed Subroutes

Subroutes	Ridge or Low Pass	Distance (miles)
Subroute 2.1, Proponent Preferred	Roostercomb Ridge in the Peloncillo Mountains	0.31
	Nearest low pass in the Peloncillo Mountains	0.03
	Nearest high ridge in the Dos Cabezas Range	0.19
Subroute 2.2, Proponent Alternative	Nearest ridge in the Peloncillo Mountains	0.83
	Powers Canyon (low pass in the Peloncillo Mountains)	0.00
	Highest ridge in the Circle I Hills	1.10
Route Group 2 Local Alternatives		
Local Alternatives for Subroute 2.1		
Local Alternative LD3b	Eastern ridgeline of the Peloncillo Mountains near Rustler Draw	0.49
Local Alternatives for Subroute 2.2		
Local Alternative LD1	Nearest ridge in the Peloncillo Mountains	0.10
	Nearest ridge of Cedar Mountain within the Peloncillo Mountains	0.85

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1.

Construction

Subroute 2.1 would intersect wildlife designated habitat for the desert bighorn sheep on approximately 74.5 acres of the ROW. Desert bighorn habitat areas are recognized as avoidance areas by the Mimbres RMP. Disturbance of this habitat would occur on approximately 17.2 acres.

Subroute 2.1 would cross two wildlife linkage areas: the Willcox Playa-Winchester-Pinaleño-Dos Cabezas and the Pinaleño-Dos Cabezas-San Simon Valley PLZs. The representative ROW would cross these linkages on approximately 1,021.2 acres, of which approximately 235.9 acres would be disturbed. Impacts to these linkages would be as described for the potential cougar corridor in route group 1.

Subroute 2.1 would cross approximately 200.4 acres of the Willcox Playa/Lake Cochise Important Bird Area. Approximately 46.1 acres of the IBA would be disturbed.

Based on the amount of designated habitat for desert bighorn sheep in the representative ROW and broader analysis area and the acreage of wildlife linkage areas, it is not anticipated that subroute 2.1 would cause any significant population-level impacts to the northern aplomado falcon, IBA, or form a significant barrier to wildlife movement.

Additionally, as noted in chapter 3, the Willcox Playa Wildlife Area is considered to be habitat of the highest value to Arizona wildlife species. The Wildlife Area is considered to be Resource Category 1 under the AGFD's habitat compensation policy (AGFD 2010). Resource Category 1 areas have a compensation goal of no loss of existing in-kind habitat value. Impacts to habitat would be minimized with the use of existing access roads along the existing SWTC ROW; however, transmission lines are not compatible with AGFD policy goals for the Wildlife Area. With the implementation of PCEMs to relocate Crane Lake and further enhance the Wildlife Area with pond renovations and vegetation management, the policy goal would be met and possibly exceeded.

Operation and Maintenance

Potential operational and maintenance impacts would be as described for subroute 1.1. Impacts on special designations, including designated northern aplomado falcon habitat, are analyzed in "Special Designations," section 4.12.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. Acres of impacts are given in table 4.8-30.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 2.2 would be as described above for subroute 1.1.

Special Status Species

Federally Listed Species

Construction

Acres of impacts to federally listed species from subroute 2.2 are given in table 4.8-30.

The construction impact types to Chiricahua leopard frog would be the same as described under subroute 2.1.There would be a lack of perennial and intermittent water that could provide habitats for this species and there would be no critical habitat for this species in subroute 2.2. There would be no effect on this species' designated critical habitat and no detectable effect on the viability of this species by Project-related activities.

The construction impact types and intensities to southwestern willow flycatcher would be the same as described under subroute 2.1.There would be a lack of perennial and intermittent water that could provide habitats for this species and there would be no critical habitat for this species in subroute 2.2.

The construction impact types and intensities to lesser long-nosed bat, Mexican long-nosed bat, and Sprague's pipit would be the same as described under subroute 2.1. Habitat for the lesser long-nosed bat and the Mexican long-nosed bat along subroute 2.2 is within 40 miles of known roost sites in the Peloncillo and Chiricahua mountains and is therefore within the foraging range of these species. However, there would be no roost sites in the representative ROW that would provide shelter for lesser long-nosed bat or Mexican long-nosed bat. While some foraging habitat would be removed, foraging by

the species would continue in the general area at current levels because of the relatively small area of forage that would be affected. As such, the proposed Project may affect, and is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through temporary loss of forage plants.

Northern aplomado falcon could be impacted through potential habitat loss, fragmentation and from noise; however, with implementation of PCEMs, the amount of available, unoccupied habitat for the species in the representative ROW and broader analysis area and the naturally low densities of the species, impacts would be insignificant resulting from proportionally small areas of habitat loss. The proposed Project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of the northern aplomado falcon (FWS 2014d).

Operation and Maintenance

The operation and maintenance impact types and intensities to Chiricahua leopard frog, southwestern willow flycatcher, northern aplomado falcon, Sprague's pipit, lesser long-nosed bat, and Mexican long-nosed bat would be the same as described under subroute 2.1.

BLM Sensitive Species

The Project-related subroute 2.2 impact types and intensities to the BLM Sensitive Species Colorado River toad (also known as Sonoran desert toad), lowland leopard frog, Texas horned lizard, desert ornate box turtle, New Mexico population of the burrowing owl, loggerhead shrike, white-faced ibis, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, Allen's big-eared bat, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, big free-tailed bat, and the greater western mastiff bat would be the same as described under subroute 2.1.

There would be no effect on these species habitat and no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of these species as threatened or endangered. Acres of potential impacts are given in table 4.8-30.

Construction

The construction impact types to the Texas horned lizard, desert ornate box turtle, western burrowing owl, loggerhead shrike, and bat species would be as described under subroute 2.1.

Operation and Maintenance

The operation and maintenance impact types and intensities to BLM sensitive species would be the same as described under subroute 2.1.

State of New Mexico Wildlife Conservation Act Species

Sixteen New Mexico Wildlife Conservation Act species were identified as possibly occurring in subroute 2.2. Of these 16 species, 12 could potentially occur within subroute 2.2. These would include the lowland leopard frog, Gila monster, Gila woodpecker, Bell's vireo, varied bunting, Abert's towhee, Arizona grasshopper sparrow, northern aplomado falcon, peregrine falcon, Lucifer hummingbird, desert bighorn sheep, and lesser long-nosed bat. Impacts on northern aplomado falcon and lesser long-nosed bat are addressed above in the "Federally Listed Species" section and lowland leopard frog addressed in the "BLM Sensitive Species" section. Impacts on the remaining nine species are given below. Acres of impacts on these species are given in table 4.8-30.

Based on the amount of habitat for these species in the analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Potential impacts on desert bighorn sheep and Gila monster would be as described above in for subroute 2.1.

Potential impacts on State of New Mexico Wildlife Conservation Act bird species would be as described above for subroute 2.1.

Operation and Maintenance

Potential operational and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described above for subroute 1.1.

State of Arizona Wildlife Species of Concern

Eight Arizona listed Wildlife Species of Concern were identified as possible to occur in subroute 2.2. One of these species, white-faced ibis, is addressed in the "BLM Sensitive Species" section. The other seven species are addressed below. Acres of impacts on these species are given in table 4.8-30.

Construction

Potential impacts on Arizona listed Wildlife Species of Concern mammal species would be as described above for subroute 2.1. These species would include pocketed free-tailed bat and western red bat. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on Arizona listed Wildlife Species of Concern bird species would be as described above for subroute 2.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona listed Wildlife Species of Concern species would be as described above in subroute 2.1.

State of New Mexico Species of Greatest Conservation Need

Seventeen New Mexico SGCN were identified as possibly occurring in subroute 2.2. Of these, seven are addressed above (white-faced ibis and spotted bat are addressed in the "BLM Sensitive Species" section and Bell's vireo, Abert's towhee, Gila woodpecker, peregrine falcon, and desert bighorn sheep are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). The other 10 species and Bendire's thrasher are addressed below. Acres of impacts on these species are given in table 4.8-30.

Construction

Potential impacts on the western red bat, pocketed free-tailed bat, SGCN bird species and the Arizona toad would be as described for subroute 2.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on the western red bat, pocketed free-tailed bat, SGCN bird species, and the Arizona toad would be as described for subroute 2.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

State of Arizona Species of Greatest Conservation Need

Nine Arizona SGCN were identified as possibly occurring in subroute 2.2. Of these, two are addressed above (the southwestern willow flycatcher is addressed in the "Federally Listed Species" section and the spotted bat is addressed in the "BLM Sensitive Species" section). The other seven species are addressed below. Acres of impacts are given in table 4.8-30.

Construction

Potential impacts on desert bighorn, SGCN bird species, and Arizona toad would be as described above for subroute 2.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described above for subroute 2.1. Potential impacts on sandhill cranes would be from striking transmission lines and structures could occur at Willcox Playa. Subroute 2.2 avoids crossing the daily migration corridor between Willcox Playa and the agricultural fields to the east. This impact would be mitigated with the use of line marking devices. This alignment would have a lower likelihood of collisions of sandhill cranes and transmission lines/structures than subroute 2.1.

Migratory Birds

Impacts on migratory birds would be as described above for subroute 1.1 and "Additional Impacts" for sandhill crane and the many species of waterfowl, waders, and shorebirds documented at Willcox Playa. The risk would be mitigated with use of line marking devices.

Construction

The representative ROW for subroute 2.2 contains a total of 70.8 acres of agricultural of which, 16.4 acres of agricultural lands would be disturbed.

The ROW would cross a total of 222.83 acres of North America Warm Desert Riparian Mesquite Bosque and 0.6 acre of North American Warm Desert Lower Montane Riparian Woodland and Shrubland.

According to the NWI, two wetlands totaling 1.6 acres occur within the ROW along segment E. SWReGAP mapping indicates 11 acres of North America Arid West Emergent Marsh would be crossed by the ROW. Proposed structure locations would incorporate avoidance and PCEMs to avoid any wetland, playa, and open water. Construction of access roads would likely not impact these features within the ROW if avoidance measures were incorporated and with the implementation of PCEMs.

Subroute 2.2 would cross approximately 114.0 acres of the Lordsburg Playa avian protection area, 26.3 acres of which would be disturbed.

Operation and Maintenance

The habitats and land cover types mentioned above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. However, that risk is still unlikely to reach population-level impacts for most species.

The ROW for segment E crosses Powers Canyon, a low pass in the Peloncillo Mountains, raising the possibility of somewhat higher impacts on migratory birds (see table 4.8-31).

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described above for subroute 1.1.

Construction

The representative ROW for subroute 2.2 would intersect wildlife designated habitat for desert bighorn sheep on approximately 71.3 acres. Desert bighorn habitat areas are recognized as avoidance areas by the Mimbres RMP. Disturbance would occur on 16.5 acres of the ROW.

Subroute 2.2 would cross two wildlife linkage areas: the Willcox Playa-Winchester-Pinaleño-Dos Cabezas and the Pinaleño-Dos Cabezas-San Simon Valley PLZs. Impacts on linkages would occur on approximately 1,573.5 acres of the ROW, of which approximately 363.5 acres would be disturbed. Impacts on these linkages would be as described for the potential cougar corridor in route group 1.

Operation and Maintenance

Potential operation and maintenance impacts on desert bighorn habitat would be as described above for subroute 2.1. Impacts on special designations, including desert bighorn habitat, are analyzed in the "Special Designation" section 4.12.

ROUTE VARIATIONS

General Wildlife

Construction

Impacts on general wildlife species for the route variations P7a, P7b, P7c, and P7d would be as described above for subroute 1.1. Acres of impacts are given in table 4.8-30. Some of the habitat would be restored after the completion of construction activities; however, restoration in arid environments would be difficult and slow and as such, there would be short-term impact in areas where restoration activities would be successful, and long-term impact in areas where they would be unsuccessful. Based on the

amount of available habitat in the representative ROW and broader analysis area it is not anticipated that the route variations would significantly impact general wildlife populations or contribute to a need to list species as threatened or endangered.

Route variation P7a would be approximately 31.2 miles in length. This would be an increase of approximately 8.5 miles in comparison to the segment it would replace, P7. Route variations P7b, P7c, and P7d, when combined with the portions of the other segments necessary to replace segment P7 would all be approximately the same length as P7a and would have similar levels of impacts. All route variations would have increased impacts on general wildlife when compared to segment P7 due to the additional 8.5 miles in length.

Operation and Maintenance

Impacts from the operation and maintenance of the route variations would be as described above for subroute 1.1. All route variations would have increased impacts on general wildlife when compared to segment P7 due to the increased length of the transmission line.

Special Status Species

Federally Listed Species

Construction

Acres of impacts to federally listed species from route variations P7a, P7b, P7c and P7d are given in table 4.8-30. Four species listed under the ESA have the potential to occur along the route variations, the lesser long-nosed bat, Mexican long-nosed bat, northern aplomado falcon and Sprague's pipit.

The construction impact types and intensities to lesser long-nosed bat, Mexican long-nosed bat, northern aplomado falcon, and Sprague's pipit would be the same as described under subroute 2.1. Habitat for the lesser long-nosed bat and the Mexican long-nosed bat along the route variations is within 40 miles of known roost sites in the Peloncillo and Chiricahua mountains and is therefore within the foraging range of these species. However, there would be no roost sites in the representative ROW that would provide shelter for lesser long-nosed bat or Mexican long-nosed bat. While some foraging habitat would be removed, foraging by the species would continue in the general area at current levels because of the relatively small area of forage that would be affected. As such, the proposed Project may affect, and is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through temporary loss of forage plants.

Operation and Maintenance

The operation and maintenance impact types and intensities to northern aplomado falcon, Sprague's pipit, lesser long-nosed bat, and Mexican long-nosed bat would be the same as described under subroute 2.1.

BLM Sensitive Species

Acres of impacts to BLM sensitive species from route variations P7a, P7b, P7c, and P7d are given in table 4.8-30. Fifteen BLM sensitive species have the potential to occur along route variations P7a, P7b, and P7c. These species include the big free-tailed bat, cave myotis, fringed myotis, little brown myotis, long-legged myotis, Mexican long-tongued bat, pale Townsend's big-eared bat, Greater western mastiff bat, spotted bat, Yuma myotis, loggerhead shrike, desert ornate box turtle, Texas horned-lizard, and the Colorado River toad.

Seven BLM sensitive species have the potential to occur in route variation P7d. These species include the big free-tailed bat, fringed myotis, little brown myotis, Mexican long-tongued bat, desert ornate box turtle, Texas horned-lizard, and Colorado River toad.

Construction

Potential construction-related impacts to BLM sensitive bat species would be as described for subroute 2.1. However, there would be no roost sites in the representative ROW that would provide shelter for bat species. Based on the amount of foraging habitat for these species in the analysis area; there would be a minor/negligible, long-term impact on these species.

Impacts on loggerhead shrike, desert ornate box turtle, Texas horned-lizard, and Colorado River toad would be as described for subroute 2.1. Impacts on all species from the route variations would be greater than under subroute 2.1 due to the increased length of the transmission line and increased impacts to habitat. Based on the amount of habitat for these species in the analysis area; there would be a minor/negligible, long-term impact on these species.

Operation and Maintenance

The operation and maintenance impact types and intensities to BLM sensitive species would be the same as described under subroute 2.1. However, as the route variations would increase the length of the transmission line impacts to BLM sensitive species would be greater than under subroute 2.1.

State of Arizona Wildlife Species of Concern

Six Arizona listed Wildlife Species of Concern were identified as possible to occur in route variations P7a and P7b. These include the pocketed free-tailed bat, Abert's towhee, Gila woodpecker, northern harrier, Bell's vireo, and yellow warbler. The Bell's vireo, Gila woodpecker and northern harrier also potentially occur in route variation P7c. The northern harrier potentially occurs in route variation P7d. Acres of impacts on these species are given in table 4.8-30.

Construction

Potential impacts on pocketed free-tailed bat, Abert's towhee, Gila woodpecker, northern harrier, Bell's vireo, and yellow warbler would be as described above for subroute 2.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered. Potential impacts on State of Arizona listed Wildlife Species of Concern would be greater under all route variations than under subroute 2.1 due to the increased length of the transmission line.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona listed Wildlife Species of Concern species would be as described above in subroute 2.1. Potential impacts would be greater under all route variations than under subroute 2.1 due to the increased length of the transmission line.

State of Arizona Species of Greatest Conservation Need

Three Arizona SGCN were identified as possibly occurring in route variations P7a, P7b, P7c, and P7d. These include the northern harrier, American peregrine falcon and sandhill crane. Bighorn sheep also

have the potential to occur in P7a and P7c. All but the crane are addressed above in State of Arizona Wildlife Species of Concern. Acres of impacts are given in table 4.8-30.

Construction

Potential construction impacts on sandhill crane from the route variations would include those impacts described for subroute 2.1.

Operation and Maintenance

Potential operational and maintenance impacts on sandhill cranes would be from striking transmission lines and structures could occur in the route variations. However, the route variations would significantly reduce the number of sandhill crane flights across the transmission line by being located east and south of the majority of the agricultural fields in the area. The route variations would have a much lower likelihood of collisions of sandhill cranes and transmission lines/structures than subroute 2.1.

Migratory Birds

General impacts on migratory birds would be as described above for subroute 1.1. The route variations (P7a–d) would have a much lower probability of cranes, waterfowl, waders, and shorebirds to collide with the transmission line than segment P7 in subroute 2.1. As noted in section 3.8.2, sandhill cranes migrate daily between Willcox Playa and the agricultural fields to the south and east. The route variations would move the transmission line east and south, and farther from the daily migration corridor, thus reducing the numbers of times that the flight path of the cranes would cross the proposed transmission line. By shifting the route to the south and east, and potentially reducing the number of crane flights across the proposed transmission, line these route variations (P7a–d) would be much more effective at reducing the likelihood of cranes colliding with the proposed transmission line. Impacts on cranes from project activities would be minor, with a minor potential for cranes to collide with the transmission line.

P7a would cross the Willcox Playa/Cochise Lakes IBA on approximately 24.3 acres with disturbance to approximately 5.6 acres.

Construction

The representative ROW would include agricultural lands on each of the route variations. Route variation P7a contains a total of 45.9 acres of agricultural lands, P7b (5.3 acres), P7c (1.4 acres), and P7d (12.0 acres). Impacts would occur on approximately 23 percent of the agricultural lands in the route variations. Agricultural habitats can support higher concentrations of migratory birds than other habitat types.

Operation and Maintenance

The route variations would have a much lower probability of cranes, waterfowl, waders, and shorebirds to collide with the transmission line than segment P7 in subroute 2.1. Sandhill cranes migrate daily between Willcox Playa and the agricultural fields to the south and east. The route variations would move the transmission line south and east, and farther from the daily migration corridor, thus reducing the numbers of times that the flight path of the cranes would cross the transmission line. By reducing the number of crane flights across the transmission line. The route variations would be much more effective at reducing the likelihood of cranes colliding with the transmission line. Potential impacts on cranes from project activities would be minor, with a minor potential for cranes to collide with the proposed transmission line.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1.

Construction

Segment P7 of subroute 2.1 would intersect the Willcox Playa Wildlife Area; however, the route variations (P7a–d) were generated to avoid intersecting this AGFD managed area and to Crane Lake. These route variations would remove potential impacts to these areas at Willcox Playa; there would be no impact to the AGFD Willcox Playa Wildlife Area.

Route variations P7a and P7b would cross the Willcox Playa-Winchester-Pinaleño-Dos Cabezas PLZ, similar to segment P7 in subroute 2.1. Route variation P7a would cross the PLZ on approximately 230.1 acres of the ROW, of which approximately 53.0 acres would be disturbed. Route variation P7b would cross the PLZ on approximately 15.2 acres of the ROW, of which approximately 3.5 acres would be disturbed. Impacts on these linkages would be as described for the potential cougar corridor in route group 1. In terms of impacts to PLZs, the route variations would have similar impacts as segment P7 in subroute 2.1; however, as noted in chapter 3, these route variations would generally follow existing roads, which are already something of a wildlife barrier.

Based on the intent of these route variations, overall acreage to be disturbed and the nature of the potential impacts, the construction of the route variations would not likely form a significant barrier to wildlife movement.

Operation and Maintenance

Potential operational and maintenance impacts would be as described for subroute 2.1. Impacts on special designations are analyzed in section 4.12.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

General Wildlife

Impacts on general wildlife species would be as described above for subroute 1.1. Acres of impacts on general wildlife for the local alternatives are given in table 4.8-30. American pronghorn are present along segment LD4 in the Circle I Hills and near Playa de los Piños in Greenlee County. Impacts on American pronghorn would be as described above in “Impacts Common to All Alternatives” and “Additional Impacts” for mammals.

Construction

Construction impacts from the local alternatives would be as described above for subroute 1.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that the eight local alternatives would cause any significant population-level impacts for these species or contribute toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Impacts from the operation and maintenance of the local alternatives would include those described above for subroute 1.1.

Special Status Species

Federally Listed Species

Construction

The construction impact types and intensities to northern aplomado falcon, Sprague's pipit, lesser long-nosed bat, and Mexican long-nosed bat would be the same as described under subroute 2.1. In addition, because of a lack of perennial or intermittent water and no designated critical habitat for Chiricahua leopard frog in the local alternatives, there would be no effect on the species' designated critical habitat and no detectable effect on the viability of the species from the local alternatives. Southwestern willow flycatcher individuals could experience impacts common to migratory birds during migration as they move through the local alternatives during construction with the potential for strikes to transmission lines and structures (see migratory species impacts described below).

Local alternative LD1 would cross and closely parallel I-10 throughout its length; as such, it would be unlikely that northern aplomado falcon or Sprague's pipit would occur in this alternative. Foraging habitat for lesser long-nosed bat and Mexican long-nosed bat would be crossed by local alternative LD1.

Habitat for northern aplomado falcon and Sprague's pipit and foraging habitat for lesser long-nosed bat and Mexican long-nosed bat would be crossed by local alternatives LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Operation and Maintenance

The operation and maintenance impact types and intensities to Chiricahua leopard frog, southwestern willow flycatcher, northern aplomado falcon, Sprague's pipit, lesser long-nosed bat, and Mexican long-nosed bat would be the same for all the local alternatives (LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1) as described under subroute 2.1. There would be about the same chance for impacts to northern aplomado falcons from striking the transmission lines and structures under any of the local alternatives relative to the length of the local alternative.

BLM Sensitive Species

The Project-related impact types and intensities to the BLM Sensitive Species Colorado River toad (also known as Sonoran desert toad), lowland leopard frog, Texas horned lizard, desert ornate box turtle, New Mexico population of the burrowing owl, loggerhead shrike, white-faced ibis, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, Allen's big-eared bat, little brown myotis, fringed myotis, cave myotis, long-legged myotis, Yuma myotis, big free-tailed bat, and the greater western mastiff bat would be the same as described under subroute 2.1 for all the local alternatives (LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1). Acres of impacts are given in table 4.8-30. There would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Habitat for the Sonoran desert toad, Texas horned lizard, desert ornate box turtle, western burrowing owl, white-faced ibis, loggerhead shrike and bat species would be impacted under local alternative LD1.

Under local alternative LD2 habitat for Sonoran desert toad, Texas horned lizard, desert ornate box turtle, western burrowing owl, loggerhead shrike and bat species would be impacted.

Under local alternative LD3a and LD3b habitat for the Sonoran desert toad, Texas horned lizard, western burrowing owl, loggerhead shrike, and bat species would be impacted.

Under local alternative LD4 habitat for the Sonoran desert toad, Texas horned lizard, desert ornate box turtle, western burrowing owl, white-faced ibis, loggerhead shrike, and bat species would be impacted.

Under local alternative LD4-Option 4, LD4–Option 5, and WC1 habitat for the Sonoran desert toad, Texas horned lizard, desert ornate box turtle, western burrowing owl, loggerhead shrike, and bat species would be impacted.

Operation and Maintenance

The operation and maintenance impact types to BLM Sensitive Species would be the same as described under subroute 2.1. The ROW length under all the local alternatives (LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1) would determine the relative chance for impacts to BLM sensitive avian species from striking the transmission lines and structures.

State of New Mexico Wildlife Conservation Act Species

Sixteen New Mexico Wildlife Conservation Act species were identified as possibly occurring on the local alternatives. Of these 16 species, 12 could potentially occur within the alternatives. Impacts on northern aplomado falcon and lesser long-nosed bat are addressed above in “Federally Listed Species” and lowland leopard frog is addressed above in “BLM Sensitive Species.” The remaining 9 species are addressed below. Potential impacts for all local alternatives would be similar in nature to those described for subroute 2.1. Acres of impacts are given in table 4.8-30. There would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Local alternative LD1 would intersect habitat for the Gila monster, Gila woodpecker, Bell’s vireo, varied bunting, Abert’s towhee, Arizona grasshopper sparrow, peregrine falcon, Lucifer hummingbird, and desert bighorn sheep.

Local alternative LD2 would intersect with habitat for Gila monster, Gila woodpecker, Bell’s vireo, varied bunting, Arizona grasshopper sparrow, peregrine falcon, Lucifer hummingbird, and desert bighorn sheep.

Local alternative LD3a would intersect with habitat for Gila monster, Gila woodpecker, Bell’s vireo, varied bunting, Arizona grasshopper sparrow, peregrine falcon, Lucifer hummingbird, and desert bighorn sheep.

Local alternative LD3b would intersect with habitat for Gila monster, Gila woodpecker, Arizona grasshopper sparrow, peregrine falcon, Lucifer hummingbird, and desert bighorn sheep.

Local alternative LD4 would intersect with habitat for Gila monster, Gila woodpecker, Bell's vireo, varied bunting, Arizona grasshopper sparrow, peregrine falcon, Lucifer hummingbird, and desert bighorn sheep.

Local alternatives LD4-Option 4, LD4-Option 5, and WC1 would not occur in New Mexico.

Operation and Maintenance

Potential operational and maintenance impacts on State of New Mexico Wildlife Conservation Act species would be as described for subroute 2.1.

State of Arizona Wildlife Species of Concern

Eight Arizona listed Wildlife Species of Concern were identified as possible to occur in the local alternatives routes. One of these species, white-faced ibis is addressed in the "BLM Sensitive Species" section. The other seven species are addressed below. Acres of impacts are given in table 4.8-30. There would be no detectable effect on the viability of these species from Project-related activities or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Local alternative LD1 would intersect habitat for pocketed free-tailed bat, western red bat, Bell's vireo, Abert's towhee, Gila woodpecker, bank swallow, and yellow warbler.

Local alternative LD4 would intersect habitat for pocketed free-tailed bat, western red bat, Bell's vireo, Abert's towhee, Gila woodpecker, and yellow warbler.

Local alternatives LD4-Option 4, LD4-Option 5, and WC1 would intersect habitat for western red bat, Bell's vireo, Abert's towhee, Gila woodpecker, and yellow warbler.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona listed Wildlife Species of Concern species would be as described above for subroute 2.1.

State of New Mexico Species of Greatest Conservation Need

Eighteen New Mexico SGCN were identified as possibly occurring within the local alternatives. Of these, seven are addressed above (white-faced ibis and spotted bat are addressed in the "BLM Sensitive Species" section and Bell's vireo, Abert's towhee, Gila woodpecker, peregrine falcon, and desert bighorn sheep are addressed in the "State of New Mexico Wildlife Conservation Act Species" section). Of the 11 remaining, 7 potentially occur within the local alternatives and are addressed below.

Construction

Impacts on these species would be as previously described for subroute 2.1 with acreages of impacts given in table 4.8-30. There would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Local alternative LD1 would intersect with habitat for western red bat, pocketed free-tailed bat, Bendire's thrasher, northern harrier, sandhill crane, varied bunting and yellow warbler. Habitat for American bittern and eared grebe would be avoided.

Local alternative LD2 could impact habitat for Bendire's thrasher, northern harrier, varied bunting, yellow warbler, and sandhill cranes at Lordsburg Playa. LD2 would have a higher potential for crane collisions with the transmission lines as it passes between the Lordsburg Playa.

Local alternative LD3a would intersect habitat for Bendire's thrasher, northern harrier, varied bunting, and yellow warbler. LD3a would also have a lower mortality rate than LD2 for sandhill cranes at Lordsburg Playa as it would pass north of all the Playas.

Local alternative LD3b would intersect habitat for northern harrier, sandhill crane, and yellow warbler.

Local alternative LD4 would intersect habitat for western red bat, pocketed free-tailed bat, Bendire's thrasher, northern harrier, sandhill crane, and yellow warbler. No structures, access roads or other disturbance would occur in American bittern and eared grebe habitat.

Local alternatives LD4-Option 4, LD4-Option 5, and WC1 do not occur in New Mexico.

Operation and Maintenance

Potential operational and maintenance impacts on New Mexico Species of Greatest Conservation Need species would be as described above for subroute 2.1

State of Arizona Species of Greatest Conservation Need

Ten Arizona SGCN were identified as possibly occurring in the local alternatives. Of these 10 species, 2 are addressed above (the southwestern willow flycatcher is addressed in the "Federally Listed Species" section and the spotted bat is addressed in the "BLM Sensitive Species" section). Of the remaining eight species only four species potentially occur within the local alternatives and are addressed below. Acreages of impacts on these species are given in table 4.8-30. There would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Local alternative LD, LD4, LD4-Option 4, LD4-Option 5, and WC1 would intersect habitat for bighorn sheep, northern harrier, peregrine falcon and sandhill crane. No structures, access roads or other disturbance would occur in American bittern and eared grebe habitat.

Local alternative WC1could impact sandhill cranes at Willcox Playa. Potential impacts from striking transmission lines and structures could occur at Willcox Playa. Local alternative WC1 would avoid crossing the daily migration corridor between Willcox Playa and the agricultural fields to the east and as such would have a lower likelihood of collisions of sandhill cranes and transmission lines/structures than the corresponding segment of subroute 2.1.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described above for subroute 1.1.

Migratory Birds

Impacts on Migratory Birds from the local alternatives would be similar to those described above for subroute 1.1.

Construction

The representative ROW for local alternative LD1 would cross a total of 69.1 acres of agricultural lands, of which approximately15.8 acres would be disturbed. Also present in the representative ROW for alternative LD 1 would be12.4 acres of North America Warm Desert Riparian Mesquite Bosque, of which 2.9 acres would be disturbed. Local alternative LD1 would cross approximately 202.2 acres of the Lordsburg Playa avian protection area. Approximately 46.5 acres of this area would be disturbed.

Local alternative LD4 would cross 2.2 acres of North America Warm Desert Riparian Mesquite Bosque, of which 0.5 acre would be disturbed.

No wetlands or bodies of perennial water would be present in the representative ROW for any of the local alternatives according to the NWI. However, SWReGAP mapping shows 13.5 acres of North America Arid West Emergent Marsh for alternative LD1. Marsh areas would be avoided to the extent possible.

Operation and Maintenance

The habitats and land cover types mentioned above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. However, that risk would still be unlikely to reach population-level impacts for most species.

The representative ROW for local alternative LD1 falls within approximately 0.1 mile of a ridge in the Peloncillo Mountains (see table 4.8-31), raising the possibility of somewhat higher impacts on migratory birds.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1 for all local alternatives.

Construction

Local alternatives LD2 and LD4-Option4 would not cross any wildlife special designation areas.

The representative ROW for local alternative LD would intersect wildlife designated habitat for the northern aplomado falcon, desert bighorn sheep, and the Peloncillo Bighorn Avoidance Area.
The northern aplomado habitat would be intersected by the ROW on approximately 102.2 acres of which 23.6 would be disturbed. Desert bighorn habitat would be crossed on approximately 41.5 acres of which 9.6 acres would be disturbed. The ROW would occur on approximately 33.2 acres of the Peloncillo Bighorn Avoidance Area, of which 7.7 acres would be disturbed. Local alternative LD1 would cross the Willcox Playa-Winchester-Pinaleño-Dos Cabezas and Pinaleño-Dos Cabezas-San Simon Valley PLZs on approximately 459.8 acres of which 106.2 acres would be disturbed.

Local alternative LD4 would cross the Willcox Playa-Winchester-Pinaleño-Dos Cabezas and Pinaleño-Dos Cabezas-San Simon Valley, and the Pinaleño-San Simon Valley PLZs on approximately 311.7 acres, of which 72.0 acres would be disturbed.

Local alternative LD4-Option 5 would cross the Willcox Playa-Winchester-Pinaleño-Dos Cabezas and Pinaleño-Dos Cabezas-San Simon Valley PLZs on approximately 296.1 acres, of which 68.4 acres would be disturbed.

Local alternative WC1 would cross the Willcox Playa-Winchester-Pinaleño-Dos Cabezas PLZ on approximately 354.4 acres, of which approximately 81.9 acres would be disturbed. It would also cross approximately 2.2 acres of the Willcox Playa/Lake Cochise (IBA), of which 0.5 acre would be disturbed.

Operation and Maintenance

Potential operation and maintenance impacts on desert bighorn habitat and the Peloncillo Bighorn Avoidance Area would be as described above for subroute 1.1. Potential operation and maintenance impacts on northern aplomado falcon would be as described above for subroute 2.1. Impacts on special designations, including designated northern aplomado falcon habitat, are analyzed in section 4.12.

Route Group 3 – Apache Substation to Pantano Substation

Tables 4.8-32 and 4.8-33 show impact acreages by habitat type for route group 3. Acreages of impacts on general wildlife and special status species for route group 3 are provided in table 4.8-34.

Table 4.8-32. Route Group 3 Wildlife Habitat Type Resource Inventory Data

Habitat Type	Subroute 3.1 (acres)	Local Alternative H (acres)
Agriculture	29.3	9.3
Apacherian-Chihuahuan Mesquite Upland Scrub	407.7	198.1
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	255.8	62.8
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	132.7	38.3
Chihuahuan Mixed Salt Desert Scrub	37.9	35.3
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	-	0.6
Developed, Medium - High Intensity	57.0	1.7
Developed, Open Space - Low Intensity	25.2	-
Madrean Encinal	0.1	1.3
Mogollon Chaparral	3.8	-
North American Arid West Emergent Marsh	3.4	-
North American Warm Desert Bedrock Cliff and Outcrop	3.6	-
North American Warm Desert Riparian Mesquite Bosque	1.9	2.8
Open Water	0.7	-
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	86.8	-
Sonoran Mid-Elevation Desert Scrub	14.1	-
Sonoran Paloverde-Mixed Cacti Desert Scrub	209.3	-

Table 4.8-33. Route Group 3 Wildlife Resource Inventory Data for Substations and Staging Areas

Habitat Type	Subroute 3.1 (acres)	Local Alternative H (acres)
Apacherian-Chihuahuan Mesquite Upland Scrub	0.2	-
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	19.4	-
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	0.3	-

Table 4.8-34. Route Group 3 Acres of Impacts on Wildlife and Special Status Species

Common name	Subroute 3.1	Local Alt H
General Wildlife	438.7	98.4
Federally Listed Species		
Lesser long-nosed bat	349.3	76.5
Mexican long-nosed bat	332.4	76.5
Southwestern willow flycatcher	0	0
Western yellow-billed cuckoo	0	0
Northern Mexican gartersnake	0	0
Sonoran desert tortoise*	252.4	17.7
Gila chub	0	0
BLM Sensitive Species		
Allen's big-eared bat	0.6	0.8
Banner-tailed kangaroo rat	72.1	17.6
California leaf-nosed bat	136.1	20.8
Cave myotis	136.4	10.7
Greater western mastiff bat	89.4	0
Mexican long-tongued bat	72.1	76.2
Pale Townsend's big-eared bat	137.5	76.2
Spotted bat	0.6	77.0
American peregrine falcon	209.7	94.6
Arizona grasshopper sparrow	72.1	17.6
Bald eagle	0.6	94.6
Desert purple martin	88.4	0.8
Gilded flicker	88.4	0.8
Golden eagle	303.6	94.6
Western burrowing owl	357.1	93.9
Arizona striped whiptail	72.1	17.6
Desert ornate box turtle	80.4	93.8
Sonoran mud turtle	1.5	0
Lowland leopard frog	1.5	0
Coronado National Forest Sensitive Species		
Cockrum's desert shrew	251.8	-
Greater western mastiff bat	309.6	-
Hooded skunk	188.0	-
Northern pygmy mouse	112.7	-
Pale Townsend's big-eared bat	136.4	-
Plains harvest mouse	251.8	-
Yellow-nosed cotton rat	251.8	-
Abert's towhee	0.6	-
American peregrine falcon	209.7	-

Table 4.8-34. Route Group 3 Acres of Impacts on Wildlife and Special Status Species (Continued)

Common name	Subroute 3.1	Local Alt H
Coronado National Forest Sensitive Species, cont'd.		
Arizona grasshopper sparrow	72.1	-
Western burrowing owl	357.1	-
Reticulate Gila monster	209.7	-
Coronado National Forest Management Indicator Species		
White-tailed deer	359.1	-
American peregrine falcon	209.7	-
Bell's vireo	115.4	-
State of Arizona Wildlife Species of Concern		
Antelope jackrabbit	88.4	17.6
Harris' antelope squirrel	88.4	20.8
Mexican free-tailed bat	136.4	20.8
Common nighthawk	249.2	22.0
Dusky-capped flycatcher	0.6	0.4
Gila woodpecker	136.4	76.7
Rufous-winged sparrow	249.2	38.4
Savannah sparrow	112.7	17.6
Yellow warbler	0.6	1.2
Hooded nightsnake	249.2	95.0
Desert ornate box turtle	80.4	38.2
Regal horned lizard	249.2	38.4
Sonoran coralsnake	249.2	38.2
Sonoran whipsnake	249.2	17.5
Tiger rattlesnake	249.2	34.0
State of Arizona Species of Greatest Conservation Need		
American bittern	0	0
Lincoln's sparrow	0.6	4.3
Mississippi kite	0.6	1.1
Western grasshopper sparrow	72.1	11.2
Wood duck	0.9	-

*On October 6, 2015, FWS determined the Sonoran desert tortoise does not warrant protection under the ESA as a candidate species.

SUBROUTE 3.1 – PROPONENT PREFERRED

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. However, as the representative ROW has been previously disturbed for the existing transmission line and access roads the scope of impacts would be less than for route groups 1 and 2. Disturbance to wildlife habitat would occur on approximately 28 percent of the representative ROW in route groups 3 and 4. Acreages of impacts on general wildlife habitat are given in table 4.8-34. Based on the amount of habitat for general wildlife in the representative ROW and broader analysis area it is not anticipated that subroute 2.2 would cause any significant population-level impacts for these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 3.1 would be as described above for subroute 1.1.

Special Status Species

Federally Listed Species

Within this route group, six species were identified as having the potential to occur because the representative ROW would be within their ranges and habitat parameters would be present: the lesser long-nosed bat, Mexican long-nosed bat, northern Mexican gartersnake, Sonoran desert tortoise, southwestern willow flycatcher, and western yellow-billed cuckoo. In addition, designated critical habitat for the Gila chub (*Gila intermedia*) occurs downstream of the Project along Cienega Creek and north of I-10. While there is no habitat for the Gila chub in the analysis area, impacts could occur that would affect the species' designated critical habitat. Potential impacts to these species are discussed below. Acreages of impacts on these species are given in table 4.8-34.

In addition, six other species, the California least tern (*Sterna antillarum browni*), Chiricahua leopard frog, Gila topminnow (*Poeciliopsis occidentalis occidentalis*), jaguar (*Panthera onca*), Mexican spotted owl (*Strix occidentalis lucida*), and ocelot, could also occur but would be considered unlikely to occur because although habitat parameters may be present, the representative ROW within this route group would not be within the species' typical range or vice versa (i.e., the route group would be within the known range, but habitat parameters would not be present). Therefore the Project activities in route group 3 would have no effect to the populations of California least tern, Chiricahua leopard frog, Gila topminnow, jaguar, or ocelot.

Construction

Construction-related impacts would be similar to those described for route groups 1 and 2. However, as the ROW has been previously disturbed for the existing transmission line and access roads the scope of impacts would be less than for route groups 1 and 2.

Potential impacts on the lesser long-nosed bat and Mexican long-nosed bat from construction activities would include foraging habitat loss and disturbance. Habitat for these species along subroute 3.1 is within 40 miles of a known roost site and is therefore within the foraging range of the species. However, there would be no roost sites in the representative ROW that would provide shelter for this species. Habitat

disturbance would result in minor fragmentation of foraging areas for this bat species. Foraging by the species would continue in the general area at current levels because of the relatively small area of forage that would be affected as most of the proposed ROW would be spanned by the transmission line and would be undisturbed. With the implementation of conservation measures the proposed Project may affect, is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through temporary loss of forage plants.

Potential impacts on northern Mexican gartersnake from construction-related activities would include those described above as "Additional Impacts" to reptile species. The ROW would cross northern Mexican gartersnake proposed critical habitat at two locations; approximately 1,550 feet across the location of the existing Western transmission line at the San Pedro River in segment U2 and approximately 1,280 feet across the location of the existing Western transmission line at Cienega Creek at Empirita Ranch in segment U3a. As siting of structures would be done to avoid critical habitat and riparian habitat, no disturbance would occur in the riparian area, and access would come from outside of habitat and proposed critical habitat for the species, construction-related impacts would avoid impacts on this species' and its proposed critical habitat and would remain within the existing Western 100-foot ROW whenever possible. If additional disturbance outside the existing Western transmission line ROW is necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

Potential impacts on Sonoran desert tortoise from construction-related activities would include those described above as "Additional Impacts" to reptile species. However, route group 3.1 would not intersect with any BLM designated category of desert tortoise habitat. While there is no BLM designated category of desert tortoise habitat in route group 3.1, habitat for the species is present in the route group. Approximately 250 acres of this habitat would be disturbed during construction. Impacts on the species would primarily occur within the existing Western 100-foot ROW. If additional disturbance outside the existing Western transmission line ROW is necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW. Based on the impacts occurring primarily within the existing Western ROW and the amount of available Sonoran desert tortoise habitat in the analysis area, there would be no detectable effect on the viability of this species or that would contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on southwestern willow flycatcher from construction activities in this subroute would include those described above as "Additional Impacts" to bird species. However, there would be no perennial or intermittent waterways in this subroute that would provide appropriate vegetation structure for nesting habitat for this species and this subroute group would not intersect with any designated critical habitat for this species. Foraging and migratory habitat for the species along the San Pedro River and Cienega Creek would be spanned within the existing Western 100-foot ROW and no proposed Project-related ground disturbance would occur within foraging habitat for the species.

Potential impacts on western yellow-billed cuckoo from construction activities in this subroute would include those described above for subroute 3.1. However, there would be no large cottonwood and willow galleries that would provide nesting habitat for this species in the area to be disturbed. Foraging and migratory habitat for the species along the San Pedro River and Cienega Creek would be spanned within the existing Western 100-foot ROW and no proposed Project-related ground disturbance would occur in those areas. Construction activities in this subroute may affect, is likely to adversely affect the western yellow-billed cuckoo.

Potential impacts on Gila chub designated critical habitat could include increased sedimentation levels downstream from the proposed Project. As the proposed ground-disturbing activities would not occur within the area of riparian vegetation along Cienega Creek, no equipment would be used in the riparian

area, access roads would avoid the riparian area and approach Cienega Creek from both sides of the creek. However, ground-disturbing activities would occur on the banks within the existing Western 100-foot ROW, and possibly within 300 feet, of the Cienega Creek stream channel approximately 2.5 miles upstream of designated critical habitat. These ground-disturbing activities could cause an increase in erosion and sedimentation and indirectly impact PCEs of Gila chub designated critical habitat. However, PCEMs to minimize sedimentation and to avoid ground disturbance within the riparian area would minimize the potential for impacts on Gila chub and Gila chub designated critical habitat. Therefore, project activities may affect, and is not likely to adversely affect the Gila chub or its designated critical habitat.

Operation and Maintenance

Removal of lesser long-nosed bat and Mexican long-nosed bat forage plants could occur during maintenance activities. PCEMs would reduce impacts to forage resources. A short-term loss of foraging habitat (less than 2 percent of the analysis area) would occur during the time that it takes for salvaged and additional agave and saguaro plants to become established. With the implementation of conservation measures the proposed Project may affect, is likely to adversely affect the lesser long-nosed bat and Mexican long-nosed bat through loss of forage resources. Potential impacts on Sonoran desert tortoises would include the potential for mortality from maintenance vehicle strikes; impacts from noise; and potential localized increases in predator populations near the proposed transmission line.

Potential effects on the northern Mexican gartersnake would include potential impacts from noise during maintenance activities, and potential for mortality from being crushed by maintenance vehicles during vegetation management activities. As such, the proposed Project may affect, is likely to adversely affect the northern Mexican gartersnake.

Potential impacts on southwestern willow flycatcher from operation and maintenance activities would include those described above as “Additional Impacts” to bird species. Individuals may experience impacts common to migratory birds during migration as they move through the subroute during construction with the potential for strikes to transmission lines and structures (see migratory species impacts described below). Nocturnal migrant species such as the southwestern willow flycatcher would have a higher risk of collision with transmission lines and structures. Maintenance activities could modify migratory and foraging habitat for the species; however, they would occur within the existing Western transmission line ROW where there are existing transmission lines and ongoing maintenance currently occurs. The existing Western transmission line is smaller than the proposed line and has fewer circuits. The increased number of circuits may increase the potential for strikes; however, it is possible that the larger structures would be more visible than the existing structures thus reducing strike potential. While impacts would likely be minimal they could still occur. As such, the proposed Project may affect, is likely to adversely affect the southwestern willow flycatcher.

Potential impacts on western yellow-billed cuckoo from operation and maintenance activities would include those described above as “Additional Impacts” to bird species. Operational or maintenance impacts would prevent large trees from developing along the line, limiting potential development of western yellow-billed cuckoo habitat. Individuals may experience impacts common to migratory birds during migration as they move through the subroute group during construction with the potential for strikes to transmission lines and structures (see migratory species impacts described below). The existing Western transmission line is smaller than the proposed line and has fewer circuits. The increased number of circuits may increase the potential for individuals striking the lines; however, it is possible that the larger structures would be more visible than the existing structures thus reducing strike potential. While impacts would likely be minimal they could still occur. As such, the subroute may affect, is likely to adversely affect the western yellow-billed cuckoo.

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive Species for this region (the Gila District), 19 species were identified as having the potential to occur because the representative ROW would be within the species' range and habitat parameters would be present. These species include the lowland leopard frog, Arizona striped whiptail (*Aspidoscelis arizonae*), Sonoran mud turtle (*Kinosternon sonoriense sonoriense*), desert ornate box turtle, Arizona grasshopper sparrow, western burrowing owl, golden eagle, gilded flicker (*Colaptes chrysoides*), American peregrine falcon, bald eagle, desert purple martin (*Progne subis hesperia*), pale Townsend's big-eared bat, banner-tailed kangaroo rat (*Dipodomys spectabilis*), spotted bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, cave myotis, and Mexican long-tongued bat.

In addition, five other species—longfin dace, Slevin's bunchgrass lizard, Arizona Botteri's sparrow (*Aimophila botterii arizonae*), the ferruginous hawk, and the black-tailed prairie dog—could also occur but would be considered unlikely to occur because either habitat parameters would be present (e.g., healthy grasslands for black-tailed prairie dog), but the representative ROW within this route group would not be within the species' typical range, or would be within the species' typical range but habitat parameters would not be present (e.g., perennial streams for longfin dace). There would be no effect on these species' habitat and no detectable effect on the viability of these species or that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Construction

Construction-related impacts would be similar to those described for route groups 1 and 2. However, as the ROW has been previously disturbed for the existing transmission line and access roads the scope of impacts would be less than for route groups 1 and 2. Acres of impacts are given in table 4.8-34.

Potential impacts on lowland leopard frog from construction activities would include those described above as "Additional Impacts" to amphibian species. However, there would be no perennial waterways in this subroute and pole structures and laydown areas would not be placed in ephemeral or intermittent waterways that could provide dispersal habitats for toads or frogs. There would be no impacts on these species' habitat and no detectable effect on the viability of these species by Project-related activities or that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts on Arizona striped whiptail, Sonoran mud turtle, and desert ornate box turtle from construction-related activities would include those described above as "Additional Impacts" to reptile species. Construction-related impacts would be temporary and negligible to the species and consist of a small detectable long-term disturbance of the species' habitat. Based on the amount of available reptile habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of any of these species as threatened or endangered.

Potential impacts on Arizona grasshopper sparrow, western burrowing owl, golden eagle, gilded flicker, American peregrine falcon, bald eagle, and desert purple martin from construction activities in this subroute group would include those described above as "Additional Impacts" to bird species. Based on the amount of available bird nesting habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of any of these bird species or contribute toward a downward population trend or listing of the species as threatened or endangered.

Potential impacts on the banner kangaroo rat from construction-related activities would include those described above as "Additional Impacts" to mammal species. Based on the amount of available small

mammal habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on the eight bat species noted above from construction activities would include those described above for subroute 1.1. However, there would be no roost or nest sites in the representative ROW that would provide shelter for these species. Based on the amount of available foraging habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species or to contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the western burrowing owl, golden eagle, gilded flicker, American peregrine falcon, bald eagle, and desert purple martin would be related to the potential for individuals striking the transmission lines and structures.

Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, cave myotis, plains leopard frog, lowland leopard frog, Sonoran green toad, Arizona striped whiptail, Sonoran mud turtle, desert ornate box turtle, and banner-tailed kangaroo rat would likely not experience operational or maintenance impacts detectable at the population level or contribute to a downward population trend or listing of these species as threatened or endangered.

Coronado National Forest Sensitive Species and Management Indicator Species

Coronado National Forest Sensitive Species

The area of the Coronado National Forest that would be crossed by subroute 3.1 would be approximately 0.5 mile in length and would follow the route of the existing transmission line. Of the 87 species listed as Forest Service sensitive in Coronado National Forest, 12 are identified as possible to occur because the representative ROW would be within their ranges and habitat parameters would be present. These species include the reticulate Gila monster (*Heloderma suspectum suspectum*), Arizona grasshopper sparrow, western burrowing owl, American peregrine falcon, Abert's towhee, northern pygmy mouse (*Baiomys taylori ater*), pale Townsend's big-eared bat, greater western mastiff bat, hooded skunk (*Mephitis macroura milleri*), Cockrum's desert shrew (*Notiosorex cockrumi*), plains harvest mouse (*Reithrodontomys montanus*), and yellow-nosed cotton rat.

For all other sensitive species the representative ROW would be either outside of the known range, would not contain habitat or both. There would be no effect on these species habitat and no detectable effect on the viability of these species or that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Construction

Impacts on Coronado National Forest Sensitive Species were included for areas that are not within Coronado National Forest and include acres of impacts on habitat types that these species utilize within the representative ROW for Subroute 3.1. Construction-related impacts would be similar to those described for route groups 1 and 2. However, as the ROW has been previously disturbed for the existing transmission line and access roads and the area of Coronado National Forest to be crossed is only 0.5 mile in length, the scope of impacts would be minimal. Acres of impacts are given in table 4.8-34.

Potential impacts to the reticulate Gila monster would include those described above as "Additional Impacts" to reptile species. Gila monsters shelter in burrows and rock outcrops for shade and as winter hibernacula and would be susceptible to being crushed by construction equipment. These construction-related impacts would be temporary to individuals and consist of a negligible long-term effect to this species' habitat within Coronado National Forest. Based on the amount of available reticulate Gila monster habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts to the Arizona grasshopper sparrow from construction activities in this subroute group would include those described above as "Additional Impacts" to bird species. These construction-related impacts would be temporary to individuals and consist of a small detectable long-term effect to this species' habitat within the Coronado National Forest. Based on the amount of available habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or to contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on Abert's towhee, American peregrine falcon, and western burrowing owl from construction activities in this subroute group would be as described above for subroute 1.1. Based on the amount of available western burrowing owl habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of this species or contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts from construction activities on the northern pygmy mouse, Cockrum's desert shrew, plains harvest mouse, yellow-nosed cotton rat, and hooded skunk would include those described as "Additional Impacts" to mammals. Based on the amount of available habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts from construction on the pale Townsend's big-eared bat and the greater western mastiff bat would include habitat disturbance. It is unlikely that construction would impact any roost sites as the pale Townsend's big-eared bat typically roosts in abandoned mines and buildings (AGFD 2003) and the greater western mastiff bat roosts in horizontal crevices usually in steep canyon walls (AGFD 2002). If roost sites were present in construction areas there would be the possibility that bats could be flushed. Based on the lack of roost sites and the amount of available habitat for these species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the Arizona grasshopper sparrow, American peregrine falcon, and Abert's towhee would be related to individuals striking the transmission lines and structures. Transmission structures may increase the presence of avian predators, primarily raptors and ravens, in the representative ROW and increase predation on the northern pygmy mouse, Cockrum's desert shrew, plains harvest mouse, and yellow-nose cotton rat. Reticulate Gila monster, western burrowing owl, hooded skunk, and the bat species would likely not experience operational and maintenance impacts detectable at the population level.

Coronado National Forest Management Indicator Species

Coronado National Forest lists 33 species in total, as well as general groups of primary and secondary cavity nesters, as management indicator species across eight management groups. MIS are "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" (FSM 2620.5). Based on range and habitat, three MIS are identified as possible to occur within the analysis area. These species include Bell's vireo, American peregrine falcon, and white-tailed deer (*Odocoileus virginianus couesi*). For all other MIS the representative ROW would be either outside of the species' known range, would not contain habitat for the species, or both.

Construction

Bell's vireo is an indicator species in the riparian species, species needing dense canopy, and threatened and endangered species management groups. Potential impacts on Bell's vireo from construction activities include those described above as "Additional Impacts" to bird species. There is no riparian or mesquite habitat for the species in or near the area where the proposed transmission line would cross Coronado Forest. However, there is suitable riparian and mesquite shrubland habitat elsewhere in Subroute 3.1 and impacts on Coronado National Forest Management Indicator Species are considered for the entire representative ROW of Subroute 3.1. Based on the amount of available Bell's vireo habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

The American peregrine falcon is an indicator species in the threatened and endangered management group. Potential impacts from construction activities on the American peregrine falcon would be as described above for the Coronado National Forest sensitive species.

The white-tailed deer is an indicator species in the species needing diversity, species needing herbaceous cover, and game species management groups. Potential impacts from construction activities on the white-tailed deer include those described above as "Impacts Common to All Action Alternatives" with collisions, habitat loss, and habitat fragmentation being the most likely to occur. Based on the amount of available white-tailed deer habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to Bell's vireo and the American peregrine falcon would be related to individuals striking the transmission lines and structures. White-tailed deer would likely not experience operational and maintenance impacts detectable at the population level.

State of Arizona Wildlife Species of Concern

In total, 15 Wildlife Species of Concern were identified as possible to occur because the representative ROW would be within the species' range and habitat parameters for the species would be present. These species include antelope jackrabbit (*Lepus alleni*), common nighthawk (*Chordeiles minor*), dusky-capped flycatcher (*Myiarchus tuberculifer*), Gila woodpecker, Harris' antelope squirrel (*Ammospermophilus harrisii*), hooded nightsnake (*Hypsiglena* sp. *nov*.)**,** Mexican free-tailed bat (*Tadarida brasiliensis*), desert ornate box turtle, regal horned lizard (*Phrynosoma solare*), rufous-winged sparrow (*Aimophila carpalis*), savannah sparrow (*Passerculus sandwichensis*), Sonoran coralsnake (*Micruroides euryxanthus*), Sonoran

whipsnake (*Coluber bilineatus*), tiger rattlesnake (*Crotalus willardi obscurus*), and yellow warbler. Acres of impacts on these species are given in table 4.8-34.

Six additional Wildlife Species of Concern—white-tailed deer, kit fox (*Vulpes macrotis*), American beaver (*Castor canadensis*), northern rock mouse (*Peromyscus nasutus*), banded rock rattlesnake (*Crotalus lepidus klauberi*), and Sonoran Desert toad (*Incilius alvarius*)— would be unlikely to occur within the representative ROW because it would be either outside of the species' known range, would not contain habitat for the species, or both. There would be no effect on these species' habitat and no detectable effect on the viability of these species by Project-related activities or that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Construction

Potential impacts from construction on antelope jackrabbit and Harris' antelope squirrel include those described as "Additional Impacts" to mammals. Based on the amount of available habitat for these two species in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species and it would not contribute toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts on common nighthawk, dusky-capped flycatcher, Gila woodpecker, rufous-winged sparrow, savannah sparrow, and yellow warbler from construction activities would include those described above as "Additional Impacts" to bird species. Based on the amount of available foraging and breeding habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species and it would not contribute toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts on Mexican free-tailed bat from construction activities would include habitat disturbance. Based on the amount of available foraging and breeding habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species and would not contribute toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts to the desert ornate box turtle, hooded nightsnake, regal horned lizard, Sonoran coralsnake, Sonoran whipsnake, and tiger rattlesnake from construction activities would include those described above as "Additional Impacts" to reptile species. Based on the amount of available habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species and no contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the common nighthawk, dusky-capped flycatcher, Gila woodpecker, rufous-winged sparrow, savannah sparrow, and yellow warbler would be related to individuals striking the transmission conductors. Additional impacts may occur to antelope jackrabbit, Harris' antelope squirrel, ornate box turtle, regal horned lizard, Sonoran coralsnake, Sonoran whipsnake, and tiger rattlesnake due to increased predation from raptors hunting from transmission lines and structures. No operation or maintenance impacts are expected for the Mexican free-tailed bat.

State of Arizona Species of Greatest Conservation Need

In total, five SGCN were identified as possible to occur because the representative ROW would be within the species' range and habitat parameters for the species would be present. These species include

American bittern, Lincoln's sparrow (*Melospiza lincolnii*), Mississippi kite, western grasshopper sparrow (*Ammodramus savannarum perpallidus*), and wood duck (*Aix sponsa*). Acres of impacts on these species are given in table 4.8-34.

Two additional SGCN, southern pocket gopher (*Thomomys umbrinus*), and sulphur-bellied flycatcher (*Myiodynastes luteiventris*) would be unlikely to occur within the representative ROW because it would be either outside of the species' known range, would not contain habitat for the species, or both. There would be no effect on this species' habitat and no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Construction

Construction-related impacts would be similar to those described for route groups 1 and 2. However, as the ROW has been previously disturbed for the existing transmission line and access roads, the scope of impacts would be less than for route groups 1 and 2. There would be no effect on the viability of this species or that would contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on American bittern, Lincoln's sparrow, Mississippi kite, western grasshopper sparrow, and wood duck from construction activities would include habitat disturbance and those described above as "Additional Impacts" to bird species.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the American bittern, Lincoln's sparrow, Mississippi kite, western grasshopper sparrow, and wood duck would be related to individuals striking the transmission lines and structures. There would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Migratory Birds

Impacts on migratory birds would be as previously described for subroute 1.1.

Construction

Construction-related impacts would be similar to those described for route groups 1 and 2. However, as the ROW has been previously disturbed for the existing transmission line and access roads, the scope of impacts would be less than for route groups 1 and 2.

Subroute 3.1 contains a total of 29.3 acres of agricultural lands, found along segments U1a and U2, of which 8.2 acres would be disturbed.

Subroute 3.1 would intersect a total of 1.9 acres of North America Warm Desert Riparian Mesquite Bosque, of which approximately 0.5 acre would be disturbed. The two segments with North America Warm Desert Riparian Mesquite Bosque would be U1a (0.3 acre) and U3a (1.6 acres).

According to the NWI, 157 feet of riverine wetlands 4.0 acres occur within the representative ROW along segment U2. SWReGAP mapping indicates 3.4 acres of North American Arid West Emergent Marsh and 0.7 acre of open water along U2. The wetlands mapped within the ROW for subroute 3.1 would be located along the crossing of the San Pedro River within the existing Western transmission line ROW. This area is mapped as a riverine wetland that follows the main channel of the river. Construction-related

impacts to the river and associated wetlands would be minimal as no disturbance would occur in the River or riparian area.

Proposed structure locations would incorporate avoidance and PCEMs to avoid any wetland and open water. Construction of access roads would likely not impact the San Pedro River and Cienega Creek within the ROW and downstream with the incorporation of avoidance measures and PCEM implementation and by keeping work primarily within the existing 100-foot Western transmission line ROW.

Operation and Maintenance

The land cover types above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. That risk could lead to the mortality of some migratory birds. While potential impacts would still be unlikely to reach population-level impacts for all species, the risk of collision could lead to mortality of migratory birds at the San Pedro River and Cienega Creek crossings. The existing, maintained Western transmission line is smaller than the proposed line and has fewer conductors. The increased number of conductors may increase the potential for strikes; however, the larger conductors may be more visible than the existing structures thus reducing strike potential. The likelihood of impacts would be reduced by utilizing the existing Western transmission line ROW at the San Pedro River and Cienega Creek crossings.

Table 4.8-35 gives the proximity of areas with elevated terrain to the ROW in route group 3.

Table 4.8-35. Route Group 3 Proximity of Mountain Ridges and Low Passes to the ROW of Proposed Subroutes

Subroutes	Ridge or Low Pass	Distance (miles)
Subroute 3.1, Proponent Preferred	Low pass between the Dragoon Mountains and the Gunnison Hills	0.50
Route Group 3 Local Alternatives		
Local Alternatives for Subroute 3.1	NA*	NA

Note: NA = not applicable.

* No ridge or low pass is present near any of the segments of the proposed subroute's ROW.

Route group 3 would not be near any mountain ridges and low passes and as such would have a decreased risk for impacts on migratory birds.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1. However, as the ROW has been previously disturbed for the existing Western transmission line and access roads the scope of impacts would be less than for route groups 1 and 2**.**

Construction

Pima County Biological Core Management Areas, Important Riparian Areas, Multiple Use Management Areas, Pima County groundsnake PCA, Pima County Pima pineapple cactus PCA, and Bar V Ranch would all intersect with subroute 3.1. Pima County Biological Core Management Areas are managed to include a mitigation ratio of 4:1. Important Riparian Areas are managed to "…protect, restore, and enhance the structure and functions of Important Riparian Areas, including their hydrological, geomorphological, and biological functions." Multiple Use Management Areas are managed to include a

mitigation ratio of 2:1. As described in section 2.4.1 of the EIS, a Reclamation, Vegetation, and Monitoring Plan would be developed and areas of temporary disturbance would be restored and the success of that restoration monitored. If during final project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands of Pima County and the Pima County Flood Control District then compensatory mitigation would be considered. Project activities would occur primarily within the existing ROW and would not significantly affect the functioning or mission of CLS lands to protect habitat in Pima County for the SDCP.
The proposed ROW in Pima County would utilize the existing Western transmission line ROW and most impacts would remain within the existing 100-foot wide ROW. If additional disturbance outside the existing Western transmission line ROW is necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

The ROW would intersect approximately 137.2 acres of the rufous-winged sparrow PCA ROW with 39.1 acres of disturbance and the burrowing owl PCA on 70.3 acres with 20.0 acres of disturbance. The ROW would intersect approximately 347.2 acres of the Pima pineapple cactus PCA with 98.9 acres of disturbance.

Biological Core Management Areas would be intersected by the ROW on approximately 300.3 acres, of which 84.4 acres would be disturbed. Important Riparian Areas would be intersected on approximately 14.6 acres, of which 4.3 acres would be disturbed. Mitigation to minimize disturbance in riparian areas would reduce the construction-related impacts. The ROW would intersect Multiple Use Management Areas on approximately 41.8 acres of which 11.9 would be disturbed. Impacts on Pima County Biological Core Management Areas, Important Riparian Areas, and Multiple Use Management Areas could require mitigation. All of these areas would be crossed by the ROW within the existing Western transmission line ROW and most impacts would remain within the existing 100-foot wide ROW. If additional disturbance outside the existing Western transmission line ROW is necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW. As described in section 2.4.1 of the EIS, a Reclamation, Vegetation, and Monitoring Plan would be developed and areas of temporary disturbance would be restored and the success of that restoration monitored. If during final project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands then compensatory mitigation would be considered.

The ROW would intersect the Bar V Ranch on approximately 107.3 acres, of which 30.6 acres would be disturbed. All of these areas would be crossed by the ROW within the existing Western transmission line ROW and would remain within the existing 100-foot wide ROW. Utilizing the existing ROW would minimize impacts on the Empirita and Bar V ranches.

Potential impacts on special designation areas from subroute 3.1 would include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect with special designations. Impacts on special designations, including Pima County CLS, Empirita Ranch and Bar V Ranch, are analyzed further in Section 4.12, “Special Designations.”

Subroute 3.1 would cross the Galiuro-Winchester-Dragoon PLZ, the Rincon-Whetstone-Santa Rita PLZ, and the Rincon-Santa Rita-Whetstone PLZ. Approximately 225.3 acres of the ROW intersects with these PLZs of which 63.3 acres would be disturbed. Impacts would be as similar in nature for those described above for subroute 1.1 but would be greatly reduced in scope as impacts would remain within the existing 100-foot wide ROW whenever possible. If additional disturbance outside the existing Western transmission line ROW would be necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

Operation and Maintenance

Potential impacts from operation and maintenance activities would include potential conflicts with management objectives for special designation areas. Operation and maintenance activities would occur primarily within the existing ROW and would not significantly affect the functioning or mission of CLS lands to protect habitat in Pima County for the SDCP.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H. Acres of impacts from local alternative H are given in table 4.8-34. Based on the amount of habitat in the representative ROW and broader analysis area it is not anticipated that local alternative H would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. Disturbance to wildlife habitat would occur on approximately 28 percent of the ROW. No staging areas or substations would be proposed for local alternative H.

Operation and Maintenance

Potential impacts from the operation and maintenance of local alternative H would be as described above for subroute 1.1.

Special Status Species

Federally Listed Species

Within local alternative H, three species were identified as having the potential to occur because the representative ROW would be within their ranges and habitat parameters would be present: the lesser long-nosed bat, northern Mexican gartersnake with proposed critical habitat, and Sonoran desert tortoise. Potential impacts to these species are discussed below.

The remaining ESA listed species for Cochise County, Arizona would have no potential to occur within local alternative H.

Construction

Potential impacts on the lesser long-nosed bat from construction activities would be as described for subroute 3.1. Habitat for this species along local alternative H would be within 40 miles of a known roost site and is therefore within the foraging range of the species. However, there would be no roost or nest sites in the representative ROW that would provide shelter for this species.

Potential impacts on northern Mexican gartersnake from construction-related activities would include those described above for subroute 3.1. Local alternative H would cross more than 2,100 feet of northern Mexican gartersnake proposed critical habitat at a new crossing of the San Pedro River. Construction-related impacts would avoid adverse modification to this species' proposed critical habitat, as structures would be designed to span the two critical habitat units and the specific siting of access roads would avoid those areas.

Potential impacts on Sonoran desert tortoise from construction-related activities would be as described for subroute 3.1. Local alternative H would not intersect with any BLM-designated category of desert tortoise habitat. Based on the amount of available Sonoran desert tortoise habitat in the analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

There would likely not be operational and maintenance impacts to Sonoran desert tortoise or to any populations of this species under local alternative H. Therefore, there would be no detectable effect on the viability of these species. Impacts on lesser-long nosed bats and Mexican long-nosed bats would be as described for subroute 3.1.

There would likely not be operational impacts to northern Mexican gartersnake or to any populations of northern Mexican gartersnake under local alternative H. In addition, there would be no operational impacts to northern Mexican gartersnake proposed critical habitat.

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive for this region (the Gila District), 19 species were identified as having the potential to occur in local alternative H because the representative ROW would be within the species' range and habitat parameters would be present. These species include the American peregrine falcon, Arizona grasshopper sparrow, bald eagle, golden eagle, western burrowing owl, Arizona striped whiptail, lowland leopard frog, Sonoran mud turtle, desert ornate box turtle, gilded flicker, desert purple martin, Mexican long-tongued bat, pale Townsend's big-eared bat, banner-tailed kangaroo rat, spotted bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, and cave myotis. Acres of impacts on these species are given in table 4.8-34. Mexican long-tongued bat is addressed above in the "Federally Listed Species" section.

In addition, five other species—longfin dace, Slevin's bunchgrass lizard, Arizona Botteri's sparrow, ferruginous hawk, and black-tailed prairie dog—could also occur but would be considered unlikely to occur in local alternative H because either habitat parameters would be present (e.g., healthy grasslands for black-tailed prairie dog), but the representative ROW within this route group would not be within the species' typical range, or it would be within the species' typical range but habitat parameters would not be present (e.g., perennial streams for longfin dace).

Construction

Potential impacts on lowland leopard frog and Sonoran mud turtle from construction activities would be as described for subroute 3.1. There would be no impacts on this species habitat and no detectable effect on the viability of this species or contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on desert ornate box turtle and Arizona striped whiptail would be as described above for subroute 3.1. Based on the amount of available reptile habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of any of these species as threatened or endangered.

Potential impacts on gilded flicker, bald eagle, golden eagle, burrowing owl, American peregrine falcon, Arizona grasshopper sparrow, and desert purple martin from construction activities in local alternative H would be as described in subroute 3.1. Based on the amount of available bird nesting habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable

effect on the viability of these bird species or contribution toward a downward population trend or listing of the species as threatened or endangered.

Potential impacts on the banner-tailed kangaroo rat from construction-related activities would be as described in subroute 3.1. Based on the amount of available small-mammal habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on the eight bat species noted above from construction activities would be as described for subroute 3.1. Based on the amount of available foraging habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the gilded flicker, and desert purple martin would be related to the potential for individuals striking the transmission lines.

Lowland leopard frog, Sonoran mud turtle, desert ornate box turtle, banner-tailed kangaroo rat, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, Arizona myotis, and cave myotis would likely not experience operational and maintenance impacts detectable at the population level or contribution toward a downward population trend or listing of these species as threatened or endangered.

State of Arizona Wildlife Species of Concern

In total, 15 Wildlife Species of Concern were identified as possible to occur because the representative ROW would be within the species' range and habitat parameters for the species would be present. These species include antelope jackrabbit, common nighthawk, Gila woodpecker, Harris' antelope squirrel, hooded nightsnake, Mexican free-tailed bat, ornate box turtle, regal horned lizard, rufous-winged sparrow, savannah sparrow, Sonoran coralsnake, Sonoran whipsnake, tiger rattlesnake, and yellow warbler. Acres of impacts on these species are given in table 4.8-34. The dusky-capped flycatcher would be unlikely to occur within local alternative H due to lack of habitat.

Construction

The construction impact types and intensities to antelope jackrabbit, common nighthawk, Gila woodpecker, Harris' antelope squirrel, hooded nightsnake, Mexican free-tailed bat, desert ornate box turtle, regal horned lizard, rufous-winged sparrow, savannah sparrow, Sonoran coralsnake, Sonoran whipsnake, tiger rattlesnake, yellow warbler, and dusky-capped flycatcher would be the same as described under subroute 3.1. Based on the amount of available habitat for these species in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

The operation and maintenance impact types and intensities would be as described for subroute 3.1.

State of Arizona Species of Greatest Conservation Need

Three Arizona SGCN would be likely to occur on local alternative H. These species include American bittern, Lincoln's sparrow, and western grasshopper sparrow. All other SGCN that are listed under the ESA, BLM, and/or Forest Service that would be likely to occur in the representative ROW are discussed above. The Mississippi kite would be unlikely to occur on local alternative H. The representative ROW would be either outside of the species' known range, would not contain habitat for the species, or both.

Construction

Construction-related impacts would be similar to those described for subroute 3.1. Acreages of impacts are given in table 4.8-34.

The construction impact types and intensities to American bittern, Lincoln's sparrow, and western grasshopper sparrow would be the same as described under subroute 3.1. Based on the amount of available habitat for these species construction-related activities would have no detectable effect on the viability of these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

The operation and maintenance impact types and intensities would be as described for subroute 3.1.

Migratory Birds

Impacts on migratory birds would be as described above for subroute 1.1. Based on the amount of migratory bird habitat for these species in the representative ROW and broader analysis area it is not anticipated that any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered would occur.

Construction

The ROW for local alternative H would intersect approximately 9.3 acres of agricultural lands, 2.6 acres of which would be disturbed. While there would be disturbance within agricultural areas normal agricultural operations could continue within the ROW with only structures and a small area around them removed from production.

The ROW for alternative H would intersect approximately 2.8 acres of North America Warm Desert Riparian Mesquite Bosque, 0.8 acre of which would be disturbed.

According to the NWI, the ROW for alternative H contains 409 feet of riverine wetlands totaling approximately 2.7 acres. These features would all be associated with the intermittent reach of the San Pedro River. SWReGAP does not show any wetlands or open water. Construction-related impacts to the river and associated wetlands would be related to the construction of the transmission line structures and temporary access roads. Proposed structure locations would incorporate avoidance and PCEMs to avoid any wetland and open water. This new crossing of the San Pedro River would be spanned and construction of access roads would not occur in the riparian area or the river bed. As such, local alternative H and access roads are not likely to impact the San Pedro River within the ROW and downstream if avoidance measures were incorporated and with the implementation of PCEMs.

Operation and Maintenance

The land cover types above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. That risk would still be unlikely to

reach population-level impacts for all species, but the risk of collision for migratory birds would likely be influenced by the exact placement of the San Pedro River crossing.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1.

Construction

Local alternative H would intersect Pima County Biological Core Management Areas and Important Riparian Areas. The ROW would intersect Biological Core Management Areas on approximately 46.5 acres, of which 13.1 acres would be disturbed. The ROW would intersect Important Riparian Areas on approximately 1.3 acres, of which 0.4 acre would be disturbed. Impacts would be as described above for subroute 3.1. As described in section 2.4.1 of the EIS, a Reclamation, Vegetation and Monitoring plan would be developed and areas of temporary disturbance would be restored and the success of that restoration monitored. If during final project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands then compensatory mitigation would be considered. Project activities would occur within a new ROW; however PCEMs would limit impacts and would not significantly affect the functioning or mission of CLS lands to protect habitat in Pima County for the SDCP. Impacts on special designations are analyzed in more detail in section 4.12.

Local alternative H would cross the Rincon-Whetstone-Santa Rita PLZ. Approximately 36.9 acres of the representative ROW in the Rincon-Whetstone-Santa Rita PLZ would be crossed with 10.4 acres being disturbed. Impacts would be as described above for subroute 2.1.

Operation and Maintenance

Operation-related impacts from local alternative H would be as described above for subroute 3.1.

Route Group 4 – Pantano Substation to Saguaro Substation

Tables 4.8-36 and 4.8-37 give the acres of impacted habitat types for the ROW as well as staging areas and substations for route group 4. Acreages of impacts on general wildlife and special status species for route group 4 are provided in table 4.8-38.

SUBROUTE 4.1 – PROPONENT PREFERRED

General Wildlife

Construction

Construction-related impacts would be similar to those described for subroute 3.1. Impact levels from disturbance would be lower than for route groups 1 and 2 as the ROW has been previously disturbed for the existing Western transmission line. Acreages of impacts are given in table 4.8-38. Based on the amount of available habitat for general wildlife species, construction-related activities would have no detectable effect on the viability of these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Impacts from the operation and maintenance of subroute 4.1 would be as described above for subroute 3.1.

Table 4.8-36. Route Group 4 Wildlife Habitat Type Resource Inventory Data

Habitat Type	Subroute 4.1 (acres)	Route Variation	Local Alternatives									
		U3aPC (acres)	MA1 (acres)	TH1a (acres)	TH1b (acres)	TH1c (acres)	TH1-Option (acres)	TH3a (acres)	TH3b (acres)	TH3-Option A (acres)	TH3-Option B (acres)	TH3-Option C (acres)
Agriculture	68.6	-	19.9	-	-	-	-	-	-	-	-	-
Apacherian-Chihuahuan Mesquite Upland Scrub	3.0	13.7	-	-	-	-	-	-	-	-	0.8	0*
Barren Lands, Non-specific	14.1	-	-	-	-	-	-	-	-	-	-	-
Developed, Medium - High Intensity	146.0	9.0	-	0.6	7.9	3.1	0.8	14.5	48.7	-	4.2	5.0
Developed, Open Space - Low Intensity	34.9	-	-	-	-	-	-	-	-	-	-	-
North American Warm Desert Riparian Mesquite Bosque	18.2	-	-	-	-	-	-	-	-	-	-	-
North American Warm Desert Riparian Woodland and Shrubland	17.0	-	-	-	-	-	-	-	-	-	-	-
North American Warm Desert Wash	1.1	-	-	-	-	-	-	-	-	-	-	-
Open Water	0.5	-	-	-	-	-	-	-	-	-	-	-
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	123.8	53.4	-	-	-	-	-	-	0.8	1.2	0.2	-
Sonoran Mid-Elevation Desert Scrub	2.6	1.2	-	-	-	-	-	1.2	0.4	-	0.3	1.4
Sonoran Paloverde-Mixed Cacti Desert Scrub	292.4	35.4	-	11.2	11.0	-	16.2	17.3	4.6	8.6	4.3	13.9

* Greater than zero acres but less than 0.1 acre.

Table 4.8-37. Route Group 4 Wildlife Resource Inventory Data for Substations and Staging Areas

Habitat Type	Subroute 4.1 (acres)
Apacherian-Chihuahuan Mesquite Upland Scrub	40.4
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	7.6
Barren Lands, Non-specific	0.5
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	12.0
Chihuahuan Mixed Salt Desert Scrub	0.2
Developed, Medium - High Intensity	36.1
North American Warm Desert Riparian Mesquite Bosque	0*
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	78.1
Sonoran Mid-Elevation Desert Scrub	2.9
Sonoran Paloverde-Mixed Cacti Desert Scrub	75.3

* Greater than zero acres but less than 0.1 acre.

Special Status Species

Federally Listed Species

Within this route group, five federally listed species were identified as having the potential to occur because the representative ROW would be within the species' range and habitat parameters would be present: the lesser long-nosed bat, northern Mexican gartersnake, and Sonoran desert tortoise. The southwestern willow flycatcher and western yellow-billed cuckoo are unlikely to be present; however, riparian habitat suitable for foraging by these species is present. Acres of impacts on these species are given in table 4.8-38.

In addition, nine other species, the ocelot, California least tern, Mexican spotted owl, Chiricahua leopard frog, Gila chub, Gila topminnow, jaguar, ocelot, and Sprague's pipit, could also occur but would be considered unlikely to occur because although habitat parameters would be present the representative ROW within this route group would not be within the species' typical range, or the route group would be within the species' typical range, but habitat parameters would not be present. Therefore the proposed Project activities in subroute 4.1 would have no effect to the populations of California least tern, Chiricahua leopard frog, Gila chub, Gila topminnow, jaguar, ocelot, or Sprague's pipit.

Tribal sensitive species for the Tohono O'odham Nation were considered in the EIS when they were also protected under a Federal, State, or County law. For those species that are not specifically addressed in the EIS, Western and Southline would coordinate with the Tohono O'odham Nation to determine appropriate mitigation.

Construction

Construction-related impacts would be as described for subroute 3.1.

There would be no roost sites for lesser long-nosed bat in the representative ROW that would provide shelter for this species. However, subroute 4.1 would be within 40 miles of a known roost site, and would be within the foraging range of the species.

Table 4.8-38. Route Group 4 Acres of Impacts on Wildlife

Common name	Subroute 4.1	Route Variation	Local Alternatives									
		U3aPC	MA1	TH1a	TH1b	TH1c	TH1-Option	TH3a	TH3b	TH3-Option A	TH3-Option B	TH3-Option C
General Wildlife	322.2	31.6	5.6	7.2	8.0	1.3	5.0	13.9	23.0	4.2	4.2	9.2
Federally Listed Species												
Lesser long-nosed bat	237.0	31.6	-	5.0	7.0	1.4	7.2	16.5	23.0	4.2	3.8	4.7
Southwestern willow flycatcher	12.0	-	-	-	-	-	-	-	-	-	-	-
Western yellow-billed cuckoo	12.0	-	-	-	-	-	-	-	-	-	-	-
Northern Mexican gartersnake	0.2	-	-	-	-	-	-	-	-	-	-	-
Sonoran desert tortoise	143.1	25.3	-	4.2	7.0	-	6.8	10.3	2.5	4.2	2.0	2.4
BLM Sensitive Species												
Allen's big-eared bat	176.0	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Banner-tailed kangaroo rat	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
California leaf-nosed bat	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Cave myotis	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Greater western mastiff bat	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Mexican long-tongued bat	262.7	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Pale Townsend's big-eared bat	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Spotted bat	155.2	25.3	-	-	-	-	-	-	-	-	-	-
American peregrine falcon	12.0	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Arizona grasshopper sparrow	-	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Bald eagle	12.0	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Cactus ferruginous pygmy-owl	155.2	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Desert purple martin	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Gilded flicker	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Golden eagle	12.0	-	-	-	-	-	-	-	-	-	-	-
Western burrowing owl	240.3	31.6	5.6	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Ornate box turtle	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Sonoran mud turtle	12.5	-	-	-	-	-	-	-	-	-	-	-
Great Plains narrow-mouthed toad	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Lowland leopard frog	12.5	-	-	-	-	-	-	-	-	-	-	-
Plains leopard frog	2.1	-	-	-	-	-	-	-	-	-	-	-
Sonoran green toad	155.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Tucson shovel-nosed snake	6.2	-		-	-		-	-	-	-	-	
State of Arizona Wildlife Species of Concern												
Antelope jackrabbit	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Arizona pocket mouse	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Harris' antelope squirrel	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Kit fox	143.1	-	5.6	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Little pocket mouse	143.1	25.3	-	-	-	-	-	-	-	-	-	-

Table 4.8-38. Route Group 4 Acres of Impacts on Wildlife (Continued)

Common name	Subroute 4.1	Route Variation	Local Alternatives									
		U3aPC	MA1	TH1a	TH1b	TH1c	TH1-Option	TH3a	TH3b	TH3-Option A	TH3-Option B	TH3-Option C
State of Arizona Wildlife Species of Concern, cont'd.												
Pocketed free-tailed bat	12.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Abert's towhee	240.3	31.6	-	5.0	8.0	1.4	7.2	16.5	23.0	4.2	2.0	4.7
Bell's vireo	12.1	-	-	-	-	-	-	-	-	-	-	-
Crested caracara	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Gila woodpecker	155.1	25.3	-	5.0	8.0	1.4	7.2	16.5	23.0	4.2	2.0	4.7
Canyon spotted whiptail	12.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Gila monster	155.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Regal horned lizard	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Saddled leaf-nosed snake	143.1		-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Sonora mud turtle	0.1	-	-	-	-	-	-	-	-	0.2	-	-
Sonoran collared lizard	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Sonoran coralsnake	155.1	31.6	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Sonoran whipsnake	143.1	31.6	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Tiger rattlesnake	143.1	31.6	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Variable sandsnake	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Colorado River toad (aka Sonoran desert toad)	155.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
State of Arizona Species of Greatest Conservation Need												
Mexican free-tailed bat	143.1	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Western yellow bat	0.1	-	-	-	-	-	-	-	-	-	-	-
Buff-collared nightjar	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Savannah sparrow	7.9	-	5.6	-	-	-	-	-	-	-	-	-
Goode's horned lizard	143.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4
Pima County Species												
Merriam's mesquite mouse	149.3	-	-	-	-	-	-	-	-	-	0.8	-
Western red bat	12.1	25.3	-	-	-	-	-	-	-	-	-	-
Rufous-winged sparrow	143.1	-	-	-	-	-	-	-	-	-	0.8	-
Swainson's hawk	12.1	-	-	4.2	4.7	-	6.8	10.3	2.5	4.2	4.2	2.4
Ground snake	216.8	25.3	-	4.2	4.7	-	6.8	10.3	2.5	4.2	2.0	2.4

Potential impacts on northern Mexican gartersnake would be as described for subroute 3.1. As the proposed Project facilities would be located to avoid habitat and proposed critical habitat for the species there would be no impact on habitat or proposed critical habitat.

The ROW for subroute 4.1 would cross Sonoran desert tortoise habitat. Based on the amount of available Sonoran desert tortoise habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on southwestern willow flycatcher would be as described for subroute 3.1. However, there would be no perennial or intermittent waterways in this subroute that would provide appropriate vegetation structure for nesting habitat for this species and this subroute group would not intersect with any designated critical habitat for this species. Riparian vegetation that may be used as migratory habitat is present near the Santa Cruz River in segments U3i and U3k. Approximately 13.6 acres of this habitat would be disturbed. However, these impacts would primarily occur within the existing transmission line 100-foot ROW. As such impacts would be reduced. If additional disturbance outside the existing Western transmission line ROW would be necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

Potential impacts on western yellow-billed cuckoo from construction activities in this subroute group would be as described for subroute 3.1. However, there would be no large cottonwood and willow galleries that would provide nesting habitat for this species in the ROW although riparian vegetation that may be used as migratory habitat is present near the Santa Cruz River in segments U3i and U3k. Approximately 13.6 acres of this habitat would be disturbed. However, these impacts would primarily occur within the existing transmission line 100-foot ROW. As such, impacts would be reduced. If additional disturbance outside the existing Western transmission line ROW would be necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

Operation and Maintenance

There would likely not be operational impacts to lesser long-nosed bats or Sonoran desert tortoise. There would likely not be operational impacts to northern Mexican gartersnake under this subroute group. In addition, there would be no operational impacts to northern Mexican gartersnake proposed critical habitat.

Operation and maintenance impacts on western yellow-billed cuckoo and southwestern willow flycatcher would be as described for subroute 3.1.

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive for this region (the Gila District), 22 species were identified as having the potential to occur in subroute 4.1, because the representative ROW would be within the species' range and habitat parameters would be present. These species include the Tucson shovel-nosed snake, plains leopard frog (*Lithobates blairi*), lowland leopard frog, Sonoran green toad (*Bufo retiformis*), Great Plains narrow-mouthed toad, Sonoran mud turtle, desert ornate box turtle, western burrowing owl, golden eagle, gilded flicker, American peregrine falcon, cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), bald eagle, desert purple martin, Mexican long-tongued bat, pale Townsend's big-eared bat, banner-tailed kangaroo rat, spotted bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, and cave myotis. Acres of impacts on these species are given in table 4.8-38.

Cave myotis are known to roost on the Ina Street Bridge in April and May, approximately 0.66 mile from segment U3i. Blasting may occur in this area. Impacts from blasting would be as described for mammals in "Impacts Common to All Action Alternatives." Implementation of PCEMs combined with the distance to the bridge would avoid potential impacts to roosting bats at the Ina Road Bridge.

In addition, four other species—desert sucker, longfin dace, Slevin's bunchgrass lizard, and Arizona Botteri's sparrow—could also occur but would be considered unlikely to occur because either habitat parameters would be present (e.g., healthy grasslands for Slevin's bunchgrass lizard), but the representative ROW within this route group would not be within the species' typical range, or the representative ROW would be within the species' typical range, but habitat parameters would not be present (e.g., perennial streams for longfin dace).

Construction

Construction-related impacts would be as described for subroute 3.1.

Potential impacts on plains leopard frog, lowland leopard frog, Sonoran green toad, and Great Plains narrow-mouthed toad from construction activities would include those described above as common to all amphibian species and subroute 3.1. There would be no perennial waterways in this subroute and pole structures and laydown areas would not be placed in ephemeral or intermittent waterways that could provide dispersal habitats for toads or frogs. There would be no impacts on these species' habitat and no detectable effect on the viability of these species or that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Potential impacts on Sonoran mud turtle and desert ornate box turtle from construction-related activities would be as described for subroute 3.1. Construction-related impacts would include habitat disturbance. Based on the amount of available reptile habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of these species or contribution toward a downward population trend or listing of any of these species as threatened or endangered.

Potential impacts on Tucson shovel-nosed snake would include those described previously for all reptiles. Habitat for the species occurs in Pinal County where segment UK3 would cross the Santa Cruz River floodplain. PCEMs to avoid and minimize disturbance in riparian areas and using the existing transmission line ROW would minimize impacts on the species. Based on the amount of available habitat in the representative ROW and broader analysis area, construction-related impacts would have a short-term, minor/negligible effect on Tucson shovel-nosed snake and its habitat.

Potential impacts on western burrowing owl, golden eagle, gilded flicker, American peregrine falcon, cactus ferruginous pygmy-owl, bald eagle, and desert purple martin from construction activities would be as described for subroute 3.1. Based on the amount of available bird nesting habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of any of these bird species or to contribute toward a downward population trend or listing of the species as threatened or endangered.

Potential impacts on the banner kangaroo rat from construction-related activities would include those described above as "Additional Impacts" to mammal species. Based on the amount of available small mammal habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on the seven bat species noted above from construction activities would include those described above for subroute 3.1. However, there would be no roost or nest sites in the ROW that would

provide shelter for these species. Based on the amount of available foraging habitat in the representative ROW and broader analysis area and utilizing the existing ROW, construction-related activities would have no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to BLM Sensitive Species would likely not experience operational impacts detectable at the population level or contribution toward a downward population trend or listing of these species as threatened or endangered.

State of Arizona Wildlife Species of Concern

Twenty-six Arizona listed Wildlife Species of Concern are identified as possibly occurring in subroute 4.1. Of these, five are addressed above (Sonoran green toad, ornate box turtle, cave myotis, pale Townsend's big-eared bat, and gilded flicker are addressed in the "BLM Sensitive Species" section). The other 21 species are addressed below. Acres of impacts on these species are given in table 4.8-38.

Construction

Construction-related impacts would be similar to those described for subroute 3.1.

Amphibian species impacted would include the Sonoran desert toad. Mammal species impacted would include antelope jackrabbit, kit fox, Arizona pocket mouse (*Perognathus amplus*), little pocket mouse (*Perognathus longimembris*), and Harris' antelope squirrel.

Bird species impacted would include Abert's towhee, Bell's vireo, crested caracara (*Caracara cheriway*) and Gila woodpecker. The crested caracara is known to breed in areas approximately 4 miles north of the Project terminus and is seen infrequently in the area near the Project terminus.

Reptile species impacted would include canyon spotted whiptail (*Aspidoscelis burti*), Gila monster, regal horned lizard, saddled leaf-nosed snake (*Phyllorhynchus browni*), Sonora mud turtle, Sonoran collared lizard (*Crotaphytus nebrius*), Sonoran coralsnake, Sonoran whipsnake, tiger rattlesnake, and variable sandsnake (*Chilomeniscus stramineus*). Based on the amount of habitat for these species in the representative ROW and broader analysis area and utilizing the existing ROW it is not anticipated that subroute 4.1 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational impacts on Arizona listed Wildlife Species of Concern species would be as described above for subroute 3.1.

State of Arizona Species of Greatest Conservation Need

Sixteen Arizona SGCN were identified as possibly occurring in subroute 4.1. Of these, 11 are addressed above (lesser long-nosed bat, cactus ferruginous pygmy-owl, southwestern willow flycatcher, and Sonoran desert tortoise are addressed in the "Federally Listed Species" section, and greater western mastiff bat, California leaf-nosed bat, spotted bat, peregrine falcon, desert purple martin, western burrowing owl, and lowland leopard frog are addressed in the "BLM Sensitive Species" section). The other 5 species are addressed below. Acres of impacts on these species are given in table 4.8-38.

Construction

Construction-related impacts would be similar to those described for subroute 3.1. Mammal species impacts would include Mexican free-tailed bat and western yellow bat. Bird species impacted would include buff-collared nightjar (*Caprimulgus ridgwayi*) and savannah sparrow. Reptile species impacted would include Goode's horned lizard (*Phyrnosoma goodei*). Based on the amount of habitat for these species in the representative ROW and broader analysis area and utilizing the existing ROW it is not anticipated that subroute 4.1 would cause any significant population-level impacts for these species or contribute toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described for subroute 3.1.

Pima County Species

Fifteen Priority Vulnerable Species in Pima County were identified as possibly occurring in subroute 4.1. Of these, 10 are addressed above (California leaf-nosed bat, pale Townsend's big-eared bat, Mexican long-tongued bat, western burrowing owl, ornate box turtle, and lowland leopard frog are addressed in the "BLM Sensitive Species" section, Abert's towhee, Bell's vireo, and spotted canyon whiptail are addressed in the "Arizona Wildlife Species of Concern" section, and the western yellow bat is addressed in the "Arizona Species of Greatest Conservation Need" section). The remaining five species are addressed below. Acres of impacts on these species are given in table 4.8-38.

Construction

Construction-related impacts would be as described for subroute 3.1.

Mammal species impacts would include western red bat and Merriam's mesquite mouse. Bird species impacted would include rufous-winged sparrow and Swainson's hawk. Reptile species impacted would include the ground snake. Based on the amount of habitat for these species in the representative ROW and broader analysis area and utilizing the existing ROW it is not anticipated that subroute 4.1 would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential operational and maintenance impacts on the Priority Vulnerable Species in Pima County species would be as described for subroute 3.1.

Migratory Birds

Impacts on migratory birds would be as described for subroute 1.1.

Construction

The ROW for subroute 4.1 contains a total of 68.6acres of agricultural lands, found along segments U3i (19.0 acres), U3j (15.0 acres), and U3k (34.6 acres). Disturbance would occur on 23.4 acres.

In total, 18.3 acres of North America Warm Desert Riparian Mesquite Bosque and 18.0 acres of North America Warm Desert Riparian Woodland and Shrubland habitat types occur in the representative ROW.

Disturbance would occur on 6.2 acres of North America Warm Desert Riparian Mesquite Bosque and 6.1 acres of North America Warm Desert Riparian Woodland and Shrubland.

According to the NWI, the ROW would cross a total of four wetlands totaling 8.9 acres, along segments U3b, U3c, U3h, and U3i. These would be associated with the ephemeral reach of the Santa Cruz River that passes through Tucson. SWReGAP mapping indicates 1.1 acres of open water along segment U3i. Proposed structure locations would incorporate avoidance and PCEMs to avoid any wetland and open water. Construction of access roads would likely not impact the Santa Cruz River within the ROW and downstream by utilizing the existing ROW and if avoidance measures were incorporated and with the implementation of PCEMs.

Operation and Maintenance

The land cover types above may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. Due in part to the small size of the wetlands in the ROW and utilizing the existing ROW that risk would be unlikely to reach population-level impacts for all species, but the risk of collision for migratory birds would likely be influenced by the exact placement of the Santa Cruz River.

The ROW for subroute 4.1 lies less than 0.1 mile from an unnamed ridge near Ajo Way and Rattlesnake Pass in the Tucson Mountains (table 4.8-39), where migratory birds may have a higher likelihood of striking the transmission lines. The existing Western transmission line is smaller than the proposed line and has fewer conductors. The increased number of conductors may increase the potential for strikes; however, the larger conductors may be more visible than on the existing transmission line, thus reducing strike potential. The likelihood of impacts would be reduced by utilizing the existing Western transmission line ROW.

Table 4.8-39. Route Group 4 Proximity of Mountain Ridges and Low Passes to the ROW of Proposed Subroutes

Subroutes	Ridge or Low Pass	Distance (miles)
Subroute 4.1, Proponent Preferred	Unnamed ridge near Ajo Way and Rattlesnake Pass in the Tucson Mountains	0.06
Route Group 4 Local Alternatives		
Local Alternatives for subroute 4.1	NA*	NA

Note: NA = not applicable.

* No ridge or low pass is present near any of the segments of the proposed subroute's ROW.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1.

Construction

Subroute 4.1 would cross Tumamoc Hill as well as Pima County Biological Core Management Areas, Important Riparian Areas, Multiple Use Management Areas, and Agricultural Inholdings. Project activities would occur primarily within the existing ROW and would not significantly affect the functioning or mission of Biological Core Management Areas, Important Riparian Areas, Multiple Use Management Areas, and Agricultural Inholdings to protect habitat in Pima County for the SDCP. Project activities would occur primarily within the existing ROW and would not significantly affect the

functioning or mission of CLS lands to protect habitat in Pima County for the SDCP. The proposed ROW in Pima County would utilize the existing Western transmission line ROW and most impacts would remain within the existing 100-foot wide ROW. If additional disturbance outside the existing Western transmission line ROW is necessary it would be minimal and would occur within the additional 50 feet of the expanded 150-foot ROW.

As described in section 2.4.1 of this EIS, a Reclamation, Vegetation, and Monitoring Plan would be developed, areas of temporary disturbance would be restored, and the success of that restoration would be monitored. If during final project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands then compensatory mitigation would be considered. Subroute 4.1 would also cross Tumamoc Hill, Tucson Mountain Park, and Pima County PCAs for western burrowing owl, cactus ferruginous pygmy owl, rufous-winged sparrow, and Pima pineapple cactus.

The ROW would intersect Tumamoc Hill on approximately 9.9 acres, of which 4.2 acres would be disturbed. The ROW would intersect Tucson Mountain Park on 3.8 acres, 1.6 acres of which would be disturbed and the Santa Cruz River Park on 1.4 acres with 0.6 acre of disturbance. The ROW would intersect Pima County Biological Core Management Areas on approximately 12.8 acres, of which 5.2 acres would be disturbed. The ROW would intersect IRAs on approximately 63.4 acres, of which 25.7 acres would be disturbed. The ROW would intersect Agricultural Inholdings on approximately 30.2 acres, of which 8.5 acres would be disturbed.

Pima County Agricultural Inholdings are managed to “emphasize the use of native flora, facilitate the movement of native fauna and pollination of native flora across and through the landscape, and conserve on-site conservation values when they are present.” Development within these areas would occur primarily within the existing Western ROW and would be configured in a manner that would not compromise the conservation values of adjacent and nearby CLS lands. Impacts on these areas would be similar to those described for subroute 3.1.

The ROW would cross Pima County PCAs, including the western burrowing owl PCA with 17.0 acres of disturbance. The ROW would also intersect the cactus ferruginous pygmy owl PCA with 62.6 acres of disturbance. The ROW would intersect the ground snake PCA with 63.1 acres of disturbance and approximately 34.7 acres of the Pima pineapple cactus PCA with 26.4 acres of disturbance.

Subroute 4.1 would cross the Ironwood-Tortolita PLZ, Coyote-Ironwood-Tucson PLZ, the Ironwood-Picacho PLZ, and the Tucson-Tortolita-Santa Catalina PLZ. Approximately 205.0 acres of the representative ROW in these PLZs would be crossed with 69.9 acres of disturbance.

Operation and Maintenance

Operation-related impacts from subroute 4.1 would be as described above for subroute 3.1.

ROUTE VARIATION U3APC

The proposed route variation U3aPC would be approximately 6.2 miles in length and it would replace an approximately 4.9-mile portion of segment U3a. This would be an increase in the overall length of 1.3 miles. Based on the amount of habitat in the representative ROW and broader analysis area it is not anticipated that this route variation would cause any significant population-level impacts for these species or contribute toward a downward population trend or listing of species as threatened or endangered.

General Wildlife

Construction

Impacts on general wildlife species would be as described above for subroute 1.1. Disturbance to wildlife habitat would occur on approximately 28 percent of the ROW. No staging areas or substations would be proposed for route variation U3aPC. As route variation U3aPC is longer than the portion of Subroute 4.1 that it would replace, overall habitat impacts would increase by approximately 6.1 acres.

Operation and Maintenance

Potential impacts from the operation and maintenance of route variation U3aPC would be as described above for subroute 1.1.

Special Status Species

Federally Listed Species

Within route variation U3aPC two species were identified as having the potential to occur because the representative ROW would be within their ranges and habitat parameters would be present: the lesser long-nosed bat and Sonoran desert tortoise. Potential impacts to these species are discussed below.

Construction

Potential impacts on the lesser long-nosed bat from construction activities would be as described for subroute 4.1. Habitat for this species along route variation U3aPC would be within 40 miles of a known roost site and is therefore within the foraging range of the species. However, there would be no roost sites in the representative ROW that would provide shelter for this species. Impacts would be limited to a temporary loss of foraging habitat.

Potential impacts on Sonoran desert tortoise from construction-related activities would be as described for subroute 4.1. Route variation U3aPC would not intersect with any BLM-designated category of desert tortoise habitat. Based on the amount of available Sonoran desert tortoise habitat in the analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered.

Operation and Maintenance

There would likely not be operational and maintenance impacts to lesser long-nosed bats and Sonoran desert tortoise under route variation U3aPC. Therefore, there would be no detectable effect on the viability of these species.

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive for this region (the Gila District), 11 species were identified as having the potential to occur in route variation U3aPC because the representative ROW would be within the species' range and habitat parameters would be present. These species include the Allen's big-eared bat, California leaf-nosed bat, cave myotis, greater western mastiff bat, Mexican long-tongued bat, pale Townsend's big-eared bat, spotted bat, desert purple martin, gilded flicker, western burrowing owl, and ornate box turtle. Acres of impacts on these species are given in table 4.8-38.

Construction

Potential impacts on BLM sensitive species from construction activities in route variation U3aPC would be as described in subroute 4.1. Based on the amount of available bird nesting habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these bird species or contribution toward a downward population trend or listing of the species as threatened or endangered.

Potential impacts on the nine bat species noted above from construction activities would be as described for subroute 4.1. Based on the amount of available foraging habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the BLM sensitive bird species would be related to the potential for individuals striking the transmission lines.

BLM sensitive bat species would likely not experience operational and maintenance impacts detectable at the population level or contribution toward a downward population trend or listing of these species as threatened or endangered.

State of Arizona Wildlife Species of Concern

Eleven State of Arizona listed Wildlife Species of Concern Species were identified as possible to occur on route variation U3aPC. Impacts on these species would be as previously described for subroute 4.1. Species potentially occurring and acres of impacts on these species are given in table 4.8-38.

Construction

Route variation U3aPC could impact habitat for antelope jackrabbit, Harris' antelope squirrel, Arizona pocket mouse, little pocket mouse, pocketed free-tail bat, Abert's towhee, Gila woodpecker, regal horned lizard, Sonoran coralsnake, Sonoran whipsnake, and tiger rattlesnake.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona listed Wildlife Species of Concern species would be as described above for subroute 4.1.

State of Arizona Species of Greatest Conservation Need

One Arizona SGCN was identified as possible to occur on route variation U3aPC; the Mexican free-tailed bat. Impacts on this species would be as previously described for subroute 4.1. Acres of impacts on this species are given in table 4.8-38.

Construction

Route variation U3aPC could impact habitat for Mexican free-tailed bat.

Operation and Maintenance

Potential operational and maintenance impacts on Mexican free-tailed bat would be as described above for subroute 4.1.

Pima County Species

Two Priority Vulnerable Species in Pima County were identified as possibly occurring in route variation U3aPC. These include western red bat and ground snake. Impacts on these species would be as previously described for subroute 4.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that route variation U3aPC would cause any significant population-level impacts for these species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Route variation U3aPC could impact habitat for the western red bat and ground snake.

Operation and Maintenance

Impacts on Pima County Species from operation and maintenance activities would be as described for subroute 4.1.

Migratory Birds

Impacts on migratory birds would be as described above for subroute 1.1. Based on the amount of migratory bird habitat for these species in the representative ROW and broader analysis area it is not anticipated that any significant population-level impacts for these species or contribution toward a downward population trend or listing of this species as threatened or endangered would occur.

Construction

Approximately 31.6 acres of migratory bird habitat would be disturbed on route variation U3aPC. No agricultural lands, wetlands, or riparian vegetation would be crossed by this route variation.

Operation and Maintenance

The risk of collision for migratory birds would be as described above for subroute 1.1.

Wildlife Special Designation Areas

Route variation U3aPC would disturb approximately 7.1 acres of the Pima County PCA for western burrowing owl and disturb approximately 31.6 acres of the PCA for Pima pineapple cactus.

LOCAL ALTERNATIVES

There would be 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C.

General Wildlife

Impacts on general wildlife would be as described for subroute 1.1.

Construction

Impacts on general wildlife from the local alternatives would be as described for subroute 1.1. Acreages of impacts on general wildlife for each local alternative are given in table 4.8-38.

Operation and Maintenance

Potential impacts from operation and maintenance of the local alternatives would be similar in nature to those described for subroute 3.1.

Special Status Species

Federally Listed Species

Impacts to federally listed species would be as described for subroute 4.1. Acres of impacts on these species for the local alternatives are given in table 4.8-38.

Construction

Local alternative TH1a representative ROW would comprise 17.1 acres, TH1b ROW would comprise 18.9 acres, TH1c ROW would comprise 3.1 acres, TH1-Option would comprise 11.8 acres, TH3-Option A ROW would comprise 9.8 acres, TH3-Option B ROW would comprise 9.8 acres, TH3-Option C ROW would comprise 20.3 acres, TH3a ROW would comprise 33.0 acres, and TH3b ROW would comprise 54.4 acres. Impacts on species in these local alternatives would be as described for subroute 3.1.

There would be no roost sites for lesser long-nosed bat in the ROW of any of the local alternatives that would provide shelter for this species. However, the local alternatives, with the exception of MA1, contain foraging habitat for the species and are within 40 miles of a known roost location within the foraging range of the species.

Sonoran desert tortoise habitat would be impacted by local alternatives. However, none of the route group 4 local alternatives would intersect BLM-designated category of desert tortoise habitat. Based on the amount of available Sonoran desert tortoise habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or contribution toward a downward population trend or listing of this species as threatened or endangered under any of the alternatives.

The alternative TH1c total representative ROW comprises 3.1 acres and would be characterized by Developed, Medium - High Intensity (4.8 acres), lesser long-nosed bats occasionally utilize developed areas in the vicinity of Tucson; however, impacts from utilizing a previously developed area would not have a significant impact on the species' ability to forage in the representative ROW. No other federally listed species are anticipated to occur in alternative Th1c. Route segment MA1 would be characterized by the Agriculture plant association, which accounts for over 99 percent of the acreage (19.9 acres). There would be no federally listed species anticipated to occur in this alternative; therefore, there would be no effects to any federally listed species or their habitats.

Operation and Maintenance

Operational impacts on lesser long-nosed bat and Sonoran desert tortoise would be as described for subroute 3.1.

There would be no effects to any threatened or endangered species or their habitat from operational and maintenance activities under the remaining two local alternatives, TH1 and MA1.

BLM Sensitive Species

Of the 45 species listed as BLM Sensitive for this region (the Gila District), 17 species were identified as having the potential to occur in the local alternatives of route group 4, because the representative ROW is within the species' range and habitat parameters would be present. These species are listed above for subroute 4.1. Acres of impacts on these species are given in table 4.8-38.

In addition, four other species—desert sucker, longfin dace, Slevin's bunchgrass lizard, and Arizona Botteri's sparrow—could also occur but would be considered unlikely to occur because either habitat parameters would be present (e.g., healthy grasslands for Slevin's bunchgrass lizard), but the representative ROW within this route group would not be within the species' typical range, or the would be within the species' typical range, but habitat parameters would not be present (e.g., perennial streams for longfin dace).

Construction

Potential impacts on Sonoran green toad and Great Plains narrow-mouthed toad from construction activities would be as described for subroute 4.1. However, there would be no perennial waterways in the local alternatives and pole structures and laydown areas would not be placed in ephemeral or intermittent waterways that could provide dispersal habitats for toads or frogs. There would be no impacts on these species' habitat, limited temporary negligible impacts to individuals, and no detectable effect on the viability of these species that would contribute toward a downward population trend or listing of these species as threatened or endangered.

Additional impacts would occur along the local alternatives for the remaining BLM Sensitive Species would be as described for subroute 4.1. Acreages of impacts are given in table 4.8-38. Based on the amount of available foraging habitat in the representative ROW and broader analysis area, construction-related activities would have no detectable effect on the viability of these species or contribution toward a downward population trend or listing of these species as threatened or endangered under any of the alternatives.

Operation and Maintenance

Potential impacts from operation and maintenance activities to the western burrowing owl, gilded flicker, cactus ferruginous pygmy-owl, and desert purple martin would be related to the potential for individuals striking transmission lines.

Mexican long-tongued bat, pale Townsend's big-eared bat, greater western mastiff bat, Allen's big-eared bat, California leaf-nosed bat, cave myotis, Sonoran green toad, Great Plains narrow-mouthed toad, desert ornate box turtle, and the banner-tailed kangaroo rat would likely not experience operational and maintenance impacts detectable at the population level or contribution toward a downward population trend or listing of these species as threatened or endangered under any of the local alternatives.

State of Arizona Wildlife Species of Concern

Twenty-four State of Arizona listed Wildlife Species of Concern Species were identified as possible to occur on the local alternatives. Of these five are addressed above (Sonoran green toad, ornate box turtle, cave myotis, pale Townsend's big-eared bat, and gilded flicker are addressed in the "BLM Sensitive Species" section). The other 19 species are addressed below. Impacts on these species would be as previously described for subroute 4.1. Acres of impacts on these species are given in table 4.8-38.

Construction

Local alternative MA1 could impact habitat for kit fox.

Local alternatives TH1a, Th1b, TH1-Option, TH3a, TH3b, TH3-Option B, and TH3-Option C could impact habitat for antelope jackrabbit, kit fox, Arizona pocket mouse, Harris' antelope squirrel, pocketed free-tail bat, Abert's towhee, crested caracara, Gila woodpecker, canyon spotted whiptail, Gila monster, regal horned lizard, saddled leaf-nosed snake, Sonoran collared lizard, Sonoran coralsnake, Sonoran whipsnake, tiger rattlesnake, variable sandsnake, and Sonoran desert toad. Local alternative TH3-Option A includes all of the above 18 species and as well as the Sonoran mud turtle.

Local alternative TH1c could impact habitat for Abert's towhee and Gila woodpecker.

Operation and Maintenance

Potential operational and maintenance impacts on Arizona listed Wildlife Species of Concern species would be as described above for subroute 4.1.

State of Arizona Species of Greatest Conservation Need

Thirteen Arizona SGCN were identified as possible to occur on the local alternatives. Of these, 9 are addressed above (southwestern willow flycatcher and Sonoran desert tortoise are addressed in the "Federally Listed Species" section and greater western mastiff bat, California leaf-nosed bat, spotted bat, peregrine falcon, desert purple martin, western burrowing owl, and lowland leopard frog are addressed in the "BLM Sensitive Species" section). The other four species are addressed below. Impacts on these species would be as previously described for subroute 4.1. Acres of impacts on these species are given in table 4.8-38.

Construction

All local alternatives except for MA1 and TH1c could impact habitat for Mexican free-tailed bat, buff-collared nightjar, and Goode's horned lizard.

Local alternative MA1 could impact habitat for savannah sparrow.

Local alternative TH1c would not intersect habitat for any Arizona SGCN.

Operation and Maintenance

Potential operational and maintenance impacts on SGCN would be as described above for subroute 4.1.

Pima County Species

Fourteen Priority Vulnerable Species in Pima County were identified as possibly occurring in the local alternatives. Of these 10 are addressed above (California leaf-nosed bat, pale Townsend's big-eared bat, Mexican long-tongued bat, western burrowing owl, ornate box turtle, and lowland leopard frog are addressed in the "BLM Sensitive Species" section, Abert's towhee, Bell's vireo, and spotted canyon whiptail are addressed in the "Arizona Wildlife Species of Concern" section, and western yellow bat is addressed in the "Arizona Species of Greatest Conservation Need" section). The other four species are addressed below. Impacts on these species would be as previously described for subroute 4.1. Based on the amount of habitat for these species in the representative ROW and broader analysis area it is not anticipated that the local alternatives would cause any significant population-level impacts for these

species or contribution toward a downward population trend or listing of these species as threatened or endangered.

Construction

Local alternative MA1 and TH1c would not impact habitat for any Priority Vulnerable Species in Pima County.

Local alternative TH1a, TH1b, TH1-Option, TH3a, TH3b, TH3-Option A, and TH3-Option C could impact habitat for Swainson's hawk and ground snake.

Local alternative TH3-Option B could impact habitat for Merriam's mesquite mouse, rufous-winged sparrow, Swainson's hawk, and ground snake.

Operation and Maintenance

Impacts on Pima County Species from operation and maintenance activities would be as described for subroute 4.1.

Migratory Birds

Impacts on migratory birds would be as described for subroute 1.1.

Construction

Local alternative MA1 would cross 19.9 acres of agricultural lands, of which 5.6 acres would be disturbed. Agricultural lands in the area are utilized by wintering raptors and other birds. No other agricultural lands would be present along the other segments. Implementation of mitigation measures, including adherence to the APLIC (2012) guidelines for reducing collisions with transmission lines, would reduce the level of impacts on migratory birds and wintering raptors along alternative MA1.

The NWI records riverine wetlands totaling 21.8 acres associated with the intermittent reaches of the Santa Cruz River where it would be crossed by the ROW. The three local alternatives involved would be TH3-Option A, TH3-Option C, and TH3b. Proposed structure locations would incorporate avoidance and PCEMs to avoid any wetland.

Operation and Maintenance

The land cover types above, including agricultural lands, may harbor higher concentration of migratory birds than surrounding areas, and may thus be associated with an elevated risk of collision events. Due in part to the small size of the wetlands in the ROW that risk would still be unlikely to reach population-level impacts for all species, but the risk of collision for migratory birds would likely be influenced by the exact placement of the Project in relation to the Santa Cruz River.

Wildlife Special Designation Areas

Impacts on wildlife special designation areas would be as described for subroute 1.1.

Construction

Local alternatives would cross Pima County IRAs and Multiple Use Management Areas as well as Tumamoc Hill and the Santa Cruz River Park. Local alternatives would not intersect with any PLZs or Tucson Mountain Park. As described in section 2.4.1 of this EIS, a Reclamation, Vegetation, and

Monitoring Plan would be developed, areas of temporary disturbance would be restored, and the success of that restoration would be monitored. If during final Project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands then compensatory mitigation would be considered.

Local alternative TH1a would intersect Pima County Multiple Use Management Areas on approximately 17.1 acres, of which 7.2 acres would be disturbed. It would also cross Tumamoc Hill on approximately 14.4 acres, of which 6.1 acres would be disturbed.

Local alternative TH1b would intersect Pima County Multiple Use Management Areas on approximately 0.3 acre, of which 0.1 acre would be disturbed.

Local alternative TH1-Option would intersect Pima County Multiple Use Management Areas on approximately 11.8 acres, of which 5.0 acres would be disturbed.

Local alternative TH3-Option A would intersect Pima County Important Riparian Areas on approximately 3.6 acres, of which 1.5 acres would be disturbed. It would also intersect Pima County Multiple Use Management Areas on approximately 2.1 acres, of which 1.0 acres would be disturbed. TH3-Option A would intersect with the Santa Cruz River Park on approximately 2.3 acres, of which 1.0 acres would be disturbed. This local alternative would also intersect with the western burrowing owl PCA on approximately 9.8 acres, of which 2.8 acres would be disturbed.

Local alternative TH3-Option B would intersect Pima County Important Riparian Areas on approximately 0.8 acre, of which 0.4 acre would be disturbed. TH31-Option B would also intersect Pima County Multiple Use Management Areas on approximately 1.1 acres, of which 0.5 acre would be disturbed. It would also intersect with the Santa Cruz River Park on approximately 0.4 acres, of which 0.2 acre would be disturbed. This local alternative would also intersect with the western burrowing owl PCA on approximately 9.8 acres, of which 2.7 acres would be disturbed.

Local alternative TH3-Option C would intersect Pima County Important Riparian Areas on approximately 6.2 acres, of which 2.8 acres would be disturbed. TH3-Option C would intersect Pima County Multiple Use Management Areas on approximately 9.8 acres, of which 4.3 acres would be disturbed. It also would intersect with Santa Cruz River Park on 6.0 acres, of which 2.7 acres would be disturbed. This local alternative would also intersect with the western burrowing owl PCA on approximately 20.3 acres, of which 5.7 acres would be disturbed.

Local alternative TH3a would intersect Pima County Important Riparian Areas on approximately 4.8 acres, of which 2.0 acres would be disturbed. It would also cross Pima County Multiple Use Management Areas on less than 0.1 acre. This local alternative would also intersect with the western burrowing owl PCA on approximately 33.0 acres, of which 9.3 acres would be disturbed.

Local alternative TH3b would intersect with the Santa Cruz River Park on 24.8 acres, of which 10.5 acres would be disturbed. TH3b would intersect Pima County Important Riparian Areas on approximately 48.5 acres, of which 20.5 acres would be disturbed. This local alternative would also intersect with the western burrowing owl PCA on approximately 54.4 acres, of which 15.3 acres would be disturbed.

Local alternative MA1 would intersect the pygmy owl and western burrowing owl PCAs on approximately 19.9 acres, of which 5.6 acres would be disturbed.

Construction-related impacts on special designation areas would be as described for subroute 3.1. Impacts on special designations are analyzed in section 4.12.

Operation and Maintenance

Operation-related impacts for local alternatives would be as described above for subroute 3.1.

Agency Preferred Alternative

Impacts on wildlife and special status species from the Agency Preferred Alternative would include impacts to habitat and individuals during construction activities resulting in the direct loss of habitat and individuals; these impacts are described below. Acres of impacts to wildlife and special status species are given below by route group in tables 4.8-40 to 4.8-43.

The primary potential direct and indirect impacts to wildlife and special status species during construction and operation and maintenance of the proposed Project would be associated with:

- loss, degradation, and/or fragmentation of breeding, rearing, foraging, roosting, and dispersal habitats;
- collisions with and crushing by construction vehicles;
- loss of burrowing animals in burrows in areas where grading would occur;
- loss, degradation, and/or fragmentation from increased invasive and noxious weed establishment and spread;
- changes to habitat use and fitness from increased noise/vibration levels;
- changes to behavior, changes in activity patterns, and reproductive failure from increased noise/vibration levels; and
- bird collisions with transmission lines.

Table 4.8-40. Route Group 1 Agency Preferred Alternative Acres of Impacts on Wildlife

Common name	Segment P1	Segment P2	Segment P3	Segment P4a	Total
General Wildlife Species	28.7	651.0	194.2	50.0	944.0
Federally Listed Species*					
Northern aplomado falcon	0.0	271.3	57.5	19.3	348.1
Sprague's pipit	0.0	271.3	57.5	19.3	348.1
BLM Sensitive Species					
Allen's big-eared bat	0	0.6	0.3	0.2	1.1
Big free-tailed bat	2.4	97.5	40.7	7.7	148.3
Cave myotis	2.4	107.1	54.0	7.7	171.2
Fringed myotis	2.4	378.5	110.2	44.2	535.3
Little brown myotis	2.4	107.1	54.3	7.7	171.5
Long-legged myotis	2.4	107.1	54.3	7.7	171.5
Mexican long-tongued bat	0.0	271.4	56.2	36.6	364.2
Pale Townsend's big-eared bat	2.4	107.1	54.0	7.7	171.2
Spotted bat	2.4	107.1	54.0	7.7	171.5
Western small-footed myotis	0.0	271.3	57.5	19.3	348.1
Yuma myotis	2.4	107.1	54.3	7.7	171.5
Loggerhead shrike	2.4	107.1	55.3	7.7	172.5

Table 4.8-40. Route Group 1 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment P1	Segment P2	Segment P3	Segment P4a	Total
BLM Sensitive Species, cont'd.					
Western burrowing owl (New Mexico population)	0.0	271.4	57.5	36.6	365.5
White-faced ibis	0	0	1.3	0	1.3
Texas horned lizard	2.4	378.5	110.2	44.2	535.3
Colorado River toad (aka Sonoran desert toad)	2.4	379.1	110.2	44.4	536.1
New Mexico Wildlife Conservation Act Species					
Desert bighorn sheep	0	0.7	0	0	0.7
Abert's towhee	0	1.0	0.6	0.6	2.2
American peregrine falcon	2.4	379.2	110.2	44.2	536.0
Bell's vireo	2.4	39.9	7.4	3.8	53.9
Gila woodpecker	2.4	107.1	54.3	7.7	171.5
Lucifer hummingbird	2.4	378.5	110.2	44.2	535.3
Varied bunting	2.4	42.6	7.2	3.8	56.0
Gila monster	2.4	378.5	110.2	44.2	535.3
Great Plains narrow-mouthed toad	0.0	260.3	56.2	36.6	353.1
State of New Mexico Species of Greatest Conservation Need					
Pocketed free-tailed bat	0	0	0.3	0	0.3
Western red bat	0	0	0.3	0	0.3
American bittern	0	0	0.3	0	0
Bank swallow	0	0	0.3	0	0.3
Bendire's thrasher	2.4	107.1	54.0	7.7	171.2
Common black hawk	0	0	0.3	0	0.3
Eared grebe	0	-	-	-	0
Northern harrier	2.4	379.8	110.2	44.2	536.6
Northern pintail					0
Painted bunting	2.4	107.1	54.0	7.7	171.2
Sandhill crane	0	260.6	56.5	36.6	353.7
Yellow warbler	2.4	107.1	54.0	7.7	171.2

* Data in this Final EIS reflect minor refinement of calculations used in the BA and amendment but differences would be no more than 2 percent of the acres of impacts.

Table 4.8-41. Route Group 2 Agency Preferred Alternative Acres of Impacts on Wildlife

Common name	Segment LD3a	Segment LD3b	Segment P5b	Segment P6a	Segment P6b	Segment P6c	Segment P7	Segment P8	Total
General wildlife	168.8	32.2	138.1	24.9	125.9	35.8	125.9	2.8	693.5
Federally Listed Species*									
Lesser long-nosed bat	142.7	12.2	118.1	1.6	41.1	5.1	84.8	0.9	406.5
Mexican long-nosed bat	32.9	12.2	72.1	1.7	27.3	5.2	84.8	0.9	237.1
Northern aplomado falcon	108.7	8.7	33.0	1.0	13.7	4.9	84.8	0.9	255.7
Southwestern willow flycatcher	-	-	-	-	-	-	-	-	0
Sprague's pipit	66.0	5.4	26.7	0.6	8.4	2.9	84.8	0.9	195.7
Chiricahua leopard frog	-	-	-	-	-	-	-	-	0
BLM Sensitive Species									
Allen's big-eared bat	-	-	-	0.3	0.6	-	-	-	0.90
Big free-tailed bat	31.2	3.4	39.1	0.7	26.8	0.3	96	2.2	199.7
Cave myotis	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
Fringed myotis	91.4	12.2	72.1	1.4	40.4	5.2	94.1	1.3	318.1
Greater western mastiff bat	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
Little brown myotis	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
Long legged-myotis	31.2	3.4	39.1	0.7	26.8	0.3	9.3	1.3	112.1
Mexican long-tongued bat	91.4	8.8	33.0	1.0	13.7	4.7	94.1	2.8	249.5
Pale Townsend's big-eared bat	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
Spotted bat	31.2	9.4	39.2	0.7	27.3	0.3	94.1	2.8	205.0
Yuma myotis	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
Burrowing owl (New Mexico population)	12.2	30.6	72.1	-	125.9	-	-	-	240.8
Loggerhead shrike	31.2	3.4	39.1	0.4	26.8	0.3	9.3	1.3	111.8
White-faced ibis	-	-	-	-	11.5	-	-	-	11.5
Desert ornate box turtle	122.7	12.2	33.0	1.0	25.2	4.7	94.1	1.3	294.2
Texas horned lizard	122.7	12.2	72.1	1.4	40.4	5.2	94.1	2.8	350.9

Table 4.8-41. Route Group 2 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment LD3a	Segment LD3b	Segment P5b	Segment P6a	Segment P6b	Segment P6c	Segment P7	Segment P8	Total
BLM Sensitive Species, cont'd.									
Colorado River toad (aka Sonoran desert toad).	122.7	12.2	33.0	1.4	40.4	5.2	94.1	1.3	310.3
Lowland leopard frog	-	-	-	-	-	-	-	-	0
New Mexico Wildlife Conservation Act Species- Acreages given are for the Agency Preferred Alternative in New Mexico									
Desert bighorn sheep	31.2	3.4	6.4	-	-	-	-	-	41.0
Abert's towhee	-	-	-	-	-	-	-	-	0
American peregrine falcon	122.7	12.2	23.9	-	-	-	-	-	158.8
Arizona grasshopper sparrow	91.5	8.8	17.4	-	-	-	-	-	117.7
Bell's vireo	2.3	-	0.2	-	-	-	-	-	2.5
Gila woodpecker	31.2	3.4	6.4	-	-	-	-	-	41.0
Lucifer hummingbird	122.7	12.2	23.9	-	-	-	-	-	158.8
Varied bunting	2.3	-	0.2	-	-	-	-	-	2.5
Gila monster	31.2	318.1	6.4	-	-	-	-	-	355.7
State of Arizona Wildlife Species of Concern- Acreages given are for the Agency Preferred Alternative in Arizona									
Pocketed free-tailed bat	-	-	0.1	0.3	0.1	-	125.1	2.8	128.4
Abert's towhee	-	-	-	0.3	-	-	-	-	0.3
Bank swallow	-	-	-	-	-	-	-	-	0
Bell's vireo	-	-	43.3	2.8	71.9	-	28.7	0.6	147.3
Gila woodpecker	-	-	30.1	0.4	26.7	0.3	9.2	1.9	68.6
Northern harrier	-		45.7	1.4	51.9	5.2	84.8	0.9	189.9
Yellow warbler	-	-	30.1	0.4	26.7	0.3	-	-	57.5

Table 4.8-41. Route Group 2 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment LD3a	Segment LD3b	Segment P5b	Segment P6a	Segment P6b	Segment P6c	Segment P7	Segment P8	Total
State of New Mexico Species of Greatest Conservation Need- Acreages given are for the Agency Preferred Alternative in New Mexico									
Pocketed free-tailed bat	-	-	-	-	-	-	-	-	0
Western red bat	-	-	-	-	-	-	-	-	0
American bittern	-	-	-	-	-	-	-	-	0
Bank swallow	-	-	-	-	-	-	-	-	0
Bendire's thrasher	31.2	-	6.4	-	-	-	-	-	37.6
Eared grebe	-	-	-	-	-	-	-	-	0
Northern harrier	122.7	12.2	23.9	-	-	-	-	-	158.8
Northern pintail	-	-	-	-	-	-	-	-	0
Sandhill crane	91.5	8.8	17.4	-	-	-	-	-	117.7
Varied bunting	2.3	-	0.2	-	-	-	-	-	2.5
Yellow warbler	31.2	3.4	6.4	-	-	-	-	-	41.0
State of Arizona Species of Greatest Conservation Need- Acreages given are for the Agency Preferred Alternative in Arizona									
Desert bighorn sheep	-	-	6.4	1.4	40.4	0.3	-	-	48.5
American bittern	-	-	-	-	-	-	-	-	0
American peregrine falcon	-	-	40.7	1.4	40.4	5.2	9.3	1.9	98.9
Eared grebe	-	-	-	-	-	-	-	-	0
Northern harrier	-	-	23.9	1.4	51.9	5.2	-	-	82.4
Northern pintail	-	-	-	-	-	-	-	-	0
Sandhill crane	-	-	17.4	1.0	25.2	-	84.8	0.9	129.3

* Data in this Final EIS reflect minor refinement of calculations used in the BA and amendment but differences would be no more than 2 percent of the acres of impacts.

Table 4.8-42. Route Group 3 Agency Preferred Alternative Acres of Impacts on Wildlife

Common name	Segment U1a	Segment U1b	Segment U2	Segment U3a	Total
General Wildlife	82.0	34.8	80.6	216.2	413.6
Federally Listed Species*					
Lesser long-nosed bat	77.8	14.8	75.5	181.2	349.3
Mexican long-nosed bat	77.8	14.8	75.5	164.3	332.4
Southwestern willow flycatcher	0	0	0	0	0
Western yellow-billed cuckoo	0	0	0	0	0
Northern Mexican gartersnake	0	0	0	0	0
Sonoran desert tortoise	52.9	9.8	79.2	110.5	252.4
Gila chub	0	0	0	0	0
BLM Sensitive Species					
Allen's big-eared bat	0.1	0	0	0.5	0.6
Banner-tailed kangaroo rat	35.2	4.1	15.9	16.9	72.1
California leaf-nosed bat	0	0	0	88.4	136.1
Cave myotis-desertscrub	16.8	4.7	22.3	92.6	136.4
Greater western mastiff bat	0	0	0.7	88.7	89.4
Mexican long-tongued bat	35.2	4.1	15.9	16.9	72.1
Pale Townsend's big-eared bat	17.9	4.7	22.3	92.6	137.5
Spotted bat	0.1	0	0	0.5	0.6
American peregrine falcon	53.1	8.8	38.2	109.6	209.7
Arizona grasshopper sparrow	35.2	4.1	15.9	16.9	72.1
Bald eagle	0.1	0	0	0.5	0.6
Desert purple martin	0	0	0	88.4	88.4
Gilded flicker	0	0	0	88.4	88.4
Golden eagle	77.9	14.0	66.6	145.1	303.6
Western burrowing owl	82.0	14.8	79.0	181.3	357.1
Arizona striped whiptail	35.2	4.1	15.9	16.9	72.1
Desert ornate box turtle	39.3	4.1	20.1	16.9	80.4

Table 4.8-42. Route Group 3 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment U1a	Segment U1b	Segment U2	Segment U3a	Total
BLM Sensitive Species, cont'd.					
Sonoran mud turtle	0.1	0	0.9	0.5	1.5
Lowland leopard frog	0.1	0	0.9	0.5	1.5
Coronado National Forest Sensitive Species					
Cockrum's desert shrew	41.7	9.9	50.7	149.5	251.8
Greater western mastiff bat	16.8	4.7	117.3	170.8	309.6
Hooded skunk	60.1	9.3	44.3	74.3	188
Northern pygmy mouse	35.2	4.1	56.5	16.9	112.7
Pale Townsend's big-eared bat	16.8	4.7	22.3	92.6	136.4
Plains harvest mouse	41.7	9.9	50.7	149.5	251.8
Yellow-nosed cotton rat	41.7	9.9	50.7	149.5	251.8
Abert's towhee	0.1	0	0	0.5	0.6
American peregrine falcon	53.1	8.8	38.2	109.6	209.7
Arizona grasshopper sparrow	35.2	4.1	15.9	16.9	72.1
Western burrowing owl	82.0	14.8	79.0	181.3	357.1
Reticulate Gila monster	53.1	8.8	38.2	109.6	209.7
Coronado National Forest Management Indicator Species					
White-tailed deer	82.0	14.8	80.6	181.7	359.1
American peregrine falcon	53.1	8.8	38.2	109.6	209.7
Bell's vireo	24.9	5.2	28.4	56.9	115.4
State of Arizona Wildlife Species of Concern					
Antelope jackrabbit	0	0	0	88.4	88.4
Harris' antelope squirrel	0	0	0	88.4	88.4
Mexican free-tailed bat	16.8	4.7	22.3	92.6	136.4
Common nighthawk	52.0	8.8	78.8	109.6	249.2
Dusky-capped flycatcher	0.1	0	0	0.5	0.6
Gila woodpecker	16.8	4.7	22.3	92.6	136.4

Table 4.8-42. Route Group 3 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment U1a	Segment U1b	Segment U2	Segment U3a	Total
State of Arizona Wildlife Species of Concern, cont'd.					
Rufous-winged sparrow	52.0	8.8	78.8	109.6	249.2
Savannah sparrow	35.2	4.1	56.5	16.9	112.7
Yellow warbler	0.1	0	0	0.5	0.6
Hooded nightsnake	52.0	8.8	78.8	109.6	249.2
Desert ornate box turtle	39.3	4.1	20.1	16.9	80.4
Regal horned lizard	52.0	8.8	78.8	109.6	249.2
Sonoran coralsnake	52.0	8.8	78.8	109.6	249.2
Sonoran whipsnake	52.0	8.8	78.8	109.6	249.2
Tiger rattlesnake	52.0	8.8	78.8	109.6	249.2
State of Arizona Species of Greatest Conservation Need					
American bittern	0	0	0	0	0
Lincoln's sparrow	0.1	0	0	0.5	0.6
Mississippi kite	0.1	0	0	0.5	0.6
Western grasshopper sparrow	35.2	4.1	15.9	16.9	72.1
Wood duck	0	0	0.9	0	0.9

* Data in this Final EIS reflect minor refinement of calculations used in the BA and amendment but differences would be no more than 2 percent of the acres of impacts.

Table 4.8-43. Route Group 4 Agency Preferred Alternative Acres of Impacts on Wildlife

Common name	Segment U4 (acres)	Segment U3aPC (acres)	Segment U3b	Segment U3c	Segment U3d	TH1a (acres)	TH1-Option (acres)	Segment U3g	Segment U3h	Segment U3i	Segment MA1	Segment U3k	Segment U3l	Segment U3m	Total
General Wildlife	9.8	31.6	2.3	4.9	17.5	7.2	5.0	4.6	5.6	113.0	5.6	105.2	7.9	3.0	359.1
Federally Listed Species*															
Lesser long-nosed bat	9.8	31.6	2.3	4.9	17.5	5.0	7.2	4.6	5.6	92.6	-	82.4	6.9	3.0	273.4
Southwestern willow flycatcher	-	-	-	-	-	-	-	-	-	1.6	-	8.4	-	-	10.0
Western yellow-billed cuckoo	-	-	-	-	-	-	-	-	-	1.6	-	8.4	-	-	10.0
Northern Mexican gartersnake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Sonoran desert tortoise	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
BLM Sensitive Species									-						
Allen's big-eared bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Banner-tailed kangaroo rat	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
California leaf-nosed bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Cave myotis	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Greater western mastiff bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Mexican long-tongued bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Pale Townsend's big-eared bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Spotted bat	9.8	25.3	2.3	2.5	5.6	-	-	0.2	-	46.0	-	59.4	6.6	0.0	157.7
American peregrine falcon	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Arizona grasshopper sparrow	-	-	-	-	0.0	4.2	6.8	0.2	-	-	-	59.4	-	-	70.6
Bald eagle	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	1.5	-	8.4	6.6	0.0	47.9
Cactus ferruginous pygmy-owl	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	46.0	-	68.1	6.6	0.0	152.1
Desert purple martin	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Gilded flicker	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Golden eagle	-	-	-	-	-	-	-	0.2	-	44.5	-	-	6.6	0.0	51.3
Western burrowing owl	9.8	31.6	2.3	2.5	5.6	4.2	6.8	0.2	-	52.2	5.6	73.0	6.6	0.0	200.4
Ornate box turtle	9.8	-25.3	2.3	2.5	5.6	-4.2	6.8	0.2	-	7.7	-	59.4	6.6	0.0	71.4
Sonoran mud turtle	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	0.2
Great Plains narrow-mouthed toad	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	67.7	6.6	0.0	150.2
Lowland leopard frog	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	0.2
Plains leopard frog	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	0.2
Sonoran green toad	9.8	-25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	45.4	-	67.7	6.6	0.0	125.8
Tucson shovel-nosed snake	-	-	-	-	-	-	-	-	-	0.9	-	4.1	-	-	5.0

Table 4.8-43. Route Group 4 Agency Preferred Alternative Acres of Impacts on Wildlife (Continued)

Common name	Segment U4 (acres)	Segment U3aPC (acres)	Segment U3b	Segment U3c	Segment U3d	TH1a (acres)	TH1-Option (acres)	Segment U3g	Segment U3h	Segment U3i	Segment MA1	Segment U3k	Segment U3l	Segment U3m	Total
State of Arizona Wildlife Species of Concern									-						
Antelope jackrabbit	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Arizona pocket mouse	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Harris' antelope squirrel	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Kit fox	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	5.6	59.4	6.6	0.0	147.5
Little pocket mouse	9.8	-25.3	2.3	2.5	5.6	-	-	0.2	-	44.5	-	59.4	6.6	0.0	105.6
Pocketed free-tailed bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Abert's towhee	9.8	31.6	2.3	4.9	17.5	5.0	7.2	0.2	**5.6**	86.2	-	73.0	6.6	0.0	249.9
Bell's vireo	-	-	-	-	0.0	-	-	-	-	1.7	-	8.4	-	-	10.1
Crested caracara	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Gila woodpecker	9.8	25.3	2.3	2.5	5.6	5.0	7.2	0.2	-	44.5	-	59.4	6.6	0.0	168.4
Canyon spotted whiptail	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Gila monster	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Regal horned lizard	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Saddled leaf-nosed snake	9.8		2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Sonora mud turtle				-	-	-	-	-	-	0.2	-	-	-	-	0.2
Sonoran collared lizard	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Sonoran coralsnake	9.8	31.6	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	173.5
Sonoran whipsnake	9.8	31.6	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	173.5
Tiger rattlesnake	9.8	31.6	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	173.5
Variable sandsnake	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Colorado River toad (aka Sonoran desert toad)	9.8	-		2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	139.6
State of Arizona Species of Greatest Conservation Need									-						
Mexican free-tailed bat	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2
Western yellow bat	-	-	-	-	-	-	-	-	-	40.2	-	8.4	-	-	48.6
Buff-collared nightjar	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Savannah sparrow	-	-	-	-	-	-	-	-	-	-	5.6	-	-	-	5.6
Goode's horned lizard	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Pima County Species															
Merriam's mesquite mouse	-	=	-	-	0.0	-	-	-	-	0.9	-	0.9	-	-	1.8
Western red bat	-	25.3	-	-	-	-	-	-	-	1.5	-	8.4	-	-	35.2
Rufous-winged sparrow	9.8	-	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Swainson's hawk	9.8	-=	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	141.9
Ground snake	9.8	25.3	2.3	2.5	5.6	4.2	6.8	0.2	-	44.5	-	59.4	6.6	0.0	167.2

* Data in this Final EIS reflect minor refinement of calculations used in the BA and amendment but differences would be no more than 2 percent of the acres of impacts.

GENERAL WILDLIFE

The Agency Preferred Alternative would disturb approximately 2,410.2 acres of wildlife habitat during construction activities. This would include approximately 944.0 acres in route group 1; 693.5 acres in route group 2; 413.6 acres in route group 3; and 359.1 acres in route group 4. This would be a small portion of the available wildlife habitat in the project vicinity. Potential impacts to habitat from increased invasive and noxious weed establishment and spread would also occur. With the implementation of PCEMs, potential habitat impacts from the Agency Preferred Alternative would be minor and short- and long-term.

Potential impacts to wildlife would include collisions with and crushing by construction vehicles, loss of burrowing animals in burrows in areas where grading would occur, changes to habitat use and behavior from increased noise/vibration levels, and the potential lack of breeding success for one season in some areas, depending on construction timing, and would be minor and short-term. They would primarily occur during construction activities and would cease with the completion of those activities. Some minor/negligible, short-term impacts could occur during maintenance activities.

In the Upgrade Section impacts to wildlife and wildlife habitat would be less than those in the New Build Section due to the presence of the existing Western transmission line, access roads, and other infrastructure. Ground disturbance in the Upgrade Section would primarily occur within the existing 100-foot ROW. In areas where the Agency Preferred Alternative does not follow the existing transmission line it would follow existing roads.

FEDERALLY LISTED SPECIES

There are numerous special status species that have the potential to occur along the Agency Preferred Alternative. These include 10 ESA-listed, candidate, and proposed species. The Agency Preferred Alternative may affect, and is likely to adversely affect the lesser long-nosed bat, Mexican long-nosed bat, and southwestern willow flycatcher. The Agency Preferred Alternative may affect, but is not likely to adversely affect the Gila chub and its critical habitat and the Huachuca water umbel. There would be no impact on the Chiricahua leopard frog or its designated critical habitat. Impacts would be unlikely to jeopardize the continued existence to the 10 (j) experimental, non-essential population of the northern aplomado falcon. For the Sonoran desert tortoise and Sprague's pipit there would 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.

Potential impacts on the lesser long-nosed bat and the Mexican long-nosed bat would include the loss or alteration of suitable foraging habitat. Foraging activities for these species would continue in the general area at current levels due to the relatively small area of forage affected. Impacts would not jeopardize the continued existence of these species as no roosts would be affected, the relatively small area of foraging habitat impacted, and implementation of PCEMs to achieve a no net loss of mature flowering bat forage plants (FWS 2014d).

Potential impacts on the southwestern willow flycatcher and western yellow-billed cuckoo would include a small potential for collisions with the transmission lines and temporary displacement in foraging habitat during the breeding season from emergency maintenance activities at the crossings of the San Pedro River and Cienega Creek. This could affect individuals temporarily but they would likely resume normal behavior after emergency maintenance is complete. Vegetation conditions are anticipated to continue to provide foraging and migrating habitat for the species in these areas. Potential impacts would not jeopardize the continued existence of these species based on no impacts to breeding habitat, limiting

non-emergency activities at the San Pedro River and Cienega Creek to outside the breeding season, and limiting vegetation removal to the ROW thus retaining vegetation in the action area (FWS 2014d).

Designated critical habitat for the southwestern willow flycatcher is present approximately 9 miles from project area on the San Pedro River; as such, there would be no impacts to critical habitat from the Agency Preferred Alternative. Proposed critical habitat for the western yellow-billed cuckoo occurs along Cienega Creek. While the project may affect riparian woodlands within the ROW in general it would not affect areas outside the ROW and as such the size of riparian woodlands would continue to increase and decrease under current processes, which would not be affected by the proposed action (FWS 2014d).

Potential impacts on the northern Mexican gartersnake would include individuals being harmed or killed by vehicles and equipment; however, these activities would occur outside the riparian area and would have a small chance of impacting individuals. Impacts on proposed critical habitat could include impacts from removal of vegetation to maintain clearance under the transmission line; however, it is not anticipated that it would preclude development of suitable habitat for the species at the crossings of the San Pedro River and Cienega Creek if water availability in these areas changes (FWS 2014d).

Designated critical habitat for the Gila chub occurs approximately 2.5 miles downstream of the proposed project on Cienega Creek. There is no suitable habitat for the species in the project area. Potential impacts would be from increased erosion causing sedimentation impacts to critical habitat; however, these would be avoided through implementation of PCEMs. The Agency Preferred Alternative may affect, but is not likely to adversely affect the Gila chub and designated critical habitat as no individuals occur in the project area and impacts from erosion and sedimentation would be insignificant (FWS 2014d).

The Agency Preferred Alternative would not disturb Huachuca water umbel habitat or individual plants as none occur in the project area. Impacts on designated critical habitat would be discountable as the nearest critical habitat is approximately 12 miles from the project area. As such the Agency Preferred Alternative may affect, but is not likely to adversely affect the Huachuca water umbel and its designated critical habitat.

Potential impacts to northern aplomado falcon would include habitat loss and degradation. The species utilizes large home ranges so habitat impacts would be negligible/minor. With the implementation of PCEMs, the large areas of available, unoccupied habitat and naturally low density of aplomado falcons the project would be not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of the northern aplomado falcon (FWS 2014d).

There would be no effect to the Chiricahua leopard frog or its habitat as there are no perennial or intermittent waterways that would be similar to those used by this species, and pole structures and laydown areas would not be placed in ephemeral waterways that could provide dispersal habitats for Chiricahua leopard frogs.

Potential impacts to Sonoran desert tortoise would include habitat loss and degradation as well as potential for burial in burrows, and collisions with construction vehicles and equipment. Based on the impacts occurring primarily within the existing Western ROW, implementation of PCEMs, and the amount of available Sonoran desert tortoise habitat in the representative ROW and broader analysis area, there would be no detectable effect on the viability of this species or that would contribute toward a downward population trend or listing of this species as threatened or endangered.

Potential impacts on Sprague’s pipit would include habitat loss and degradation. These impacts would be minor/negligible based on the implementation of PCEMs and the amount of available habitat in the representative ROW and broader analysis area. As such, there would be no effect on the viability of this

species or contribution toward a downward population trend or listing of this species as threatened or endangered.

BLM SENSITIVE SPECIES

The Agency Preferred Alternative would impact habitat for BLM sensitive species in each route group. Habitat for 15 BLM sensitive species is present in route group 1, 17 species in route group 2, 20 species in route group 3, and 23 species in route group 4. Impacts on BLM sensitive species and their habitats would include those described above for wildlife. With the implementation of PCEMs and based on the amount of habitat available within the representative ROW and broader analysis area, impacts on these species and their habitat would be minor/negligible and both short- and long-term. As such there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

STATE OF NEW MEXICO WILDLIFE CONSERVATION ACT SPECIES

The Agency Preferred Alternative would impact habitat for State of New Mexico Wildlife Conservation Act Species in route groups 1 and 2. Habitat for 11 State of New Mexico Wildlife Conservation Act Species is present in route group 1, and 8 species in route group 2. Impacts on State of New Mexico Wildlife Conservation Act Species and their habitats would include those described above for wildlife. With the implementation of PCEMs and based on the amount of habitat available within the representative ROW and broader analysis area impacts on these species and their habitat would be minor/negligible and both short- and long-term. As such, there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

STATE OF NEW MEXICO SPECIES OF GREATEST CONSERVATION NEED

The Agency Preferred Alternative would impact habitat for State of New Mexico SGCN in route groups 1 and 2. Habitat for 17 State of New Mexico SGCN is present in route group1, and 5 species in route group 2. Impacts on State of New Mexico SGCN and their habitats would include those described above for wildlife. Sandhill cranes potentially occur at Lordsburg Playa. The Agency Preferred Alternative was routed around the north and west sides of the Playa to reduce the potential for collisions with the transmission line. With the implementation of PCEMs, routing around Lordsburg Playa, and based on the amount of habitat available within the representative ROW and broader analysis area, impacts on sandhill cranes and the other species and their habitat would be minor/negligible and both short- and long-term. As such there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

STATE OF ARIZONA WILDLIFE SPECIES OF CONCERN

The Agency Preferred Alternative would impact habitat for State of Arizona Wildlife Species of Concern in route groups 2-4. Habitat for 6 State of Arizona Wildlife Species of Concern is present in route group 2, 14 species in route group 3, and 22 species in route group 4. Impacts on State of Arizona Wildlife Species of Concern and their habitats would include those described above for wildlife. With the implementation of PCEMs and based on the amount of habitat available within the representative ROW and broader analysis area, impacts on these species and their habitat would be minor/negligible and both short- and long-term. As such there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

STATE OF ARIZONA SPECIES OF GREATEST CONSERVATION NEED

The Agency Preferred Alternative would impact habitat for State of Arizona SGCN in route groups 2, 3, and 4. Habitat for four State of Arizona SGCN is present in route group 2, five in route group 3, and five species in route group 4. Impacts on State of Arizona SGCN and their habitats would include those described above for wildlife.

Sandhill cranes utilize Willcox Playa and the agricultural fields to the south and east for foraging and roosting habitat and make a daily migration between the Playa and the fields. The Agency Preferred Alternative would pass northwest of Crane Lake through the AGFD managed Willcox Playa Wildlife Area, an important winter roosting area for the sandhill cranes. As noted previously, there is the potential for sandhill crane collisions with the transmission line during daily migration that could impact individual sandhill cranes. With the implementation of PCEMs such as line marking devices and mitigation measures requested by the AGFD, including (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; the intensity of impacts to habitat in the Willcox Playa Wildlife Area would be reduced. Based on the amount of habitat available within the analysis area and implementation of PCEMs, impacts on sandhill cranes and State of Arizona SGCN and their habitat would be minor and both short- and long-term. As such, there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of these species as threatened or endangered.

PIMA COUNTY SPECIES

The Agency Preferred Alternative would impact habitat for five Priority Vulnerable Species in Pima County that were identified as possibly occurring in route group 4. Impacts on Pima County Species would include those described above for wildlife. With the implementation of PCEMs and based on the amount of habitat available within the representative ROW and broader analysis area in route group 4 impacts on these species and their habitat would be minor/negligible and both short- and long-term. As such, there would be no detectable effect on the viability of these species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

MIGRATORY BIRDS

Migratory bird species could be impacted through collisions with the transmission line. Line marking devices would be utilized near high use areas to increase line visibility and reduce the potential for collisions. Additionally, with the implementation of PCEMs requested by the AGFD and the use of line marking devices, the Agency Preferred Alternative would have minor, short- and long- term impacts to migratory birds.

WILDLIFE SPECIAL DESIGNATION AREAS

The Agency Preferred Alternative would intersect special designation areas including wildlife movement corridors, potential linkage zones, northern aplomado falcon designated habitat, and Pima County special management areas.

While the removal of vegetation could decrease cover in special management areas, linkage areas, and other natural movement corridors, the total portion of these areas to be impacted would be minimal in comparison to the existing habitat and would retain large areas of existing habitat. Most crossings of wildlife movement and linkage areas would be perpendicular to those areas, and would retain landscape features to allow for species movement and should not significantly impact wildlife movement. Within the Upgrade Section these impacts would primarily occur along the existing Western transmission line.

Given the limited disturbance to special designations in comparison to the amount in the broader analysis area, the amount of area within the representative ROW not disturbed by proposed Project activities, implementation of PCEMs, and utilization of the existing Western transmission line ROW would reduce impacts and would not create significant barriers to wildlife movement or conflicts with management of special designations.

As noted previously, the AGFD managed Willcox Playa Wildlife Area is considered to be habitat of the highest value to Arizona wildlife species. The Wildlife Area is considered to be Resource Category 1 under the AGFD's habitat compensation policy (AGFD 2010). Resource Category 1 areas have a compensation goal of no loss of existing in-kind habitat value. With the implementation of PCEMs to relocate Crane Lake and to further enhance the Wildlife Area with pond renovations and vegetation management, the policy goal would be met and possibly exceeded.

Residual Impacts

Residual impacts as a result of this proposed Project would include a permanent but minor loss of breeding and foraging habitat due to access roads and structure pads. Additional residual impacts would include increased mortality to avian species due to collisions with the transmission line, increased predation on invertebrate, reptile, and small mammal species due to predators using the transmission line as a hunting perch, and increased hunting opportunities for raptors and corvids. The residual impacts to general wildlife are not expected to be significant. The residual impacts to sandhill cranes at the Willcox Playa would be reduced by the relocation of Crane Lake, and while the loss of individuals could occur, impacts at the population level would not be significant. The relocation of Crane Lake is analyzed in Section 4.21, "Cumulative Impacts," as a reasonable foreseeable action. A full NEPA analysis would be required once the final design is developed.

Unavoidable Adverse Impacts

Implementation of the proposed Project would result in short-term impacts to wildlife breeding and foraging in the area. The construction activities coupled with the attempt to occupy new habitat may result in the loss of some individuals and the potential lack of breeding success for one season in some areas, depending on construction timing. In addition, long-term impacts include increased mortality to avian species due to collisions with the transmission line and increased predation on invertebrate, reptile, and small mammal species due to predators, including raptors and corvids using the transmission line as a hunting perch. A negligible loss of individuals from vehicle strikes could occur during maintenance activities when vehicles/equipment would be present. Therefore, implementation of the proposed Project would result in both Project-related and cumulative unavoidable adverse impacts (short- and long-term) to the wildlife in the area.

Short-term Uses versus Long-term Productivity

Construction of the proposed transmission line would result in some short- and long-term impacts to wildlife resources and habitat. During construction, breeding and foraging within the area may decrease due to temporary habitat loss, construction noise, and human presence. In addition, there may be increased mortality due to collisions with construction equipment. The decrease in productivity during construction would be expected to be short-term; breeding and foraging within the proposed Project ROW would commence following construction activities. Long-term productivity of some species may be impacted by collisions with power lines, as well as by long-term habitat loss, and increased mortality due to predation. Some predator species, especially raptors and corvids, would benefit from the increase perches provided by the transmission line.

Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitment of resources would occur in cases of wildlife mortality due to collisions with construction equipment, transmission lines, or structures. No other irreversible and/or irretrievable commitments of resources would occur.

4.9 CULTURAL RESOURCES

4.9.1 Introduction

The following section details anticipated impacts to cultural resources, including archaeological sites, historic built environment resources, trails, and American Indian traditional use areas and sacred sites associated with the construction, operation, and maintenance of the proposed Project. Impacts to cultural resources are discussed in both terms of potential disturbance to previously recorded sites and historic built environment resources that are listed in, eligible for listing in, or that may be eligible for listing in the NRHP (historic properties), and predicted number of historic properties for areas not previously surveyed. The following analysis is based on the Class I data presented in Section 3.9, "Cultural Resources," and appendices G and H, and site forecasts provided in "Southline Transmission Project Resource Report 2: Cultural Resources" (CH2M Hill 2013i), as well as a BLM sensitivity model for southern New Mexico (Heilen et al. 2012). The Class I data include all Class III pedestrian survey data within the analysis area, including the surveys of the Upgrade Section existing transmission line ROW (Effland and Green 1985; Goldstein 2008; Hart 2012), and a survey performed by Western on portions of the line from the Tucson to the Saguaro substations (personal communication, Maria Martin, Galileo 2013).

4.9.2 Methodology and Assumptions

The following analysis is based on Class I records search data only; no field checks or pedestrian surveys have been conducted at this time. The Project-specific PA will stipulate the APEs for this Project and the "direct effects" APE would be inventoried at the Class III level. For the New Build Section, the APE for direct effects as described in the PA consists of a 200-foot-wide permitted ROW corridor plus 100 feet on either side of the corridor (400 feet wide total). For the Upgrade Section, the APE for direct effects will consist of the 100- to 150-foot-wide permanent ROW corridor plus 100 feet on either side of the corridor (300–350 feet wide total). The APE will include the transmission corridor any associated access roads, substations, and temporary construction ROW. All cultural resources identified during the inventory would be evaluated for eligibility to the NRHP, based on the criteria set forth in 36 CFR 60.4, which states the following:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history.

Adverse effects to individual historic properties will then be assessed as stipulated in the executed PA developed to comply with Section 106 of the NHPA. Assessment of adverse effects will be conducted according to BLM Manual MS-8110: "Identifying and Evaluating Cultural Resources" (BLM 2004c). Measures to avoid, minimize, and/or mitigate any adverse effects on historic properties will then be developed by BLM in consultation with the Section 106 consulting parties. Avoidance of sites during final design is the preferred choice for impact reduction (see PCEM CR-4: Avoid Direct Impacts on Significant Cultural Resources through Final Design of the POD); impacts that cannot be avoided or minimized through design will mitigated by other measures such as data recovery as outlined in an HPTP (see PCEM CR-3: Historic Properties Treatment Plan of the POD).

Early in the Project planning, the BLM made an "adverse effect" determination based on the sheer scope of the Project, and because of the clear potential for the Project to have adverse effects on previously known historic properties. In compliance with 36 CFR 800.4(b)(2) and 800.14(b)(1)(ii), a PA for the proposed Project is currently being developed. The PA is a legally binding document which will outline the process that will be followed to identify, evaluate, and mitigate historic properties that may be affected by the proposed Project.

Analysis Area

As discussed in chapter 3 (see section 3.9), the analysis area for direct impacts to cultural resources is 1 mile on either side of the centerline (2-mile corridor) for the New Build Section and the existing 500-foot corridor for the Upgrade Section. The analysis area for visual and indirect effects is 5 miles on either side of the centerline (10-mile corridor) for all alternatives.

For this analysis, a 200-foot wide representative ROW has been developed by using the centerline as a base for the proposed transmission line. Using Google Earth to identify impediments to structure siting, the transmission line was moved off the centerline to avoid these impediments. The representative ROW then follows the new alignment. The following analysis will discuss resources found or projected to be found within the representative ROW. In the Upgrade Section, the representative ROW encompasses the existing 100-foot ROW plus 25 feet on either side.

Several approaches are taken in this analysis: impacts to known archaeological sites and historic built environment resources within the representative ROW, predicted number of resources within the representative ROW, and archaeological sensitivity data within the representative ROW for New Mexico which was compiled for a BLM sensitivity model for the area under the jurisdiction of the Las Cruces Field Office (Heilen et al. 2012).

KNOWN ARCHAEOLOGICAL SITES AND HISTORIC BUILT ENVIRONMENT RESOURCES

In NEPA analysis, Federal agencies treat archaeological sites and historic built environment resources with unevaluated and/or unknown NRHP eligibility the same as sites which are recommended or determined eligible for the NRHP. The Class I includes all recorded data from previous Class III surveys and potential historic features taken from historical maps. Using the Class I data, counts of NRHP listed, determined eligible, and unevaluated/unknown archaeological sites, and potential historic built environment resources, are calculated for the proposed Project and the alternatives by alternative segment for the representative ROW. Resources that have been determined to be not eligible for the NRHP are not considered in this analysis.

ARCHAEOLOGY SOUTHWEST'S CULTURAL RESOURCES PRIORITY CONSERVATION AREAS

Archaeology Southwest's cultural resources PCAs as defined by Laurenzi et al. (2013) were also used in this analysis. PCAs crossed by the representative ROW for the proposed Project and the alternatives were identified by segment, as well as for new and existing substation expansions.

RESOURCE FORECASTS (NEW MEXICO AND ARIZONA)

Data from the Class I records search was used to forecast the anticipated number of resources within each segment's representative ROW (CH2M Hill 2013i). The forecast represents an estimate of the number of sites within a segment's analysis area that would be expected if the entire analysis area had been surveyed. Because systematic surveys represent the best available data, only resources that were part of a formal, systematic inventory were used to create the forecasts. In addition, data from historical GLO and USGS maps were included in the number of known resources. Although these forecasts are quantities, they cannot be expressed in terms of probabilities or statistical significance because the data were not collected according to statistical sampling methods (CH2M Hill 2013i). In addition, because of the variable survey coverage of the segments and the lack of consistent sampling, the forecasts must be considered with caution.

The Class I inventory includes the data from the Class III inventories conducted on the existing ROW along the Upgrade Section of the proposed Project (Effland and Greene 1985; Goldstein 2008; Hart 2012). Because a larger portion of the representative ROW within the Upgrade Section has been inventoried for cultural resources, a greater amount of detailed information has been collected which will affect the outcome of the predictive model for route groups 3 and 4. Please note that there is limited data available for route groups 1 and 2 and that the predictions of numbers of resources may not be as accurate or reliable than that for route groups 3 and 4. For that reason, a second predictive model based on data collected for the New Mexico BLM is used in conjunction with the resource forecasts to gauge route sensitivity.

The methodology used to arrive at the estimated number of archaeological sites for each segment follows that of Mueller (1974), Plog (1976), Plog et al. (1978), and Schiffer et al. (1978). Corrections for inventory area shape and sites size were factored into the analysis (CH2M Hill 2013i). These corrections then create an "effective" coverage inventory area or sampling fraction. As discussed in chapter 3, the formula used to generate the estimated number consists of the number of recorded resources within the inventoried area of the segment multiplied by 1 divided by the effective sampling fraction, or

$$Forecast\ resources = number\ of\ resources \times \frac{1}{effective\ sampling\ fraction}$$ (CH2M Hill 2013i).

Number of forecast resource was calculated for each segment, as well as number of forecast NRHP-eligible resources (historic properties). The forecast number of historic properties was calculated by taking the percentage of recorded historic properties multiplied by the total number of forecast resources for each segment. Predicted resource density was also calculated by dividing the number of predicted resources by the acreage of each segment. Segments can then be compared based on total numbers of forecast resource, forecast number of historic properties, and forecast site density to evaluate the potential resource sensitivity of the segment. Longer routes can be compared by adding up the total numbers of forecast resources; however, please note that longer routes will generally have more resources because of their length.

It must be noted that there is much less resource data for the New Build Section (primarily located in New Mexico) than the Upgrade Section (Arizona). As noted in section 3.9.8, only 3.7 to 9.1 percent of the New Build Section has been previously surveyed, whereas 50 to 65 percent of the Upgrade Section has been surveyed. The entire 100-foot ROW from Tucson to Saguaro substations was surveyed in 1985 (Effland and Green 1985). Two recent surveys have been performed along the existing transmission line in the Upgrade Section (Goldstein 2008; Hart 2012). Goldstein (2008) conducted a Class III pedestrian survey along the existing Tucson-Apache 115-kV Transmission Line. The survey covered approximately 80 miles within a 200-foot-wide corridor from the Tucson Substation to the Apache Substation. Hart (2012) conducted a Class III survey of a 100-foot access road ROW between several pole structures along the line between the Tucson and Apache substations for a total of 4.45 miles. An additional check for sites along the ROW from the Tucson to the Saguaro Substation was conducted in 2012 by a Western archaeologist but no survey corridor width was specified and no report was generated (personal communication, Maria Martin, Galileo 2013). Because so little of the New Build Section has been surveyed, the forecast resource numbers are lower than should be expected. For this reason, a second model using BLM site sensitivity data was used to analyze the portion of the New Build Section that is located within New Mexico (see below).

In addition, some segments have been identified “of potential cultural resource concern”:

> Segments were designated “of potential cultural resource concern” if they contain any of the following characteristics: anticipated resource densities greater than 50 resources per 100 acres; State or National Register-listed properties; anticipated densities of Register eligible properties greater than 10 properties per 100 acres; or groupings of prehistoric habitation sites. In many cases, segments of potential concern possess more than one of these characteristics. (CH2M Hill 2013i:20)

Following the definitions provided in table 4.1-1, the following magnitude descriptions are used:

- No impact – The project would not alter the characteristics of historic properties that make them eligible for the NRHP or alter their integrity of location, design, setting, materials, workmanship, feeling, or association.
- Minor – Impacts would occur but overall historic properties would retain those characteristics that make them eligible for the NRHP by not altering their integrity of location, design, setting, materials, workmanship, feeling, or association.
- Moderate – Impacts would occur, but overall historic properties would partially retain those characteristics that make them eligible for the NRHP by not altering their integrity of location, design, setting, materials, workmanship, feeling, or association.
- Major – Impacts would occur that overall, would substantially alter those characteristics of historic properties that make them eligible for the NRHP and would alter their integrity of location, design, setting, materials, workmanship, feeling, or association.

INDEX OF TOTAL POTENTIAL EFFECT (NEW MEXICO)

For the New Mexico portion of the proposed Project, an additional measure is available to quantitatively estimate the number of archaeological sites present within the representative ROW. In 2012 the New Mexico State Office of the BLM sponsored the creation of a quantitative sensitivity model of the southern portion of the State (Heilen et al. 2012). For model development, southern New Mexico was divided into seven modeling units based on environmental zones, hydrological basins, and culture areas. The New Mexico portion of the proposed Project is contained within Modeling Units 1 (Southwestern New Mexico Upland) and 2 (Southwestern New Mexico Lowland). Multiple sensitivity models were developed by

statistical techniques for each modeling unit using data on site locations and previous archaeological surveys in conjunction with a variety of environmental and cultural variables.

For Modeling Units 1 and 2 models were created for Archaic sites, Formative period residential and non-residential sites, Protohistoric sites, and historic residential sites. In addition, a model for historic period non-residential sites was created for Modeling Unit 1 but not for Modeling Unit 2. Residential sites were identified by the presence of features indicative of a residential function, such as rooms, pit houses, rock shelters, foundations, kivas, cabins, tipi rings, wickiups, and hearths (Heilen et al. 2012:3.4). The final form of each model is a GIS raster data file, each cell of which contains a number between zero and one representing the probability of that cell being a site as opposed to non-site cell. Each cell in the raster matrix measures 30 x 30 m, or 0.222 acre.

Taken as a whole, these models provide a quantitative measure of the likelihood of archaeological site occurrence throughout the Southline representative ROW. They therefore provide another method of analyzing cultural resource impacts of the various route, subroutes, and segments of the Project within New Mexico. The models were used to generate an Index of Total Potential Effect (TPE) in the following manner:

1. For each of the models, probability values of each cell were summed for each segment, subroute, and route group in New Mexico. The result is an estimate of the number of "site" (as opposed to "non-site") cells present in each segment—a direct measure of archaeological site area likely to be present within each segment.
2. In this analysis we are primarily concerned with impacts to significant archaeological resources. Since the sensitivity models predict the total area of all archaeological sites, the numbers needed to be corrected by an estimate of significance for each site type. In other words, the total site cell values for each segment need to be corrected using an "eligibility multiplier" reflecting the percentage of sites of each type that are considered eligible for the NRHP. Eligibility multipliers (*e*) for each site type were derived as follows:
    a. Unfortunately, Heilen et al. (2012) do not provide information on what percentage of sites of each type have been recommended or determined eligible for inclusion in the NRHP. No adequate data are presented by CH2M Hill (2013i) to allow for such a calculation. In order to derive eligibility multipliers for the southwestern New Mexico sensitivity models, a complete site database for the area of Modeling Units 1 and 2 was obtained from the Archaeological Records Management Section in Santa Fe.
    b. Sites components were classified according to the criteria outlined in Heilen et al. (2012) as Archaic, Formative residential, Formative non-residential, Protohistoric, and Historic residential. The resulting site database therefore replicated as closely as possible the database that was employed in producing the sensitivity model. Eligibility multipliers were calculated directly from this database.
    c. Of 710 Archaic sites in the sample 191 were recommended or determined eligible, while 28 were recommended or determined not eligible ($e = 0.87$).
    d. Of 1471 Formative residential sites in the sample 434 were recommended or determined eligible, while 11 were recommended or determined not eligible ($e = 0.98$).
    e. Of 2578 Formative non-residential sites in the sample 467 were recommended or determined eligible, while 79 were recommended or determined not eligible ($e = 0.86$).
    f. Of 46 Protohistoric sites in the sample 12 were recommended or determined eligible, while only two were recommended or determined not eligible ($e = 0.86$).
    g. Of 661 Historic residential sites in the sample 317 were recommended or determined eligible, while 28 were recommended or determined not eligible ($e = 0.88$).

3. The total number of "site" cells for each segment was then multiplied by the value of *e* for each site type to derive an estimate of the number of "eligible site cells" of each site type in each segment.
4. The total number of eligible site cells for each segment was then multiplied by 0.222 to generate a measure of total eligible site acres for each site type in each segment.
5. The total number of eligible site acres for each segment was then divided by the mean site size (in acres) of each site type to derive an estimate of the number of eligible sites of each site type in each segment (see tables 4.9-3 and 4.9-6). The mean site size was calculated using all single-component eligible sites of each type in the database. Protohistoric sites were an exception to this procedure since there was only one single-component eligible Protohistoric site in the database. Mean site size for protohistoric sites was calculated using all available Protohistoric sites in the database.
    a. Mean site sizes (and sample sizes) were: 4.26 acres for Archaic (n=78), 3.23 acres for Formative residential (n=308), 4.56 acres for Formative non-residential, 8.47 acres for Protohistoric, and 14.72 acres for Historic residential.
6. An estimate of total eligible sites was produced by combining the five available sensitivity surfaces to generate a layer representing probability of each cell containing an eligible site of any time period. This was done by converting each period-specific sensitivity layer into a probability of each cell being a non-eligible-site cell, multiplying the five model values together to generate a probability that each cell does not contain an eligible site, and subtracting that value from 1. The resulting cell values, representing the probability that each cell was located within an eligible site, were summed by Project alternatives and corrected by mean eligible site size (6.22 acres), as described above. This procedure eliminated errors related to double-counting multicomponent sites.
7. Finally, an Index of TPE was calculated for each segment by standardizing the estimated number of eligible sites as a percentage of the value for the segment with the largest number of total eligible sites. The segment with the largest number of estimated eligible sites was segment P2 with 317.23 (see table 4.9-3), so that segment has a TPE value of 1.0.

This method is imperfect for a several reasons. First, multiplying the number of "site" cells by *e* is an imperfect method since eligible sites of each type are probably larger on average than not-eligible sites of the same type. Second, use of a raster grid automatically overestimates site acreage, since all cells which intersect a site boundary are classified as "site" cells, even though only a portion of their area may be within a site boundary. Both of these considerations mean that the method employed here will tend to overestimate the number of eligible sites in a subroute or segment. However, imperfect as it may be, the method is preferable to a straightforward count of "site" cells, since it does correct for different levels of significance within the defined site types. In particular, Formative residential sites are weighted more heavily other site types.

The TPE therefore provides a relative measure of probable impact to NRHP-eligible archaeological sites that can be used to compare segments with one another. Moreover, segment TPE values can be summed to calculate and compare the total probable impacts of subroutes. Although it does not consider impacts to cultural resources other than archaeological sites, the TPE is nevertheless a valuable quantitative measure that can be used to compare segments and subroutes in terms of their impacts to archaeological sites. The sensitivity model is based on sound statistical procedures and generalizes from established site location patterns in southwestern New Mexico. The regional archaeological sensitivity model derived from this method is presented graphically in figures 4.9-1a and 4.9-1b in relation to the proposed Project.

Please note that Arizona is not shown because no data for this portion of the analysis area were available for Arizona.

ARCHAEOLOGICAL SENSITIVITY

As discussed in chapter 3, each site from the 2-mile analysis area was assigned a relative value based on NRHP eligibility, site type, and site characteristics. Values assigned included unknown (0), low (1), low to moderate (2), moderate (3), moderate to high (4), and high (5). Analysis was then run to determine the numbers of each value present in the representative ROW for each alternative. Percentages for each value were then calculated for each alternative within the representative ROW. Assuming that the percentage for each value is consistent throughout each alternative by route group, the forecast percentage of each sensitivity value was calculated by multiplying the total number of forecast resources for each alternative by the percentages for each value. For example, 69 percent of the previously recorded sites along subroute 1.1 are classified as moderate sensitivity (level 3). It is projected that 173 resources will be found in the representative ROW for subroute 1.1; therefore, 69 percent of 173 totals 119 resources that will have moderate sensitivity.

VISUAL ANALYSIS

The APE for indirect effects as described in the PA consists of areas visible and within 5 miles of any Project component or to the visual horizon, whichever is closer. According to BLM VRI Handbook H-8410-1 (BLM 1986a), the BLM divides landscapes into three zones: foreground-middleground (less than 3 to 5 miles away), background (areas beyond the foreground-middleground but less than 15 miles away), and seldom seen (areas not seen or hidden). Visual impacts to historic properties are not likely for resources outside the foreground-middleground zone. Visual impacts to historic properties are those that affect the integrity of setting, association, or feeling of those properties; for resources greater than 5 miles away, any impacts to setting, association, or feeling would be minimal.

For towers up to 170 feet (New Build Section) and 140 feet (Upgrade Section), the area of visual effects would generally be 3 miles or less; therefore, the analysis area was divided into three zones: from 0 to 0.5 mile from the centerline, 0.5 to 3 miles away from the centerline, and 3 to 5 miles away from the centerline.

Analysis Assumptions

The analysis was conducted with the following assumptions:

- The Class I and BLM sensitivity model data are sufficient to assess impacts to cultural resources within the analysis area. The Class I model data include data from the Class III surveys within the representative ROW for the Upgrade Section (Effland and Green 1985; Goldstein 2008; Hart 2012). A Class III inventory would be conducted of the selected route in areas where no valid Class III inventory exists in accordance with Section 106 of the NHPA.
- The analysis of the representative ROW will sufficiently characterize the potential impacts to cultural resources. If the ROW is amended after the FEIS is complete, any additional areas would be inventoried for the presence of cultural resources in accordance with the terms of the PA.
- All access routes and substation locations are located within the analysis area. Any access routes or substations outside the analysis area, if selected, would be inventoried for the presence of cultural resources in accordance with the terms of the PA.

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS). Additionally, during the design phase, the siting of transmission line, placement of towers, and the configuration of access roads allows for flexibility to avoid or span historic properties.

Impact Indicators

The primary direct impact to historic properties would consist of damage, loss, or disturbance from construction that would alter the characteristic(s) which make it eligible for listing in the NRHP. Therefore, the relative direct impacts were assessed by comparing the number of known resources and the predicted number of resources within each alternative's representative ROW. Because the primary indirect impact to cultural resources would consist of alterations to setting, feeling, or association of a resource where setting is a significant component of its NRHP eligibility, the relative visual effects were assessed by comparing numbers and types of historic properties listed on State or Federal registers and historic properties which are eligible under Criterion A, B, or C.

Impacts to historic trails and historic trail corridors would consist mainly of alterations to the setting and/or loss of recreational value of a historic trail or NHT corridor. Therefore, relative impacts were assessed by comparing where and how many times an alternative's analysis area would cross a trail.

Direct impacts to historic properties are most often caused by ground disturbance, but can also result from restricting access to a resource or from permanent visual or other intrusions within or adjacent to a property. Because cultural resources are finite and fragile, direct impacts to cultural resources are usually considered permanent and/or long-term, because ground disturbance generally results in damage to or loss of a property's characteristics that make it eligible for listing in the NRHP. Indirect (primarily visual) impacts to historic properties can be temporary or permanent and/or long-term. Temporary indirect impacts are usually those caused by construction; permanent and/or long-term indirect impacts are those caused by the structures themselves.

IMPACT MAGNITUDE

Impact magnitude for cultural resources follows that presented in table 4.1-1.

- No impact – Would not produce obvious changes in baseline condition of resource, e.g., no changes to characteristics that contribute to a resource's eligibility for State or Federal registers.
- Minor/Negligible – Impacts would occur, but resource would retain existing character and overall baseline conditions, e.g., some changes to characteristics that contribute to a resource's eligibility would occur but would not alter that resource's eligibility for State or Federal registers.
- Moderate – Impacts would occur, but resource would partially retain existing character. Some baseline conditions would remain unchanged, e.g., some changes to characteristics that contribute to a resource's eligibility would occur which may alter that resource's eligibility for State or Federal registers.
- Major – Impacts would occur that would create a high degree of change within the existing resource character and overall condition of resource, e.g., changes to characteristics that contribute to a property's eligibility would occur that alter that resource's eligibility for State or Federal registers.

Significant Impacts

For the purposes of this analysis, a significant impact on cultural resources under NEPA could result if any of the following were to occur from construction or operation/maintenance of the proposed Project that could not be mitigated:

- Loss, damage, or disturbance to resources (including trails) listed on State or Federal registers;
- Loss, damage, or disturbance to resources (including trails) that are eligible or may be eligible for State and Federal registers;
- Loss, damage, or disturbance to resources of tribal concern;
- Alterations to setting, feeling, or association for an NRHP or State register–listed historic property; and
- Alterations of the setting or feeling to resources of tribal concern.

4.9.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not grant the ROW for the proposed Project. Analysis area conditions would likely continue at current levels and trends. Even under the no action alternative, Western still plans to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

Because under the no action alternative the existing lines would still be upgraded, impacts would be the same as described below under route groups 3 and 4 (Proponent Preferred alternatives 3.1 and 4.1 respectively). Importantly, in subroute 4.1, the representative ROW of segments U3d, U3e, U3f, and U3g all cross the NRHP-listed Tumamoc Hill Archaeological District and Desert Laboratory NHL. Although this is an existing line, direct impacts, due to the planned upgrade, and indirect impacts, due to the presence of the upgraded transmission line, to the NHL would be expected.

Impacts Common to All Action Alternatives

CONSTRUCTION

Ground disturbance during construction is expected with all action alternatives and may result in the damage or loss of historic properties; however, the number and types of resources affected would vary, depending on the alternative. The primary ground disturbing activities would be access road improvements, structure construction, and substation expansion and/or construction.

As discussed in section 4.9.2, adverse impacts to historic properties would be mitigated in accordance with the PA and the POD. As stated in the POD (see appendix N), avoidance of resources during the final design stage is the preferred form to minimize impacts. As noted above, during the design phase, the siting of transmission line, placement of towers, and the configuration of access roads allows for flexibility to avoid or span historic properties.

OPERATION AND MAINTENANCE

Indirect impacts would occur from the presence of towers, conductors, and substations within view of NRHP-listed historic properties eligible under Criterion A, B, or C by altering the setting of the properties. However, the number and types of historic properties affected would vary by alternative.

Route Group 1 – Afton Substation to Hidalgo Substation

For the analysis of direct impacts, three data sets are discussed for each alternative within route group 1: known cultural resources, forecast resources, and the Index of TPE for archaeological sites. Because linear or large cultural resources may intersect with more than one segment within an alternative, each segment within an alternative is discussed separately. For this route group, the forecast resource numbers are based on very limited samples of surveyed space and are therefore likely to be unreliable.[1] The Index of TPE should be used for evaluating alternatives rather than the forecast resources. However, forecast resources are presented here for the sake of completeness.

Table 4.9-1 presents counts of known cultural resources within the representative ROW for route group 1, Afton Substation to Hidalgo Substation. Table 4.9-2 presents forecast number of resources for the representative ROW. Table 4.9-3 presents the Index of TPE for archaeological sites based on BLM sensitivity data. Table 4.9.4 presents archaeological sensitivity of the representative ROW.

Table 4.9-1. Route Group 1 Cultural Resources Inventory Data within the Representative ROW

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historical Maps	Total Number of Resources
Subroute 1.1, Proponent Preferred						
P1	5.1				6	**6**
P2	102.0	1	2	12	55	**70**
P3	31.1			9	12	**21**
P4a	8.9				3	**3**
Total for Subroute 1.1	**147.1**	**1**	**2**	**21**	**76**	**100**
Subroute 1.2, Proponent Alternative						
S1	13.4			2	17	19
S2	11.1				8	8
S3	12.9		1		6	7
S4	10.6				5	5
S5	29.7		3	7	20	30
S6	7.4				9	9
S7	41.5		1	2	41	44
S8	14.6	1	1	1	10	13
Total for Subroute 1.2	**141.1**	**1**	**6**	**12**	**116**	**135**

[1] Forecast resources numbers for all route groups are based on counts of known cultural resources within the representative ROW as described in the Draft EIS; however, because the numbers only varied slightly from the Draft EIS representative ROW to the Final EIS representative ROW, the forecast resources numbers can still help predict how many resources may be in the Final EIS representative ROW.

Table 4.9-1. Route Group 1 Cultural Resources Inventory Data within the Representative ROW (Continued)

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historical Maps	Total Number of Resources
Route Group 1 Local Alternatives						
DN1	42.5			2	28	30
A	17.5		1	4	17	22
B	12.2		2	3	4	9
C	9.0		1	1	11	13
D	22.8	1		2	30	33
Total for Route Group 1 Local Alternatives	**104**	**1**	**4**	**12**	**90**	**107**

Table 4.9-2. Route Group 1 Cultural Resources Projected (Forecast) Resource Numbers and Density within the Representative ROW

	Total Miles	Projected Number of Resources	Projected Resources Density (per 100 acres)	Projected Number of NRHP-eligible Resources	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Subroute 1.1, Proponent Preferred						
P1	5.1	6	4.80	0	12.8	–
P2	102.0	121	4.90	22	4.4	Yes
P3	31.1	43	5.70	1	1.8	–
P4a	8.9	3	1.38	3	24.7	–
Total for Subroute 1.1	**147.1**	**173**	–	**26**	–	–
Subroute 1.2, Proponent Alternative						
S1	13.4	29	8.88	2	4.3	–
S2	11.1	8	2.99	0	1.0	–
S3	12.9	7	2.19	1	8.4	–
S4	10.6	5	1.96	1	0.1	–
S5	29.7	66	9.16	20	8.7	Yes
S6	7.4	9	4.94	0	0.32	–
S7	41.5	65	6.44	13	5.7	Yes
S8	14.6	41	11.66	8	14.0	Yes
Total for Subroute 1.2	**141.1**	**230**	–	**45**	–	–

Table 4.9-2. Route Group 1 Cultural Resources Projected (Forecast) Resource Numbers and Density within the Representative ROW (Continued)

	Total Miles	Projected Number of Resources	Projected Resources Density (per 100 acres)	Projected Number of NRHP-eligible Resources	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Route Group 1 Local Alternatives						
DN1	42.5	143	13.9	0	1.6	–
A	17.5	32	7.48	3	3.1	–
B	12.2	31	10.55	9	1.7	–
C	9.0	15	7.00	3	2.1	–
D	22.8	53	9.71	9	1.8	Yes
Total for Route Group 1 Local Alternatives	**104**	**274**	–	**24**	–	–

Table 4.9-3. Route Group 1 Estimated Eligible Sites and Index of Total Potential Effect for Archaeological Sites within the Representative ROW

Segment	Total Miles	Archaic	Formative Residential	Formative Non-Residential	Proto-Historic	Historic Residential	All Eligible Sites	Index of TPE	Eligible Sites/mile
Subroute 1.1, Proponent Preferred									
P1	5.1	2.75	4.59	2.74	1.10	1.33	15.33	0.05	3.01
P2	102.0	107.35	116.76	138.76	40.16	16.82	317.23	1.00	3.11
P3	31.1	31.95	42.44	37.56	9.13	5.30	105.40	0.33	3.39
P4a	8.9	6.84	5.80	6.73	3.46	0.05	16.31	0.05	1.87
Subroute 1.2, Proponent Alternative									
S1	13.4	5.46	8.08	10.12	2.97	2.16	40.49	0.13	3.02
S2	11.1	13.19	28.05	22.52	1.87	3.47	39.79	0.13	3.58
S3	12.9	16.03	23.21	19.94	8.17	4.04	46.66	0.15	3.62
S4	10.6	10.94	25.79	21.71	3.62	2.77	37.92	0.12	3.58
S5	29.7	23.39	24.97	41.48	17.57	5.92	90.49	0.29	3.05
S6	7.4	9.66	8.56	9.40	3.44	1.37	21.95	0.07	2.97
S7	41.5	29.42	24.14	39.26	32.13	3.45	108.15	0.34	2.61
S8	14.6	7.83	2.78	8.60	5.42	0.73	33.45	0.11	2.29

Table 4.9-3. Route Group 1 Estimated Eligible Sites and Index of Total Potential Effect for Archaeological Sites within the Representative ROW (Continued)

Segment	Total Miles	Archaic	Formative Residential	Formative Non-Residential	Proto-Historic	Historic Residential	All Eligible Sites	Index of TPE	Eligible Sites/mile
Route Group 1 Local Alternatives									
DN1	42.5	41.57	25.64	31.32	11.84	3.22	92.52	0.29	2.18
A	17.5	13.60	23.80	26.04	5.71	2.29	59.14	0.19	3.38
B	12.2	12.47	24.64	24.61	9.10	2.36	42.45	0.13	3.48
C	9.0	21.50	15.06	14.92	5.16	2.03	30.45	0.10	3.38
D	22.8	25.89	18.04	34.08	13.72	2.72	62.70	0.20	2.75

Table 4.9-4. Route Group 1 Archaeological Sensitivity within the Representative ROW

Alternative	Total Miles	Projected Number of Resources: Level 0 (%)	Projected Number of Resources: Level 1 (%)	Projected Number of Resources: Level 2 (%)	Projected Number of Resources: Level 3 (%)	Projected Number of Resources: Level 4 (%)	Projected Number of Resources: Level 5 (%)
Subroute 1.1	147.1	7 (4%)	7 (4%)	33 (19%)	119 (69%)	7 (4%)	0 (0%)
Subroute 1.2	141.1	32 (14%)	32 (14%)	44 (19%)	87 (38%)	32 (14%)	0 (0%)
DN1	42.5	86 (60%)	0 (0%)	0 (0%)	29 (20%)	29 (20%)	0 (0%)
A	17.5	0 (0%)	0 (0%)	0 (0%)	27 (83%)	5 (16%)	0 (0%)
B	12.2	12 (40%)	0 (0%)	0 (0%)	17 (60%)	0 (0%)	0 (0%)
C	9.0	0 (0%)	0 (0%)	0 (0%)	8 (50%)	0 (0%)	8 (50%)
D	22.8	0 (0%)	21 (40%)	0 (0%)	21 (40%)	0 (0%)	11 (20%)

SUBROUTE 1.1 – PROPONENT PREFERRED

Subroute 1.1 consists of segments P1, P2, P3, and P4a. Segment P1 connects the Afton Substation to an existing line to the southwest. Segments P2 and P4a are the primary route: it runs from the Afton Substation west and northwest past Deming to the Hidalgo Substation. Segment P3 is an interconnection route running north-south between I-10 and NM 9. The majority (75 percent) of subroute 1.1 is routed along existing facilities and infrastructure including transmission lines and portions of subroute 1.1 are routed along the approved, but not yet constructed SunZia project.

Direct Impacts

Known Cultural Resources

For subroute 1.1, segments P1 and P4a have no previously recorded cultural resources that are eligible or may be eligible for the NRHP within the representative ROW. Segment P1 has 6 potential historic resources found on historical maps; segment P4a has 3 potential historic resources. Survey coverage of the subroute 1.1 representative ROW is low and ranges from 1.8 percent for segment P1 to 24.7 percent for segment P4a.

The representative ROW of segment P2 crosses the Butterfield Trail, which is NRHP-listed. Please note that the Butterfield Trail is listed on the NRHP in Arkansas and Texas; segments in New Mexico and Arizona are not currently listed and several segments still need to be evaluated for eligibility. Two NRHP-eligible (LA 15330 and LA 35176) and 12 unevaluated/unknown resources are also present in P2, as well as 55 potential resources found on historical maps. Both eligible sites are prehistoric artifact scatters.

Segment P3 has 9 unevaluated/unknown resources and 12 potential historic resources within the representative ROW.

Seventy-five percent of subroute 1.1 is routed along existing infrastructure meaning that some resources within the representative ROW may already have been disturbed by previous construction and undergone data recovery or other types of mitigation.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The representative ROW of segment P2 crosses the southern edge of the Burro Creek Cienega PCA for 1.0 mile.

Forecast Resources

For subroute 1.1, 173 resources are anticipated to be found in the representative ROW, with the majority of those (121) located within segment P2. A total of 26 NRHP-eligible historic properties is predicted for this subroute and resource density would range from 1.38 resources to 5.70 resources per 100 acres. Segment P2 has been categorized as a segment of cultural concern; P2 is sensitive primarily because of its length, which means more historic properties should be located within its representative ROW. However, because of the low percentage of surveyed representative ROW, this forecast must be used with caution.

Index of Total Potential Effect

Subroute 1.1 segments have TPE values ranging from 0.05 to 1.00, with segment P2 having the highest value. Because segment P2 is the longest segment of the subroute, the greater projected impact is partially due to its length. However, segment P2 also has a high number of eligible sites per mile at 3.11. It is both long and is projected to have a relatively high density of eligible sites. Subroute 1.1 as a whole has a total estimate number of eligible sites of 454, slightly higher than the subroute 1.2 estimate of 418. It is therefore to be expected that subroute 1.1 would have slightly greater total effects on archaeological sites than would subroute 1.2. However, the difference is a relatively subtle one.

Archaeological Sensitivity

Sixty-nine percent of sites within subroute 1.1 are moderate sensitivity (level 3) which means 119 of the 173 projected resources for the representative ROW should be of moderate sensitivity. No resources should be of high sensitivity (level 5) while only 7 (4%) of the Project resources should be of moderate to high sensitivity (level 4).

Historic Trails

Subroute 1.1 would cross the Butterfield Trail once and would cross the potential routes of the Mormon Battalion Trail and the Janos Copper Road. Segment P2 would cross all three trails: the Butterfield Trail east of Lordsburg and the Mormon Battalion Trail and the Janos Copper Road just south of Grandmother Mountain and north of I-10. Members of the BLM Las Cruces Field Office staff visited the potential Butterfield Trail crossing by P2; however, the trail could not be located (Childress 2013a). In addition, an

existing Public Service Co. of New Mexico transmission line parallels P2 at the Butterfield Trail crossing location; therefore, visual impacts to the trail route are already present.

Summary of Direct Impacts for Subroute 1.1

Direct impacts to cultural resources for subroute 1.1 would be major and permanent where avoidance cannot be achieved by spanning or other methods and disturbance from existing infrastructure has not already occurred. One NRHP-listed, two NRHP-eligible, and 21 unevaluated resources are found within the representative ROW for subroute 1.1. Because only 1.8 to 24.7 percent of the representative ROW has been surveyed, projected resources are anticipated to total 173 with 73 percent in the moderate to high or high sensitivity category. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Visual Impacts

Visual impacts data for subroute 1.1 consist of historic properties listed on State or Federal registers and historic properties eligible for the NRHP under Criterion A, B, or C within 5 miles of the centerline (10-mile corridor). As discussed in section 4.9.2, historic properties were divided into three categories based on distance from the centerline: 0–0.5 mile, 0.5–3 miles, and 3–5 miles. Significant visual impacts are more likely to occur in the 0–0.5 mile and 0.5–3 miles zones than the 3–5 miles zone due to the increased distance in the 3–5 miles zone; however, the proposed 170-foot lattice structures for the New Build Section and the 140-foot tubular steel poles for the Upgrade Section can be seen as far away as 3 miles (BLM 2006; Jones and Jones 1976:table 11).

Listed Properties

Twenty historic properties that are listed on State or Federal registers are located within the 10-mile visual effects corridor. All of the properties are found in the 0.5- to 3-mile range along segment P2, but are located at the far end (3-mile) of that range south of I-10 in Deming. Due to the distance and other features, built or natural, blocking the view, few, if any, visual impacts are expected. The properties are as follows:

- Deming Armory
- Seaman Field House
- Luna County Courthouse and Park
- Mahoney Building
- US Post Office–Deming Main
- 105–107 North, Silver Avenue, Deming
- Baker Hotel
- Diamond Furniture Warehouse, Deming
- 100 South Gold Avenue, Deming (Deming Art Council)
- 110 South Gold Avenue, Deming (Waymaker Christian Store)
- 200 South Gold Avenue, Deming (Mimbres Valley Brewing Company)
- 202 South Gold Avenue, Deming (Liberty Finance)
- Old Deming National Bank
- Palmas Restaurant
- 118 East Pine Street, Deming (The New T-Shirt Print Shop)

- 116 North Silver Avenue, Columbus (Star Barber Shop (possible location))
- 116 North Silver Avenue, Deming (Tinaja Alta Trading Co.)
- Silver Avenue, Deming (Antique Shop)
- 112–120 East Spruce Street, Deming
- 113 East Spruce Street, Deming (Delaney & Hernandez)

Determined Eligible Historic Properties

There is one resource which has been determined eligible under Criterion A, B, or C within the 10-mile visual analysis corridor for subroute 1.1. The historic site LA 164811, the Cambray Civilian Conservation Corps camp, is within 0.5 mile of the centerline of segment P2. Visual impacts to the setting of this property are expected due to the distance from the proposed transmission line; however, P2 runs along an existing transmission line which has likely already impacted the setting for the site.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Subroute 1.2 consists of segments S1 through S8. It begins at the Afton Substation and runs south and southwest to NM 9. It then continues west along Columbus Road and eventually runs south of the town of Columbus where it runs west along NM 9 until the intersection of NM 9 and NM 146. The subroute then runs northwest just east of the Luna and Grant County line. Segment S8 then runs north to segment P4a of subroute 1.1. Approximately 44 percent of subroute 1.2 parallels existing roads and transmission lines.

Direct Impacts

Known Cultural Resources

For subroute 1.2, segments S2, S4, and S6 have no previously recorded NRHP-eligible or unevaluated/unknown sites within the representative ROW; segment S2 has eight potential historic resources from historical maps, S4 has five potential historic resources, and S6 has nine potential historic resources. Previous survey coverage of the subroute 1.2 representative ROW is lower than that of subroute 1.1; it ranges from a low of 0.1 percent for segment S4 to 14.0 percent for segment S8.

One resource which is NRHP-unevaluated/unknown is found within the representative ROW for segment S3, along with six potential resources from historical maps.

In the representative ROW for segment S5, three NRHP-eligible resources (LA 54882, LA 54883, and LA 76114) and seven unevaluated/unknown previously recorded resources are found. All three eligible sites are historic and at least two are associated with the railroad; no information was available for LA 76114. Segment S5 also has 20 potential historic resources from historical maps.

In segment S7, one NRHP-eligible (LA 44811) and two unevaluated/unknown previously recorded resources along with 41 potential historic resources are found. LA 44881 is the historic Victorio Station.

One listed property, the Butterfield Trail, crosses the representative ROW of segment P8. Please note that the Butterfield Trail is listed on the NRHP in Arkansas and Texas; segments in New Mexico and Arizona are not currently listed and several segments still need to be evaluated for eligibility. One NRHP-eligible (LA 134502) and one unevaluated/unknown previously recorded resource are found within the segment P8 representative ROW; 10 potential historic resources are also present. LA 134502 is a prehistoric artifact scatter.

Forty-four percent of subroute 1.2 is routed along existing infrastructure meaning that some resources within the representative ROW may already have been disturbed by previous construction and undergone data recovery or other types of mitigation.

In addition, while not recorded as an archaeological site in New Mexico, or a historic built environment resource, the historic railroad grade of the El Paso and Southwestern Railroad can be seen on historical maps running alongside a large portion of subroute 1.2. It is labeled as OLD RAILROAD GRADE. The grade originates southeast of segment S2 and is crossed by segment S3. The grade then runs along the north side of segment S3, S5, and S6, although it is only found in the representative ROW where it is crossed by S3. The El Paso and Southwestern Railroad grade is considered an NRHP-eligible site by the BLM (personal communication, Jane Childress, BLM, 2013b).

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The representative ROW for subroute 1.2 does not cross any of the Archaeology Southwest's Cultural Resources PCAs.

Forecast Resources

Based on forecasted resources analysis, impacts to cultural resources for subroute 1.2 would be major and long-term and more intense than that of subroute 1.1. For subroute 1.2, 230 cultural resources are anticipated to be in the representative ROW, of which 45 are anticipated to be eligible for the NRHP. Predicted resource density ranges from 1.96 to 11.66 resources per 100 acres. Segments S5, S7, and S8 have been flagged as segments of cultural concern.

Index of Total Potential Effect

Subroute 1.2 segments have TPE values ranging from 0.07 to 0.34, with S7 having the highest value. Because segment S7 is the longest segment of the subroute, the greater projected impact is due mainly to its length; segments S2, S3, and S4 have much larger estimated numbers of eligible sites per mile. Subroute 1.2 as a whole has a total estimated number of eligible sites of 418, slightly lower than the subroute 1.1 estimated number of 454. Subroute 1.2 also has a slightly lower number of eligible sites per mile (2.97) than does subroute 1.1 (3.09). Therefore, it is expected that subroute 1.2 would have slightly lesser impact on archaeological sites than would subroute 1.1. However, the difference is a relatively subtle one.

Archaeological Sensitivity

Subroute 1.2 is projected to have 87 resources (38 percent) with moderate sensitivity (level 3); 32 resources (14 percent) at low to moderate (level 2); and 32 (14 percent) at both low and moderate to high sensitivity. No resources are projected to be in the high sensitivity group (level 5).

Historic Trails

Subroute 1.2 crosses the Butterfield Trail once and also crosses the potential routes of the Mormon Battalion Trail and the Janos Copper Road. Segment S6 crosses the Janos Copper Road, segment S7 crosses the Mormon Battalion Trail, and segment S8 crosses the Butterfield Trail. Segment S6 crosses the Janos Copper Road on the northeast side of the Carrizalillo Hills and west of Columbus. Segment S7 crosses the Mormon Battalion Trail southeast of the Brockman Hills. Segment S8 crosses the Butterfield Trail east of Lordsburg. Members of the BLM Las Cruces Field Office staff visited the S8 potential crossing; however, the trail could not be located (Childress 2013a). An existing Tri-State G & T

Association, Inc. transmission line parallels S8 at the Butterfield Trail crossing location; therefore, visual impacts to the trail route are already present.

Summary of Direct Impacts for Subroute 1.2

Direct impacts to cultural resources for subroute 1.2 would be moderate/major and long-term where avoidance cannot be achieved by spanning or other methods and disturbance from existing infrastructure has not already occurred. One NRHP-listed, six NRHP-eligible, and 12 unevaluated resources are found within the representative ROW for subroute 1.2. Projected resources are anticipated to total 230 resources with 55 percent in the moderate to high or high sensitivity category. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Visual Impacts

Listed Historic Properties

Seven historic properties within the 10-mile visual corridor have been listed on State or Federal registers for subroute 1.2. All listed properties are within the visual corridor for segment S5.

For segment S5, the Village of Columbus and Camp Furlong NHL is located within 0.5 mile of the centerline. The transmission line would be located to the east of the Village of Columbus and Camp Furlong NHL. No existing transmission lines are present along S5. Some impacts to setting would occur for the eastern edge of the NHL which is less than 0.5 mile from the line. Within 0.5 to 3 miles are: the Hoover Hotel, the Columbus Village Jail, the Railroad Station Complex, the U.S. Army Headquarters, the U.S. Customs House, and the Camp Furlong Recreation Hall. All of these historic properties are located within downtown Columbus, approximately 1.5 miles from the transmission line. Visibility of the line from these properties would be negligible; therefore, few visual impacts are expected.

Determined Eligible Historic Properties

Along subroute 1.2, there is one resource which has been determined eligible under Criterion A, B, or C within the visual impact analysis corridor. LA 12839 is within 0.5 to 3 miles of the centerline of segment S5. LA 12839 is the El Paso and Southwestern Railroad Columbus Station. The station is located in downtown Columbus, approximately 1.5 miles from the proposed transmission line and visibility of the transmission line would be limited from the station; therefore, few visual impacts are expected.

The El Paso and Southwestern Railroad grade, which is considered an NRHP-eligible site by the BLM (personal communication, Jane Childress, BLM, 2013b) is within the 0.5-mile visual impact zone. In many places the railroad grade is less than 150 m from the centerline of subroute 1.2; therefore, visual impacts to the railroad grade would be major and long-term.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D. DN1 would run north of subroute 1.1 and share ROW with the approved, but not yet constructed SunZia project. Alternative A would follow existing unpaved roads south and southeast of subroute 1.2; both alternatives B and C parallel NM 9 for 12 miles; and alternative D runs from segment S7 to just south of Lordsburg where it continues west and northwest to 1 mile north of I-10. Local alternatives A, B, C, and D are routed along existing roads or pipelines and local alternative DN1 would parallel the approved, but not yet constructed SunZia project.

Direct Impacts

Known Cultural Resources

The representative ROW for segment DN1 contains 2 unevaluated/unknown previously recorded resources and 28 potential resources from historical maps; 1.6 percent of the representative ROW has been previously surveyed. Though it is located slightly outside of the representative ROW, it is worth mentioning that the Black Mountain site (LA 49) is located very close to local alternative DN1 northwest of Deming. This site is of the greatest significance, and is listed on both the State and Federal registers.

Local alternative A has 1 eligible resource, 4 unevaluated/unknown previously recorded resources, and 17 potential resources from historical maps; 3.1 percent of local alternative A has been previously surveyed. The eligible resource (LA 79551) is a prehistoric artifact scatter.

Local alternative B has two NRHP-eligible and three unevaluated/unknown previously recorded resources, as well as four potential resources from historical maps. Within the representative ROW, however, only 1.7 percent of the representative ROW has been surveyed. Both the eligible resources (LA 54880 and LA 159468) are historic; however, no information was available for LA 159468. LA 54880 is a railroad station.

Local alternative C has 1 eligible resource, 1 unevaluated/unknown resource, and 11 potential historic resources; 2.1 percent of the representative ROW has been previously surveyed.

One NRHP-listed resource, the Town of Shakespeare, is located within the representative ROW of local alternative D, along with 2 unevaluated/unknown previously recorded resources, and 30 potential resources from historical maps; however, only 1.8 percent of the representative ROW has been surveyed.

Local alternatives A, B, C, and D are routed along existing roads or pipelines meaning that some resources within the representative ROW may already have been disturbed by previous construction and undergone data recovery or other types of mitigation.

In addition, the El Paso and Southwestern railroad grade begins approximately 150 m south of local alternative A. Local alternative B and C run parallel approximately 100 m to the south of the railroad grade along the same basic alignment; however, it is not found within the representative ROW for local alternatives A, B, and C.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The representative ROW for local alternative DN1 crosses the northwest portion of the Black Mountain PCA for 1.4 miles and the southern tip of the Burro Creek Cienega PCA for 0.7 mile.

Forecast Resources

Local alternative A is predicted to have 32 cultural resources in the representative ROW, 3 of which would be NRHP-eligible. Local alternative B is predicted to have 31 cultural resources, 9 of which would be NRHP-eligible. Fifteen resources are also predicted for local alternative C; 3 of which would be NRHP-eligible. Local alternative D is predicted to have 53 cultural resources with 9 resources eligible for the NRHP. Resource density for local alternative D is anticipated to be 9.71 resources per 100 acres within the representative ROW. Local alternative DN1 is forecast to have 143 resources but no resources eligible for the NRHP. Local alternative D is the only local alternatives categorized as being of cultural concern with route group 1.

Index of Total Potential Effect

Local alternative DN1 has a TPE index of 0.29 with 93 estimated eligible sites. DN1 is 42.50 miles long; there are 2.18 eligible sites per mile.

Local alternative A has a TPE index of 0.19 with 59 estimated eligible sites. DN2 is 17.50 miles long; there are 3.38 eligible sites per mile.

Local alternative B has a TPE index of 0.13 with 42 estimated eligible sites. B is 12.20 miles long; there are 3.48 eligible sites per mile.

Local alternative C has a TPE index of 0.10 with 30 estimated eligible sites. DNC is 9.00 miles long; there are 3.38 eligible sites per mile.

Local alternative D has a TPE index of 0.23 with 94 estimated eligible sites. DND is 22.80 miles long; there are 2.75 eligible sites per mile.

Archaeological Sensitivity

Local alternative DN1 is projected to have 29 resources (20 percent) with moderate sensitivity (level 3) and 29 resources with moderate to high sensitivity (level 4).

Local alternative A is projected to have 27 resources (83 percent) with moderate sensitivity (level 3) and 5 resources (16 percent) at moderate to high sensitivity (level 4). No resources are projected with high sensitivity (level 5).

Nineteen resources (60 percent) with moderate sensitivity are projected for local alternative B; 12 resources (40 percent) are projected as unknown sensitivity (level 0). No resources are projected with moderate to high (level 4) or high sensitivity (level 5).

Local alternative C is projected to have eight resources (50 percent) in both the moderate (level 3) and high (level 5) sensitivity category.

Local alternative D is projected to have 21 resources (40 percent) in both the low (level 1) and moderate (level 3) categories; eleven resources (20 percent) are projected to be of high sensitivity (level 5).

Historic Trails

Local alternatives C and DN1 cross potential route of the Janos Copper Road. DN1 also crosses the potential route of the Mormon Battalion Trail. Local alternative C crosses the potential route of the Janos Copper Road northeast of the Carrizalillo Hills and north of where segment S6 crosses the road. Segment DN1 crosses the potential Mormon Battalion Trail route west of Luna, just southwest of Clabber Top Hill.

Summary of Direct Impacts for Route Group 1 Local Alternatives

Direct impacts to cultural resources for local alternative DN1 are projected to be moderate. Five unevaluated resources have been previously recorded within the representative ROW. Projected resources total 143, with 40 percent being of moderate and moderate to high sensitivity.

Direct impacts for local alternative A are projected to be moderate: one eligible and five unevaluated resources are located within the representative ROW. Projected resources total 32, with 100 percent being of moderate or moderate to high sensitivity.

For local alternative B, direct impacts are projected to be moderate: two eligible and two unevaluated resources have been previously recorded in the representative ROW. Thirty-one resources are projected for the representative ROW of local alternative B, with 60 percent falling in the moderate sensitivity category.

Direct impacts for local alternative C are projected to be moderate. One eligible and one unknown resource have been recorded in the representative ROW and only 15 resources are projected for local alternative C; however, 50 percent of the projected resources are anticipated to fall in the high sensitivity category and 50 percent in the moderate sensitivity category.

For local alternative D, direct impacts are projected to be moderate. One listed and two unevaluated resources have been previously recorded in the representative ROW. Project resources total 53, with 40 percent having moderate sensitivity and 20 percent having high sensitivity.

However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD and some areas may already be disturbed due to existing infrastructure. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Visual Impacts

Listed Historic Properties

For local alternative D, five historic properties which are listed on State or Federal registers are found within the visual analysis corridor. Two properties, the Shakespeare Ghost Town and the Shakespeare Cemetery, are found within 0.5 mile of the centerline. The centerline currently crosses the southwestern corner of the Shakespeare Ghost Town. Alterations to setting for these two properties would be major or moderate, depending on the exact location of the towers. No existing power lines are located near the resource. Three properties, the Hidalgo County Courthouse, the Hidalgo County Library, and the Lordsburg Coaling Tower which was torn down in 1998 and no longer exists, are found within 0.5 to 3 miles of the centerline. These properties are all located in downtown Lordsburg on the northern side of I-10; therefore, the visibility of the transmission line would be limited from these properties. Few to no impacts are expected to these properties.

No listed historic properties are within the visual analysis corridor for local alternatives A, B, C, and DN1.

Determined Eligible

No resources which have been determined eligible under Criterion A, B, or C are within the visual analysis area for local alternative A, B, or C.

Two properties are between 0.5 to 3 miles of local alternative D: LA 50129 and LA 111003. Visual impacts to the setting for these two sites would be minor.

The El Paso and Southwestern Railroad grade, which is considered an eligible site by the BLM (personal communication, Jane Childress, BLM, 2013b), is within the 0.5-mile visual impact zone. In many places the railroad grade is less than 150 m from the centerline of local alternatives A, B, and C and no existing transmission lines are present; therefore, visual impacts to the railroad grade would be major and long-term.

Route Group 2 – Hidalgo Substation to Apache Substation

There are three tables of data for direct analysis: table 4.9-5 presents counts of known cultural resources within the representative ROW for route group 2, Hidalgo Substation to Apache Substation. Table 4.9-6 presents forecast number of resources for representative ROW for route group 2, Hidalgo Substation to Apache Substation. Table 4.9-7 presents Index of TPE for archaeological sites based on BLM sensitivity data for route group 2, Hidalgo Substation to Apache Substation (New Mexico portion only). Table 4.9-8 presents the archaeological sensitivity of route group 2, Hidalgo Substation to Apache Substation.

For this route group, the forecast resource numbers are based on very limited samples of surveyed space and are therefore likely to be unreliable. Where available (in New Mexico), the Index of TPE should be used for evaluating alternatives rather than the forecast resources. However, forecast resources are presented here for the sake of completeness and due to the fact that no Index of TPE can be calculated for the Arizona portion of this route group.

Table 4.9-5. Route Group 2 Cultural Resource Inventory Data

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historic Maps	Total Number of Resources
Subroute 2.1, Proponent Preferred						
P4b	13.9				5	5
P4c	1.9	1			2	3
P5a	9.6			1	4	5
P5b	21.1	1	2	5	17	25
P6a	0.9			1	2	3
P6b	22.5			12	37	49
P6c	2.8			1	7	8
P7	22.3		2	13	32	47
P8	0.5				2	2
Total for Subroute 2.1	**95.5**	**2**	**4**	**33**	**108**	**147**
Subroute 2.2, Proponent Alternative						
E	31.8	1		1	38	40
F	25.3			4	36	40
Ga	25.7			1	45	46
Gb	1.1				4	4
Gc	7.4		3	2	13	18
I	2.3				4	4
J	2.3				6	6
Total for Subroute 2.2	**96.0**	**1**	**3**	**8**	**146**	**158**

Table 4.9-5. Route Group 2 Cultural Resource Inventory Data (Continued)

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historic Maps	Total Number of Resources
Route Group 2 Route Variations						
P7a	31.2	1	2	6	8	17
P7b	10.5	1				1
P7c	1.0					0
P7d	2.0					0
Total for Route Group 2 Route Variations	44.7	2	2	6	8	18
Route Group 2 Local Alternatives						
LD1	35.4	1	1	11	46	59
LD2	8.9	1			3	4
LD3a	26.6	1		2	13	16
LD3b	2.2				1	1
LD4	53.7		1	3	33	37
LD4-Option 4	6.4				10	10
LD5-Option 5	12.3				17	17
WC1	14.8			1	82	83
Total for Route Group 2 Local Alternatives	**160.2**	**3**	**2**	**17**	**205**	**227**

Table 4.9-6. Route Group 2 Cultural Resources Projected (Forecast) Resources Numbers and Density within the Representative ROW

	Total Miles	Projected Number of Resources	Projected Resource Density (per 100 acres)	Projected Number NRHP-eligible Historic Properties	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Subroute 2.1, Proponent Preferred						
P4b	13.9	5	1.49	0	1.0	–
P4c	1.9	3	6.68	1	1.7	Yes
P5a	9.6	7	2.86	0	16.5	–
P5b	21.1	42	8.14	9	52.0	Yes
P6a	0.9	12	57.60	6	16.8	Yes
P6b	22.5	93	17.10	2	11.0	–
P6c	2.8	19	27.71	0	2.6	–
P7	22.3	58	10.79	1	82.5	Yes
P8	0.5	2	22.22	0	100.0	–
Total for Subroute 2.1	**95.4**	**241**	–	**19**	–	

Table 4.9-6. Route Group 2 Cultural Resources Projected (Forecast) Resources Numbers and Density within the Representative ROW (Continued)

	Total Miles	Projected Number of Resources	Projected Resource Density (per 100 acres)	Projected Number NRHP-eligible Historic Properties	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Subroute 2.2, Proponent Alternative						
E	31.8	41	5.26	4	0.64	Yes
F	25.3	60	9.80	5	16.13	–
Ga	25.7	73	11.67	3	2.1	–
Gb	1.1	4	15.42	1	35.4	–
Gc	7.4	24	13.02	3	67.2	–
I	2.3	3	5.42	0	6.1	–
J	2.3	5	7.72	0	14.8	–
Total for Subroute 2.2	**95.9**	**210**	–	**16**	–	–
Route Group 2 Route Variations						
P7a	31.2	37	4.89	2	41.4	Yes
P7b	10.5	7	2.8	7	12.2	Yes
P7c*	1.0	0	0	0	0	–
P7d*	2.0	0	0	0	0	–
Total for Route Group 2 Route Variations	**44.7**	**44**	–	**9**	–	–
Route Group 2 Local Alternatives						
LD1	35.4	73	8.55	7	31.3	Yes
LD2	8.9	4	1.67	0	1.2	Yes
LD3a	26.6	61	8.77	0	11.0	Yes
LD3b	2.2	3	6.42	0	1.6	–
LD4	53.7	45	3.6	0	2.1	–
LD4-Option 4	6.4	0	0	0	29.1	–
LD4-Option 5	12.3	0	0	0	77.6	–
WC1	14.8	89	24.78	0	12.2	Yes
Total for Route Group 2 Local Alternatives	**160.2**	**275**	–	**7**	–	–

*Segment not surveyed; no data available.

Table 4.9-7. Route Group 2 Estimated Eligible Sites and Index of Total Potential Effect for Archaeological Sites within the Representative ROW (New Mexico)

Segment	Total Miles	Archaic	Formative Residential	Formative Non-Residential	Proto-Historic	Historic Residential	Eligible Sites	Index of TPE	Eligible Sites/mile
Subroute 2.1, Proponent Preferred									
P4b	13.9	7.41	5.27	10.14	3.81	0.80	28.46	0.09	2.03
P4c	1.9	1.07	2.29	2.10	0.72	0.52	5.29	0.02	2.79
P5a	9.6	6.41	2.69	7.61	1.20	0.48	21.03	0.07	2.19
P5b	21.1	10.11	10.28	5.63	1.36	0.82	14.64	0.05	0.69
Subroute 2.2, Proponent Alternative									
E	31.8	13.61	7.67	11.51	2.08	1.11	34.13	0.11	1.07
Route Group 2 Local Alternatives									
LD1	35.4	10.83	8.32	13.24	10.45	1.59	41.37	0.13	1.17
LD2	8.9	12.19	2.20	8.53	3.05	0.65	23.92	0.08	2.49
LD3a	26.6	14.72	11.88	24.28	8.01	1.01	63.36	0.20	2.27
LD3b	2.20	2.54	0.91	2.22	0.49	0.13	4.96	0.02	2.61
LD4	53.70	3.64	6.41	7.40	2.12	0.67	12.32	0.04	0.24

Table 4.9-8. Route Group 2 Archaeological Sensitivity within the Representative ROW

Alternative	Total Miles	Projected Number of Resources: Level 0 (%)	Projected Number of Resources: Level 1 (%)	Projected Number of Resources: Level 2 (%)	Projected Number of Resources: Level 3 (%)	Projected Number of Resources: Level 4 (%)	Projected Number of Resources: Level 5 (%)
Subroute 2.1	95.5	29 (8%)	0 (0%)	75 (31%)	80 (33%)	67 (28%)	0 (0%)
Subroute 2.2	96.0	0 (0%)	0 (0%)	34 (17%)	158 (75%)	17 (8%)	0 (0%)
P7a	31.2	0 (0%)	0 (0%)	0 (0%)	7 (20%)	22 (60%)	7 (20%)
P7b	10.5	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	7 (100%)
P7c	1.0	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
P7d	2.0	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
LD1	35.4	6 (8%)	0 (0%)	11 (15%)	50 (69%)	6 (8%)	0 (0%)
LD2	8.9	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (100%)	0 (0%)
LD3a	26.6	0 (0%)	0 (0%)	0 (0%)	20 (33%)	41 (67%)	0 (0%)
LD3b	2.2	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
LD4	53.7	8 (17%)	0 (0%)	8 (17%)	30 (67%)	0 (0%)	0 (0%)
LD4-Option 4	6.4	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
LD4-Option 5	12.3	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
WC1	14.8	0 (0%)	0 (0%)	0 (0%)	89 (100%)	0 (0%)	0 (0%)

SUBROUTE 2.1 – PROPONENT PREFERRED

Subroute 2.1 consists of segments P4b, P4c, P5a, P5b, P6a, P6b, P6c, P7, and P8. Beginning northeast of Lordsburg, subroute 2.1 travels west and south around Lordsburg. It then travels west across the New Mexico–Arizona State line and into Arizona, where it extends south and southwest around the eastern edge of Willcox Playa. Approximately 83 percent of subroute 2.1 is routed along or adjacent to existing pipelines, roads, or transmission lines.

Direct Impacts

Known Cultural Resources

Previous survey coverage for subroute 2.1 is variable, ranging from 1.0 percent for segment P4b to 100 percent for segment P8.

Within subroute 2.1, segments P4b and P8 have no previously recorded resources which are eligible or unevaluated/unknown. Segment P4b has five potential resources digitized from historical maps; segment P8 has two potential historic resources.

Segment P4c crosses the Butterfield Trail (historic property) twice and segment P5b crosses it once. Please note that the Butterfield Trail is listed on the NRHP in Arkansas and Texas; segments in New Mexico and Arizona are not currently listed and several segments still need to be evaluated for eligibility. Segment P4c has an additional 2 potential historic resources. Segment P5b also has 2 NRHP-eligible resources (LA 55762 and LA 130265), 5 unevaluated/unknown resources, and 17 potential resources from historical maps. LA 55762 is a habitation site with both prehistoric and historic components; LA 130265 is a historic habitation.

Segment P5a has 1 unevaluated/unknown resource and 4 potential historic resources digitized from historical maps; segment P6a has 1 unevaluated/unknown resource and 2 potential historic resources. Segment P6b has 12 unevaluated/unknown resources and 37 potential historic resources; segment P6c has 1 unevaluated/unknown resource and 7 potential historic resources.

Within segment P7, there are 2 eligible resources (AZ CC:3:91[ASM] and AZ FF:1:34[ASM]), 13 unevaluated/unknown resources, and 32 potential resources from historical maps. AZ CC:3:91(ASM) is the historic alignment of U.S. 191 and U.S. 71; AZ FF:1:34(ASM) is the Arizona & Colorado Railroad.

Because approximately 83 percent of subroute 2.1 is routed along existing roads, pipelines, and power lines, some resources within the representative ROW may already have been disturbed by previous construction and undergone data recovery or other types of mitigation.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

Subroute 2.1 does not cross any of the Archaeology Southwest's Cultural Resources PCAs.

Forecast Resources

For subroute 2.1, it is predicted that 241 cultural resources would be present within the representative ROW; 19 of these resources would be eligible for the NRHP. Predicted resource density ranges from 1.49 to 57.60 per 100 acres. Segments P4c, P5b, P6a, and P7 have been categorized as being of cultural concern. Based on these numbers, impacts to historic properties due to ground disturbance is projected to be major for subroute 2.1.

Index of Total Potential Effect (New Mexico only)

Subroute 2.1 segments have TPE values ranging from 0.02 to 0.09, with P4b and P5a having the highest values. P5b is the longest segment of the subroute, but has a relatively low TPE value reflecting its low predicted site density. P5a has a higher density of eligible sites per mile. Subroute 2.1 as a whole has a total estimated number of eligible sites of 69, significantly higher than the subroute 2.2 estimated number value of 34. It is therefore to be expected that subroute 2.1 would have significantly greater total effects on archaeological sites within New Mexico than would subroute 2.2. This greater effect is due both to the greater length of subroute 2.1 and its higher projected resource density (1.49 eligible sites per mile, as opposed to 1.07 for segment 2.2).

Archaeological Sensitivity

Subroute 2.1 is projected to have 75 resources (31 percent) which fall in the low to moderate (level 2) and 80 resources in the moderate (level 3) sensitivity category. Sixty-seven resources (28 percent) are projected to have moderate to high sensitivity. No resources are projected to have high sensitivity (level 5).

Summary of Direct Impacts for Subroute 2.1

Direct impacts to cultural resources for subroute 2.1 would be moderate and long-term. Two listed, four eligible, and 32 unevaluated resources are found within the representative ROW for subroute 2.1. Projected resources are anticipated to total 241 resources with 59 percent in the moderate or moderate to high sensitivity category. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Segments P4c and P5b of subroute 2.1 cross the Butterfield Trail. Segment P4c crosses the trail just west of Lordsburg and segment P5b crosses it east of San Simon in the southwest foothills of the Peloncillo Mountains. No existing lines are present at the P4c or P5b crossings. BLM staff visited the P4c potential crossing encountered evidence of the trail in the area (Childress 2013a); rock cairns and historical artifacts were recorded just east of the P4c crossing as site LA 173989 in the SunZia Transmission Line project corridor (Swanson and Rayle 2012).

Visual Analysis

Listed Historic Properties

One listed property (Stein's Peak Station) is located within 0.5 to 3 miles of the centerline of subroute 2.1 along segment P5b. The station is approximately 2.5 miles from the line and there is a line of mountains between it and the proposed transmission line; few to no visual impacts are anticipated.

Shakespeare Ghost Town is found between 3 to 5 miles from segments P4b, P4c, and P5a and Shakespeare Cemetery is found within 3 to 5 miles of segments P4c and P5a. Stein's Peak Station is located between 3 and 5 miles of P5a. Because of the distance, no visual impacts are anticipated.

The Cochise Hotel is located between 3 and 5 miles from segment P8 and 14 listed properties are found between 3 to 5 miles from segment P7, but because of the distance no visual impacts are anticipated:

- Benjamin E. Briscoe House
- Cochise Hotel
- Crowley House
- John Gung'l House
- Hooker Town House
- Johnson-Tillotson House
- Joe Mee House
- Morgan House
- John H. Norton and Company Store
- Harry Saxon House
- Schwertner House
- Pablo Soto House
- Willcox Women's Club
- J. C. Wilson House

Determined Eligible

Three resources which have been determined eligible under Criterion A, B, or C are found within the visual analysis area. AZ Z:2:40(ASM) is found within 0.5 to 3 miles and AZ CC:3:91(ASM) is found within 3 to 5 miles of P6b. AZ Z:2:40(ASM) is the Southern Pacific Mainline and is approximately 2 miles away from the centerline. The transmission line would be in the foothills while the railroad is in the valley to the north; the transmission line may be visible but would only have a minor effect on the setting of the railroad. AZ CC:3:91(ASM) is historic route U.S. 191/U.S. 71 and is over 3 miles from the transmission line; no visual effects are anticipated because of the distance.

The proposed transmission line would cross AZ FF:1:34(ASM), the Arizona and Colorado Railroad, south of Cochise near the edge of Willcox Playa. Impacts to setting of the abandoned railroad are expected.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Subroute 2.2 consists of segments E, F, Ga, Gb, Gc, I, and J. It begins south of the Lordsburg Playa and travels west across the New Mexico–Arizona State line and north of San Simon. The subroute then travels west-northwest to north of the Dos Cabezas Mountains and then northwest, west, and south around Willcox Playa. More than 55 percent of subroute 2.2 is routed along existing infrastructure and facilities; a portion of segment Ga would parallel the approved but not yet constructed SunZia project.

Direct Impacts

Known Cultural Resources

Survey coverage in the representative ROW of subroute 2.2 ranges from 0.6 percent for segment E to 35.4 percent for segment Gb.

For subroute 2.2, segments Gb, I, and J have no previously recorded cultural resources which are NRHP-eligible or unevaluated/unknown within the representative ROW. Four potential resources from historical maps are found in segments Gb and I; six potential historic resources are found in segment J.

Segment E crosses the listed Butterfield Trail. Also found in segment E are 1 unevaluated/unknown resource and 38 potential historic resources.

In segment F, 4 unevaluated/unknown resources and 36 potential historic resources are found.

In segment Ga, one unevaluated/unknown resource and 45 potential historic resources are found.

In segment Gc, 3 eligible (AZ CC:3:91[ASM], AZ CC:13:5[ASM], and AZ FF:1:34[ASM]), 2 unevaluated/unknown resources, and 13 potential historic resources are found. AZ CC:3:91(ASM) is the alignment of historic roads U.S. 191 and U.S. 71. AZ CC:13:5(ASM) is a prehistoric artifact scatter with features. AZ FF:1:34(ASM) is the Arizona & Colorado Railroad.

More than 55 percent of subroute 2.2 is routed along existing roads, pipelines, and power lines, meaning some resources within the representative ROW may already have been disturbed by previous construction and undergone data recovery or other types of mitigation.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

Subroute 2.2 does not cross any the Archaeology Southwest's Cultural Resources PCAs.

Forecast Resources

Based on forecast resources, impacts to cultural resource due to ground disturbance along subroute 2.2 would be major but slightly less than that of subroute 2.1. The total anticipated number of resources within the representative ROW for subroute 2.2 is 210; 16 resources are anticipated to be NRHP-eligible. Predicted resource density ranges from 5.26 to 15.42 sites per 100 acres. Segment E has been categorized as a segment of cultural concern.

Index of Total Potential Effect (New Mexico only)

The New Mexico portion of subroute 2.2 has a total estimated number of eligible sites of 34, significantly lower than the subroute 2.1 estimated number of 69. It is therefore to be expected that subroute 2.2 would have significantly fewer total effects on archaeological sites within New Mexico than would subroute 2.1. This lesser effect is due both to the shorter length of subroute 2.2 and to its lower resource density (1.07 eligible sites/mile, as opposed to 1.49 for segment 2.1).

Archaeological Sensitivity

Subroute 2.2 is projected to have 210 resources (75 percent) with moderate sensitivity (level 3). Thirty-four resources (17 percent) are projected to have low to moderate sensitivity (level 2). Seventeen resources (8 percent) with moderate to high sensitivity (level 4) are projected for subroute 2.2. No resources are projected to have high sensitivity (level 5).

Summary of Direct Impacts for Subroute 2.2

Direct impacts to cultural resources for subroute 2.2 are projected to be major and long-term. One listed, three eligible, and eight unevaluated resources are found within the representative ROW for subroute 2.2. Projected resources are anticipated to total 210 resources, with 83 percent in the moderate and moderate to high sensitivity category. However, adverse impacts to historic properties would be mitigated in

accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Subroute 2.2 crosses the Butterfield Trail and the potential location of the Zuñiga Trail. Segment E crosses the Butterfield Trail directly east of San Simon; no existing transmission line is located at that crossing. Segment Ga crosses the potential Zuñiga Trail route northeast of Willcox.

Visual Analysis

Listed Historic Properties

One listed historic property, the Cochise Hotel, is located within 0.5 to 3 miles of segment Gc and within 3 to 5 miles of segment Gb. The transmission line would pass by the hotel approximately 1.0 mile to the east on the other side of U.S. 191; because of the distance and the presence of the highway, few impacts to the hotel's setting would be expected.

Determined Eligible

No resources which have been determined eligible under Criterion A, B, or C are found within the visual analysis area for subroute 2.2.

ROUTE VARIATION

Route variations for route group 2 consist of P7a through P7d. Approximately 78 percent of route variation P7a is routed along existing linear facilities; portions of all the route variations run along existing roads.

Direct Impacts

Known Cultural Resources

For the route variations P7a through P7d, there are no resources within the representative ROW for route variations P7c and P7d.

Route variations P7a and P7b both cross the Butterfield Trail listed (historic property). Route variation P7a also has 2 NRHP-eligible resources (AZ CC:3:91[ASM] and AZ FF:134[ASM]), 6 unevaluated/unknown resources, and 8 potential resources. No other resources besides the Butterfield Trail are present in P7b.

Because all the route variations run along existing roads and/or infrastructure, some cultural resources in the representative ROW for route variations P7a-P7b may have been previously disturbed from road and other infrastructure construction and undergone data recovery or other types of mitigation.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The representative ROWs for route variations P7a through P7d do not cross any Archaeology Southwest's Cultural Resources PCAs.

Forecast Resources

Route variation P7a is predicted to have 37 cultural resources in the representative ROW, 2 of which would be NRHP-eligible. P7b is predicted to have 7 cultural resources all of which would be NRHP-eligible; however, predictions for P7b are skewed because only one resource is present in the ROW, the NRHP-eligible/listed Butterfield Trail. Both segments are categorized as being of cultural concern. No predictions could be made for P7c and P7d because no portion of the ROW had been previously surveyed.

Archaeological Sensitivity

Route variation P7a is projected to have 7 resources (20 percent) with moderate sensitivity (level 3). Twenty-two resources (60 percent) with moderate to high sensitivity (level 4) are projected for subroute 2.2. Seven resources (20 percent) are projected to have high sensitivity (level 5). Route variation P7b is projected to have 7 resources (100 percent) with high sensitivity (level 5). Predictions could not be made for P7c and P7d.

Summary of Direct Impacts for Route Variations P7a through P7d

Direct impacts for route variations P7a through P7d are projected to be moderate and long-term. One listed, two eligible, and six unevaluated resources are found within the representative ROW for route variations P7a through P7d. Projected resources are anticipated to total 44 resources, with the majority in P7a; all of the resources in P7a are within the moderate, moderate to high sensitivity, and high sensitivity categories. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Route variation P7a crosses the Butterfield Trail twice: once southeast of the Willcox Playa and a second time south of the Willcox Playa. Route variation P7b crosses the Butterfield southwest of Willcox Playa. Although roads cross the trail at these locations as well, no existing transmission lines are present at the crossings.

Visual Analysis

Listed Historic Properties

Fourteen listed historic properties are found between 3 to 5 miles from segment P7a, but because of the distance no visual impacts are anticipated:

- Benjamin E. Briscoe House
- Cochise Hotel
- Crowley House
- John Gung'l House
- Hooker Town House
- Tillotson House
- Joe Mee House
- Morgan House
- John H. Norton and Company Store

- Harry Saxon House
- Schwertner House
- Pablo Soto House
- Willcox Women's Club
- J. C. Wilson House

Determined Eligible

No resources determined eligible under Criterion A, B, or C are within the visual analysis area for route variations P7a through P7d.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. LD1 starts east of Lordsburg, crosses the Peloncillo Mountains, and ends northwest of San Simon. LD2 starts northwest of Lordsburg and crosses the Lordsburg Playa between the north and south Playa. LD3a and LD3b travel around the north sides of the Lordsburg Playa. LD4 crosses the Peloncillo Mountains and the San Simon Valley and ends northwest of Willcox. LD4-Option 4 begins in the foothills of the Peloncillo Mountains, travels south across I-10 and ends at the Dos Cabezas Mountains. LD5-Option 5 runs southwest between LD4 and segment P6c. WC1 runs roughly parallel to I-10 on the north side of the Willcox Playa. Some portion of all of the local alternatives except LD2 and LD3b run along or is adjacent to existing pipelines, roads, or transmission lines.

Direct Impacts

Known Cultural Resources

Local alternatives LD1, LD2, and LD3a cross the Butterfield Trail. In addition, 1 eligible resource (LA 129570), 11 unevaluated/unknown resources, and 46 potential resources from historical maps are found in LD1; 31.3 percent of the LD1 representative ROW has been previously surveyed. LA 129570 is a historic artifact scatter.

In addition to the Butterfield Trail, 3 potential resources are found in LD2; 2 unevaluated/unknown resources and 13 potential historic resources are found in LD3a. Previous survey coverage for LD2 is 1.2 percent and for LD3a is 11.0 percent.

In segment LD3b, only 1 potential historic resource is found; only 1.6 percent of the representative ROW of LD3b has been previously surveyed.

One eligible resource, 3 unevaluated/unknown resource, and 33 potential historic resources are found in LD4; however, only 2.1 percent of the representative ROW has been surveyed.

LD4-Option 4 (29.1 percent surveyed) has 10 potential historic resources and LD4-Option 5 (77.6 percent surveyed) has 17 potential resources. Neither segment has any previously recorded eligible or unevaluated/unknown resources.

WC1 has 1 unevaluated/unknown resource and 82 potential resources from historical maps; 12.2 percent of the representative ROW has been previously surveyed.

Because portions of all the route group 2 local alternatives runs along existing roads, pipelines, or transmission lines except for LD2 and LD3b, some cultural resources in the representative ROW for local

alternatives LD1, LD3a, LD4, LD4-, LD4-Option 4, LD4-Option 5, and WC1 may have been previously disturbed by construction and undergone data recovery or other types of mitigation.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

Local alternative LD4 crosses the Peloncillo North PCA for 0.4 mile.

Forecast Resources

Local alternative LD1 is predicted to have 73 cultural resources within the representative ROW; 7 of those resources are anticipated to be NRHP eligible. Segment LD2 is anticipated to have 4 cultural resources; LD3a is anticipated to have 61 resources; and LD3b is anticipated to have 3 resources. No resource from LD2, LD3a, or LD3b is anticipated to be eligible for the NRHP; however, LD1, LD2, and LD3a are classified as local alternatives of cultural concern due to the projected density of resources.

Local alternative LD4 is forecast to have 45 resources but none eligible for the NRHP; LD4-Option 4 and LD4-Option 5 are forecast to have no resources.

WC1 is forecast to have 89 resources with none eligible for the NRHP; however, due to the number of potential resources, WC1 is a segment of cultural concern.

Index of Total Potential Effect (New Mexico Only)

Local alternative LD1 has a TPE index of 0.13 with 41 estimated eligible sites. Local alternative LD1 is 35.40 miles long; there are 1.17 estimated eligible sites per mile.

Local alternative LD2 has a TPE index of 0.08 with 24 estimated eligible sites. Local alternative LD2 is 9.60 miles long; there are 2.49 estimated eligible sites per mile.

Local alternative LD3a has a TPE index of 0.20 with 63 estimated eligible sites. Local alternative LD3a is 27.90 miles long; there are 2.27 estimated eligible sites per mile.

Local alternative LD3b has a TPE index of 0.02 with 5 estimated eligible sites. Local alternative LD3b is 1.90 miles long; there are 2.61 estimated eligible sites per mile.

Local alternative LD4 has a TPE index of 0.04 with 12 estimated eligible sites. Local alternative LD4 is 51.70 miles long; there are 0.24 estimated eligible sites per mile.

Archaeological Sensitivity

Local alternative LD1 is projected to have 50 resources (69 percent) with moderate sensitivity (level 3) and 6 (8 percent) with moderate to high sensitivity (level 4).

Local alternative LD2 is projected to have four resources (100 percent) with moderate to high sensitivity (level 4). Local alternative LD3a is projected to have 20 resources (33 percent) with moderate sensitivity (level 3) and 41 resources (67 percent) with moderate to high sensitivity (level 4); local alternative WC1 is projected to have 89 resources (100 percent) with moderate sensitivity. No resources are projected for LD3b, LD4-Option 4, or LD3-Option 5.

Local alternative LD4 is projected to have 8 resources (17 percent) with moderate to low sensitivity (level 2) and 30 resources (67 percent) with moderate sensitivity.

Summary of Direct Impacts for Route Group 2 Local Alternatives

There are no direct impacts anticipated for LD4-Option 4 and LD4-Option 5 and minor impacts projected for LD3b due to a low number of estimated resources.

For local alternative LD1, direct impacts are projected to be moderate. Seventy-three resources are projected for the representative ROW with 77 percent being of moderate or moderate to high sensitivity.

Direct impacts for local alternative LD2 area projected to be major because all of the projected resources, 4, are anticipated to be of high sensitivity; however, only one resource, which is listed, is present in the alternative which has skewed the predictions toward the high sensitivity category. It is more likely that impacts would be moderate for local alternativeLD2.

Direct impacts for LD3a are projected to be moderate; all of the 61projected resources would fall into the moderate or moderate to high sensitivity category.

Direct impacts for local alternatives LD4 and WC1 are projected to be moderate. Projected resources for LD4 total 45 with 67 percent having moderate sensitivity. Projected resources for WC1 total 89 with 100 percent having moderate sensitivity.

However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Several local alternatives cross the Butterfield Trail and the potential route of the Zuñiga Trail: local alternatives LD1, LD2, and LD3a cross the Butterfield Trail and local alternatives LD4, LD4-Option 4, and LD4-Option 5 cross the Zuñiga Trail. LD1 crosses the Butterfield Trail southeast of San Simon; LD 2 crosses the trail as LD2 enters the gap between the north and south playa of the Lordsburg Playa; and, LD3a crosses it just east of the gap between the north and south playa of the Lordsburg Playa. BLM staff visited the potential LD3a crossing and noted that the Butterfield Trail is likely to be what is nowDoubtful Canyon Road (Childress 2013a).

LD4 crosses the potential Zuñiga Trail route north of Bowie; LD4-Option 4 crosses it north-northeast of Willcox; and LD4-Option 5 crosses it north of the I-10 and SR 191 junction.

Tribal Resources

LD4 and LD4-Option are approximately 20 miles southeast of Mount Graham.

Visual Analysis

Listed Historic Properties

No listed historic properties are found within the visual analysis area for LD4, LD4-Option 4, or LD4-Option 5.

Shakespeare Cemetery is between 3 and 5 miles from segment LD1; Shakespeare Ghost Town is between 3 and 5 miles from LD1 and LD2. Stein’s Peak Station is within 3 to 5 miles of segments LD2, LD3a, and LD3b. No visual impacts are anticipated because of the distance from the transmission line.

Thirteen listed historic properties are found within the visual analysis area for WC1. All of the resources are within 0.5 to 3 miles of the centerline in the town of Willcox:

- Benjamin E. Briscoe House
- Crowley House
- John Gung'l House
- Hooker Town House
- Johnson-Tillotson House
- Joe Mee House
- Morgan House
- John H. Norton and Company Store
- Harry Saxon House
- Schwertner House
- Pablo Soto House
- Willcox Women's Club
- J. C. Wilson House

All of these resources are located in downtown Willcox between 0.5 and 1.5 miles from the proposed transmission line, which is located along I-10 in this section. Because they are located within the town the visibility of the line from the historic properties is minimal; therefore, little impact to setting is expected.

Determined Eligible

No resources that have been determined eligible under Criterion A, B, or C are found within the visual analysis 10-mile corridor for any of the route group 2 local alternatives.

Route Group 3 – Apache Substation to Pantano Substation

The route group 3 analysis includes data from two recent surveys that have been performed along the existing transmission line in the Upgrade Section (Goldstein 2008; Hart 2012). Goldstein (2008) conducted a Class III pedestrian survey along the existing Tucson-Apache 115-kV Transmission Line. The survey covered approximately 80 miles within a 200-foot wide corridor from the Tucson Substation to the Apache Substation. Hart (2012) conducted a Class III survey of a 100-foot access road ROW between several pole structures along the line between the Tucson and Apache substations for a total of 4.45 miles. A very high percentage of the representative ROW has been previously surveyed, so forecast resource numbers for this route group should be reliable. Because cultural resources impact analysis focuses on exact locations of particular resources, segment U3a has been separated between route group 3 and 4 for the majority of the below analysis.

For route group 3, there are two tables of data for direct analysis: table 4.9-9 presents counts of known cultural resources within the representative ROW for route group 3, Apache Substation to Pantano Substation. Table 4.9-10 presents forecast number of resources for the representative ROW for route group 3, Apache Substation to Pantano Substation. Table 4.9-11 presents the archaeological sensitivity within the representative ROW for route group 3, Apache Substation to Pantano Substation.

Table 4.9-9. Route Group 3 Cultural Resources Inventory Data

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historic Maps	Total Number of Resources
Subroute 3.1, Proponent Preferred						
U1a	16.1	1		18	29	48
U1b	2.9			1	2	3
U2	15.8	1	2	8	17	29
U3a	5.9	1		4	7	11
Total	40.7	3	2	31	55	91
Route Group 3 Local Alternative						
H	19.3	1	2	3	26	29

Table 4.9-10. Route Group 3 Cultural Resources Projected (Forecast) Resources Numbers and Density within the Representative ROW

	Total Miles	Projected Number of Resources	Projected Resource Density (per 100 acres)	Projected Number NRHP-eligible Historic Properties	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Subroute 3.1, Proponent Preferred						
U1a	16.1	53	18.08	0	93.9	Yes
U1b	2.9	4	6.77	0	89.4	–
U2	15.8	27	9.41	5	90.4	Yes
U3a	35.6*	109	16.86	3	89.6	Yes
Total for Subroute 3.1	**70.3**	**193**	**–**	**8**	**–**	**–**
Route Group 3 Local Alternative						
H	19.3	40	11.35	6	7.25	Yes

*Please note that forecast resources for U3a cover the entire length of the segment, including that in route group 4.

Table 4.9-11. Route Group 3 Archaeological Sensitivity within the Representative ROW

Alternative	Total Miles	Projected Number of Resources: Level 0 (%)	Projected Number of Resources: Level 1 (%)	Projected Number of Resources: Level 2 (%)	Projected Number of Resources: Level 3 (%)	Projected Number of Resources: Level 4 (%)	Projected Number of Resources: Level 5 (%)
Subroute 3.1	70.3	54 (28%)	0 (0%)	14 (7%)	114 (59%)	14 (7%)	8 (4%)
H	19.3	0 (0%)	0 (0%)	12 (30%)	24 (60%)	4 (10%)	0 (0%)

SUBROUTE 3.1 – PROPONENT PREFERRED

Subroute 3.1 consists of the upgrade of the existing Western 115-kV line running from the Apache Substation north of the Dragoon Mountains and through the San Pedro Valley to the Pantano Substation.

Direct Impacts

Known Cultural Resources

Previous survey coverage for the subroute 3.1 representative ROW is excellent and is approximately 90 percent for all segments.

In subroute 3.1, segment U1a crosses the listed Butterfield Trail and has 18 unevaluated/unknown sites and 29 potential resources from historical maps.

Segment U1b has 1 unevaluated/unknown resource and 2 potential historic resources.

Segment U2 also crosses the Butterfield Trail, as well as having 2 eligible resources (AZ EE:3:74[ASM] and AZ FF:9:17[ASM]), 8 unevaluated/unknown resources, and 17 potential historic resources. AZ EE:3:74(ASM) is the El Paso & Southwestern Railroad. AZ FF:9:17(ASM) is the historic alignment of SR 80.

One federally listed resource is located in segment U3a: the Empirita Ranch Historic District. Four unevaluated/unknown resources and 7 potential historic resources are also found in the representative ROW for segment U3a.

Because subroute 3.1 consists of the upgrade of the existing Western 115-kV line, cultural resources present in the existing ROW may have been previously disturbed and/or mitigated if they were not spanned by the line.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

Subroute 3.1 does not cross any Archaeology Southwest's Cultural Resources PCAs.

Forecast Resources

For subroute 3.1, 193 resources are predicted for the representative ROW; 8 of these are anticipated to NRHP-eligible. Predicted resource density ranges from 9.41 to 18.08 resources per 100 acres. Segments U1a, U2, and U3a are considered as being of cultural concern. Because subroute 3.1 is within the Upgrade Section and less ground disturbance would be needed, impacts to cultural resources due to ground disturbance would be minor.

Archaeological Sensitivity

Subroute 3.1 is projected to have 68 resources (35 percent) with unknown or low to moderate sensitivity (levels 0 and 2); 114 resources (59 percent) with moderate sensitivity (level 3); 14 resources (7 percent) are projected to have moderate to high sensitivity (level 4); and 8 resources (4 percent) are projected to have high sensitivity (level 5).

Using the Pima County data, the portion of the representative ROW of subroute 3.1 in Pima County consists of 11.4 acres (9 percent) of cultural resources high sensitivity, 19.1 acres of moderate sensitivity (16 percent), and 92.7 acres (75 percent) of low sensitivity.

Summary of Direct Impacts for Subroute 3.1

Direct impacts to cultural resources for subroute 3.1 are projected to be minor. Three listed, 2 eligible, and 31 unevaluated resources are found within the representative ROW for subroute 3.1.Although, projected resources are anticipated to total 193 resources with 59 percent having moderate sensitivity, 7

percent having moderate to high sensitivity, and 4 percent having high sensitivity, subroute 3.1 is an existing line and less ground disturbance would been needed than for a new line but it would still directly impact two eligible resources and one listed resource; therefore, impacts would be moderate.

In addition, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Subroute 3.1 crosses the Butterfield Trail and the potential routes of the Mormon Battalion Trail and the Zuñiga Trail. Segment U1a crosses the Butterfield Trail at West Dragoon Road just north of the Ammon Airport and segment U2 crosses it just northeast of Benson. Segment U1b crosses the potential Mormon Battalion Trail route in northwestern Benson and segment U3a crosses it northwest of Vail. Segment U1b crosses the potential Zuñiga Trail route crosses west-northwest of Benson and segment U2 crosses it in Mescal just north of I-10. Since subroute 3.1 is the existing Western line, visual impacts to all trails and potential trail routes are currently present; however, because the new towers will be larger than the existing towers, visual impacts from the proposed Project would increase.

Visual Analysis

Listed Historic Properties

There are nine listed historic properties within the visual analysis area of subroute 3.1. One is within 0.5 mile of the centerline of U3a: the Empirita Ranch Historic District. The transmission line is located along the northern border of the southern portion of Empirita Ranch Historic District and would impact the setting of the property; however, because the line is existing, new or additional impacts from the upgrade would only be moderate. The Empirita Ranch Historic District is also located between 3 and 5 miles of U1a and U1b. The Cochise Hotel is located in the 3-5 mile zone from U1a; however, because of the distance no visual impacts are expected from U1a or U1b.

Seven resources are within 0.5 to 3 miles of the centerline of segment U2 of subroute 3.1 in Benson:

- Benson Railroad Historic District
- Hi Wo Company Grocery
- W. D. Martinez General Merchandise Store
- Oasis Court
- Redfield-Romine House
- Smith-Beck House
- Max Treu Territorial Meat Company

All seven properties are located in downtown Benson from 0.9 to 1.2 miles south from the proposed transmission line. The transmission line is located on the northern side of I-10 in the Benson area. Visibility of the transmission line would be limited from the historic properties, so little impact their setting would be expected.

Determined Eligible

One resource that has been has been determined eligible under Criterion A is found within 0.5 mile of segment U2 of subroute 3.1—AZ EE:3:74(ASM), the El Paso and Southwestern Railroad. The existing

transmission line crosses the railroad east of Benson. Some minor alternations in the setting of AZ EE:3:74(ASM) would be expected with the upgrade of the line.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H, which runs north of Benson. Local alternative H is routed along or adjacent to an existing transmission line.

Direct Impacts

Known Cultural Resources

Located within local alternative H are 3 listed or eligible resources (Butterfield Trail, AZ Z:2:40[ASM], and AZ FF:9:17[ASM]), 3 unevaluated/unknown resources, and 26 potential historic resources. AZ Z:2:40(ASM) is the Southern Pacific Railroad Mainline–Southern Route. AZ FF:9:17(ASM) is State Route 80. Only 7.25 percent of local alternative H has been previously surveyed; however, because local alternative H is routed along existing infrastructure, cultural resources in the representative ROW may have been disturbed by construction activities.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

Local alternative H does not cross any Archaeology Southwest's PCAs.

Forecast Resources

For local alternative H, 40 cultural resources are predicted for a resource density of 11.35 resources per 100 acres. Six of the resources are anticipated to be NRHP eligible and local alternative H is considered a segment of cultural concern.

Archaeological Sensitivity

For local alternative H, 24 resources (60 percent) are projected to have moderate sensitivity (level 3), 4 resources (10 percent) to have moderate to high sensitivity (level 4), and 12 resources (30 percent) are projected to have low to moderate sensitivity (level 2).

Using the Pima County data, the representative ROW of local alternative H consists of 7.3 acres of cultural resources moderate sensitivity (85 percent), and 41.6 acres (15 percent) of low sensitivity.

Summary of Direct Impacts for Route Group 3 Local Alternative H

Direct impacts for local alternative H would be moderate. One listed, two eligible, and three unevaluated cultural resources are found in the representative ROW for local alternative H. Projected resources total 40 with 70 percent having moderate or moderate to high sensitivity. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Local alternative H crosses the Butterfield Trail just north of where it leaves subroute 3.1 west of Benson, the potential Mormon Battalion Trail route north of Mescal, and the potential route of the Zuñiga Trail west of Mescal. An existing Southwest Transmission Co-op Inc. transmission lines runs parallel to local alternative H at the location of the Butterfield Trail.

Visual Analysis

Listed Historic Properties

The Empirita Cattle Ranch Historic District is located within 0.5 miles of local alternative H; however, because there are existing transmission lines along the route for local alternative H, impacts would be moderate.

Seven listed properties are located between 3 and 5 miles of local alternative H, but because of the distance no visual impacts are anticipated:

- Benson Railroad Historic District
- Hi Wo Company Grocery
- W.D. Martinez General Merchandise Store
- Oasis Court
- Redfield-Romine House
- Beck Smith House
- Max Treu Territorial Meat Company

Determined Eligible

AZ EE:3:74(ASM), the El Paso and Southwestern Railroad, is crossed by local alternative H. The proposed transmission line crosses the railroad east of Benson. Impacts to the setting of the site would be expected because a new transmission line would be constructed.

AZ FF:9:17[ASM], SR 80, crosses local alternative H toward its eastern end. Impacts to the setting of the site are expected because a new transmission line would be constructed.

Route Group 4 – Pantano Substation to Saguaro Substation

The route group 4 analysis includes data from three surveys that have been performed along the existing transmission line in the Upgrade Section (Effland and Green 1985; Goldstein 2008; Hart 2012). Effland and Green (1985) surveyed the 100-foot ROW for the existing 115-kV transmission line from the Tucson to the Saguaro substations, which is approximately 35 miles. Goldstein (2008) conducted a Class III pedestrian survey along the existing Tucson-Apache 115-kV Transmission Line. The survey covered approximately 80 miles within a 200-foot-wide corridor from the Tucson Substation to the Apache Substation. Hart (2012) conducted a Class III survey of a 100-foot access road ROW between several pole structures along the line between the Tucson and Apache substations for a total of 4.45 miles. An additional check for sites along the ROW from the Tucson to the Saguaro Substation was conducted in 2012 by a Western archaeologist but no survey corridor width was specified and no report was generated (personal communication, Maria Martin, Galileo, 2013). A very high percentage of the representative ROW has therefore been previously surveyed, so forecast resource numbers for this route group should be reliable. Because cultural resources impact analysis focuses on exact locations of particular resources, segment U3a has been separated between route group 3 and 4 for the majority of the below analysis.

For route group 4, there are two tables of data for direct impact analysis. Table 4.9-12 presents counts of known cultural resources within the representative ROW for route group 4, Pantano Substation to Saguaro Substation. Table 4.9-13 presents forecast number of resources for the representative ROW for route group 4, Pantano Substation to Saguaro Substation. Table 4.9-14 presents the archaeological sensitivity of the representative ROW for route group 4, Pantano Substation to Saguaro Substation.

Table 4.9-12. Route Group 4 Cultural Resource Inventory Data

	Total Miles	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historical Maps	Total Number of Resources
Subroute 4.1, Proponent Preferred						
U3a	29.6	2		24	75	**101**
U3b	0.5		1	3	5	**9**
U3c	1.0			4	5	**9**
U3d	3.4	1	1	3	12	**17**
U3e	0.9	1		1	1	**3**
U3f	0.7	1			1	**2**
U3g	0.9	1	1	2	10	**14**
U3h	1.1	1	1	2	5	**9**
U3i	18.2	1	5	15	70	**91**
U3j	0.9			1	1	**2**
U3k	16.7	1	1	3	44	**49**
U3l	1.6	1	2	1	5	**9**
U3m	0.6		4	1	3	**8**
U4	1.9			2	4	**6**
Total for Subroute 4.1	**78.0**	**10**	**16**	**62**	**241**	**329**
Route Variation U3aPC	**6.2**			**3**	**2**	**5**
Route Group 4 Local Alternatives						
MA1	1.1			1	1	**2**
TH1a	1.4	1		1		**3**
TH1b	1.6	1		2	8	**12**
TH1c	0.3			1	5	**7**
TH1-Option	1.0	1		1	6	**8**
TH3-Option A	0.8		1	3	10	**14**
TH3-Option B	0.8				4	**4**
TH3-Option C	1.8		1	2	18	**21**
TH3a	2.7		1	3	31	**35**
TH3b	4.5	1	3	2	39	**45**
Total for Local Alternatives	**16**	**4**	**9**	**16**	**122**	**151**

Table 4.9-13. Route Group 4 Cultural Resources Projected (Forecast) Resources Numbers and Density within the Representative ROW

	Total Miles	Projected Number of Resources	Projected Resource Density (per 100 acres)	Projected Number NRHP-eligible Historic Properties	Percentage of Representative ROW Surveyed	Segment of Cultural Concern
Subroute 4.1, Proponent Preferred						
U3b	0.5	10	93.86	0	100.0	Yes
U3c	1.0	11	62.98	0	76.6	Yes
U3d	3.4	19	30.43	12	90.3	Yes
U3e	0.9	4	28.56	2	100.0	Yes
U3f	0.7	4	48.92	3	100.0	Yes
U3g	0.9	15	92.31	5	75.1	Yes
U3h	1.1	11	55.58	0	90.2	Yes
U3i	18.2	98	29.60	17	79.4	Yes
U3j	0.9	6	37.78	0	66.7	–
U3k	16.7	51	16.80	15	52.5	Yes
U3l	1.6	9	80.55	9	99.3	Yes
U3m	0.6	8	40.38	3	100.0	Yes
U4	1.9	11	31.82	0	25.9	
Total for Subroute 4.1	**48.3**	**257**	**–**	**66**	**–**	**–**
Route Variation U3aPC	**6.2**	**34**	**30.09**	**0**	**43.4**	
Route Group 4 Local Alternatives						
MA1	1.1	1	5.27	0	0.0	–
TH1a	1.4	3	52.75	2	100.0	Yes
TH1b	1.6	15	52.76	10	21.6	Yes
TH1c	0.3	7	160.81	0	33.2	Yes
TH1-Option	1.0	4	47.83	4	100.0	Yes
TH3-Option A	0.8	16	76.83	3	100.0	Yes
TH3-Option B	0.8	3	21.14	0	62.0	Yes
TH3-Option C	1.8	25	85.39	17	82.6	Yes
TH3a	2.7	39	79.73	7	91.8	Yes
TH3b	4.5	51	62.63	16	87.0	Yes
Total for Local Alternatives	**16**	**164**	**–**	**59**	**–**	**–**

Table 4.9-14. Route Group 4 Cultural Resources Archaeological Sensitivity within the Representative ROW

Alternative	Total Miles	Projected Number of Resources: Level 0 (%)	Projected Number of Resources: Level 1 (%)	Projected Number of Resources: Level 2 (%)	Projected Number of Resources: Level 3 (%)	Projected Number of Resources: Level 4 (%)	Projected Number of Resources: Level 5 (%)
Subroute 4.1	48.3	26 (10%)	3 (1%)	28 (11%)	100 (39%)	77 (30%)	39 (15%)
U3aPC	6.2	0 (0%)	0 (0%)	0 (0%)	23 (67%)	11 (33%)	0 (0%)
MA1	1.1	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TH1a	1.4	0 (0%)	0 (0%)	0 (0%)	1 (33%)	0 (0%)	2 (67%)
TH1b	1.6	0 (0%)	0 (0%)	0 (0%)	9 (60%)	0 (0%)	6 (40%)
TH1c	0.3	0 (0%)	0 (0%)	0 (0%)	7 (100%)	0 (0%)	0 (0%)
TH1-Option	1.0	0 (0%)	0 (0%)	0 (0%)	1 (33%)	0 (0%)	3 (67%)
TH3-Option A	0.8	0 (0%)	3 (20%)	0 (0%)	6 (40%)	6 (40%)	0 (0%)
TH3-Option B	0.8	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TH3-Option C	1.8	0 (0%)	0 (0%)	0 (0%)	17 (67%)	8 (33%)	0 (0%)
TH3a	2.7	0 (0%)	0 (0%)	0 (0%)	20 (50%)	20 (50%)	0 (0%)
TH3b	4.5	0 (0%)	0 (0%)	0 (0%)	29 (57%)	22 (43%)	0 (0%)

SUBROUTE 4.1 – PROPONENT PREFERRED

Subroute 4.1 consists of the existing Western 115-kV line and begins at the Pantano Substation and travels northwest and north through Green Valley to Tucson. It runs around the Tucson International Airport to the Del Bac Substation and then heads north and northwest across Tumamoc Hill. The line then continues north and northwest traveling northeast of the Tucson Mountains to Marana and ending at the Saguaro Substation.

Direct Impacts

Known Cultural Resources

In subroute 4.1, the representative ROW of segments U3d, U3e, U3f, and U3g all intersect with the NRHP-listed Tumamoc Hill Archaeological District and Desert Laboratory NHL. In addition, 1 eligible resource (AZ AA:16:420[ASM]), 3 unevaluated/unknown resources, and 12 potential historic resources are found in segment U3d; 1 unevaluated/unknown resource and 1 potential historic resource are found in segment U3e; 1 potential historic resource is found in segment U3f; and, 1 eligible resource (AZ AA:16:333[ASM]), 2 unevaluated resources, and 10 potential historic resources are found in segment U3g. Both AZ AA:16:420(ASM) and AZ AA:16:333(ASM) are prehistoric artifact scatters.

The portion of the representative ROW for U3a within subroute 4.1 intersects with two listed resources both are prehistoric sites: the Valencia Site (AZ BB:13:15[ASM]) and the Zanardelli site (AZ BB:13:315[ASM]). The representative ROW for U3a also intersects 24 unevaluated/unknown and 75 potential resources.

The representative ROW of segments U3h, U3i, and U3l all intersect with the NRHP-listed Butterfield Trail. In addition, 1 eligible resource (AZ AA:16:333[ASM]), 2 unevaluated/unknown resources, and 5 potential resources from historical maps are found in segment U3h. AZ AA:16:333(ASM) is a prehistoric artifact scatter.

In segment U3i, there are 5 eligible resources, 15 unevaluated/unknown resources, and 70 potential resources from historical maps in addition to the listed Butterfield Trail.

Two eligible resources (AZ Z:2:40[ASM] and AZ AA:2:118[ASM]), one unevaluated/unknown resource, and five potential resources from historical maps are found in segment U3l along with the listed Butterfield Trail. AZ Z:2:40(ASM) is the Southern Pacific Railroad Mainline–Southern Route; AZ AA:2:118(ASM) is the historic alignment of SR 84.

One listed resource, the Los Robles Archaeological District, is found within segment U3k, as well as 1 eligible resource (AZ AA:1:95[ASM]), 3 unevaluated/unknown resources, and 44 potential historic resources. AZ AA:1:95(ASM) is the Maricopa-Saguaro 115-kV transmission line.

Segment U3b has 1 eligible resource, 3 unevaluated/unknown resources, and 5 potential historic resources. The eligible resource, AZ BB:13:102(ASM), is a prehistoric artifact scatter.

Segment U3c has 4 unevaluated/unknown resources and 5 potential historic resources. Segment U3j has 1 unevaluated/unknown resource and 1 potential historic resource.

Four eligible resources, one unevaluated resource, and three potential historic resources are found in segment U3m. AZ Z:2:40(ASM) is the Southern Pacific Railroad Mainline–Southern Route; AZ AA:2:118(ASM) is the historic alignment of SR 84. AZ AA:1:95(ASM) is the Maricopa-Saguaro 115-kV transmission line. AZ AA:8:366(ASM) is the Saguaro-Oracle 115-kV transmission line.

Two unevaluated/unknown resources and 4 potential historic resources are found in segment U4.

Previous survey coverage is good to excellent for the subroute 4.1 representative ROW because it consists of the ROW for the existing Western 115-kV line. Several segments (U3b, U3e, U3f, and U3m) have 100 percent survey coverage. Segment U4 has the lowest with 25.9 percent. The remaining segments range from 50 percent to almost 100 percent. Because subroute 4.1 consists of the upgrade of the existing Western 115-kV line, cultural resources present in the existing ROW may have been previously disturbed and/or mitigated if they were not spanned by the line.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The portion of segment U3a of subroute 4.1 crosses the Zanardelli PCA for 1.0 mile; it crosses the Valencia PCA for 2.2 miles; and it crosses the Middle Santa Cruz PCA for 1.2 miles.

Segments U3b, U3c, U3e, U3f, U3g, U3h, and U3i of subroute 4.1 cross the Middle Santa Cruz PCA for 12.6 miles. Segments U3b and U3c cross the Valencia PCA for 0.9 mile; segments U3c and U3d cross the West Branch PCA for 1.4 miles. Segment U3i crosses the Los Morteros PCA for 1.7 miles and the River Confluence PCA for 8.2 miles. Segment U3k crosses the Los Robles PCA for 5.6 miles.

Forecast Resources

For subroute 4.1, 257 cultural resources are anticipated within the representative ROW with 66 of the resources being eligible for the NRHP. Predicted resource density is high for all segments and ranges from 16.80 to 93.86 predicted resources per 100 acres. All segments except for segments U3j and U4 have been categorized as being of cultural concern. Although subroute 4.1 is within the Upgrade Section and less ground disturbance would be needed, impacts to cultural resources due to ground disturbance would range from moderate to major due to the greater number of predicted resources within this section.

Archaeological Sensitivity

Subroute 4.1 is projected to have 26 resources (10 percent) with unknown sensitivity (level 0); 3 resources (1 percent) with low sensitivity (level 1); 28 resources (11 percent) with low to moderate sensitivity (level 2); 100 resources (39 percent) with moderate sensitivity (level 3); 77 resources (30 percent) with moderate to high sensitivity (level 4); and 39 resources (15 percent) with high sensitivity (level 5).

Using the Pima County data, the representative ROW of subroute 4.1 consists of 713 acres (57 percent) classified as high sensitivity, 153 acres (12 percent) as moderate sensitivity, and 396 acres (31 percent) as low sensitivity.

Summary of Direct Impacts for Subroute 4.1

Direct impacts to cultural resources for subroute 4.1 are projected to be moderate. Several segments cross NRHP-listed Tumamoc Hill Archaeological District and Desert Laboratory NHL or the Butterfield Trail. Sixteen eligible and 62 unevaluated cultural resources are also present within the representative ROW for subroute 4.1. Although projected resources are anticipated to total 257 resources with 39 percent having moderate sensitivity, 30 percent having moderate to high sensitivity, and 15 percent having high sensitivity, subroute 4.1 is an existing line and less ground disturbance would be needed than for a new line; therefore, impacts would be moderate. See Local Alternatives section for development of routes around the Tumamoc Hill Archaeological District and Desert Laboratory NHL.

In addition, any adverse impacts to cultural resources would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Subroute 4.1 crosses one National Historic Trail (the Anza NHT corridor), which is not an archaeological site or an historic property under NHPA but can be considered a cultural resource under NEPA, and one known and one potential historic trail routes (the Butterfield Trail and the Mormon Battalion Trail). The various trails all converge as they exit Tucson to the northwest and follow the same basic route as subroute 4.1. The greatest concern along this route would be the visual effects from towers and lines; however, because this is an already heavily developed corridor and the subroute consists of an existing 115-kV transmission line, any additional visual effects would be minor. Segment U3i crosses the Anza NHT south of West Grant Road and southwest of I-10; segment U3k crosses it north of West Copper Street and west of I-10. Segment U3h crosses the Butterfield Trail at North Aztec Street in Tucson, and segment U3i crosses it along The Loop north of West Grant Road and segment U3k crosses the trail again at just before the Saguaro Substation. Segment U3f crosses the potential route of the Mormon Battalion Trail north of West Starr Pass Boulevard, segment U3 crosses the potential route along The Loop north of West Grant Road, and segment U3k crosses it southwest of the Saguaro Substation.

Tribal Resources

As discussed above, subroute 4.1 crosses Tumamoc Hill. Subroute 4.1 also passes within 2 miles of San Xavier del Bac and runs along the northwestern side of Martinez Hill less than 0.5 mile from the peak.

Visual Analysis

Listed Historic Properties

One hundred and seven listed historic properties are found within the visual analysis area for subroute 4.1. Six are within 0.5 mile of the centerline: the Pascua Cultural Plaza, the Ghost Ranch, the Antonio Matus House and Property, the Menlo Park Historic District, the Miracle Mile Historic District, and the Tumamoc Hill Archaeological District and Desert Laboratory NHL. The existing line crosses through the center of the Tumamoc Hill Archaeological District and Desert Laboratory NHL. Because this portion of the proposed Project consists of upgrading an existing line, the alteration to setting for these resources would be moderate, rather than major.

Seventy-seven resources are within 0.5 to 3 miles:

- 4th Avenue
- Arizona Daily Star
- Arizona Hotel
- Armory Park Historic Residential District
- Barrio Anita Historic District
- Barrio El Hoyo Historic District
- Barrio El Membrillo Historic District
- Barrio Libre Historic District
- Barrio Santa Rosa Historic District
- Bear Down Gym
- Blenman-Elm Historic District
- Blixt-Avita House
- Boudreaux-Robison House
- Bray-Valenzula
- Dr. William Austin Cannon House
- Catalina Vista Historic District
- Cienega Bridge
- Copper Bell Bed and Breakfast
- Cordova House
- Coronado Hotel
- Dodson-Esquival House
- Don Martin Apartments
- Downtown Tucson Historic District
- Eckbo Landscape
- El Paso and Southwestern Railroad Depot
- El Paso and Southwestern Historic District
- El Presidio Historic District
- El Tiradito
- Feldmans Historic District
- First Hittinger Block
- Fox Commercial Building

- Fox Theatre
- Haynes House
- Hotel Congress
- Iron Horse Expansion Historic District
- J.C. Penny Store
- Jefferson Park Historic District
- Julian-Drew Building
- Manning House
- Marist College Historic District
- Menlo Park Historic District, Type A Joesler, and Type B Joesler, the
- Old Adobe Patio
- Old Main, University of Arizona
- Old Vail Post Office
- Owen Homesite
- Pie Allen Residential Historic District
- Pima County Courthouse
- Rebeil Building
- Rialto Building
- Rialto Racetrack Historic District
- Rialto Theatre
- Rincon Heights Historic District
- Ronstadt-Sims Warehouse
- Ronstadt House
- Sabedra-Huerta House
- Santa Cruz Catholic Church
- San Xavier del Bac
- Schwalen-Gomez House
- Sixth Avenue Underpass
- Professor George E.P. Smith House
- Sosa-Carillo-Fremont House
- Southern Pacific Railroad Locomotive No. 1673
- John Spring Neighborhood Historic District
- Stone Avenue Underpass
- Type A Joesler
- Type B Joesler
- University Heights Elementary School
- University of Arizona Historic District
- University Library, Arizona State Museum, North
- US Post Office & James A. Walsh Courthouse
- USDA Tucson Plant Materials Center
- Valley National Bank

- Velasco House
- Veterans Administration Hospital Historic District
- Warehouse Historic District
- Solomon Warner House and Mill
- West University Historic District

This portion of the proposed Project consists of upgrading an existing line; therefore, additional alterations to setting (visual impact) would be minor.

The remaining 24 properties are within 3 to 5 miles and, due to distance, no visual impacts are expected:

- James P. and Sarah Adams House
- Binghampton Rural Historic Landscape
- Erksine P. Caldwell House
- Colossal Cave Preservation Park Historic District
- John P. and Helen S. Corcoran House
- El Conquistador Water Tower
- El Encanto Apartments
- El Encanto Estates Residential Historic District
- El Montevideo Residential Historic District
- P.W. Fletcher House
- Gabel House
- Arthur C. Hall and Helen Neel House
- Sam Hughes Residential Historic District
- Phillip G. McFadden House
- Ramada House
- Rillito Racetrack-Chute
- St. Philip's in the Hills Episcopal Church
- Virginia Heights
- Winterhaven Historic District
- Cocoraque Butte Archeological District
- Los Robles Archeological District, Red Rock
- Santa Ana del Chiquiburitac Mission Site
- Valley of the Moon Historic District
- Villa Catalina

Determined Eligible

Two resources determined eligible under Criterion A, B, or C are found within 0.5 mile of the centerline of subroute 4.1: AZ AA:2:118(ASM) and AZ AA:8:366(ASM). AZ AA:2:118(ASM) is SR 84; AZ AA:8:366(ASM) is the Saguaro-Oracle 115-kV transmission line. No visual impacts are expected to these two resources from the transmission line.

ROUTE VARIATION

Route variation U3aPC runs north off of segment U3a for 1 mile on the west side of the Arizona State Prison in Tucson and then head west for roughly 5 miles along Old Vail Road. Approximately 80 percent of route variation U3aPC is routed along existing transmission lines or roads.

Direct Impacts

Known Cultural Resources

The representative ROW for route variation U3aPC intersects with 3 unevaluated/unknown resources and 2 potential resources. Because the majority of U3aPC is parallel or adjacent to existing linear infrastructure, resources within the representative ROW may have been disturbed from previous construction.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The representative ROW for route variations U3aPC crosses the Zanardelli PCA for less than a tenth of a mile.

Forecast Resources

Route variation U3aPC is predicted to have 34 cultural resources; however, none of them are predicted to be eligible for the NRHP.

Archaeological Sensitivity

Route variation U3aPC is predicted to have 23 cultural resources (67 percent) with moderate sensitivity (level 3) and 11 (33 percent) with moderate to high sensitivity (level 4).

Using the Pima county data, route variation U3aPC has 52 acres (46 percent) classified as high sensitivity, 48 acres (43 percent) as moderate sensitivity, and 12 acres (11 percent) as low sensitivity.

Summary of Direct Impacts for Route Variation U3aPC

Direct impacts for route variation U3aPC are projected to be minor; 34 resources are predicted for the segment but they are not anticipated to be eligible for the NRHP. The route does enter a section of the Zanardelli PCA that could directly impact the PCA. However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

Route variation U3aPC crosses the Mormon Battalion Trail north of Summit and the Gila Trail twice in the northeastern corner of the route east of Summit.

Visual Analysis

Listed Historic Properties

The listed Zanardelli site is within the 0.5 to 3.0 mile zone from route variation U3aPC; the site is located approximately 0.75 mile from the proposed route. Moderate visual impacts could occur due to the

proximity of the transmission line to the site. Sax Xavier del Bac is located between 3 and 5 miles; because of the distance, no visual impacts are anticipated.

Determined Eligible

There are no determined eligible sites within the visual analysis area of route variation U3aPC.

LOCAL ALTERNATIVES

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C. MA1 runs southwest of the Marana Regional Airport in an L shape to avoid the airport itself. The nine TH alternatives are all options for replacing the existing line, which currently runs across Tumamoc Hill. The Tumamoc Hill (TH) alternatives were developed by a working group of stakeholders at meetings on August 24, 2013 and August 13, 2013 which includes the University of Arizona, City of Tucson, Pima County, and the Tohono O'odham Nation, to avoid or minimize impacts to the Tumamoc Hill Archaeological District and Desert Laboratory NHL. The local alternatives around Tumamoc Hill will also allow the removal on the existing line which currently crosses the NHL.

Direct Impacts

Known Cultural Resources

Local alternative MA1 has one unevaluated/unknown resource and one potential resource from a historical map; however, none of the representative ROW for MA1 has been previously surveyed.

The representative ROW for local alternatives TH1a, TH1b, and TH1-Option crosses one listed property (Tumamoc Hill Archaeological District and Desert Laboratory). In addition, TH1a has one unevaluated/unknown resource; TH1b has two unevaluated/unknown resources and 8 potential resources from historical maps; and TH1-Option has one unevaluated/unknown resource and six potential resources from historical maps. The representative ROWs for TH1a and TH1-Option have been 100 percent surveyed; TH1b has been 21.6 percent surveyed.

Local alternative TH1c has one eligible (AZ AA:16:333[ASM]), one unevaluated/unknown, and five potential historic resources. AZ AA:16:333(ASM) is a prehistoric artifact scatter. The TH1c representative ROW has been 33.2 percent surveyed.

TH3-Option A has one eligible resource (AZ BB:13:101[ASM]), three unevaluated/unknown, and ten potential historic resources. AZ BB:13:101(ASM) is a prehistoric artifact scatter. The TH3-Option A representative ROW has been 100 percent surveyed.

TH3-Option B has four potential historic resources from historical maps; 62.0 percent of the representative ROW has been surveyed. TH3-Option C, which has been 82.6 percent surveyed, has 1 eligible resource (AZ BB:13:17[ASM]), 2 unevaluated/unknown resources, and 18 potential historic resources. AZ BB:13:17(ASM) is a prehistoric artifact scatter.

One eligible resource (AZ BB:13:17[ASM]), 3 unevaluated/unknown resources, and 31 potential historic resources are found in TH3a which has been 91.8 percent surveyed. AZ BB:13:17(ASM) is a prehistoric artifact scatter.

The listed Butterfield Trail and 3 additional eligible resources (AZ BB:13:17[ASM], AZ BB:13:94[ASM], and AZ BB:13:111[ASM]), 3 unevaluated/unknown resources, and 39 potential

resources from historical maps are found in local alternative TH3b. AZ BB:13:17(ASM) and AZ BB:13:94(ASM) are prehistoric artifact scatters. AZ BB:13:111(ASM) is the historic Lee's Mill. The TH3b representative ROW has been 87.0 percent surveyed.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

TH1a crosses the Middle Santa Cruz PCA for 0.3 mile; TH1b and TH1c do not cross any PCAs. TH1-Option crosses the Middle Santa Cruz PCA for 0.9 mile.

TH3-Option A crosses both the Middle Santa Cruz and Valencia PCA for 0.8 mile. TH3-Option B crosses the Middle Santa Cruz PCA for 0.4 mile, the West Branch PCA for 0.3 mile, and the Valencia PCA for 0.1 mile.

TH3a crosses the Middle Santa Cruz PCA for 1.7 miles and the Valencia PCA for 1.4 miles; TH3b crosses the Middle Santa Cruz PCA for 4.5 miles.

Forecast Resources

Local alternative MA1 is predicted to have one cultural resource which would not be eligible for the NRHP. Local alternative TH1a is anticipated to have three resources, two of which would be eligible for the NRHP. Local alternative TH1b is anticipated to have 15 resources with 10 of them being eligible for the NRHP; local alternative TH1c is anticipated to have seven resources with none of them being eligible for the NRHP.

Local alternative TH3-Option A is anticipated to have 16 cultural resources, with 3 being eligible; local alternative TH3-Option B is anticipated to have 3 resources with none being NRHP eligible; and local alternative TH3-Option C is anticipated to have 25 resources with 17 being eligible for the NRHP. TH3a is predicted to have 39 cultural resources; 7 of them are anticipated to be eligible. Local alternative TH3b is forecast to have 51 resources with 16 of them being NRHP eligible.

Archaeological Sensitivity

Local alternative MA1 is projected to have 1 resource with unknown sensitivity (level 0).

Local alternative TH1a is projected to have two resources (67 percent) with high sensitivity (level 5) and one resource (33 percent) with moderate sensitivity (level 3). Local alternative TH1b is projected to have 9 resources (60 percent) with moderate sensitivity (level 3) and 6 resources (40 percent) with high sensitivity (level 5). Local alternative TH1c is projected to have 7 resources (100 percent) with moderate sensitivity (level 3).

Local alternative TH1-Option is projected to have 3 resources (67 percent) with high sensitivity (level 5) and 1 resource (33 percent) with moderate sensitivity. TH13-Option A is projected to have 6 resources (40 percent) with moderate sensitivity (level 3) and 6 resources (40 percent) with moderate to high sensitivity (level 4). TH3-Option C is projected to have 17 resources (67 percent) with moderate sensitivity (level 3) and 8 resources (33 percent) with moderate to high sensitivity (level 4).

Local alternative TH3a is projected to have 20 resources (50 percent) with moderate to high sensitivity (level 4) and 20 resources (50 percent) with moderate sensitivity (level 3). Local alternative TH3b is projected to have 29 resources (57 percent) with the moderate sensitivity (level 3) and 22 resources (43 percent) with moderate to high sensitivity (level 4).

No resources are projected for local alternative TH3-Option B.

Using the Pima County data, 100 percent (19 acres) of MA1 is categorized as moderate sensitivity, as well as all of TH1a (26 acres). Twenty-five acres (86 percent) of TH1b is categorized as high sensitivity and 4 acres (4 percent) as low sensitivity. All of TH1c (5 acres), TH1-Option (17 acres), TH3a (50 acres), and TH3b (81 acres) is categorized as high sensitivity.

Summary of Direct Impacts for Route Group 4 Local Alternatives

The local alternatives which go around Tumamoc Hill Archaeological District and Desert Laboratory NHL or around portions of the NHL would allow for the removal of the existing line which would decrease the impact of the current line across the NHL; however, some of the routes do still cross portions of the NHL and would directly impact the resource.

No direct impacts for local alternatives MA and TH3-Option B are anticipated.

Direct impacts for local alternative TH1a are projected to be moderate because the representative ROW crosses the Tumamoc Hill Archaeological District and Desert Laboratory NHL. Projected resources in the representative ROW total 3 with 33 percent having moderate sensitivity and 67 percent having high sensitivity. Direct impacts for local alternative TH1b would also be moderate because the representative ROW crosses the Tumamoc Hill Archaeological District and Desert Laboratory NHL. Projected resources in the representative ROW total 15 with 60 percent having moderate sensitivity and 40 percent having high sensitivity.

For local alternative TH1c, direct impacts are projected to be minor. One eligible and one unevaluated resource are found within the representative ROW. Seven cultural resources are projected to be present; all resources have moderate sensitivity.

For local alternative TH1-Option, direct impacts are projected to be moderate because the representative ROW crosses the Tumamoc Hill Archaeological District and Desert Laboratory NHL. Project resources total 4 with 33 percent having moderate sensitivity and 67 percent having high sensitivity.

Direct impacts for local alternative TH3-Option A are projected to be minor. One eligible and 3 unevaluated resources are present in the representative ROW. Sixteen resources are projected with 80 percent of them falling in the moderate sensitivity and moderate to high sensitivity categories.

Direct impacts for local alternative TH3-Option C are projected to be minor. One eligible and 2 unevaluated resources are present in the representative ROW. Twenty-five resources are projected with 100 percent of them falling in the moderate and moderate to high sensitivity categories.

For local alternative TH3a, direct impacts are projected to be minor. One eligible and 3 unevaluated resources are present in the representative ROW. Thirty-nine resources are projected for the representative ROW with 50 percent of them falling in the moderate sensitivity category and 50 percent in the moderate to high sensitivity category.

Direct impacts for local alternative TH3b are projected to be moderate. One listed, 3 eligible, and 4 unknown cultural resources are present in the representative ROW. Projected resources within the representative ROW total 51 with 100 percent having moderate or moderate to high sensitivity.

However, adverse impacts to historic properties would be mitigated in accordance with the terms of the PA and the POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred method to minimize impacts.

Historic Trails

The local alternatives intersect with the Butterfield Trail, the potential routes of the Mormon Battalion Trail and the Zuñiga Trail, and the Anza NHT.

Local alternative TH1c crosses the potential route of the Mormon Battalion Trail north of West Speedway Boulevard.

TH3-Option B crosses the Anza NHT north of West Irvington Road.

Local alternatives TH3-Option C and TH3a cross the potential Zuñiga Trail northwest of the West Ajo Way exit off I-19.

Local alternative TH3b crosses the Anza NHT three times: south of West Silverlake Road, north of West Cushing Street, and south of The Loop between West Grant Road and West Speedway Boulevard. Local alternative TH3b crosses the Butterfield Trail south of West Speedway Boulevard.

Tribal Resources

Local alternatives TH1a, TH1b, and TH1-Option cross portions of Tumamoc Hill.

Visual Analysis

Listed Historic Properties

No listed properties are within the visual analysis area for MA1.

One listed property is located within 0.5 mile of local alternatives TH1a, TH1b, TH1-Option: the Tumamoc Hill Archaeological District and Desert Laboratory NHL. TH1a passes through the Tumamoc Hill Archaeological District and Desert Laboratory NHL; TH1b is located just north of the property. Moderate to major visual impacts due to alterations to the setting of Tumamoc Hill are expected for both routes because a new transmission line would be constructed. Although Tumamoc Hill is located within a residential area, the residential area itself contains several historic homes and Tumamoc Hill is considered a component of that residential area (see Section 4.10.3, “Visual Resources”). As discussed in section 4.10.3, the visual sensitivity of Tumamoc Hill is moderate to high because of the NHL itself and the surrounding community; therefore, visual impact of the new tower structures along the route would be moderate to high. However, because routing the line along TH1a, TH1b, or TH1-Option would entail removing the existing line across Tumamoc Hill visual impacts from the existing line would be eliminated, and the new line would present lesser visual impacts even though the new line would be taller because of the distance from the resource.

Ninety-six listed historic properties are located within the visual analysis area of TH3b. Twenty-four listed historic properties are located within 0.5 mile of the TH3b centerline:

- Barrio Anita Historic District
- Blixt–Avitia House
- Bray–Valenzuela House
- Cordova House
- Dodson–Esquivel House
- Eckbo Landscape
- El Paso and Southwestern Railroad Depot

- El Paso and Southwestern Historic District
- El Presidio Historic District
- El Tiradito
- Levi H. Manning House
- Antonio Matus House and Property
- Pascua Cultural Plaza
- Pima County Courthouse
- Ronstadt–Sims Adobe Warehouse
- Sabedra–Huerta House
- Schwalen–Gomez House
- Sosa-Carrillo-Fremont House
- Solomon Warner House and Mill
- Barrio El Hoyo Historic District
- Barrio El Membrillo Historic District
- San Agustin del Tucson
- Menlo Park Historic District
- Warehouse Historic District

These properties are part of an urban environment and many are located on the eastern side of I-10 while the proposed transmission line would be located on the western side of I-10; therefore, alterations to setting (visual impact) would be minor to properties on the eastern side of I-10. The Menlo Park Historic District, the Blixt–Avitia House, the Bray-Valenzuela House, the Dodson-Esquival House, the Schwalen-Gomez House, the Solomon Warner House and Mill are located just east of TH3b on the eastern side of Tumamoc Hill; visual impacts would be greater to these properties than on the other side of I-10 in this distance category.

Sixty-three listed historic properties which are also part of an urban environment and are mostly located on the eastern side of I-10 are found within the 0.5- to 3-mile range of the local alternative:

- 4th Avenue (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Arizona Daily Star Building (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Arizona Hotel (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Arizona Inn (TH3b)
- Armory Park Historic Residential District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Bear Down Gym (TH3b)
- Barrio Libre (TH3b)
- Barrio Santa Rosa Historic District
- Boudreax-Robinson House (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Dr. William Austin Cannon House (TH1c, TH3b)
- Catalina Vista Historic District (TH3b)
- Copper Bell Bed and Breakfast (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Coronado Hotel (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Don Martin Apartments (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)

- Downtown Tucson Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- El Encanto Apartments (TH3b)
- El Tiradito (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- First Hittinger Block (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Fourth Avenue Underpass (TH3b)
- Fox Commercial Building (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Fox Theatre (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Ghost Ranch Lodge (TH1b, TH1c, TH3b, TH1-Option)
- Haynes House (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Hotel Congress (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Sam Hughes Neighborhood Historic District (TH3b)
- Iron Horse Expansion Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- J. C. Penney–Chicago Store (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Jefferson Park Historic District (TH1b, TH1c, TH3b)
- Julian-Drew Building (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Marist College Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Men’s Gymnasium, University of Arizona (TH3b)
- Old Adobe Patio (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Old Library Building (TH3b)
- Old Main, University of Arizona (TH1c, TH3b)
- Pascua Cultural Plaza (TH1a, TH1b, TH1c, TH3b, TH1-Option)
- Pie Allen Historic District (TH1b, TH1c, TH3a, TH3b, TH3-Option C)
- Pima County Courthouse (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Rebeil Block (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Rialto Building (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Rialto Theatre (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Rincon Heights Historic District (TH1c, TH3a, TH3b, TH3-Option C)
- Ronstadt House (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Sam Hughes Neighborhood Historic District (Boundary Increase) (TH3b)
- Santa Cruz Catholic Church (TH1a, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Sixth Avenue Underpass (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Professor George E. P. Smith House (TH1c, TH3b)
- Southern Pacific Railroad Locomotive No. 1673 (TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Speedway–Drachman Historic District (TH3b)
- John Spring Neighborhood Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Stone Avenue Underpass (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Tucson Warehouse Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)

- Type A Joesler (TH3b)
- Type B Joesler (TH3b)
- U.S. Post Office and Courthouse (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- University Heights Elementary School (TH1b, TH1c, TH3b)
- University of Arizona Campus Historic District (TH1c, TH3b)
- University Library, Arizona State Museum North (TH1c, TH3b)
- USDA Tucson Plant Materials Center (TH1b, TH1c, TH3b, TH1-Option)
- Valley National Bank Building (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Velasco House (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Veterans Administration Hospital Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- West University Historic District (TH1a, TH1b, TH1c, TH3a, TH3b, TH1-Option, TH3-Option C)
- Hotel Heidel (TH3b)

No visual impacts are expected for these listed historic properties.

Nine listed properties are found within 3 to 5 miles of the route group 4 local alternatives and, due to distance, no visual impacts are anticipated: Blenman-Elm Historic District, the Villa Catalina, the Catalina American Baptist Church, Colonia Solana Residential Historic District, the El Conquistador Water Tower, El Encanto Estates Historic District, El Montevideo Residential Historic District, the First Joesler House, and Virginia Heights.

Determined Eligible

There are no historic properties which have been determined eligible under Criterion A, B, or C within the visual analysis areas for local alternatives MA1, TH1a, TH1b, TH1c, TH3-Option A, TH3-Option B, TH3-Option C, TH3a, and TH3b; therefore, there would be no visual effects to determined eligible properties.

Substation and Substation Expansions

One new substation and expansion of 14 existing substations is planned for the proposed Project. The new substation (Midpoint) would be located along the subroute 1.1 (Midpoint North) or subroute 1.2 (Midpoint South). The existing stations are: Adams Tap Substation, Afton Substation, Apache Substation, Del Bac Substation, DeMoss Petrie Substation, Hidalgo Substation, Marana Substation, Nogales Substation, Pantano Substation, Rattlesnake Substation, Saguaro Substation, Tortolita Substation, Tucson Substation, and Vail Substation. Table 4.9-15 summarizes the known resources within each substation footprint.

Table 4.9-15. Substations, Cultural Resource Inventory Data

Substation	Total Acreage of Disturbance	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historical Maps	Total Number of Resources
Midpoint North	35	0	0	0	0	**0**
Midpoint South	35	0	0	2	0	**2**
Adams Tap Substation	4	0	0	1	1	**2**

Table 4.9-15. Substations, Cultural Resource Inventory Data (Continued)

Substation	Total Acreage of Disturbance	Listed Sites	Determined Eligible Sites	Unevaluated or Unknown Sites	Resources from Historical Maps	Total Number of Resources
Afton Substation	20	0	0	0	1	**1**
Apache Substation	38	0	0	0	7	**7**
Del Bac Substation	10	1	0	1	7	**9**
DeMoss Petrie Substation	0	0	0	0	3	**3**
Hidalgo Substation	35	0	0	0	1	**1**
Marana Substation	10	0	0	1	1	**2**
Nogales Substation	9	0	0	0	0	**0**
Pantano Substation	10	0	0	0	0	**0**
Rattlesnake Substation	10	0	0	0	1	**1**
Saguaro Substation	14	0	0	0	1	**1**
Tortolita Substation	1.4	0	0	0	0	**0**
Tucson Substation	3.7	0	0	0	0	**0**
Vail Substation	10	0	0	0	1	**1**

KNOWN CULTURAL RESOURCES

One listed historic property, the Valencia Site, is within the footprint of the Del Bac Substation expansion.

Archaeology Southwest's Cultural Resources Priority Conservation Areas

The Del Bac Substation is located within the Middle Santa Cruz and Valencia PCAs.
The DeMoss Petrie Substation is located with the Middle Santa Cruz PCA. The Marana Substation is located with the Los Robles PCA.

Pima County Cultural Resource Sensitivity

Using the Pima County model, the Nogales Substation and the Pantano Substation are located in areas of low sensitivity for cultural resources. The Vail Substation and the Rattlesnake Substation are located in areas of moderate sensitivity for cultural resources. The Del Bac Substation, the DeMoss Substation, the Marana Substation, and the Tucson Substation area located in areas of high sensitivity for cultural resources.

Agency Preferred Alternative

The Agency Preferred Alternative for route group 1 consists of P1, P2, P3, and P4a. Segment P2 is the segment of primary concern for cultural resource mainly because of its length at 102 miles. Within the representative ROW of P1, P2, P3, and P4a, 24 cultural resources have been recorded. Forecast number of resources for the entire representative ROW of route group 1 total 173 resources with 121 of those resources located in P2. One hundred and nineteen of the 173 resources are anticipated to be of moderate sensitivity and 7 of moderate to high sensitivity. Segment P2 is expected to have direct and indirect impacts to the Butterfield Trail (which it crosses) and visual impacts to one NRHP-eligible historic property. Seventy-five percent of the Agency Preferred Alternative for route group 1 is routed along existing transmission lines, roads, and pipeline. An existing transmission line currently crosses the

Butterfield Trail at the same location where it is crossed by P2; other cultural resources along the route may have been disturbed by the previous construction of the existing infrastructure.

The Agency Preferred Alternative for route group 2 consists of P5b, P6a, P6b, P6c, P7, P8, and local alternatives LD3a and LD3b; the Agency Preferred Alternative in this route group was designed to go around the Lordsburg and Willcox playas and parallel existing or proposed linear infrastructure. Within the representative ROW, segments P5b, P6a, P6b, P6c, P7, and P8 have 39 previously recorded and 241 projected cultural resources. For route group 2, 61 percent of the projected resources would be classified as moderate or moderate to high sensitivity. Only segment P5b crosses the Butterfield Trail; no existing transmission lines are present at that crossing. Visual impacts will occur to the setting of AZ FF:1:34(ASM), the Arizona and Colorado Railroad, where P7 crosses the abandoned railroad on the edge of Willcox Playa. No other visual impacts are anticipated for route group except for that of P7.

Local alternative LD3a has three recorded and 61 projected cultural resources. LD3b has no previously recorded and 3 projected cultural resources. All of the projected cultural resources for these local alternatives are anticipated to be of moderate or moderate to high sensitivity. LD3a also crosses the Butterfield Trail and no existing transmission lines are present at that crossing.

The Agency Preferred Alternative for route groups 1 and 2 avoids any impact to the El Paso and Southwestern “SouthLine” Railroad which runs along several segments of potential southern routes.

The Agency Preferred Alternative for route group 3 consists of U1a, U1b, U2, and portions of U3a which all consist of an existing Western 115-kV transmission line. Segment U3a is of greatest cultural concern because it travels through an area of dense resources. Within U1a, U1b, U2, and the portion of U3a there are 34 recorded resources; one of those resources is listed on the NRHP (Empirita Ranch Historic District) and is within the representative ROW of U3a. Projected resources within the route group representative ROW total 193, with 109 of those resources in the total length of U3a. Of the total projected resources, 59 percent would be of moderate sensitivity, 7 percent of moderate to high sensitivity, and 4 percent of high sensitivity. Segment U1a is the only segment that crosses the Butterfield Trail. Although there are several existing and projected resources for the route, the route is an existing line and ground disturbance would be significantly less than that of the New Build Section. The fact that this is an existing line also would minimize additional visual impacts to the several historic properties found within 3 miles of the centerline.

The Agency Preferred Alternative for route group 4 consists of a portion of U3a, as well as route variation U3aPC, segments U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, U4, MA1, TH1a, and TH1 Option. Segments U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, and U4 consist of the existing Western 115-kV transmission line. Route variation U3aPC routes around the community of Summit. Local alternative MA1 was developed to route around the Marana Regional Airport and will minimize impacts to military training at the airport. Local alternatives TH1a and TH1 Option were designed to minimize impacts to the Tumamoc Hill Archaeological District and Desert Laboratory NHL.

Within the route group 4 portion of U3a, two NRHP-listed sites are found: the Valencia Site and AZ BB:13:315(ASM). Forecast resources for segment U3a is discussed under route group 3 (see above); however, within route group 4, there are 8 previously recorded cultural resources within the representative ROW for the western portion of U3a and 16 previously recorded cultural resources in the representative ROW for the eastern portion of U3a. Route variation U3aPC has 3 previously recorded and 34 projected cultural resources. All of the projected cultural resource would be of moderate or moderate to high sensitivity. The portion of segment U3a in route group 4 also crosses three Archaeology Southwest’s Cultural Resources PCAs.

While all of segments U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, and U4 are in culturally sensitive areas with dense resources, segments U3f, U3g, U3i, and U3k are of particular concern. Within U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, and U4, 51 cultural resources have been recorded within the representative ROW, including three NRHP-listed historic properties: Tumamoc Hill Archaeological District and Desert Laboratory NHL (U3f and U3g), the Los Robles Archaeological District (U3k), and the Butterfield Trail (U3h, U3i, and U3l). Two hundred and twenty-eight cultural resources have been projected for the representative ROW; 98 of which are in U3i and 51 of which are in U3k. Almost all of the projected resources are expected to fall in the moderate, moderate to high, and high sensitivity categories. Six Archaeology Southwest's Cultural Resources PCAs are crossed by the route.

The Butterfield Trail is crossed by U3h, U3i, and U3k and the Anza NHT is crossed by U3i and U3k. Seventy-eight historic properties are within 3 miles of the route as well.

Although there are several existing and projected resources for the Agency Preferred Alternative for route group 4, this portion of the route consists of an existing line with previous disturbance and current visual impacts. For the existing line, ground disturbance and visual impacts would be significantly less than that of the New Build Section. The fact that this is an existing line also would minimize additional visual impacts to the historic properties found within 3 miles of the centerline.

Local alternative MA1 has no recorded and one anticipated cultural resource. No impacts are anticipated for MA1.

Local alternative TH1a and TH1-Option go around the southern, western, and northern edges of Tumamoc Hill but are still within the boundaries of the NHL. Projected resources in local alternative TH1a total 3 and in THI-Option total 4; for both alternatives, 67 percent of those resources are anticipated to have high sensitivity and 33 percent to have moderate sensitivity. Visual impacts to Tumamoc Hill created by the new tower structures would be moderate to high. However, because routing the line along TH1a and TH1-Option would entail removing the existing line across Tumamoc Hill visual impacts from the existing line would be reduced.

Based on this analysis, several issues have been identified for cultural resources:

- Direct and visual impacts are expected to the Butterfield Trail in segments P2, LD3a, U1a, U3h, U3i, and U3k and to the Anza NHT in segments U3i and U3k. However, many of these crossings have existing lines parallel to the proposed transmission line or consist of existing line themselves.
- In general, the length of segment corresponds to the amount of impact meaning that the longer the segment, the greater the impact. The Agency Preferred Alternative in route group 1 is culturally sensitive, especially segment P2. A high number of cultural resources is forecast for this segment which can be partially attributed to the overall length of the segment; however, all of P2 is routed along or adjacent to existing facilities and infrastructure and resources may have been previously disturbed and adverse impacts to resources mitigated.
- Segments U3a of route group 3 and U3i and U3k of route group 4 are also culturally sensitive. These routes travel through areas of high cultural density and/or importance, including several Cultural Resources PCAs. However, because these segments represent an existing line impacts due to ground disturbance will be reduced.
- Several segments cross portions of Tumamoc Hill (U3f, U3g, TH1a, and TH1-Option); however, the selection of TH1a and TH1-Option will reduce visual impacts by routing the line around the NHL rather than through it and will allow the existing line crossing through the NHL to be removed.

The above issues mean that adverse impacts to cultural resources for the Agency Preferred Alternative will be long-term and major; however, adverse effects to historic properties will be mitigated in accordance with the terms of the PA. According to Southline's POD (PPM CR-4: Avoid Direct Impacts on Significant Cultural Resources through Final Design), the preferred choice for impact reduction will be avoidance of resources. If resources cannot be avoided other types of mitigation would be developed and implemented through an HPTP, which may include data recovery, construction monitoring, and public outreach. Provided that mitigation measures (see PCEMs in table 2-8), appropriate to the resource are implemented prior to, during, and/or after construction, impacts to historic properties would be reduced to moderate but still would be permanent to long-term.

Residual Impacts

For historic properties eligible for the NRHP under Criterion D, provided that the HPTP is implemented and followed, there would be no residual impacts. For resources eligible for the NRHP under Criterion A, B, or C, there may still be residual impacts associated with alterations to integrity of setting, feeling, or association due to the presence of the transmission line and associated facilities. Resources may or may not partially retain characteristics that make them eligible under Criteria A, B, and C, and residual impacts from the presence of the proposed Project would be moderate.

Unavoidable Adverse Impacts

If resources cannot be avoided due to Project design, any disturbance, damage, or loss of cultural resources that are or may be eligible for the NRHP due to ground disturbance is considered an unavoidable adverse impact.

Short-term Uses versus Long-term Productivity

The short-term use of the ROW during construction of the transmission line and its associated facilities would result in ground disturbance. If that ground disturbance results in the disturbance, damage, or loss of cultural resources that are or may be eligible for the NRHP, the long-term potential of that resource is reduced or eliminated. This is primarily true of resources eligible under Criterion D; however, if a resource eligible under Criterion A, B, or C is damaged or lost due to construction, that would also affect its long-term potential.

Irreversible and Irretrievable Commitments of Resources

Because cultural resources are non-renewable resources, any disturbance, damage, or loss to a resource that is or may be eligible for the NRHP would constitute an irreversible and irretrievable impact to that resource. However, archaeological data recovery of sites along the proposed transmission line would increase knowledge and understanding about the history of southwestern New Mexico and southeastern Arizona, which would be a benefit (positive impact) to science. Large portions of the project area especially outside the Tucson area are still poorly understood due to lack of research. Data recovery projects along the proposed transmission line route would contribute to our understanding of the San Simon Mogollon and the Jornada Mogollon cultures, as well as to our understanding of historic era transportation, settlement, and mining in southeastern Arizona and southwestern New Mexico. Investigations in these poorly understood areas could help contribute our understanding and knowledge of the use and formation of the landscape in southwestern New Mexico and southeastern Arizona.

4.10 VISUAL RESOURCES

4.10.1 Introduction

This section addresses the potential impacts to visual resources from the proposed Project and alternatives. The proposed Project and alternatives would traverse multiple landscape types, viewing areas, and land jurisdiction as identified in Chapter 3, "Affected Environment." The visual resources analysis provides an assessment of impacts to existing conditions given the introduction of the proposed Project into the aesthetic environment. The degree of impact to visual resources was measured in terms of proportionate change to the aesthetic environment using defined criteria such as visual contrast.

4.10.2 Methodology and Assumptions

The methodology used for the impact analysis of the visual resources is three-tiered. The first level of analysis is a discussion of the changes to the landscape in the areas of analysis resulting from the actions prescribed under each alternative and an analysis of the impacts to visual resources as inventoried. The second level of analysis is an assessment of impacts resulting from those same actions as seen from KOPs along the proposed Project routes. The third level of analysis is an assessment of whether the proposed changes to the landscape would meet BLM's objectives for management of visual resources where the potential project routes crossed BLM-managed lands. The three-tiered methodology was based primarily upon the BLM VRM 8400 Series guidance, BLM third-party contractor experience with visual resource analyses for transmission line and substation projects, and extensive project-level coordination with BLM, NPS, Forest Service, and inclusion of several tiers of agency staff.

Specifically, GIS technology was used to assess initial impacts to scenery and views by establishing a viewshed. Comprehensive field reconnaissance informed the baseline conditions, described in chapter 3, "Affected Environment." Visual contrast as defined in BLM Manual 8431 was used in the site analysis from the perspective of each selected KOP (BLM 1986a).

Visual contrast, or the degree of visual change to the landscape, based on construction and operation and maintenance of the proposed Project, was used as the primary indicator of impacts. Visual contrast rating analysis is the assessment performed by evaluating the visual elements of form, line, color, and texture of the existing landscape. Contrast results from landform modifications necessary to prepare the ROW for construction, including removal of vegetation, or creation of permanent access roads to build structures.

The degree of impact to visual resources to determine what is allowable administratively based on VRM Class objectives was measured in terms of: high, moderate, and low (as defined by BLM VRM guidance). A "high" degree of impact occurs where the project facilities would dominate the landscape. A "moderate" degree of impact occurs when project facilities would co-exist within the landscape but would be apparent from viewing locations, and changes would modify the inherent quality of the landscape but the facilities would blend with the existing form, line, color, and texture. A "low" degree of visual impact would be a change that is subordinate, or not readily apparent. Low impacts are considered minimal changes to the existing landscape character, such as parallel existing facilities or placement within an existing utility corridor with a similar form, line, color, and texture.

The visual resource evaluation began with the establishment of the area of exposure; identification of the sensitive receptors (e.g., public and stakeholders) within the area of exposure; identifying issues of concern as expressed during scoping, public outreach, field reconnaissance, and specific communications with property owners; an assessment of scenic values (as expressed in the visual resource inventory); and the assessment and description of the degree of effect on public scenic value as required by NEPA.

Though the proposed Project traverses several jurisdictions, the visual resource assessment was conducted consistently throughout the analysis area. .

The assessment of visual contrast was based upon 10 environmental factors: distance, angle of observation, length of time the project is in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion. The BLM Manual 8431, Visual Contrast Rating (BLM 1986a) defines these factors as follows:

Distance. The contrast created by a project usually is less as viewing distance increases.

Angle of Observation. The apparent size of a project is directly related to the angle between the viewer's line-of-sight and the slope upon which the project is to take place. As this angle nears 90 degrees (vertical and horizontal), the maximum area is viewable.

Length of Time the proposed Project is in View. If the viewer has only a brief glimpse of the project, the contrast may not be of great concern. If, however, the project is subject to view for a long period, as from an overlook, the contrast may be very significant.

Relative Size or Scale. The contrast created by the project is directly related to its size and scale as compared to the surroundings in which it is placed.

Season of Use. Contrast ratings consider the physical conditions that exist during the heaviest or most critical visitor use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and lush vegetation and flowering in the spring.

Light Conditions. The amount of contrast can be substantially affected by the light conditions. The direction and angle of lighting can affect color intensity, reflection, shadow, form, texture, and many other visual aspects of the landscape. Light conditions during heavy periods of rain must be a consideration in contrast ratings.

Recovery Time. The amount of time required for successful revegetation should be considered. Few projects meet the VRM management objectives during construction activities. Recovery usually takes several years and goes through several phases (e.g., bare ground to grasses, shrubs, trees, etc.). It may be necessary to conduct contrast ratings for each of the phases that extend over long time periods. Those conducting contrast rating should verify the probability and timing of vegetative recovery.

Spatial Relationships. The spatial relationship within a landscape is a major factor in determining the degree of contrast.

Atmospheric Conditions. The visibility of projects due to atmospheric conditions such as air pollution or natural haze should be considered.

Motion. Movement such as waterfalls, vehicles, or plumes draws attention to a project.

Because it is not possible to analyze every view toward proposed Project features, the contrast rating process requires selection of representative views, or KOPs. KOPs represent a range of views available to the public, including common views and sensitive views; sensitive views are those from communities, recreational areas, and travel routes. In consultation with the BLM Field Office representatives, a list of potential KOP locations was compiled. Based on observations made during the field visit, 79 KOPs were identified, of which 29 were selected as candidates for visual simulation. No simulation would be created for the remaining 50 KOPs. The agencies made additional recommendations over time, resulting in a final total of 106 KOPs, with 46 being simulated. Visual simulations were prepared using computer modeling techniques to depict the view as it would appear were the proposed Project completed. A combination of

computer-aided drafting, GIS tools, and rendering programs was used to produce images of the proposed Project facilities, which were then superimposed on photographs.

The KOPs are discussed in detail in section 3.10 and, along with visual contrast rating sheets (VCRSs) are summarized in appendix I. Simulations for select KOPs can be found in appendix K. For each KOP, the existing and with-project conditions are assessed for land and water features, vegetation, and structures in terms of the elements of form, line, color, and texture. The degree of contrast—strong, moderate, weak, or none—is assessed for each of these features and elements. The visual resources impact analysis was largely based upon BLM Visual Contrast Ratings and the assessment of the degree of potential impact on viewers, based upon the level of viewer sensitivity combined with proposed Project visibility and contrast within the existing landscape. Evaluators considered the 10 environmental factors described above and how varying conditions can influence the visual contrast of a structure. For example; lighting conditions in combination with changes in atmospheric conditions can result in moments of enhanced ephemeral visual impacts. The VCRSs in appendix I were reviewed and updated to characterize contrasts based on the 10 environmental factors described above.

Analysis Area

The analysis area for visual resources was established through preliminary assessment of scenic quality, visual sensitivity, and the derivation of a viewshed analysis using digital elevation modeling and ESRI ArcGIS viewshed tools. Field reconnaissance was conducted to verify onsite existing conditions, establish or validate boundaries for scenic quality, identify sensitive viewers, and determine visual contrast. Field reconnaissance and application of distance zones revealed an analysis area between 2 and 10 miles either side of centerline. Typically, views beyond 5 miles result in the visual deterioration of transmission line structures, although lattice-type structures begin to deteriorate in visibility beginning at 0.25 mile, and monopole structures begin to blend into the landscape at farther distances (dependent upon the background or horizon line conditions).

All alternatives considered in detail are located within the Basin and Range physiographic province and are split between the Mexican Highlands (roughly within the New Mexico area) and Sonoran Desert (roughly within the Arizona area) (USGS 2003). Both of these physiographic subregions are distinctive in the topography and vegetation that they comprise; however, the proposed Project is located entirely within desert landscape characterized by large swaths of open space, variation of the degree of vegetation growth, topography, and color contrast (i.e., form, line, color, and texture). Additionally, the proposed Project traverses varying degrees of human-made development ranging from highly rural, low-density communities, to moderate- to high-density urban landscape (within the city of Tucson).

Though the proposed Project traverses several landowner jurisdictions, the visual resource assessment was conducted consistently throughout the analysis area, and objectivity and uniformity in the analysis was applied to reduce the subjectivity associated with assessing visual quality.

Analysis Assumptions

The analysis assumptions for visual resources include both temporal and spatial dimensions.
The temporal bounds of analysis include the phasing of construction and operation and maintenance.
The spatial bounds of analysis are defined by areas in which the proposed Project would be visible, or its viewshed. However, the concept of analyzing visual contrast, or the degree of change to the existing landscape, was used to determine the level of visual impact within the viewshed as a result of the proposed Project. Lastly, the cumulative effect of the proposed Project (see section 4.21) is disclosed to illustrate the potential impacts to visual resources for viewers, residents, and visitors in the lands adjacent to or surrounding the Project footprint. Past, present, and reasonably foreseeable future actions are described and considered that could cumulatively contribute to visual impacts.

The analysis area included a 10-mile buffer around all proposed Project alternatives along the New Build Section and a 5-mile buffer around all proposed Project alternatives along the Upgrade Section. The visual resource impacts analysis included an assessment of the landscape changes and the impacts to the inventoried visual values that would result from the construction and operation and maintenance of the proposed Project. The relative impacts of each alternative on the characteristic landscape was assessed by comparing visual contrasts that would result from changes to the form, line, texture, and color of the existing environment directly resulting from the implementation of the proposed Project. The analysis area was determined by a viewshed analysis in which potential viewing would be possible.

Impact Indicators

The analysis follows the contrast rating steps as defined in BLM Handbook H-8431-1 with these findings used to determine the effects to the inventoried visual values. The combination of the contrast rating results and changes to the visual values are included in the magnitude of impact significance. Conformance to the RMP visual management objectives are also to be factored (BLM 1986a). Impacts resulting from the introduction of the proposed Project into the existing visual environment, that cannot be mitigated or reduced, are measured in terms of high, moderate, and low:

- High Impacts—occur where the proposed Project and/or facilities associated with the proposed Project (e.g., access roads, towers, ancillary facilities, and other structures) are dominant in the visual landscape.
- Moderate Impacts—occur where the proposed Project or portions of the proposed Project are co-dominant with existing landscape features.
- Low Impacts—occur where the proposed Project or portions of the proposed Project are not dominant or considerably noticeable, and minimal change to the existing scenic landscape is detectible. Examples of low visual impacts include the Upgrade Section if existing utility structures are replaced, or if the proposed Project paralleled an existing transmission line or utility corridor where similar or more dominant structures are currently built, and the form, line, color, and texture contrast would result in similar views or modifications.

Significant Impacts

For the purposes of this analysis, a significant impact on visual resources could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- Areas that would no longer meet, or be in conformance with established VRM objectives and would require a plan amendment (see figures 3.10-16 and 3.10-20 for VRM class and segment conformance).
- Introduction of a structure contrast within a landscape that is highly sensitive from a natural resources or community perspective.
- Qualitative assessment of the degree of change in the landscape character from analysis viewpoints over time resulting in the permanent degradation of scenic quality in established areas of aesthetic importance.
- Shifts in the scenic quality and sensitivity rating in the affected SQRU and SLRU and any change to Distance Zone delineation as a result of newly created access opportunities that may experience significant public travel.
- Miles of Project visibility in areas established as highly scenic (i.e., scenic roads, community or historic areas).

4.10.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not issue permission to Southline for the use of the ROW; therefore, the New Build Section of the proposed Project would not be constructed across Federal lands and Western would not upgrade its existing transmission lines as part of the Southline Project. No Project-related impacts to visual resources would occur in the New Build Section and visual resource conditions would remain unaffected by the proposed Project. Visual resources would continue to be affected by current actions and activities in the analysis area. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations, including the upgrade of Western's transmission lines to 230-kV, within the next 10 years, in accordance with Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

This section presents the direct and indirect effects common to all action alternatives during construction and operation and maintenance of the proposed Project.

CONSTRUCTION

During construction, visual impacts would result from the introduction of construction vehicles, equipment, and construction materials within staging areas, access roads, and within the transmission line ROW. Disturbance resulting from construction would be temporary and largely short in duration, and visible effects from active construction would diminish subsequent to clean up and restoration of the temporary staging areas and access roads. Restoration of desert vegetation can take several years to complete and conditions in areas of disturbance are expected to change over several years as restoration takes place. Because of the small scale of vegetation disturbance required, there would be minimal visible contrasts that would be reduced over time.

Sensitive viewers would be affected by the temporary proposed Project construction impacts. However, the transmission line structures would cause the major, long-term change to scenery, while construction of the structures and facilities would be short-term and temporary. During construction, the motion associated with construction equipment, structure movement, conductor stringing, alteration of topography, earthwork, vegetation clearing, short-term impacts from dust generation, and landform modification would be noticeable and create visual contrast within the viewshed.

OPERATION AND MAINTENANCE

The towers, transmission lines, permanent access roads, and substations, would increase visual contrast during operation and maintenance of the proposed Project. Visual impacts would be most evident where cleared areas created scars, barren areas, or unnatural lines and contrast resulting from clearing which would remain for the life of the proposed Project (although, as noted in table 2-8 in chapter 2, some areas would be revegetated to reduce contrast resulting from landform and vegetation modification). The most evident and long-term visual contrasts result from the addition of transmission lines and facility structures within the landscape. These vertical structures (towers), conductors, lines, and access roads would produce long, linear contrast within the landscape, particularly in areas where no development or existing infrastructure exists.

Route Group 1 – Afton Substation to Hidalgo Substation

Visual contrast in route group 1 would directly result from introduction of transmission line structures and substations into the landscape, removal of vegetation to construct and maintain the transmission lines, construction of temporary and permanent access roads, temporary construction laydown yards, and any landform modifications necessary to prepare the ROW for construction. Table 4.10-1 provides a summary of scenic quality ratings and VRM Classes for route group 1.

Table 4.10-1. Route Group 1 Scenic Quality Ratings and VRM Class

		Scenic Quality Rating (in miles)			VRM Class (BLM lands only) (in miles)		
Segment	**Total Miles**	**A**	**B**	**C**	**II**	**III**	**IV**
Subroute 1.1, Proponent Proposed							
P1	5.1	0.0	0.0	5.1	0.0	0.0	3.0
P2	102.0	0.0	6.0	96.0	0.0	2.5	29.9
P3	31.1	0.0	0.0	31.1	0.0	2.6	22.9
P4a	8.9	0.0	0.0	8.7	0.0	0.4	3.6
Subroute 1.2, Proponent Alternative							
S1	13.4	0.0	0.0	13.4	0.0	0.0	10.9
S2	11.1	0.0	0.8	10.3	0.0	0.0	9.8
S3	12.9	0.0	7.0	5.9	0.0	0.0	12.4
S4	10.6	0.0	0.6	10.0	0.0	0.0	10.5
S5	29.7	0.0	7.6	22.1	1.2*	4.8	6.1
S6	7.4	0.0	0.0	7.4	4.4*	0.0	0.0
S7	41.5	0.0	0.0	41.5	13.7*	1.7	5.2
S8	14.6	0.0	0.0	14.6	0.0	0.3	0.0
Route Group 1 Local Alternatives							
DN1	42.5	0.0	12.3	30.2	0.0	4.0	2.9
A	17.5	0.0	0.0	17.5	0.0	14.7	0.0
B	12.2	0.0	0.7	11.5	0.0	0.0	10.0
C	9.0	0.0	0.0	9.0	3.7*	0.0	0.0
D	22.8	0.0	5.2	17.6	1.8*	4.3	1.9

* Not compliant with VRM objectives.

SUBROUTE 1.1 – PROPONENT PREFERRED

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Changes to scenic quality along subroute 1.1 would result where vegetation is removed for construction access, substation expansion, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. In an open landscape, natural lighting and atmospheric conditions can vary in ways that result in moments of enhanced visual contrasts. In addition; during times of increased cloudiness, haze, and dust in the area, there would be moments of reduced visual contrasts.

The majority of subroute 1.1 crosses Class C scenery (140.9 miles or 96 percent), crossing areas of low, rolling landscape, minimal vegetation, muted colors, and open desert. The area is not known for its scenery; and impacts from those changes to scenic quality would be low because new structures would be similar to existing transmission structures on the landscape. As noted in chapter 2, more than 75 percent of subroute 1.1 is adjacent to, and routed along, linear features such as existing transmission and gas lines. A portion of segment P2 of subroute 1.1 crosses Class B scenery where impacts to scenic quality would be low where the area has already been modified by existing lattice utility structures.

In addition, segments P1, P2, and P4a would be adjacent to existing transmission corridors and the I-10, repeating the basic visual elements of that existing infrastructure, further contributing to low visual contrasts.

Although segment P3 crosses Class C scenery, it would pass through relatively undeveloped land and would require new or improved construction access resulting in moderate impacts (see figure 3.10-11 for scenic quality ratings and subroute 1.1). Contrasts would be reduced by implementing PCEMs as described in section 2.4.6 and table 2-8 in chapter 2 of the EIS.

Existing sensitivity levels, distance zones, and VRI classes would not be affected by segments P1, P2, and P4a of subroute 1.1 because the setting in which they are located have been modified by existing transmission line facilities. Sensitivity levels would not be affected by segment P3; however, because Segment P3 does not follow an existing transmission line or access road, it may result in changes to the distance zones as a result of the new/improved construction access needed that may allow future public access.

Key Observation Points

Residential

Residences located along subroute 1.1 are generally dispersed, except for higher concentrations in the community of Deming (see figure 3.10-11 for location of KOPs and subroute 1.1). In the Deming area, impacts to residential viewers are expected to be moderate. There would be unobstructed views of segment P2 crossing gently rolling terrain with low shrub and grass cover from over 3 miles away. New structures would be visible, but would repeat the basic visual elements of the existing transmission structures (see appendix I: VCRS P2-05).

The southern half of segment P3 is considered to have moderate sensitivity because of its rural residential character. Moderate impacts to dispersed residences along segment P3 are expected to occur. There are no existing transmission structures, and viewers would have unobstructed views of the proposed Project transmission structures crossing flat to rolling terrain within 0.5 mile (see appendix I: VCRS P3-01 and P3-02).

Recreation

Subroute 1.1 comes in proximity to the Aden Hills OHV area, Aden Lava Flow WSA, West Potrillo Mountains WSA, Florida Mountains WSA, Mount Riley WSA as well as access to the CDNST (see figure 3.10-11 for location of KOPs and subroute 1.1). Because dispersed recreation viewers would have views of segments of subroute 1.1 where it is adjacent to existing transmission facilities, low impacts would occur. Along segments P1 and P2, low to moderate impacts are expected for recreation viewers associated with the Aden Hills OHV area and Aden Lava Flow WSA, Mount Riley WSA, and the West Potrillo Mountains WSA. The addition of new transmission structures would repeat the existing horizontal patterns associated with current infrastructure visible across the landscape, and views would be visible from 0.5 mile or more (see appendix I: VCRS P1-01 and P2-02).

Impacts would be moderate for dispersed recreation users associated with the Florida Mountains WSA. Because segment P2 would be viewed across slightly rolling terrain with low shrub vegetation cover, recreation viewers would have clear views of lattice structures and horizontal transmission lines (see appendix I: VCRS P2-05).

It also crosses the CDNST (see figure 3.10-11 for location of KOPs and subroute 1.1). Where it crosses the CDNST, impacts to viewers are expected to be low. The view is located along a portion of the CDNST that parallels NM 90 approximately 0.25 mile northeast of the intersection with NM 70. Very few residents or destinations are located along NM 90. There is no marked trailhead located here, and landscape is characterized by large expanses of open space. Recreation users seeking a solitary experience on the CDNST may use this portion of the trail. Low impacts are expected from Grandmother Mountain and the CDNST. Views of segment P2 would repeat the basic patterns of existing transmission structures (see appendix I: VCRS P2-07).

Travel Routes

High sensitivity travel routes along subroute 1.1 include I-10 and NM 549 (see figure 3.10-11 for location of KOPs and subroute 1.1). Viewers are traveling the I-10 corridor, which has high viewer sensitivity because it is a major travel corridor, would have clear views of segments P2 and P4a following the I-10 corridor. Low impacts are anticipated because the new transmission lines would follow existing transmission lines, and views of transmission structures would be against the backdrop of surrounding mountains for portions of these segments, which would further reduce contrast (see appendix I: VCRS P2-03 and P2-04).

Compliance

A majority of subroute 1.1 where it crosses BLM land would pass through VRM Class IV lands (59.4 miles). Of the remaining portion of subroute 1.1 across BLM lands, 5.5 miles would cross VRM Class III lands. The remaining length of subroute 1.1 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, all segments of subroute 1.1 would be in compliance with BLM VRM Class III and Class IV objectives.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Changes to scenic quality along subroute 1.2 would result where vegetation is removed for construction access, temporary laydown areas, substations, and for ROW clearing for the operation and maintenance of the transmission line. Direct impacts would also occur from the introduction of new transmission structures, including monopole and lattice-type structures, on the landscape. Subroute 1.2 crosses Class B

(16 miles or 11.3 percent) and Class C scenery (125.2 miles or 85.8 percent) and impacts from these changes would be low, moderate, and high. Subroute 1.2 would pass through the East Potrillo Mountain SQRU (segment S2) and the West Potrillo Mountain SQRU (segment S3), which the BLM considers to have high sensitivity. Subroute 1.2 would also pass through an area of moderate sensitivity between Columbus and Hachita (segments S5, S6, and S7). As noted in chapter 2, approximately 44 percent of subroute 1.2 is adjacent to, and routed along, existing linear features such as transmission lines and roadways (e.g., Columbus Road and NM 9). Low to moderate impacts would occur where there is some existing construction access and with the addition of new tall transmission structures alongside existing developments. High impacts would occur along 7 miles of segment S1 where new transmission structures and construction access are introduced into currently undeveloped areas (see figure 3.10-13 for scenic quality ratings and subroute 1.2).

Subroute 1.2 would have higher levels of contrast because it would pass mostly through rural and undeveloped landscapes with no existing transmission line corridors, as opposed to the subroute 1.1 segments, which would pass primarily along existing transmission line routes and in proximity to I-10, a major freeway. In such an open landscape, natural lighting and atmospheric conditions can vary in ways that result in brief periods of enhanced visual contrasts. In addition, during times of cloudiness, increased haze, and increased dust in the area, there would be moments of reduced visual contrasts.

Subroute 1.2 would not result in changes to distance zones because the segments are routed along existing access routes. Because subroute 1.2 is routed through otherwise undeveloped lands, sensitivity levels would be affected. Where segment S4 crosses high concern areas associated with the East Potrillo Mountains SLRU, there would be a change to the scenic natural setting along NM 9 visible to recreationists traveling to the East Potrillo Mountains. Because the destinations in the East Potrillo Mountains are farther north from subroute 1.2, and viewers would experience the change primarily traveling along NM 9, this would be a minor change in sensitivity.

Key Observation Points

Residential

Dispersed rural residences are located along portions of the subroute 1.2. There are concentrations of residences in the communities of Lordsburg, Columbus, and Hachita (see figure 3.10-11 for location of KOPs and subroute 1.2). In the Lordsburg area, impacts to residential viewers are expected to be moderate. There would be views of segment S8 paralleling existing shorter utility lines. New transmission structures would be clearly visible, would be taller than the existing infrastructure, and would be visible against the sky (see appendix I: VCRS S8-02). In the Columbus area, impacts to residential viewers are expected to be moderate. There would be unobstructed views of segment S5 crossing gently rolling terrain with low shrub and grass cover. New structures would be visible, but would repeat some of the basic visual elements of existing vertical structures/towers in the Columbus area (see appendix I: VCRS S5-01). In the Hachita area, impacts to residential viewers are expected to be low to moderate. There would be views of segment S7 interspersed with residential development, water towers, and existing utility towers. New structures would be visible, but would repeat some of the basic visual elements of existing development. Impacts would be moderate where new structures would be visible against the sky and where vegetation is removed for a temporary construction laydown yard (see appendix I: VCRS S7-02 and S7-03).

Recreation

There are few recreation viewers associated with subroute 1.2. The subroute comes in proximity to Pancho Villa State Park (1 to 2 miles from the alignment) and the CDNST (4 miles from the alignment) (see figure 3.10-11 for location of KOPs and subroute 1.2). Segments S3 and S4 are located just south of

the West Potrillos WSA boundary. Although the WSA receives little visitation, there is access from NM 9 just north of segments S3 and S4. Low to moderate impacts are expected for travelers along NM 9 accessing the WSA. Along segments S5 and S7, low to moderate impacts are expected for recreation viewers associated with the Pancho Villa State Park and the CDNST. The addition of new transmission structures would repeat the existing angular patterns visible across landscape and views would be from a distance of less than 2 miles. Impacts would be moderate for dispersed recreation users along the CDNST, where views of new structures occur in front of existing structures, and where structures are visible against the sky (see appendix I: VCRS P1-01 and P2-02).

Travel Routes

Low- to medium-concern sensitive viewing areas for subroute 1.2 include NM 9 (see figure 3.10-11 for location of KOPs and subroute 1.2). Viewers traveling along NM 9 would have views of segments S3, S5, S6, and S7. Moderate impacts would occur where new transmission structures are introduced into largely undeveloped areas, resulting in increased contrast from more pronounced linear features and strong geometric angles compared with existing roads and structures in the landscape (see appendix I: VCRS S3-01, S5-01, and S6-01).

The I-10 corridor has high viewer sensitivity because it is a major travel corridor. Low impacts are anticipated because the new transmission lines would follow existing transmission lines, and views of transmission structures would be against the backdrop of surrounding mountains for portions of these segments, which would reduce contrast (see appendix I: VCRS S8-01 and S8-02). I-10 follows an east-west path located to the north of subroute 1.2 ranging from 8 to 30 miles from the alignment.

Compliance

A majority of subroute 1.2 where it crosses BLM land (36.1 miles) would pass through VRM Class IV lands. Of the remaining portion of subroute 1.2 across BLM lands, 25.5 mile would cross VRM Class III lands, and 19.6 miles would cross VRM Class II lands. The remaining length of subroute 1.2 crosses private or State lands and does not have BLM VRM classifications. Segment S5 would cross 1.5 miles of VRM II land in the Tres Hermanas Mountains SQRU, segment S6 would cross 4.4 miles of VRM Class II lands, and segment S7 would cross 13.7 miles of VRM Class II lands.

Subroute 1.2 crosses VRM Class II lands where there is moderate concern viewers associated with rural residential areas. The West Potrillos WSA, and NM 9. Viewers would have views of moderate contrasts in VRM II administered lands. Because these segments largely follow NM 9 through the Class II area, they would remain visible for extended periods of time as viewers travel both directions. Because of the relative size of the structures when compared with existing utility poles, and because of the close proximity to the structures to potential viewers, the application of recommended mitigations would not reduce impacts to a weak level and portions of segments S5, S6, and S7 would not conform to VRM Class II.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D. Impacts to scenic quality, KOPs, and BLM VRM compliance are described for each local alternative segment below.

DN1

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along segment DN1 are similar to those described for segment P2 within subroute 1.1; low to moderate. Segment DN1 crosses 12.3 miles of Class B scenery and 30.2 miles of Class C scenery, which is characterized by low, rolling landscape, minimal vegetation, muted colors, and open desert (see figure 3.10-13 for scenic quality ratings and segment DN1).

The size of the new structures would be similar to those existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be weak contrasts. In such an open landscape, natural lighting and atmospheric conditions can vary in ways that result in brief periods of enhanced visual contrasts. In addition; during times of cloudiness, increased haze, and increased dust in the area, there would be moments of reduced visual contrasts.

Key Observation Points

Residential

Impacts to dispersed rural residences are located along portions of segment DN1 would be similar to those described for subroute 1.1, moderate. There are concentrations of residences in the communities of Lordsburg, Columbus, and Hachita (see figure 3.10-11 for location of KOPs and segment DN1).

Recreation

There are few recreation resources known along segment DN1, and impacts to dispersed recreation viewers would be similar to those described for subroute 1.1.

Travel Routes

Segment DN1 is not located along existing roadways and there would be no impacts to sensitive viewers along travel routes.

Compliance

Segment DN1 would pass through 2.9 miles of VRM Class IV lands and 4.0 miles of VRM Class III lands. The remaining length of DN1 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, all segments of DN1 would be in compliance with BLM VRM Class III and Class IV objectives.

A

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)Impacts along local alternative A would be similar to those described for segment S2 in subroute 1.2, moderate, crossing 17.5 miles of Class C scenery lands with a low sensitivity level throughout its extent (see figure 3.10-13 for scenic quality ratings and segment A).

Key Observation Points

Residential

Local alternative A would pass near few, if any, rural residences.

Recreation

There are few recreation resources known along local alternative A, and impacts to dispersed recreation viewers would be similar to those described for segment S2 in subroute 1.2.

Travel Routes

Local alternative A would follow existing roads for its entire length along County Road A015 and NM 9. Viewers would experience moderate impacts while traveling along those routes where new transmission structures are introduced into largely undeveloped areas, resulting in increased contrast from more pronounced linear features and strong geometric angles compared with existing roads and structures in the landscape.

Compliance

Local alternative A would result in lower levels of visual contrast than would segment S2. Local alternative A would pass through 14.7 miles of VRM Class III lands. The remaining length of local alternative A crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, local alternative A would be in compliance with BLM VRM Class III objectives.

B

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along local alternative B would be similar to those described for segment S4 in subroute 1.2, moderate, crossing 0.7 mile of Class B scenery and 11.5 miles of Class C scenery lands with a low sensitivity level (see figure 3.10-13 for scenic quality ratings and segment B).

Key Observation Points

Residential

Local alternative B would pass no residential areas.

Recreation

There are few recreation resources known along local alternative B, and impacts to dispersed recreation viewers would be similar to those described for segment S4 in subroute 1.2. Local alternative B is located along the West Potrillos WSA boundary, and there would be greater visibility from the WSA of local alternative B over segment S4.

Travel Routes

Local alternative B would follow NM 9. Viewers would experience moderate impacts while traveling along NM 9 where new transmission structures are introduced into largely undeveloped areas, resulting in increased contrast from more pronounced linear features and strong geometric angles compared with existing roads and structures in the landscape (see appendix I: VCRS B-01).

Compliance

Local alternative B would pass through 10.0 miles of VRM Class IV lands. The remaining length of local alternative B crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, local alternative B would be in compliance with BLM VRM Class IV objectives.

C

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along local alternative C would be similar to those described for segment S6 in subroute 1.2, low to moderate, crossing 9 miles of Class C scenery lands with a low sensitivity level throughout its extent (see figure 3.10-13 for scenic quality ratings and segment C).

Key Observation Points

Residential

Local alternative C would pass near few, if any, rural residences.

Recreation

There are few recreation resources known along local alternative C, and impacts to dispersed recreation viewers would be similar to those described for segment S6 in subroute 1.2.

Travel Routes

Local alternative C would follow NM 9 for its entire length. Viewers would experience low to moderate impacts while traveling along NM 9 where new transmission structures are introduced into largely undeveloped areas, resulting in increased contrast from more pronounced linear features and strong geometric angles compared with existing roads and structures in the landscape. There would be fewer visual contrasts from new construction access associated with local alternative C, since existing roads would be available (see appendix I: VCRS C-01).

Compliance

Local alternative C would pass through 3.7 miles of VRM Class II lands. The remaining length of local alternative C crosses private or State lands and does not have BLM VRM classification.

Local alternative C crosses VRM Class II lands where there is low concern for the maintenance of visual quality. There are no residences and it follows NM 9 for its entire length and viewers would have views of moderate contrasts in VRM II administered lands. Because of the relative size of the structures when compared with existing utility poles, and because of the close proximity to the structures to potential viewers, the application of recommended mitigations would not reduce impacts to a weak level and portions of local alternative C would not conform to VRM Class II.

D

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along local alternative D would be moderate to high, crossing 5.2 miles of Class B scenery and 17.6 miles of Class C scenery lands with low to moderate sensitivity level throughout its extent (see figure 3.10-13 for scenic quality ratings and local alternative D).

Key Observation Points

Residential

Local alternative D would pass near few rural residences.

Recreation

Local alternative D crosses perpendicular to the CDNST. There are few other recreation resources known along local alternative D, and impacts to dispersed recreation viewers would be similar to those described for segment S8 in subroute 1.2.

Travel Routes

Local alternative D would follow existing roads until approximately 1.6 miles south of I-10, where it would turn due west, from which point it would not follow any established road or energy corridor. Moderate impacts would occur to viewers traveling along those routes where new transmission structures are introduced into largely undeveloped areas, resulting in increased contrast from more pronounced linear features and strong geometric angles compared with existing roads and structures in the landscape (see appendix I: VCRS D-01).

Compliance

Local alternative D would pass through 1.9 miles of VRM Class IV, 2.3 miles of VRM Class III lands, and 1.8 miles of BLM Class II lands. The remaining length of local alternative D crosses private or State lands and does not have BLM VRM classification. The 1.8 miles of local alternative D that crosses VRM Class II lands would not be compliant with VRM Class II objectives where a moderate visual contrast would occur. Local alternative D would introduce new transmission structures along through an undeveloped area of high scenic quality and sensitivity, including a crossing of the CDNST. Because of the relative size of these structures when compared the open and undeveloped landscape, and because of the close proximity to the structures to viewers that are traveling the CDNST where it crosses the segment, there would be moderate contrasts that would attract the attention of viewers traveling through this area.

Although there would be low to moderate impacts to visual resources, the remaining 4.2 miles of local alternative D would be in compliance with BLM VRM Class III and IV objectives.

Route Group 2 – Hidalgo Substation to Apache Substation

Visual contrast in route group 2 would directly result from introduction of transmission line structures and substations into the landscape, removal of vegetation to construct and maintain the transmission lines, construction of temporary and permanent access roads, temporary construction laydown yards, and any landform modifications necessary to prepare the ROW for construction. Table 4.10-2 provides a summary of scenic quality ratings and VRM Classes for route group 2.

Table 4.10-2. Route Group 2 Scenic Quality Ratings and VRM Class

Segment	Total Miles	Scenic Quality Rating (in miles)			VRM Class (BLM lands only) (in miles)		
		A	B	C	II	III	IV
Subroute 2.1, Proponent Preferred							
P4b	13.9	0.0	0.0	13.9	0.0	0.7	0.0
P4c	1.9	0.0	0.0	1.9	0.0	0.4	0.0
P5a	9.6	0.0	0.0	9.6	0.0	5.0	1.1
P5b	21.1	0.0	21.1	0.0	0.0	6.4	11.5
P6a	0.9	0.0	0.9	0.0	0.0	0.9	0.0
P6b	22.5	2.4	20.1	0.0	0.0	0.2	0.0
P6c	2.8	0.0	0.8	2.0	0.0	0.0	0.0
P7	22.3	0.9	0.0	21.2	0.0	0.0	2.3
P8	0.5	0.0	0.0	0.5	0.0	0.0	0.0
Subroute 2.2, Proponent Alternative							
E	31.8	0.0	22.4	10.4	0.0	14.6	4.1
F	25.3	0.0	24.4	0.9	0.0	3.2	0.0
Ga	25.7	0.0	0.0	25.5	0.0	0.0	0.0
Gb	1.0	0.0	0.0	1.0	0.0	0.0	0.0
Gc	7.4	0.0	0.0	7.4	0.0	0.0	0.0
I	2.3	0.0	0.8	1.5	0.0	0.0	0.0
J	2.3	0.0	0.0	2.3	0.0	0.0	0.0
Route Group 2 Route Variations							
P7a	31.2	0.0	0.0	31.2	0.0	0.0	0.0
P7b	10.5	0.0	0.0	10.5	0.0	0.0	0.0
P7c	1.0	0.0	0.0	1.0	0.0	0.0	0.0
P7d	2.0	0.0	0.0	2.0	0.0	0.0	0.0
Route Group 2 Local Alternatives							
LD1	35.4	0.0	21.9	14.2	0.0	19.4	0.0
LD2	8.9	0.0	0.0	9.6	3.1*	0.0	0.6
LD3a	26.6	0.0	0.0	27.9	0.0	8.0	3.7
LD3b	2.2	0.0	0.0	1.9	0.0	0.0	1.3
LD4	53.7	0.0	42.3	19.4	0.0	0.0	34.8
LD4-Option 4	6.2	0.0	0.0	6.5	0.0	0.0	0.0
LD4-Option 5	12.3	0.0	9.1	3.1	0.0	0.0	0.0
WC1	14.8	0.0	0.0	14.8	0.0	0.0	0.0

* Not compliant with VRM objectives.

SUBROUTE 2.1 – PROPONENT PREFERRED

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Changes to scenic quality along subroute 2.1 would result where vegetation is removed for construction access, construction laydown yards, substation expansion, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. There are 49.2 miles of subroute 2.1 that cross Class C scenery (52 percent of the subroute), and 42.9 miles which cross Class B scenery (45 percent of the subroute). Impacts from those changes to scenic quality in Class B and C would be low to moderate. A portion of segment P6b of subroute 2.1 also crosses Class A scenery where impacts from those changes would be moderate (see figure 3.10-13 for scenic quality ratings and subroute 2.1). In an open landscape, natural lighting and atmospheric conditions can vary in ways that result in moments of enhanced visual contrasts. In addition; during times of increased cloudiness, haze, and dust in the area, there would be moments of reduced visual contrasts.

As noted in chapter 2, more than 83 percent of subroute 2.1 is adjacent to, and routed along, existing linear features, most of which are existing transmission and gas lines. Segments P5a, P5b, P6a, P6b, and P6c follow the existing El Paso Natural Gas Pipeline. Segments P7 and P8 would be adjacent to existing transmission corridors, repeating the basic visual elements of that existing infrastructure and further contributing to low visual contrasts. Although segment P6b crosses Class A scenery, there would be a moderate visual contrast based on proximity of viewers to the representative ROW.

Sensitivity in this area is considered high because of its proximity to the Willcox Playa, which is an important ecotourism and viewing area for migrating birds, including the sandhill crane. Subroute 2.1 is south of critical viewing areas associated with the Willcox Playa. Visual impacts in this area would be low to moderate in the immediate foreground, and low beyond 1 mile of the transmission line.

Existing sensitivity levels, distance zones, and VRI classes would not be affected by segments P5a, P5b, P6a, P6b, and P6c of subroute 2.1 because the setting in which they are located have been modified by existing transmission line facilities and the Natural Gas Pipeline.

Key Observation Points

Residential

Residences located along subroute 2.1 are generally dispersed, except for higher concentrations in the communities of San Simon and Bowie (see figure 3.10-11 for location of KOPs and subroute 2.1). In the San Simon area, impacts to residential viewers are expected to be low. There would be distant views of segment P5b crossing a level alkali flat over 2 miles away with the Peloncillo Mountain in the background. New structures would be faintly visible, and introduce a new linear component on the landscape (see appendix I: VCRS P5-01 and P5-02).

In the Bowie area, impacts to residential viewers are expected to be low to moderate. There would prominent views of segment P6b crossing the valley floor with the western extent of the Peloncillo Mountains in the background. There would be unobstructed views of new structures visible against the sky, adding a strong linear and angular element to the landscape (see appendix I: VCRS P6-01 and P6-02).

Recreation

Subroute 2.1 comes in proximity to the Peloncillo Mountains, Dos Cabezas Wilderness, Fort Bowie, and the Willcox Playa. There would be views of segment P4b crossing rolling terrain against a backdrop of mountains. Although the structures would introduce a new vertical element to the landscape, they would repeat the basic elements of existing linear disturbances present on the landscape (see appendix I: VCRS P4-01 and P4-02).

Impacts to viewers from the Peloncillo Mountains are expected to be low. The view is located in a wash southwest of Peloncillo Mountains. There would be faint views of structures associated with segment P5b more than 2 miles away. The Chiricahua Mountains are visible in the distant background (see appendix I: VCRS P5-02 and associated simulation in appendix K).

Impacts to viewers from the Dos Cabezas Mountains would be moderate. There would be unobstructed views of segment P6c crossing rolling hills and leading into the steeper, jagged mountains. The structures would introduce new regular vertical and horizontal linear components to the landscape (see appendix I: VCRS P6-03 and associated simulation in appendix K).

There are several views of subroute 2.1 associated with the Willcox Playa. Because dispersed recreation viewers would have views of portions of segment P7 where it is adjacent to existing transmission facilities (an SWTC transmission line parallels segment P7 along the southeast side of the playa), impacts to viewers from the Willcox Playa are expected to be low. The addition of new transmission structures would repeat the existing vertical and horizontal patterns associated with current infrastructure visible across an open and flat landscape (see appendix I: VCRS P7-01, P7-02, and P7-03).

Travel Routes

High sensitivity travel routes along subroute 2.1 include NM 70 (see figure 3.10-11 for location of KOPs and subroute 2.1). From the intersection of Hook and Anchor Road and NM 70 (Duncan Highway), this view is oriented north approximately 0.4 mile from segment P4b, crossing rolling terrain against a backdrop of mountains. There would be views to the northwest of a temporary construction laydown yard which would introduce short-term contrasts with the surrounding vegetation. Although the structures would introduce a new vertical element to the landscape, they would repeat the basic elements of existing linear disturbances present on the landscape (see appendix I: VCRS P4-02).

Compliance

Subroute 2.1 where it crosses BLM land would pass through 13.5 miles of VRM Class III lands and 14.9 miles of VRM Class IV lands (see table 4.10-2). The remaining length of subroute 2.1 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, all segments of subroute 2.1 crossing VRM Class III and IV lands would be in compliance with BLM VRM Class III and IV objectives.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Changes to scenic quality along subroute 2.2 would result where vegetation is removed for construction access, substation expansion, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. There are 49.0 miles of subroute 2.2 which cross Class C scenery (51 percent of the subroute), and 47.6 miles which

cross Class B scenery (49 percent of the subroute). Impacts from those changes to scenic quality in Class B and C would be low to moderate (see figure 3.10-13 for scenic quality ratings and subroute 2.2). In an open landscape, natural lighting and atmospheric conditions can vary in ways that result in moments of enhanced visual contrasts. In addition; during times of increased cloudiness, haze, and dust in the area, there would be moments of reduced visual contrasts.

Existing sensitivity levels, distance zones, and VRI classes would not be affected by subroute 2.1 because the setting in which they are located have been modified by existing transmission line facilities and the Natural Gas Pipeline. As noted in chapter 2, more than 55 percent of subroute 2.2 is adjacent to, and routed along, linear features such as existing transmission lines. Portions of subroute 2.2 follow a variety of existing transmission alignments, pipelines, and highways, repeating some of the basic visual elements of that existing infrastructure and further reducing visual contrasts.

Key Observation Points

Residential

Residences located along subroute 2.2 are generally dispersed, except for higher concentrations in the communities of San Simon, Bowie, and Cochise (see figure 3.10-11 for location of KOPs and subroute 2.2). In the San Simon and Bowie areas, impacts to residential viewers are expected to be low to moderate. There would be views of segments E and F crossing a rolling terrain area from between 1 and 2 miles. New structures would be visible, and would introduce a new linear component on the landscape (see appendix I: VCRS E-01, E-02, F-01 and associated simulation in appendix K, and F-02).

Impacts to viewers from the Cochise area are expected to be low to moderate, where there are somewhat denser residential areas along the western edge of the Willcox Playa surrounded by agricultural lands. The proposed transmission tower along segment Gc would result in moderate contrast to view; although relatively large, it would be partially obscured by intervening structures and vegetation within Cochise, and would appear as one of a few utility pole structures in the view (see appendix I: VCRS G-03 and associated simulation in appendix K).

Recreation

Views of segments Ga and Gb of subroute 2.2 are associated with the Willcox Playa. Because dispersed recreation viewers would have views of the segments where they are adjacent to existing transmission facilities, impacts to viewers from the Willcox Playa are expected to be low. The addition of new transmission structures would repeat the existing vertical and horizontal patterns associated with current infrastructure visible across an open and flat landscape (see appendix I: VCRS G-01 and G-02).

Compliance

A majority of subroute 2.2 where it crosses BLM land would pass through VRM Class III lands (17.8 miles). Of the remaining portion of subroute 2.1 across BLM lands; 4.1 miles would cross VRM Class IV lands (see table 4.10-2). The remaining length of subroute 2.2 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, all segments of subroute 2.2 crossing VRM Class III and IV lands would be in compliance with BLM VRM Class objectives.

ROUTE GROUP 2 ROUTE VARIATIONS

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Route variations P7a, P7b, P7c, and P7d were developed to be located farther from the Willcox Playa area to reduce potential impacts to wildlife where subroute 2.1 (specifically segment P7) skirts the southeastern edge of the playa. These route variations are located roughly south and east of the Willcox Playa. Changes to scenic quality along the route variations would result where vegetation is removed for construction access, substation expansion, and ROW clearing during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the largely open and agricultural landscape. In an open landscape, natural lighting and atmospheric conditions can vary in ways that result in moments of enhanced visual contrasts. In addition, during times of increased cloudiness, haze, and dust in the area, there would be moments of reduced visual contrasts.

Sensitivity in this area is considered high because it crosses through vineyards and wineries on the Willcox Bench, which is an important tourism area for this part of Arizona. Visual impacts in this area would be moderate to major in the immediate foreground, and lower beyond 1 mile of the transmission line.

There are 31.2 miles of route variation P7a, 10.5 miles of route variation P7b, 1.0 mile of route variation P7c, and 2 miles of route variation P7d which cross Class C scenery. Impacts from those changes to scenic quality in Class C would be low to moderate. Distance zones would not be affected by the subroute 2.1 variations because the setting in which they are located are currently accessible. Although portions of the route variations follow a variety of existing transmission alignments, pipelines, and highways, repeating some of the basic visual elements of that existing infrastructure, there are higher sensitivity viewers associated with existing domestic farm wineries, tasting rooms, and private properties in relatively close proximity to the P7a, P7b, P7c, and P7d route variations. Where these route variations cross high concern areas associated with the vineyards, there would be a change in sensitivity. There would be disruptions to existing views of the Dos Cabezas and Chiricahua mountains from these tasting rooms, vineyards, and private properties. Impacts to viewers from the wineries are expected to be moderate to major. There would be views of the route variations paralleling some existing shorter utility lines. New transmission structures would be visible, would be taller than the existing infrastructure or vegetation on the landscape, and would be visible against the sky. As demonstrated in the visual simulations from the Willcox Bench KOPs (see appendix I: WB-01, WB-02, and WB-03), the P7a route variation structures and conductors would result in greater visual contrasts from close distance, and the contrast diminishes with more distance.

Key Observation Points

Three KOPs were identified in route group 2 in response to multiple comments received regarding socioeconomics and potential impacts to views in the area. The KOPs are representative of the potential views of the route variations from both a private residence and from existing winery tasting rooms on the Willcox Bench.

Residential

Residences located along the route variations are generally dispersed across the Willcox Bench (see figure 3.10-11 for location of KOPs and route variations). Impacts to residential viewers are expected to be moderate to major. There would be clear views of the route variations crossing the terrain area from between less than 0.25 mile and 2 miles. New structures would be clearly visible, and would introduce a new linear component on the landscape (see appendix K: WB-03).

Recreation

Because visitors to the winery tasting rooms and vineyards would have clear views of the route variations where they are adjacent to existing transmission facilities, impacts to viewers from these locations are expected to be moderate to major. The addition of new transmission structures would be the largest structures visible across an open and flat landscape and would disrupt views of the surrounding Dos Cabezas and Chiricahua mountains. Impacts to viewers from the Dos Cabezas Mountains would be moderate. There would be unobstructed views of segments P7a and P7b crossing the Willcox Bench. The structures would introduce new regular vertical and horizontal linear components to the landscape (see appendix K: WB-01 and WB-02).

Compliance

No route variations cross BLM lands and VRM compliance is not an issue.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2. These local alternatives include LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1. Impacts to scenic quality, KOPs, and BLM VRM compliance are described for each local alternative segment below.

LD1

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along segment LD1 are similar to those described for segment E of subroute 2.2 segment P2, and would result where vegetation is removed for construction access, temporary construction laydown yards, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. There would be 21.9 miles of LD1 crossing Class B scenery, and 14.2 miles crossing Class C scenery (see figure 3.10-13 for scenic quality ratings and LD1). Impacts would be low to moderate, crossing Class B and C scenery that is characterized by low, rolling landscape, minimal vegetation, muted colors, and open desert.

Key Observation Points

Residential

LD1 would pass several small areas of concentrated rural residences, including San Simon, Steins Ghost Town, and Road Forks. The remainder of LD1 is sparsely populated. Impacts to dispersed rural residences located along portions of segment LD1 would be similar to those described for subroute 2.2, moderate (see figure 3.10-11 for location of KOPs and LD1).

Travel Routes

LD1 crosses the I-10 Deming to Lordsburg, and I-10 Willcox to New Mexico SLRUs which are both rated as high viewer sensitivity. The SLRUs are both high sensitivity because they are major travel corridors for local residents and tourism with scenic areas visible from the interstate. Impacts to dispersed travelers along I-10 with views of portions of segment LD1 would be similar to those described for subroute 2.2, moderate.

Compliance

Segment LD1 would pass through 34.8 miles of VRM Class III lands. The remaining length of LD1 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, all segments of LD1 crossing VRM Class III lands would be in compliance with BLM VRM Class objectives.

LD2

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along LD2 are similar to those described for subroute 2.2, and would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. All 8.9 miles of LD2 cross Class C scenery (see figure 3.10-13 for scenic quality ratings and LD2). Impacts from those changes to scenic quality in class C would be low, crossing scenery that is characterized by a broad, flat valley and the Lordsburg Playa RNA. There are no existing major transmission lines or other linear infrastructure along LD2.

Key Observation Points

No critical KOPs were identified for LD2. The area has no known populations, and representative views of subroute 2.2 from I-10 are already available.

Compliance

Local alternative LD2 would pass through 3.1 miles of VRM Class II lands and 0.6 mile of VRM Class IV lands. The remaining length of LD2 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, LD2 would be in compliance with BLM VRM Class IV objectives. This area of Class II is associated with the historic Butterfield Trail and impacts to the trail are described in appendix F.

LD2 would cross VRM Class II lands where there is high concern viewers associated with the Butterfield Trail. Viewers would have views of moderate contrasts in VRM II administered lands. Because this segment largely follows the Butterfield Trail through the Class II area, they would remain visible for extended periods of time. Because of the relative size of the structures, and because of the close proximity to the structures to potential viewers, the application of recommended mitigations would not reduce impacts to a weak level and portions of LD2 would not conform to VRM Class II.

LD3 (LD3a and LD3b)

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along LD3a would result where vegetation is removed for construction access, construction temporary laydown yards, and ROW maintenance during the operation of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. All 30.1 miles of LD3a cross Class C scenery (see figure 3.10-13 for scenic quality ratings and LD3a). Impacts from those changes to scenic quality in Class C would be low, crossing scenery that is characterized by a broad, flat valley and the Lordsburg Playa RNA. LD3a follows an existing 345-kV transmission line for much of its length.

Impacts along LD3b would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopoles, on the landscape. All 2.2 miles of LD3b cross Class C scenery (see figure 3.10-13 for scenic quality ratings and LD3b). Impacts from those changes to scenic quality in Class C would be low, crossing scenery that is characterized by a broad, flat valley and the Lordsburg Playa RNA. LD3b also follows an existing 345-kV transmission line for much of its length.

Key Observation Points

No critical KOPs were identified for LD3. The area has no known populations, and representative views from I-10 are already available from consideration of subroute 2.2 (see appendix I: VCRS for P4-01 and P4-02 as examples).

Compliance

LD3a would pass through 8 miles of VRM Class III lands, and 3.7 miles of VRM Class IV lands. The remaining length of LD3a crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, LD3a would be in compliance with BLM VRM Class III and IV objectives. LD3b would pass through 1.3 miles of VRM Class IV lands. Although there would be low to moderate impacts to visual resources, LD3b would be in compliance with BLM VRM Class IV objectives.

LD4

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along LD4 would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. There would be 19.4 miles of LD4 crossing Class B scenery, and 42.3 miles crossing Class C scenery (see figure 3.10-13 for scenic quality ratings and LD4). Impacts from those changes to scenic quality in Class B and C would be low to moderate, crossing scenery that is characterized by flat desert valleys and playas surrounded by mountains (including the Willcox Playa), and more scenic areas in Class B lands characterized by steep undulating ridgelines, low rounded hills, and eroded rocky peaks. There are a number of existing transmission lines and other existing development along the length of LD4. The size of the new structures would be similar to those existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be weak contrasts. In such an open landscape, natural lighting and atmospheric conditions can vary in ways that result in brief periods of enhanced visual contrasts. In addition; during times of cloudiness, increased haze, and increased dust in the area, there would be moments of reduced visual contrasts. Existing sensitivity levels, distance zones, and VRI classes would not be affected by LD4 because the setting in which they are located have been modified by existing transmission line facilities.

Key Observation Points

No critical KOPs were identified for LD4. Representative views from I-10 are already available from consideration of subroute 2.2.

Compliance

LD4 would pass through 34.8 miles of VRM Class IV lands. The remaining length of LD4 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, LD4 would be in compliance with VRM IV objectives.

LD4-Option 4

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along LD4-Option 4 would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. All 6.4 miles of LD4-Option 4 would cross Class C scenery (see figure 3.10-13 for scenic quality ratings and LD4-Option 4). Impacts from those changes to scenic quality in Class C would be low to moderate, crossing scenery that is characterized by flat desert valleys and playas surrounded by mountains, including the Willcox Playa. LD4-Option 4 follows an existing 230-kV transmission line for much of its length. Existing sensitivity levels, distance zones, and VRI classes would not be affected by LD4-Option 4 because the setting in which they are located have been modified by existing transmission line facilities.

Key Observation Points

No critical KOPs were identified for LD4-Option 4. Representative views from I-10 are already available from the consideration of subroute 2.2.

Compliance

LD4-Option 4 does not cross BLM lands and VRM compliance is not an issue.

LD4-Option 5

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along LD4-Option 5 would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopole and lattice-type structures on the landscape. There would be 9.1 miles of LD4-Option 5 crossing Class B scenery, and 3.1 miles crossing Class C scenery (see figure 3.10-13 for scenic quality ratings and LD4-Option 5). Impacts from those changes to scenic quality in Class B would be low to moderate, crossing scenery that is characterized by steep undulating ridgelines, low rounded hills, and eroded rocky peaks. Impacts from those changes to scenic quality in Class C would be low to moderate, crossing scenery that is characterized by flat desert valleys and playas surrounded by mountains, including the Willcox Playa.

Key Observation Points

No critical KOPs were identified for LD4-Option 5. Representative views from I-10 are already available from consideration of subroute 2.2.

Compliance

LD4-Option 5 does not cross BLM lands and VRM compliance is not an issue.

WC1

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along WC1 would result where vegetation is removed for construction access and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopoles, on the landscape. All 14.8 miles of WC1 cross Class C scenery (see figure 3.10-13 for scenic quality ratings and LD3b). Impacts from those changes to scenic quality in Class C would be low, crossing scenery that is characterized by the 1-10 corridor, development associated with the community of Willcox, and the flat open expanse of the Willcox Playa. WC1 does not follow any existing transmission lines.

Key Observation Points

No critical KOPs were identified for WC1. The area has no known populations, and representative views are already available from consideration of subroute 2.2 (see appendix I: VCRS for P7-01, P7-02, and P7-03 as examples).

Compliance

WC1 does not cross BLM lands and VRM compliance is not an issue.

Route Group 3 – Apache Substation to Pantano Substation

Visual contrast in route group 3 would directly result from the replacement of existing transmission line structures with taller structures, substation expansion, removal of vegetation to construct and maintain the transmission lines, temporary construction laydown yards, and any landform modifications necessary to prepare the existing ROW for upgrading and construction. Because there is an existing access road system in place for maintenance of the existing line, there is little need for additional temporary or permanent access roads. Table 4.10-3 provides a summary of Scenic Quality Ratings and VRM Classes for route group 3.

Table 4.10-3. Route Group 3 Scenic Quality Ratings and VRM Class

		Scenic Quality Rating (in miles)			VRM Class (BLM Lands Only) (in miles)		
Segment	**Total Miles**	**A**	**B**	**C**	**Class II**	**Class III**	**Class IV**
Subroute 3.1, Proponent Preferred							
U1a	16.1	0.0	11.1	4.9	0.0	0.0	0.4
U1b	2.9	0.0	2.9	0.0	0.0	0.0	0.0
U2	15.8	0.0	15.8	0.0	0.0	0.0	0.0
U3a	35.6	0.0	32.7	0.0	0.0	0.0	0.0
Route Group 3 Local Alternative							
H	19.3	0.0	19.3	0.0	0.0	0.0	0.0

SUBROUTE 3.1 – PROPONENT PREFERRED

Subroute 3.1 would include the upgrade of the existing Western 115-kV transmission line between the Apache and Pantano substations. This segment crosses 0.5 mile of Forest Service land and 0.6 mile of BLM-administered lands, which do not have planning-level VRI and VRM classification. Changes to scenic quality along subroute 4.1 would result where vegetation is removed for construction access, construction laydown yards, substation expansion, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the replacement of the existing H-frame structures with the introduction of upgraded transmission monopole structures. A site analysis was performed and scenic quality and sensitivity levels were derived and used to determine the visual impact of the introduction of the proposed Project on lands outside of BLM jurisdiction.

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Subroute 3.1 is largely characterized by low levels of development and natural desert landscape, including desert scrub vegetation, bare rock to low vegetation cover, and a range of topography from low hills to visually dominant rock outcroppings and distant isolated mountain ranges. Impacts along subroute 3.1 would result where vegetation is removed for construction access, temporary laydown areas, substation expansion, and for ROW clearing for the operation and maintenance and maintenance of the proposed Project. There would also be direct impacts to the existing landscape from the addition of new transmission upgrade structures. Subroute 3.1 crosses 62.5 miles (93 percent) of Class B scenery lands and 4.9 miles (7 percent) of Class C scenery land. Subroute 3.1 crosses Class B scenery lands between the Little Dragoon and Dragoon Mountains (running south of Texas Canyon) and into the San Pedro Valley agricultural and rural residential areas, and the northern corner of the Coronado National Forest. These lands are rated Class B for the mix of natural-appearing landscape, agricultural fields, and communities. Low to moderate impacts would occur where there is some existing construction access and with the upgrade of existing structures. In such an open landscape, natural lighting and atmospheric conditions can vary in ways that result in brief periods of enhanced visual contrasts. In addition; during times of cloudiness, increased haze, and increased dust in the area, there would be moments of reduced visual contrasts.

In addition to residential areas, segment U3a would pass through or near sensitive areas, including recreational areas and a historic landmark. The segment then passes within 1 mile of Cienega Creek Natural Preserve, a perennial wetland system. The preserve is located north of the Proponent Preferred alignment and is located outside of the analysis area. The preserve offers scenic views of a lush riparian corridor within a desert setting and of many wildlife species. A permit is required to visit the preserve, which is mainly accessed from the Davidson Canyon Trailhead along Marsh Canyon Road. The segment would cross near Cienega Creek in the Davidson Canyon Wash area, an undeveloped area south of I-10. Additionally, the 800-mile Arizona NST passes through the Cienega Creek Natural Preserve along the Gabe Zimmerman Trail.

The developed areas along segment U3a include residential subdivisions, isolated residences, mining operations, office parks, manufacturing complexes, and the Pima County Fairgrounds. Residential areas through which segment U3a would pass or near where segment U3a would pass include: relatively new subdivisions in the Vail area, low-density subdivisions around Swan Road, older residential areas around Country Club and Old Vail Connection Roads, a narrow band of residences north of Summit that are adjacent to the SR 19 (the Tucson-Nogales Highway) corridor, and a densely populated subdivision east of I-19 and north of Los Reales Road.

Segment U3a would cross over, or be located near, designated Pima County scenic routes. Segment U3a would come within 300 feet of a portion of I-10 designated as a scenic highway by Pima County. It also would cross Pima County Scenic Highways SR 83 and Old Sonoita Highway at their northern termini near I-10. Segment U3a would cross Pima County scenic routes such as Wentworth Road 1 mile south of I-10 and Houghton Road near the Pima County Fairgrounds. Segment U3a also would come within 0.2 mile of the beginning and end points of Marsh Station Road but would be separated from it by I-10.

Class C scenery lands are located on lands just east of the Apache Substation within Sulphur Springs Valley south of critical viewing areas associated with the Willcox Playa. The lands east of Apache Substation within the Sulphur Springs Valley within 4.9 miles of the 16-mile segment U1a are associated with Class C scenic quality, and impacts along this segment of subroute 3.1 are anticipated to be low because the Upgrade Section is replacing existing infrastructure (see figure 3.10-13 for scenic quality ratings and subroute 3.1). Contrasts from vegetation clearing would be further reduced by implementing VRM-1 and VRM-2, described in table 2-8 in chapter 2. In addition, contrasts from the upgrade of existing structures would be further reduced by the implementation of VRM-4 and VRM-5, described in table 2-8 in chapter 2. Existing sensitivity levels and distance zones would not be affected by subroute 3.1 because the setting in which the upgrade structures are located have been modified by existing transmission line facilities.

Key Observation Points

Residential

Residences located along subroute 3.1 are generally dispersed, except for higher concentrations in the community of Pomerene and the city of Benson (see figure 3.10-11 for location of KOPs and subroute 3.1). Subroute 3.1 passes through the south part of the community of Pomerene, 1.15 miles north of I-10. This area consists of cropland with several pockets of single-family homes. Segment U2 would also cross a residential area in Pomerene along Pomerene Road, the primary route from Pomerene to I-10. In the Pomerene area, impacts to residential viewers are expected to be moderate. There would be unobstructed views of segment U2 crossing gently rolling terrain with low shrub and grass cover from over 3 miles away. Upgrade structures would repeat some of the basic visual elements of the existing transmission structures, but would be substantially larger and visible against the sky as a backdrop (see appendix I: VCRS U2-02, U2-03).

West of Pomerene, upgrading of the existing Western 115-kV transmission line (segment U2) would cross the San Pedro Golf Course, one of two public courses within the city of Benson. Segment U2 would then cross adjacent to central Benson by passing through a semi-industrial corridor just north of I-10. West of Benson, this segment would pass through rural residential and light industrial development just north of I-10 and through the community of Mescal, then would cross Mescal 0.2 mile north of I-10 through a residential zone. Segment U2 would also cross the main access road from the community to I-10. Upgrade structures would be visible, but would repeat the basic visual elements of the existing transmission structures (see appendix I: VCRS U2-04).

Visual contrast rating worksheets were conducted at: KOP U2-01, located 3.5 miles from the Proponent Preferred alignment on the western edge of residential development between U.S. 80 and I-10; KOP U2-02, located along Dark Star Road near the site of future development and an existing ranch; and KOP U2-03, near the Mescal area approximate to residences.

Impacts to viewers from the San Xavier Mission just south of Tucson would be low. The upgrade structures of segment U3a are more than 1.5 miles away on the opposite side of I-19, and would be visually similar to the multiple existing transmission lines spanning the view and would be viewed against

the distant mountain forms (see appendix I: VCRS U3-07; U3-07a and associated simulation in appendix K).

Recreation

There are few designated recreational opportunities along subroute 3.1. Peaks in the Little Dragoon and Dragoon Mountains, north and south of the proposed Project, do not have developed trails and are infrequently visited, despite having unique views within the region. KOP U1-01 represents views from just north of the Dragoon Mountains along subroute 3.1. Segment U1a would pass south of Texas Canyon, a granite boulder zone that provides scenic views from I-10. Texas Canyon, a boulder-strewn, uniquely scenic area, is a popular rest stop along one of the most scenic portions of I-10 in the region. The addition of the upgrade transmission structures would repeat the existing horizontal patterns associated with current infrastructure visible across landscape and views.

Impacts to viewers along Lizard Lane would be moderate. Replacement structures of segment U1a where it crosses a sweeping valley floor along the Coronado National Forest would be more prominent than the existing structures in the landscape and would introduce stronger horizontal line elements above the existing lines (see appendix I: VCRS U1-01).

Impacts to viewers from the Benson Recreational Park of segment U2 on the opposite side of I-10 are expected to be low to moderate. Replacement structures approximately 0.5 mile away would be more prominent than the existing structures in the landscape, and would introduce stronger vertical linear elements visible against the skyline (see appendix I: VCRS U2-01).

Travel Routes

Segment U1a would cross the I-10 Willcox-to-Texas Canyon SLRU, which is rated as having high visual sensitivity because it is noted to be a highly traveled corridor with a popular rest stop in the Texas Canyon area. Segment U1a would cross I-10 as it enters the San Pedro River Valley and would cross through the San Pedro Basin. Because this segment is an upgrade of existing utility structures, the visual impacts in this area would be low to moderate in the immediate foreground and low beyond 1 mile of the transmission line.

Compliance

Segment U1a of subroute 3.1 would pass through 0.4 mile of VRM Class IV lands. The remaining length of subroute 3.1 crosses private or State lands and does not have BLM VRM classification. Although there would be low to moderate impacts to visual resources, the portion of subroute 3.1 (segment U1a) crossing BLM VRM Class IV lands would be in compliance with VRM objectives. A portion of segment U3a that crosses State lands lies directly north of a block of BLM VRM Class II land.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H.

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Local alternative H crosses the San Pedro Valley SQRU between 2 and 3 miles north of segment U2. Unlike segment U2, local alternative H would not replace an existing transmission line but would entail construction of a new transmission line which parallels an existing H-frame transmission line. Local alternative H would bypass the city of Benson and the communities of Pomerene and Mescal. It would follow an existing H-frame transmission line for its entire length. Where the segment U1/U2 boundary

would exist at the eastern edge of the San Pedro Valley, local alternative H would head northwest along the alignment of the existing H-frame transmission line, cross the north end of the valley west of Benson, and extend south until it met a railroad line. Local alternative H would follow the railroad line west along with the existing transmission line, then would drop south again to connect to where the segment U2/U3 boundary would be, east of Mescal. Lands crossed by local alternative H traverse the San Pedro River basin and valley and are a mix of vacant desert landscape, agricultural and ranch lands, and rural residential (see figure 3.10-13 for scenic quality ratings and segment H).

Local alternative H would pass through the same SQRUs and SLRUs (San Pedro Valley and San Pedro Basin) as segment U2 in subroute 3.1, and the site analysis revealed a scenic quality rating of B, sensitivity level rating of moderate, and visual impact of moderate. Existing sensitivity levels and distance zones would not be affected by local alternative H because the setting in which the structures are located have been modified by existing transmission line facilities.

Key Observation Points

Residential

Local alternative H would bypass the communities of Pomerene and Mescal, and the city of Benson. Impacts to dispersed rural residences located along portions of local alternative H south of I-10 within rural residential areas would be similar to those described for subroute 3.1, moderate (see appendix I: VCRS H-02) (see figure 3.10-11 for location of KOPs and local alternative H).

Recreation

There are few recreation resources known along local alternative H. Visual contrast rating worksheets were conducted for KOP H-02 located on North Mescal Road in proximity to the Butterfield Trail crossing. Impacts to viewers would be low because the replacement structures would be visually similar to existing landscape and would be viewed against a backdrop of distant mountains (see appendix I: VCRS H-03).

Travel Routes

Local alternative H is not located along major roadways and there would be low impacts to sensitive viewers along North Cascabel Road just east of the San Pedro River (see appendix I: VCRS H-01).

Compliance

Local alternative H does not cross BLM lands and VRM compliance is not an issue.

Route Group 4 – Pantano Substation to Saguaro Substation

Visual contrast in route group 4 would result from replacement of the existing H-frame structures with the introduction of taller transmission structures into the landscape. Visual contrast to in route group 4 was determined to be low to moderate. A summary of Scenic Quality Ratings within route group 4 is provided in table 4.10-4. Route group 4 does not cross BLM lands, and there are no VRM Class Compliance issues.

Table 4.10-4. Route Group 4 Scenic Quality Ratings and VRM Class

		Scenic Quality Rating (in miles)			VRM Class (BLM Lands Only) (in miles)		
Segment	**Total Miles**	**A**	**B**	**C**	**II**	**III**	**IV**
Subroute 4.1, Proponent Preferred							
U3b	0.5	0.0	0.5	0.0	0.0	0.0	0.0
U3c	1.0	0.0	0.0	1.0	0.0	0.0	0.0
U3d	3.4	0.0	0.0	3.4	0.0	0.0	0.0
U3e	0.9	0.0	0.0	0.9	0.0	0.0	0.0
U3f	0.7	0.0	0.0	0.7	0.0	0.0	0.0
U3g	0.9	0.0	0.0	0.9	0.0	0.0	0.0
U3h	1.1	0.0	0.0	1.1	0.0	0.0	0.0
U3i	18.2	0.0	0.0	18.2	0.0	0.0	0.0
U3j	0.9	0.0	0.0	0.9	0.0	0.0	0.0
U3k	16.7	0.0	0.0	16.7	0.0	0.0	0.0
U3l	1.6	0.0	0.0	1.6	0.0	0.0	0.0
U3m	0.6	0.0	0.0	0.6	0.0	0.0	0.0
U4	1.9	0.0	1.9	0.0	0.0	0.0	0.0
Route Group 4 Route Variation							
U3aPC	6.2	0.0	6.2	0.0	0.0	0.0	0.0
Route Group 4 Local Alternatives							
MA1	1.1	0.0	0.0	1.1	0.0	0.0	0.0
TH1a	1.4	0.0	1.4	0.0	0.0	0.0	0.0
TH1b	1.6	0.0	1.6	0.0	0.0	0.0	0.0
TH1c	0.3	0.0	0.3	0.0	0.0	0.0	0.0
TH1-Option	1.0	0.0	1.0	0.0	0.0	0.0	0.0
TH3-Option A	0.8	0.0	0.0	0.8	0.0	0.0	0.0
TH3-Option B	0.8	0.0	0.0	0.8	0.0	0.0	0.0
TH3-Option C	1.8	0.0	0.0	1.8	0.0	0.0	0.0
TH3a	2.7	0.0	0.0	2.7	0.0	0.0	0.0
TH3b	4.5	0.0	0.0	4.5	0.0	0.0	0.0

SUBROUTE 4.1 – PROPONENT PREFERRED

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Changes to scenic quality along subroute 4.1 would result where vegetation is removed for construction access, construction laydown yards, substation expansion, and ROW clearing during the operation and maintenance of the transmission line and substations. Additional changes to scenic quality would occur from the replacement of the existing H-frame structures with the introduction of upgraded transmission structures (monopole structures, see table 2-2 in chapter 2) along the existing transmission line route. There are 2.4 miles of subroute 4.1 which cross Class B scenery (5 percent of the subroute), and 46.0 miles which cross Class C scenery (95 percent of the subroute). Impacts from those changes to scenic quality in Class B and C would be minor to moderate (see figure 3.10-13 for scenic quality ratings and subroute 4.1).

In the San Pedro Valley scenic quality unit, segment U3a would cross a broad alluvial fan with large swaths of native vegetation (largely paloverde) and mixed cacti/Sonoran creosote-bursage communities. Developed areas are scattered throughout this area and become slightly more common westward toward Vail, Arizona.

Within the Vail scenic quality rating unit, which encompasses a large portion of segment U3a, the scenic quality was determined to be Class C, given the flat, common nature of desert landscape in the area and the increasingly dense human modification (e.g., residences, utility corridors, industrial areas, etc.). In addition, sensitivity levels were determined to be low to moderate, given that several concentrations of residential communities exist along the line. The visual impact in this unit is considered low because the proposed transmission line and facilities would replace a similar, existing transmission line along the same alignment, and the areas of sensitive natural features are located outside of 1 mile of the corridor.

The Anza NHT/Tucson SQRU encompasses the majority of subroute 4.1 as it traverses through southern Tucson, the city of Tucson, and north toward Marana, Arizona. This segment is located along an existing transmission line alignment flanked by varying degrees of dense urban development. Scenic quality along this segment is considered to be Class C because of the degree of urban modification and the co-location of the line within an existing utility corridor. Additionally, sensitivity along the segment is considered low to moderate given the presence of existing modifications. Visual impact would be low along this segment.

Just north of Grant Road, subroute 4.1 diverges from the dense urban environment of Tucson into a more industrial area to the north, and follows roughly adjacent and parallel to the Anza NHT. Scenery along the Trail is characterized by pockets of urban recreational places, linear biking and pedestrian trails, and access to adjacent communities. Additionally, a segment of the Butterfield Trail runs parallel to subroute 4.1, from 0.2 mile to 1 mile away to the east. Scenic quality along this segment is considered Class C because of the substantial human modification and urban industrial activities, and sensitivity is considered low to moderate given that the subroute follows an existing power line for the entirety of the segment. Thus, visual impacts are considered low.

Approximately 5 miles to the southeast of the Marana Regional Airport, subroute 4.1 crosses open desert landscape with undulating topography at the southern end, and desert valley as the segment runs northwest toward the agricultural development that surrounds the Marana Airpark. Scenic quality in this area is determined to be Class C as the lands within the immediate foreground and middleground are common desert valley landscape, with agricultural and budding residential development within the Marana town limits. Sensitivity in this area is also considered low to moderate as viewers are accustomed to views of the existing transmission line in which the proposed line would replace. Visual impacts in this area would be low given the common nature of the landscape and the lack of sensitivity viewers.

The Red Rock scenic quality unit encompasses the lands connecting Avra Valley, Marana, and Pinal County to the terminus of the Proponent Preferred alternative at the Saguaro Substation. This area is characterized by open desert landscape, agricultural development, and budding residential development. Additionally, the Pinal Airpark is located approximately 2.5 miles southeast of the Saguaro Substation and 2 miles east of the Proponent Preferred alignment. The scenic quality in this area is classified as Class C because of the developed landscape, and the sensitivity level is considered low to moderate, because viewers are accustomed to views of the existing transmission line, which the proposed Project would replace.

Existing sensitivity levels and distance zones would not be affected by subroute 4.1 because the setting in which the upgrade structures are located have already been modified by existing transmission line facilities.

Key Observation Points

Residential

High concentrations of residential development occur along subroute 4.1 in the communities of Vail, Marana, and in Tucson (see figure 3.10-12 for location of KOPs along subroute 4.1). In the Vail area, impacts to residential viewers are expected to be low to moderate. Replacement structures would appear to be substantially taller and more visible, but scenery would not vary from the current landscape. Impacts would be moderate where taller replacement structures would be visible against the skyline (see appendix I: VCRS U3-03, U3-04, and associated simulation in appendix K).

In the Summit area, impacts to residential viewers are expected to be low. Replacement structures would be visible, but scenery would not vary from the current landscape (see appendix I: VCRS U3-06 and associated simulation in appendix K).

Impacts to viewers from the fairgrounds west of Vail would be low. The upgrade structures would be visually similar to multiple existing transmission lines spanning the view (see appendix I: VCRS U3-05 and associated simulation in appendix K).

In the Tucson area, impacts to residential viewers are expected to be low to moderate. Subroute 4.1 through Tucson is dominated by existing transmission structures, linear paved highways and roads, sound walls, and blocky signs. Replacement structures would be visible, but scenery would not vary from the current landscape. There would be moderate impacts where taller replacement structures are visible against the skyline (see appendix I: VCRS U3-09, U3-20, U3-21, and U3-24 and associated simulation in appendix K).

While impacts are anticipated to be low to moderate and not significant at a landscape level, individual perspectives on the visual impact of the proposed project may be different, and some residents may consider them to be significant.

Recreation

Recreation use along subroute 4.1 takes place at Sentinel Peak, along the Anza NHT, the Butterfield Trail, the Arizona NST, at Saguaro National Park, and within pockets of urban recreational places, linear biking, and pedestrian trails. There are also views of the proposed upgraded line from the El Rio Golf Course.

Impacts to viewers along the Santa Cruz River Bikeway East River Trail and Santa Cruz riverbed crossing near Juhan Park would be low to moderate. The upgrade structures of segment U3b would introduce low vertical contrast to the existing strong linear element of the landscape. The replacement structures of segment

U3i would be taller and visible against the skyline interspersed with several transmission lines, buildings, and communication structures which currently dominate views from the trail (see VCRS U3-08 and U3-15). Impacts to viewers along the Anza NHT south of Irvington Road would be moderate. Where segment U3c crosses the Santa Cruz River channel, one new structure concrete base would be clearly visible from the trail.

The foundations where a pole would be located within the channel would need to be 25 feet tall, and would introduce a large blocky, pale structure into the gravelly river channel. The taller monopole structures and substantial concrete base where the line crosses the channel would be viewed against the skyline and the backdrop of the channel alongside existing lattice structures and other human development extending across the flat and open landscape of the Santa Cruz River channel (see appendix K: simulation NPS-02).

Impacts to viewers at the Kennedy Park Fiesta Area Outdoor Amphitheatre and Tucson Mountain Park would be low. Replacement structures would be visible, but scenery would not vary from the current landscape. There would be moderate impacts where the substantially taller replacement structures and horizontal conductors would visible against the skyline (see appendix I: VCRS U3-10, U3-11 and their associated simulations in appendix K).

Impacts to viewers from Sentinel Peak Observation Area would be low. The replacement structures and line would be similar in form to the existing line, but would be taller. Although the structures would be taller, the increased height would be barely distinguishable when viewed against the backdrop of the valley floor and surrounding hills. Replacement structures would be visible, but scenery would not vary from the current landscape. Short-term impacts to viewers from Sentinel Peak would occur as a result of improved construction access needs, but these impacts would end once construction equipment is removed and reclamation of temporary disturbance is complete. There would be moderate impacts where taller replacement structures and horizontal conductors are visible against the skyline from KOP U3-13 on Tumamoc Hill Road (see appendix I: VCRS U3-12, U3-13 and their associated simulation in appendix K).

Impacts to viewers from Joaquin Murrieta Northwest Park would be moderate. The replacement structures add prominent vertical and horizontal elements to foreground views from the park that would be skylined against distant mountains (see appendix I: VCRS U3-14).

Impacts to viewers at the Silverbell Public golf course would be low. Replacement structures would be visible, but would be similar to existing structures and horizontal conductors. The scenery would not vary from the current landscape (see appendix I: VCRS U3-16 and VCRS U3-18 and their associated simulations in appendix K).

Impacts to viewers from Silverbell Lake at Christopher Columbus Park would be low. The replacement monopole structures add prominent vertical and horizontal elements to foreground views from the park that would be skylined against distant mountains (see appendix I: VCRS U3-17 and its associated simulation in appendix K; see also simulation AN-04).

Impacts to viewers traveling on West Picture Rocks Road both to and from Saguaro National Park would be low. The replacement structures would be barely visible against the valley floor along an existing developed corridor. They would be visually similar to the existing line, and would blend into the visual disturbance of existing development in the area (see appendix I: VCRS U3-19). Impacts to hikers in Saguaro National Park located northwest of Tucson would be low. The distance (over 1 mile), vegetation screening along the use trails in the park, and extensive development along segment U3i contribute to the replacement structures blending in to the surrounding development (see appendix K: simulation SA-01).

Impacts to potential views from the planned extension of paved recreation trail of the Anza NHT west of Pinal Airpark near North Aguirre Road would be low. The existing H-frame structures are not visible from this location. The taller replacement monopoles and conductors would be visible just above the existing vegetation set against the distant mountains (see appendix K: simulation MA-03).

Travel Routes

High sensitivity travel routes along subroute 4.1 include I-10, Avra Valley Road out to the Marana Regional Airport, West Twin Peaks Road, and Picture Rocks Road. From North Silverbell Road, this view is oriented south-southeast 150 feet from segment U3i, crossing rolling terrain against a backdrop of mountains. Although the replacement monopole structures would introduce a new vertical element to the landscape, and would be visible against the skyline, they would repeat the basic elements of existing transmission lines present on the landscape (see appendix I: VCRS U3-18 and simulation MA-03 in appendix K).

Impacts to viewers from the West Twin Peaks Road would be moderate. The replacement monopole structures of segment U3i would be visible to the south, and would introduce a new taller vertical element to the landscape visible against the mountainous horizon line (see appendix I: VCRS U3-22 and its associated simulation in appendix K).

From West Silverbell Road (Historic Auto Route), the replacement monopole structures of segment U3k would be visible to the south, and would introduce a taller vertical element to the landscape. Because the replacement line would be similar to existing transmission lines visible on the landscape, impacts would be low (see appendix I: VCRS U3-23 and its associated simulation in appendix K).

Compliance

Subroute 4.1 does not cross BLM lands and VRM compliance is not an issue.

Route Group 4 Route Variation

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Impacts along U3aPC would result where vegetation is removed for limited construction access needs and ROW maintenance during the operation and maintenance of the transmission line. Additional changes to scenic quality would occur from the introduction of new transmission structures, including monopoles, on the landscape. All 6.2 miles of U3aPC cross Class B scenery. Impacts from those changes to scenic quality in Class B would be low, crossing scenery that is characterized by a broad, flat valley with existing infrastructure similar to the proposed transmission structures. The developed areas along U3aPC also include residences, roads, and mining activities.

Key Observation Points

U3aPC was routed to avoid Summit, Arizona, and minimize impacts to economic development efforts by Pima County south of the Tucson International Airport. Impacts to viewers from the San Xavier Mission just south of Tucson would be low. The structures of U3aPC would be more than 3 miles away on the opposite side of I-19, and would be visually similar to the multiple existing transmission lines spanning the view and would be viewed against the distant mountain forms.

Compliance

Route variation U3aPC does not cross BLM lands and VRM compliance is not an issue.

LOCAL ALTERNATIVES

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, TH3-Option C. These local alternatives were all derived as alternatives to subroute 4.1 for the purpose of avoiding the Tumamoc Hill area, which is considered an important natural and cultural resource within the city and region. This site is a nationally recognized historic site and also supports research, recreation, and educational opportunities for the University of Arizona and the community. Though the Tumamoc Hill area has been preserved and protected for decades, the existing Western 115-kV transmission line (an H-frame) runs north on the west side of the Tumamoc Hill and Sentinel Peak. The proposed Project would include the upgrade of subroute 4.1, which would include the replacement of the existing H-frame transmission line; however, 10 local alternative options were developed through public and agency outreach to avoid further environmental and scenic impact to the Tumamoc Hill area itself.

Local alternatives TH1a, TH1b, and TH1c provide a "picket fence" diverging from the existing Western line (subroute 4.1) at West Starr Pass Road (TH1a) heading west and north at South Greasewood Road (TH1b) then east at West Speedway Boulevard (TH1c) before it connects again with the Proponent Preferred alignment just west of the El Rio Golf Course and 0.14 mile north of West Speedway Boulevard.

Local alternatives TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C were derived through multiple discussions with a working group that included representatives of the public and agencies concerned with locating a transmission line alternative through the Tumamoc Hill area. The local routing options would be located roughly within the Santa Cruz River bed along the Anza NHT, which follows the Santa Cruz River and provides pedestrian and bicycle paths through the heart of Tucson.

MA1

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

Local alternative MA1 would be a new, approximately 1.1-mile transmission line that would provide an alternative to segment U3j. MA1 would be located approximately 4.5 miles west of I-10 on the western boundary of the Marana Regional Airport. This new segment would cross agricultural fields between North Sandario Road and North Sanders Road, turn north along North Sanders Road, and terminate before reaching West Avra Valley Road. MA1 would avoid future expansion of the Marana Regional Airport. This local alternative is located within scenic quality Class C landscape and has a sensitivity level of low to moderate, given the proximity to existing development and existing transmission line. Visual impact would be low. A simulation was rendered from approximately 1 mile northeast of the local alternative and is included with the visual contrast worksheet (see figure 3.10-13 for scenic quality ratings and MA1).

Existing sensitivity levels and distance zones would not be affected by MA1 because the setting in which the upgrade structures are located have already been modified by existing transmission line facilities.

Key Observation Points

No critical KOPs were identified for MA1. Representative views of the area from the intersection of Sanders Road and Avra Valley Road are already available from consideration of segment U3j of subroute 4.1. Although the replacement monopole structures would introduce a new vertical element to the landscape, and would continue to be visible against the skyline, MA1 would cross farther away from the observation point and would repeat the basic elements of existing transmission lines in the foreground of the simulation (see appendix K: simulation MA-02).

Compliance

MA1 does not cross BLM lands and VRM compliance is not an issue.

TH1a

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

The majority of TH1a follows existing arterial roads flanked by residential development. Along South Greasewood Road, an existing 69-kV power line runs on the east side of the road. Several KOPs located along this local alternative reveal that the addition of a power line would produce similar, but increased contrast due to the height and structure type being larger, taller, and more noticeable than the existing power line. In addition, viewer sensitivity is heightened in this area due to the community concern over the Tumamoc Hill cultural and scenic resource. Scenic quality in this area is considered Class B given the unique character of the Tumamoc Hill in the middle of a highly dense urban area. Additionally, viewer sensitivity is considered moderate to high because of Tumamoc Hill, as well as the established nature of the surrounding community. Homes in this area are historic and well maintained; residents are extremely vigilant and concerned with changes to the composition of the neighborhood and natural landscape. Visual impact is considered moderate to high in this area because of the increased scenic quality and visual sensitivity associated with Tumamoc Hill. Visual impacts would be reduced by the removal of existing line across Tumamoc Hill (see figure 3.10-13 for scenic quality ratings and TH1a).

Key Observation Points

In the Tumamoc Hill area, impacts to residential viewers and views to the west from Sentinel Peak Road are expected to be low to moderate. Impacts to viewers located along West Starr Pass Boulevard would be moderate. New transmission structures and lines associated with TH1a would be clearly visible in the foreground. The taller monopole structures would be viewed against the skyline and the backdrop of Tumamoc Hill extending north and south across the open landscape of Tumamoc Hill and east up West Starr Pass Boulevard (see appendix K: simulation TH1-4, TH1-S3, TH1-02).

Compliance

TH1a does not cross BLM lands and VRM compliance is not an issue.

TH1b

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

The scenic quality of TH1b would be the same as that described for TH1a.

Key Observation Points

Impacts to sensitive views to the west from Tumamoc Hill are expected to be low. New transmission structures and lines associated with TH1b would be somewhat visible in the foreground. Those poles that would be visible would be viewed against the backdrop of the developed landscape of Tucson. The new taller monopole structures would introduce a weak vertical element to the landscape as viewed from Tumamoc Hill. Because of the existing utilities along the proposed segment, and the surrounding dense development, impacts to sensitive viewers from KOP TH1-03 would be low (see appendix I: VCRS TH1-03; and associated simulation in appendix K).

Compliance

TH1b does not cross BLM lands and VRM compliance is not an issue.

TH1c

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

The scenic quality of TH1c would be the same as that described for TH1a and TH1b.

Key Observation Points

Impacts to sensitive views to the west from Tumamoc Hill would be the same as that described for TH1b. No other critical KOPs were identified for TH1c.

Compliance

TH1c does not cross BLM lands and VRM compliance is not an issue.

TH1-Option

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

The TH1-Option runs perpendicular from North Greasewood Road eastward to connect with the Proponent Preferred alignment. This portion runs along West Anklam Road for 1 mile. This segment would provide a closer access to the Proponent Preferred alternative but would similarly create a boundary along the northwestern edge of Tumamoc Hill where currently no similar structures exist. Scenic quality in this area is the same as that described for TH1a, TH1b, and TH1c, and is considered a moderate to high visual impact (see figure 3.10-13 for scenic quality ratings and TH1-Option).

Key Observation Points

No critical KOPs were identified for TH1-Option. Representative views of the area from KOPs identified for TH1a are already available.

Compliance

TH1-Option does not cross BLM lands and VRM compliance is not an issue.

TH3a

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

TH3a runs approximately 3 miles connecting at the southern end with the Proponent Preferred alignment and running due north parallel to I-19 along the highway corridor. Scenic quality in this area would be Class C and sensitivity would be low given the lack of highly sensitive viewers and being located parallel to a major transportation corridor. Visual impact would be low for this segment of the local alternative (see figure 3.10-13 for scenic quality ratings and TH3a). Existing sensitivity levels and distance zones would not be affected by TH3a because the setting in which the structures are located have already been modified by existing structures and development.

Key Observation Points

No critical KOPs were identified for TH3a.

Compliance

TH3a does not cross BLM lands and VRM compliance is not an issue.

TH3b

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

TH3b runs north from TH3a to connect at the northern point with the existing Western line (subroute 4.1). TH3b is co-located along the Santa Cruz River route and parallel to the Anza NHT for the entirety of its length. This local alternative also parallels existing transmission lines currently located within the river bed. To the east, ranging from 0.5 mile to directly adjacent, is I-10, a major travel corridor. KOPs were selected at varying distances from this local alternative and two simulations were rendered to illustrate how the local alternative would impact the existing visual impact of the area. Scenic quality along this segment of the local alternative is considered Class C and sensitivity is considered low to moderate, resulting in a low visual impact given the proximity to existing transmission lines and congested industrial, transportation, and commercial development (see figure 3.10-13 for scenic quality ratings and TH3b). Existing sensitivity levels and distance zones would not be affected by TH3b because the setting in which the upgrade structures are located have already been modified by existing transmission line facilities.

Key Observation Points

There are superior views of TH3b to the east as it follows the Anza NHT through heavy development of Tucson, paralleling existing transmission lines and roads. Impacts to viewers from the observation point on Sentinel Hill would be low. Although new transmission structures and lines associated with TH3b would be visible, they would blend in with the surrounding utilities and development. Where new structures associated with TH3b would be located within the river channel, the foundation would need to be 25 feet tall, and would introduce a large blocky, pale structure into the gravelly river channel. The taller monopole structures and substantial concrete base where the line crosses the channel would be viewed against the backdrop of the channel alongside existing lattice structures and other human development extending across the flat and open landscape of the Santa Cruz River channel (see appendix K: simulation TH3-S1).

Compliance

TH3b does not cross BLM lands and VRM compliance is not an issue.

TH3-Option A

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

TH3-Option A, located to the east of TH3-Option B, runs parallel through 1-mile-long, channelized portion of the Santa Cruz River parallel to commercial development. A bike and pedestrian access way located on the Anza NHT also would parallel the proposed local alternative option. Scenic quality in this area is considered Class C because of its proximity to human-made development as well as being located within a corridor with existing lattice tower transmission lines. Sensitivity in this area would be low to moderate and the visual impact would be low given the degree of modification and the lack of highly sensitive viewers in this area (see figure 3.10-13 for scenic quality ratings and TH3-Option A). Existing sensitivity levels and distance zones would not be affected by TH3-Option A because the setting in which the structures are located have already been modified by existing transmission line facilities.

Key Observation Points

Impacts to viewers along the Anza NHT south of Irvington Road would be moderate. Where TH3-Option A crosses the Santa Cruz River channel, new structure concrete bases would be clearly visible from the trail. Foundations would need to be 25 feet tall, and would introduce a large blocky, pale structure into the gravelly river channel. The taller monopole structures and substantial concrete base where it is located within the channel would be viewed against the skyline and the backdrop of the channel alongside existing lattice structures and other human development following the open landscape of the Santa Cruz River Channel (see appendix K: simulation NPS-02 subroute 4.1 for an example of the larger concrete foundations that would be required).

Compliance

TH3-Option A does not cross BLM lands and VRM compliance is not an issue.

TH3-Option B

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

From the southern end of the route, TH3-Option B is a spur that runs nearly 1 mile, bypassing a mix of high-density residential development and commercial development through a green corridor. Scenic quality in this area is considered Class C and sensitivity is considered moderate, visual impact is considered moderate (see figure 3.10-13 for scenic quality ratings and TH3-Option B). Existing sensitivity levels and distance zones would not be affected by TH3-Option B because the setting in which the upgrade structures are located have already been modified by existing transmission line facilities.

Key Observation Points

Impacts to viewers of TH3-Option B would be similar to those described for TH3-Option A.

Compliance

TH3-Option B does not cross BLM lands and VRM compliance is not an issue.

TH3-Option C

VRI (Scenic Quality, Sensitivity Levels, Distance Zones, and VRI Classes)

TH3-Option C runs parallel to the Santa Cruz bikeway along the river route west of I-19 and would have similar visual impacts as compared to TH3-Option B. Scenic quality in this area is considered Class C and sensitivity and visual impact is considered low (see figure 3.10-13 for scenic quality ratings and TH3-Option C).

Key Observation Points

Impacts to viewers of TH3-Option C would be similar to those described for TH3-Option A.

Compliance

TH3-Option C does not cross BLM lands and VRM compliance is not an issue.

Agency Preferred Alternative

NEW BUILD SECTION

The Agency Preferred Alternative for route group 1 consists of P1, P2, P3, and P4a. The Agency Preferred Alternative for route group 2 consists of P5b, P6a, P6b, P6c, P7, P8, and local alternatives L3a and LD3b, which were designed to go around the Lordsburg and Willcox playas and parallel existing or proposed transmission lines. The Agency Preferred Alternative for the New Build Section would cross predominantly flat desert valleys and playa surrounded by mountains the visual impact from the proposed monopole towers is considered low to moderate. The VRM Class B designated lands in this area are characterized by steep and undulating ridgelines, low rounded hills, and eroded rocky plains. However, there is low to moderate visual sensitivity given the existence of other disturbance such as transmission lines and utility development along the length of the route.

The introduction of a new transmission line within the existing environment along this route would result in low to moderate visual impacts. Short-term visual impacts resulting from construction, access, and ROW maintenance during the construction and operation of the transmission line would include the removal of vegetation, the introduction of new transmission structures on the landscape, and the development of access roads resulting in low to moderate visual impacts. The Agency Preferred Alternative further avoids visual disruption to Lordsburg Playa, the community of Bowie, domestic farm wineries southeast of Willcox Playa, and the BSETR. Development of the New Build Section Agency Preferred Alternative route would reduce visual congestion resulting in minimized impact to sensitive views. In addition, development of the Agency Preferred Alternative does not result in VRM class conformance issues, and would not require plan amendments for visual resources.

UPGRADE SECTION

The Agency Preferred Alternative for route group 3 consists of U1a, U1b, U2, and portions of U3a which all consist of the existing Western 115-kV transmission line. Segment U3a is of greatest cultural concern because it travels through an area of dense resources. The Agency Preferred Alternative for route group 4 consists of U3aPC, U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, U4, MA1, TH1a, and TH1-Option. Segments U3b, U3c, U3f, U3g, U3h, U3i, U3k, U3l, U3m, and U4 consist of the existing Western 115-kV transmission line. Route variation U3aPC routes away from Summit, Arizona. Local alternative MA1 was developed to route around the Marana Regional Airport and will minimize impacts to military training at the airport. Local alternatives TH1a and TH1-Option were designed to minimize impacts to the Tumamoc Hill area.

This configuration largely avoids visual impacts to Tumamoc Hill from the proposed monopole towers and would be located on segments with existing utility development and transmission lines. This area is outside of BLM-administered lands and is not subject to VRM compliance. However, along Greasewood Road, an existing 69-kV power line runs on the east side of the road, and the introduction of an additional power line would result in increased visual contrast due to the height, scale, and structure type being taller and more noticeable than the existing power line. In this area, viewer sensitivity is heightened due to community concern and relatively high density residential development as compared to the rest of the Project. The introduction of the proposed structures in this area is considered moderate to high because of the well-established residential community and the historic nature of Tumamoc Hill. However, as compared to the other alternatives under consideration, visual impacts would be reduced by constructing the power line within a corridor that is currently disturbed.

Local alternative MA1 of the Agency Preferred Alternative provides an alternative route to avoid the western boundary of the Marana Regional Airport and would cross between North Sandario Road and

North Sanders Road, turn north along North Sanders Road and terminate before reaching West Avra Valley Road. The purpose of this Agency Preferred Alternative segment is to avoid future expansion of the airport. This segment is also located outside of BLM-administered land and visual impact from the development of MA1 would be low because it avoids visually sensitive areas associated with the airport. The Marana Regional Airport is a destination for local aviation enthusiasts who currently view airplanes from the Sky Rider Café (one of the most popular airport restaurants in Arizona); however, the airport is slated for future development and MA1 would avoid obstruction of future viewing locations at the airport. Development of the Upgrade Section Agency Preferred Alternative route would reduce visual congestion resulting in minimized impact to sensitive views. In addition, development of the Agency Preferred Alternative does not result in VRM class conformance issues, and would not require plan amendments for visual resources.

Residual Impacts

The effectiveness of using and implementing established BMPs and mitigation measures (PCEMs as described in table 2-8 in chapter 2) would be limited by the distance of the viewer and the presence of other sources of contrast; therefore, impacts would generally be the same as the direct and indirect impacts described under each alternative. Regardless of the alternative selected, certain views during the construction period would be altered by the presence of construction vehicles, equipment, and the erection and operation and maintenance of towers and facilities associated with the transmission line itself. Residual impacts to landscape features from the presence of the proposed Project would be low to moderate. Where the proposed Project would not meet BLM VRM objectives, there would be significant impacts.

Unavoidable Adverse Impacts

The visual impact resulting from the construction and operation and maintenance of the transmission line within the landscape would be an unavoidable consequence.

Short-term Uses versus Long-term Productivity

Construction and operation and maintenance of the proposed Project would require short-term and long-term use of land for placement of the structures, access roads, and ancillary facilities. Implementation of the proposed Project under all action alternatives would create long-term and permanent disruptions of the characteristic landscape from soil, vegetation, and topographic disturbances and would, in some cases, change the landscape from vacant to a utility corridor. One of the intents of the Project was to parallel existing linear development where possible to minimize the disruption of vacant landscapes.
The Proponent Preferred route follows existing linear developments for a majority of its length.
The Proponent Alternative crosses vacant landscape along segments S1, S2, S4, and S6. In addition, local alternative A crosses vacant land. The Upgrade Section follows existing linear development its entire length.

Irreversible and Irretrievable Commitments of Resources

The visual contrasts that would result from the construction and operation and maintenance of the proposed Project would result in loss of a portion of the characteristic landscape within the Project footprint for the lifetime of the proposed Project (presumed to be a minimum of 50 years). If, however, at some future date all proposed Project-related facilities were removed, these visual characteristics—including vegetation levels within the ROW—would return after a few years to approximately previous levels. Thus, impacts to these resources are neither irreversible nor irretrievable.

4.11 LAND USE, INCLUDING FARM AND RANGE RESOURCES AND MILITARY OPERATIONS

4.11.1 Land Use Introduction

This section describes the potential impacts to the land use baseline conditions (as described in section 3.11.1, the land use affected environment) associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Potential impacts to land use are discussed in terms of land ownership, compliance with management of lands, land use authorizations and ROWs (including lands and realty actions), and future or planned land uses.

Methodology and Assumptions

ANALYSIS AREA

The land use analysis area for the New Build Section is a 2-mile corridor around the action alternatives (1-mile buffer on either side of the centerline). In addition, Project elements that are proposed outside the 2-mile corridor are included in the land use analysis area. The 2-mile corridor is used to identify land uses and land use resources that could be directly impacted by surface disturbance and where construction materials, equipment, and workers may be present. The land use analysis area for the Upgrade Section is a 500-foot corridor (250-foot buffer on either side of the centerline). Land use resources concerning farmlands and rangelands as well as military operations are discussed in separate subsections (sections 4.11.2 and 4.11.3, respectively) herein.

IMPACT INDICATORS

For the purposes of this analysis, an impact to land use could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- Potential conflicts with applicable land use plans, policies, goals or regulations (incompatible land uses).
- Potential conflicts with existing multi-use or utility ROWs.
- Potential conflicts with existing land uses, specifically where the Project would create a direct long-term impact:
    - Physically conflict with existing residential, commercial, industrial, military, or agricultural uses (i.e., displacement of homes, businesses, center-pivot irrigation agricultural fields).
    - Indirect conflict with residential, commercial, or military uses.
- Potential conflicts with planned land uses, specifically residential subdivisions or other sensitive land uses at the final plat approval stage.
- Potential conflicts with State or federally established, designated or reasonably foreseeable planned land use areas (e.g., lands and realty actions, resource inventory determinations (avoidance areas), recreation, wildlife management area, game management areas, waterfowl production areas, scientific and natural areas, wilderness areas, ACECs, etc.).
- The potential for the Project to result in nuisance impacts.

The analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

The laws, regulations, and land management plans below were referenced to determine conflicting or consistency determinations with the action alternatives. The following plans were found to intersect with the proposed Project.

- Mimbres Resource Management Plan
- Safford Resource Management Plan
- Phoenix Resource Management Plan
- Continental Divide National Scenic Trail Comprehensive Plan
- Coronado National Forest Plan
- Sonoita Valley Acquisition Planning District (the SVAPD is included in the Las Cienegas National Conservation Area Resource Management Plan, as described in Section 3.11)
- Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan
- Willcox Playa Wildlife Area
- Arizona State Land Department Conceptual Land Use Plans: Marana I and Marana II, Rincon Posta Quemada, and Houghton Road Corridor
- County of Doña Ana Comprehensive Plan
- Luna County
- Grant County, New Mexico, 1978 ordinance
- Hidalgo County Comprehensive Plan
- Graham County Comprehensive Plan
- Greenlee County Comprehensive Plan
- County of Cochise Comprehensive Plan
- Pima County Comprehensive Plan Update
- Pima County Sonoran Desert Conservation Plan
- Pima County Multi-Species Conservation Plan
- Pinal County Comprehensive Plan
- Cienega Creek Natural Preserve Management Plan
- City of Deming Comprehensive Plan Update
- City of Lordsburg Comprehensive Plan Update
- City of Willcox General Plan
- City of Benson General Development Plan
- City of Tucson General Plan
- Marana General Plan

Impacts Analysis Results

NO ACTION ALTERNATIVE

Under the no action alternative, the BLM would not issue a ROW grant to the Southline. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). There would be no new impacts to land uses occurring within the analysis area. It is assumed that land ownership, management of lands, land use authorizations and ROWs would continue as they are currently managed. The demand for electricity, particularly renewable energy, would likely continue to grow in the analysis area. The current capacity on the existing transmission lines would be exceeded by

the demand, and other transmission line developments would likely be sought to meet the current demand, including renewable energy transmission.

Since the Project would not be constructed, there would not be a conflict with the Mimbres RMP VRM Class II land classifications, and the Mimbres RMP would not require a plan amendment under the no action.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Construction, Operation, and Maintenance

Land Ownership and Management of Lands

The implementation of any of the action alternatives would not alter existing BLM (and all agency-managed) land ownership. Staging areas on BLM-managed lands would be returned to their existing condition in accordance with BLM standards following construction. Standard BLM leases for ROW grants, in accordance with Title V of the FLPMA, as amended (43 U.S.C. 1761–1771) would apply for all portions of BLM-managed lands that would be included in the Project footprint, should the proposed Project be approved. For non-BLM lands, ROWs would be obtained as easements or leases, as appropriate.

All negotiations with landowners (including state, county, tribal, and private) would be conducted in good faith, and the proposed Project's effect on the parcel or other landowner concerns would be addressed. ROWs for transmission line facilities on private lands would be obtained as easements. Land for substation or regeneration stations would be obtained in fee simple where located on private land. A good-faith effort would be made to purchase the land and/or obtain easements on private lands through reasonable negotiations with the landowners. The landowners would be compensated based on market value for the land that may be acquired for the proposed Project, as discussed in chapter 2. Though the construction disturbances for the proposed Project would be far less than the overall ROW acreage, for the purposes of land ownership and surface land management, the entire Project ROW acreages are discussed.

Private land owners may experience minor, temporary nuisance impacts in residential areas where the temporary activities involved with construction (i.e., noise, dust, and heavy equipment) is typically incompatible with local zoning restrictions. Where private lands would be intersected outside of existing ROWs, easements would be negotiated with the landowner. The temporary impacts would be short-term and would cease once construction activities are completed at a particular segment. (Refer to table 2-8 for a listing of appropriate PCEMs intended to reduce construction impacts.) No new access roads would be developed in the residential areas of the municipalities that occur within the analysis area. Further, the transmission lines proposed in these residential areas (particularly within route group 4) would be upgrades to existing facilities with existing zoning regulations and subsequent compliance already in place; therefore the project would not require any rezoning or land reclassification.

The implementation of any of the action alternatives would not alter existing State land ownership for both New Mexico and Arizona; all State lands would be used by the proposed Project in accordance with each State's ROW granting procedures, as described in chapter 2. As described in Section 3.11, "Land Use," State lands are managed primarily for recreation, grazing, rangeland management, and commercial and open space purposes. Recreational land uses on State lands (e.g., OHV use) may increase as a result of the proposed new access roads; however, since the areas of the New Build Section are primarily located along existing ROWs, these areas already experience recreational use and the additional access roads would result in minor but long-term changes to the existing land uses. Similarly, since the Upgrade Section would use existing access roads, the impacts to land management by the State(s) would be minor

and localized impacts. For more analysis on the impacts to OHV users, refer to Section 4.14, "Recreation." During the Project routing conducted for the proposed Southline Project, preference was given to State land parcels along that already included existing ROWs in order to reduce the potential for the creation of isolated, remnant parcels (Southline 2012a). Most uses of State lands (e.g., dispersed recreation) would still be allowed within the ROW, and transmission line towers are generally spaced five structures per mile. During micro siting every effort would be made to avoid creation of remnant parcels and work with ASLD to consider future development opportunities. Further, particularly in the Upgrade Section, the proposed Project would be located within an existing ROW, with access and the transmission line towers already in place. Therefore, any isolated or remnant State land parcels would be part of the existing conditions, and would not change as a result of the proposed Project.

Approximately 159 acres of BLM land, 296 acres of private land, and 119 acres of State land would be used for staging areas, which may result in temporary, minor impacts to land ownership and the management of lands; land purchasing for substation expansion notwithstanding as a change in landownership would subsequently change the management of the land permanently.

Approximately 327 acres of BLM lands, 117 acres of private land, and 67 acres of State lands would be used for substation construction and/or expansion, which may result in permanent, minor impacts to management of lands.

Decommissioning of the Project (i.e., after the life of the Project) would make the ROW available for other similar uses, or could be completely reclaimed and revert land uses to the existing conditions.

As described in chapter 3, the analysis area is located within Federal, State, and local planning areas. Table 4.11-1 outlines the plans that are applicable within the analysis area, land use goals and objectives therein, and consistency with those plans if any of the action alternatives is implemented.

Table 4.11-1. Consistency of the Project Alternatives with Local Plans

Plan	Goals/Objectives/Policy	Consistency Determination
Mimbres RMP	The Mimbres Resource Area grants ROWs, leases and permits to qualified individuals, businesses and governmental entities for the use of public land. New ROWs are issued within existing ROWs whenever possible. All ROW activities are subject to site-specific environmental analysis.	Not Consistent. There are existing VRM settings (VRM II) and an avoidance area where the proposed Project would be in conflict with the prescriptions of the Mimbres RMP. A plan amendment would be required to change the VRM designation if the segments of the Project in VRM Class II areas are approved in the ROD. Segments that would conflict with VRM II classifications include S5, S6, S7, alternative C, alternative D of route group 1 and LD2 of route group 2. LD2 would also conflict with the Butterfield Trail avoidance area and the Lordsburg Playa RNA.
Safford RMP	Land Use Authorizations, ROWs, leases, and permits would be considered on a case-by-case basis, in accordance with the decisions of this RMP. Major ROWs, however, would be directed to designated corridors where possible.	Consistent. Existing VRM settings (VRM II) would not be intersected by the proposed Project. The proposed Project would be in conformance with the prescriptions of the Safford RMP. A plan amendment would not be required.

Table 4.11-1. Consistency of the Project Alternatives with Local Plans (Continued)

Plan	Goals/Objectives/Policy	Consistency Determination
Phoenix RMP	Land use authorizations (ROWs, leases, permits, and easements) would continue to be issued on a case-by-case basis and in accordance with recommendations in this EIS. ROWs would be issued to promote the maximum utilization of existing ROW routes, including joint use whenever possible.	Consistent. An EIS has been determined as the appropriate level of environmental review. Where feasible, the actions alternatives would occur within existing ROWs.
Continental Divide National Scenic Trail Comprehensive Plan	The primary purpose of this plan is to provide management guidance for a continuous, appealing trail route, designed for the hiker and horseman, but compatible with other land uses. Trail segments in the Roaded Natural class pass through areas where the natural setting may have modifications that range from being easily noticed to strongly dominant to observers within the area. Trail segments in Rural or Urban class pass through areas where the natural setting is culturally modified to the point that it is dominant to the travel route observer. The setting may include pastoral, agricultural, intensively managed wildland resource landscapes or utility corridors. The urban settings may be dominated by structures with the natural elements playing an important but visually subordinate role.	Consistent. The action alternatives would cross the CDNST in areas that have been determined as having a sensitivity level rating unit as “Maintenance of Visual Quality has low Value,” no critical habitat or unique biological features, and low potential for cultural resources.*
Coronado National Forest Plan	Existing utility and transportation corridors would continue to be used for those types of uses. Every attempt should be made to locate new utilities within those existing corridors that meet the visual quality objective. New corridors shall be located so that the visual quality objectives are met.	Consistent. The approximately 0.5-mile segment that would cross the Coronado National Forest would be located within an existing ROW.
Juan Bautista de Anza National Historic Trail Comprehensive Management and Use Plan	Management objectives for visitor experience emphasize promotion of public understanding, appreciation, and enjoyment of the Anza NHT and outdoor recreation.	Consistent. The Anza NHT occurs within the development area of Tucson, primarily along the channelized Santa Cruz River that parallels I-10 and existing transmission lines.*
Willcox Playa Wildlife Area	Management emphasis for the Willcox Playa Wildlife Area is to support the best wildlife habitat possible on the wildlife area for present and future generations. This emphasis includes keeping opportunities available for public hunting and other wildlife-oriented recreation.	Consistent. Portions of the action alternatives would occur along an existing ROW; however, some seasonal restrictions may be required in accordance with AGFD hunting regulations when the presence of construction activity and workers would prevent lawful firearm use, as specified in ARS 17 309. In addition, construction activities would be required to adhere to the seasonal limitations of the Wildlife area from October 15 through March 15 annually.
Arizona State Land Department Conceptual Land Use Plans	Existing land uses and ROWs pertaining to transmission line are identified in the Marana Phase I and II conceptual plan. The proposed project would be located within these ROWs and would not expand the existing ROWs.	Consistent.
County of Doña Ana Comprehensive Plan	Maintain and protect residential areas from incompatible land uses.	Consistent. There are no residential areas in the vicinity of the action alternatives in Doña Ana County.
Luna County Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.

Table 4.11-1. Consistency of the Project Alternatives with Local Plans (Continued)

Plan	Goals/Objectives/Policy	Consistency Determination
Grant County Ordinance 1978-12-04-01	The Grant County Board of Commissioners is hereby empowered to adopt rules and regulations concerning the construction and maintenance of utilities and other facilities within Grant County road ROWs.	Consistent. Design and location of the action alternatives must comply with existing ROWs and would not occur within Grant County road ROWs.
Hidalgo County Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
Greenlee County Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
Graham County Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
County of Cochise Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
Pima County Comprehensive Plan	The Plan does not specifically address transmission of electricity, although electrical transmission requires a Conditional Use Permit under some zoning districts.	Consistent. Portions of the action alternatives would occur within an existing ROW within Pima County. A conditional use permit would be acquired for portions of the proposed Project and alternatives that would occur on county lands, as appropriate. Modifications to existing permits or new permits as may be required for electrical substations over 115 kV would be coordinated by Development Services Department.
Pima County Sonoran Desert Conservation Plan	The Plan delineates areas suitable for development, but does not specifically identify corridors for planned transmission lines.	Consistent. In the areas that would intersect with CLS county-owned lands, the construction, operation, and maintenance activities would not expand outside the existing Western ROW.
Pima County Multi-Species Conservation Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
Pinal County Comprehensive Plan	Transmission lines for the distribution of electricity and power substations shall be permitted in any zoning district and not be subject to the minimum lot area requirement.	Consistent. Portions of the action alternatives would occur within an existing ROW within Pinal County.
Cienega Creek Natural Preserve Management Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
City of Deming Comprehensive Plan	Transmission development is allowed in all zones.	Consistent. Portions of the action alternatives would occur within an existing ROW within Deming.
City of Lordsburg Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
City of Willcox Comprehensive Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
City of Benson General Development Plan	The plan acknowledges the city's presence along a transmission and transportation corridor. The transmission of electricity is allowed in all zoned areas of Benson.	Consistent. Portions of the action alternatives would occur within an existing ROW within Benson.
City of Tucson General Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.
Marana General Plan	No goals/objectives/policies pertaining to transmission line are identified.	Consistent.

* A National Trails Assessment in accordance with BLM Manual 6250 and 6280 is provided in appendix F of this EIS.

Land Use Authorizations and Rights-of-Way

The primary land use change associated with the proposed Project is the development of currently natural or undeveloped land for a new and/or upgraded transmission line and ancillary facilities (i.e., substations, access roads).

If the proposed Project is authorized, the Project would have to conform to the terms and conditions of other previously issued BLM ROWs in the Project footprint (e.g., transportation ROWs and gas line ROWs), if applicable (e.g., other linear ROWs). There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs (see chapter 3, tables 3.11-9 and 3.11-10, and appendix J) since the Project would span all pipelines, and tower construction would avoid other facilities. Similarly, impacts to state, tribal, county, city, and private land use authorizations and ROWs would have to conform to the terms and conditions of other previously issued ROWs in the Project footprint (e.g., transportation ROWs and gas line ROWs), if applicable (e.g., other linear ROWs).

The action alternatives, if authorized, would include new terms and conditions (applicable to those BLM-managed lands on which the proposed Project and alternatives would occur) that would be developed under Title V of the FLPMA, as amended (43 U.S.C. 1761–1771). Therefore, there would be no conflicts to other existing BLM-designated utility corridors or existing BLM ROW authorizations. Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted if any action alternative were implemented.

The action alternatives cross portions of various irrigation, drainage, pipes, and related facilities within agricultural areas in both New Mexico and Arizona. Where necessary to construct transmission facilities across canals or other conveyance systems, the action alternatives would be constructed to allow conductors to span these facilities, resulting in low or minimal impacts to the canal or other conveyance system. An encroachment permit would be required by the managing agency (e.g., Reclamation) to cross these facilities in accordance with Federal and local regulations. Similarly, the action alternatives would across numerous Federal, State, County, and local highways and railroads, electric transmission and delivery lines, and gas and oil pipelines. The exact alignment and design configurations of these crossings would be in accordance with applicable regulations and codes. Special construction protection measures would be undertaken at road and other ROW crossings. For a listing of construction PCEMs, refer to table 2-8 in chapter 2 of this EIS.

Other authorized land uses, such as outdoor recreation and grazing, may experience minor displacement during construction since these activities are dispersed and not concentrated within certain areas (refer to sections 4.11.2 and 4.14). Recreation along the National Trails that would be crossed by the Project would not be precluded since the transmission towers, substations, and access roads would not be constructed upon the National Trails; the intersections with National Trails would be spanned by the lines.
The recreation setting along National Trails (an authorized land use) would not change since there are existing transmission lines already in place; further discussion to the potential impacts to the recreation setting along National Trails is discussed in section 4.14. Existing land uses surrounding the proposed Project would not be precluded during the construction period. Access to all existing land uses would be maintained, and the minor displacements experienced by outdoor recreation and grazing would cease during operation/maintenance of the proposed Project, areas occupied by the transmission line towers, and substations notwithstanding. These areas would be precluded from recreation and grazing for the life of the Project.

Finally, as noted in chapter 2, ROWs for transmission line facilities on private lands would be obtained as easements. Land for substation or regeneration stations would be obtained in fee simple where located on private land. A good-faith effort would be made to purchase the land and/or obtain easements on private lands through reasonable negotiations with the landowners.

Future or Planned Land Use

Potential effects on future or planned land use are generally associated with Project construction rather than operation because once the ROW grant has been made by BLM and construction is completed, no further changes to future or planned land use patterns are expected. Similarly, county, tribal, and municipal planning already recognize the existing ROWs that the proposed Project would occupy; thus, any future planned uses would conform to these existing ROWs. Regarding BLM land management and authorizations, future or planned land use applications that would not be in conformance with the proposed Project ROW (if implemented by the BLM) would require BLM review for approval, denial, or modification/consideration for a ROW amendment, and any subsequent resource impact assessments.

Although the existing ROW does intersect residential areas (primarily in the Tucson-metropolitan area), no new planned residential subdivision or other sensitive land uses are identified. Where existing planned residential subdivisions or other sensitive land uses may be at the final plat approval stage and would be intersected by the proposed Project footprint, these entities have been actively involved with the public involvement processes. Thus, a land use conflict with future or planned land uses is not identified under all alternatives.

ROUTE GROUP 1 – AFTON SUBSTATION TO HIDALGO SUBSTATION

Subroute 1.1 – Proponent Preferred

Construction

Land Ownership and Management of Lands

Some of the segments under route group1 would cross areas identified in the Mimbres RMP as avoidance areas and VRM Class II. Please refer to Section 4.10, “Visual Resources,” for a discussion on VRM compliance. Impacts to state, county, tribal, and private land ownership and management of lands would be the same as described above in “Impacts Common to all Action Alternatives.”

Non-VRM-related Mimbres RMP ROW avoidance prescriptions that route group 1 (subroutes 1.1, 1.2, and local alternatives) would cross are provided below in table 4.11-2. Table 4.11-3 describes the total land ownership of each segment within route group 1.

As described in Section 3.11.1, “Land Use,” avoidance areas may allow for ROWs under special terms and conditions. The special terms and conditions have not yet been identified, but would be specified prior to a ROD. Further, each segment proposed under route group 1 that would intersect an avoidance area is located within or along existing ROWs.

The subroute would cross habitat areas for the bighorn sheep. Bighorn sheep habitat areas are recognized as avoidance areas by the Mimbres RMP. Impacts to these habitats are not anticipated since the Project would be located along existing facilities that are already in place within these avoidance areas. Subroute 1.1 would pass near the Aden Hills OHV area and would also intersect with BLM disposal areas; this would be a negligible impact to land use. Disposal avoidance areas are not subject as exclusion areas for ROW. Impacts for operation and maintenance of this subroute would be the same as described above in “Impacts Common to all Action Alternatives.”

Table 4.11-2. Route Group 1 BLM ROW Avoidance Areas

Segments	Suitable/Occupied Desert Bighorn Sheep Habitat Avoidance Areas (miles crossed)	Butterfield Trail Avoidance Areas (miles crossed)	CDNST Avoidance Areas (miles crossed)	Grassland Restoration Avoidance Area (miles crossed)	Areas Identified as Suitable for Disposal (miles crossed)
Subroute 1.1, Proponent Preferred					
P2	0	0	0	0	12.7
P4a	0	0	0.5	0	0
Subroute 1.2, Proponent Alternative					
S2	0.9	0	0	0	0
S6	0	0	0	1.0	0
S7	0	0	0	1.0	0
S8	0	0	0	0	0.3
Route Group 1, Local Alternatives					
DN1	0	0	0	0	4.4
Total	**0.9**	**0**	**0.5**	**2.0**	**17.4**

Table 4.11-3. Route Group 1 Land Ownership

		Land Ownership							
	Total Miles	BLM	BIA	DOD	Forest Service	Reclamation	State of New Mexico	County	Private
Subroute 1.1, Proponent Preferred									
P1	5.1	3.0	0.0	0.0	0.0	0.0	1.9	0.0	0.2
P2	102.0	32.8	0.0	0.0	0.0	0.0	31.3	0.0	37.9
P3	31.1	25.4	0.0	0.0	0.0	0.0	1.4	0.0	4.2
P4a	8.9	4.2	0.0	0.0	0.0	0.0	3.7	0.0	1.1
Subroute 1.2, Proponent Alternative									
S1	13.4	10.9	0.0	0.0	0.0	0.0	2.5	0.0	0.0
S2	11.1	9.8	0.0	0.0	0.0	0.0	1.0	0.0	0.3
S3	12.9	12.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0
S4	10.6	10.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0
S5	29.7	12.1	0.0	0.0	0.0	0.0	3.7	0.0	13.9
S6	7.4	4.4	0.0	0.0	0.0	0.0	2.4	0.0	0.5
S7	41.5	22.2	0.0	0.0	0.0	0.0	10.4	0.0	8.9
S8	14.6	0.2	0.0	0.0	0.0	0.0	5.8	0.0	8.5

Table 4.11-3. Route Group 1 Land Ownership (Continued)

		Land Ownership							
	Total Miles	BLM	BIA	DOD	Forest Service	Reclamation	State of New Mexico	County	Private
Route Group 1 Local Alternatives									
DN1	42.5	6.9	0.0	0.0	0.0	0.0	29.3	0.0	6.4
A	17.5	14.7	0.0	0.0	0.0	0.0	1.1	0.0	1.8
B	12.2	9.9	0.0	0.0	0.0	0.0	2.2	0.0	0.0
C	9.0	3.9	0.0	0.0	0.0	0.0	1.6	0.0	3.4
D	22.8	6.8	0.0	0.0	0.0	0.0	2.5	0.0	13.5

Land Use Authorizations and Rights-of-Way

If the proposed Project is authorized, the Project would have to conform to the terms and conditions of previously issued BLM ROWs in route group 1, if applicable (e.g., other linear ROWs). Valid existing rights of other ROW holders would remain in place, which are administered by the BLM Las Cruces District Office (refer to Appendix J, "BLM Land Use Authorizations"). There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs since the Project would span all pipelines, fiber optic lines, canals, and other land use authorizations; and tower construction would avoid other facilities. Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 23.1 percent of the total subroute 1.1) within the Project footprint would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted during construction. Impacts to state, county, tribal, and private land use authorization and ROWs would be the same as described above in "Impacts Common to all Action Alternatives."

Future or Planned Land Use

Future or planned land uses within subroute 1.1 include the Tri-County RMP. The Tri-County RMP will designate land use prescriptions, potentially including utility corridors intended for ROW use, and land use authorizations. The ROD for the Tri-County RMP has not been issued as of the time of writing of this EIS. Any future land use authorizations under the Tri-County Plan that may intersect with the proposed Project would also need to acknowledge the Project authorized ROW, if granted by the BLM. The Tri-County RMP will guide the land use of future activities. Since future or planned land uses within route group 1 are still under development, (i.e., the Tri-County RMP) the impact of the proposed Project to future or planned land uses would not conflict as the Project can be considered in the Tri-County RMP effort. Thus, a land use conflict with future or planned BLM land uses within the New Build Section of the analysis area is unknown until the Tri-County RMP is finalized.

Undeveloped State lands that would be physically occupied by towers or substations would no longer be available for future use. Those lands located immediately beneath the spans would have some limitations on future use, though most uses would be allowed.

Subroute 1.1 would occur within a Section 368 designated energy corridor on 20.1 acres. The Afton Substation expansion would occur on 7.8 acres of a Section 368 designated energy corridor.

Impacts to state, county, tribal, and private future or planned land use would be the same as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within route group 1 would be the same as described under subroute 1.1, "Construction." Operational surface disturbances include the physical occupation of the transmission line tower structures and substations, and the use of the access roads during maintenance activities (short-term, sporadic).

Land Use Authorizations and Rights-of-Way

During operation and maintenance, the proposed Project would have to conform to the terms and conditions of previously issued BLM, state, tribal, county, and private ROWs in route group 1, if applicable (e.g., other linear ROWs). Valid existing rights of other ROW holders would remain in place, which are administered by the BLM Las Cruces District Office (refer to Appendix J, "BLM Land Use Authorizations") or the relevant jurisdiction that manages the ROW grant. There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs since the Project would span all pipelines, fiber optic lines, canals and other land use authorizations; and tower construction would avoid other facilities. Operational activities of the transmission line, substations, and ancillary facilities would not preclude existing land use authorizations or BLM ROWs since all permanent disturbances (approximately 6.1 percent of the total subroute 1.1) within the Project footprint would avoid existing land use authorizations and BLM ROWs. Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted during operation and maintenance.

Subroute 1.2 – Proponent Alternative

Construction

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within subroute 1.2 would be the same as described under subroute 1.1, construction, except as described below.

None of the transmission alignment routes included under subroute 1.2 would occur in the lands managed by USIBWC along the international boundary between the United States and Mexico. Segment S3 is the closest alignment to the international boundary between the United States and Mexico and would be located over 1,000 feet north of the international boundary.

Land Use Authorizations and Rights-of-Way

Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 23.1 percent of the total subroute 1.2) within the Project footprint would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Refer to section 4.11.2 for discussions of impacts to grazing.

Future or Planned Land Use

Impacts to the future or planned land use within subroute 1.2 would be the same as described under subroute 1.1, construction, except as described below.

Future or planned land uses within subroute 1.2 include the Tri-County RMP. The Tri-County RMP will designate land use prescriptions, including ROWs and land use authorizations. The ROD for the Tri-County RMP has not been issued as of the time of writing of this EIS. Any future Tri-County land use authorizations under that Plan that may intersect the Project footprint would also need to acknowledge the Project authorized ROW, if granted by the BLM. The Tri-County RMP will guide the land use of future activities. Since future or planned land uses within route group 1 are still under development (i.e., the Tri-County RMP), the impact of the proposed Project to future or planned land uses would be minor. Thus, a land use conflict with future or planned land uses is unknown until the Tri-County RMP is finalized.

Operation and Maintenance

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within subroute 1.2 would be the same as described under subroute 1.1, "Construction," except the distance, ROW acreage, and disturbance estimates for subroute 1.2 would differ from subroute 1.1 (see table 4.11-1). Impacts to land use authorizations, ROWs, and future or planned land use during construction would be the same as described under construction.

Local Alternatives

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

Land Ownership and Management of Lands

Local alternative C intersects with the grassland restoration area. Local alternative D intersects with the CDNST and Section 368 designated energy corridors. Since these avoidance areas are pre-existing and would include existing utilities, impacts to these special designations from the proposed Project would be minor. Other impacts to the land ownership and the management of lands within the local alternatives of route group 1 would be the same as described under subroute 1.1, "Construction."

Land Use Authorizations and Rights-of-Way

Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 23.1 percent of the total local alternatives) within the proposed Project would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Future or planned land use in the local alternatives would be precluded by the proposed Project, but could be located parallel to the proposed Project. Refer to section 4.11.2 for discussions of impacts to grazing. Impacts to state, county, tribal, and private land use authorization and ROWs would be the same as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Land Ownership and Management of Lands

Alternative C intersects with the grassland restoration area. Local alternative D intersects with the CDNST and Section 368 designated energy corridors. Other impacts to the land ownership and the management of lands within the local alternatives of route group 1 would be the same as described under

subroute 1.1, "Construction." Impacts to existing land use authorizations, ROWs, and future or planned land use during construction would be the same as described under construction.

ROUTE GROUP 2 – HIDALGO SUBSTATION TO APACHE SUBSTATION

Subroute 2.1 – Proponent Preferred

Construction

Land Ownership and Management of Lands

All segments that comprise route group 2 are proposed New Build Section segments. Though that overall mileage, ROW acreage, and disturbance estimates would be different, impacts to the land ownership and the management of lands within route group 2 would be the same as described under subroute 1.1, "Construction," except as described below.

There would be no lands identified as suitable for disposal crossed by subroute 2.1. Some of the segments under route group 2 would cross areas identified in existing RMPs as avoidance areas and VRM Class II areas. Please refer to Section 4.10, "Visual Resources," for a discussion on VRM compliance.

Non-VRM-related Mimbres RMP and Safford RMP ROW avoidance prescriptions that route group 2 (subroutes 2.1, 2.2, local alternatives, and route variations) would cross are provided below in table 4.11-4. Table 4.11-5 shows the land ownership that each segment of subroute 2.1 would occupy.

Table 4.11-4. Route Group 2 ROW Avoidance Areas

Segments	Suitable/Occupied Desert Bighorn Sheep Habitat Avoidance Areas (miles crossed)	Butterfield Trail Avoidance Areas (miles crossed)	Lordsburg Playa RNA (miles crossed)	CDNST Avoidance Areas (miles crossed)	Grassland Restoration Avoidance Area (miles crossed)	Areas Identified as Suitable for Disposal (miles crossed)
Subroute 2.1, Proponent Preferred						
P5b	3.0	0	~~0~~	0	0	0
Subroute 2.2, Proponent Alternative						
D*	0	0	0	0.5	0	0
E	2.9	0	0	0	0	0
Route Group 2 Route Variations	-	-	-	-	-	-
Route Group 2 Local Alternatives						
LD1	2.2	0	0	0	0	0
LD2	0	3.0	2.0	0	0	0
Total	**8.2**	**3.5**	**2.0**	**0.5**	**0**	**0**

* Alternative D would occur in both route group 1 and route group 2.

Table 4.11-5. Route Group 2 Land Ownership

		Land Ownership								
	Total Miles	BLM	BIA	DOD	Forest Service	Reclamation	State of New Mexico	State of Arizona	County	Private
Subroute 2.1, Proponent Preferred										
P4b	13.9	0.5	0.0	0.0	0.0	0.0	9.6	0.0	0.0	3.7
P4c	1.9	0.4	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0
P5a	9.6	6.1	0.0	0.0	0.0	0.0	1.3	0.0	0.0	2.2
P5b	21.1	17.9	0.0	0.0	0.0	0.0	1.0	0.0	0.0	2.2
P6a	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P6b	22.5	0.2	0.0	0.0	0.0	0.0	0.0	12.6	0.0	9.7
P6c	2.8	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0
P7	22.3	2.3	0.0	0.2	0.0	0.0	0.0	8.5	0.0	11.3
P8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Subroute 2.2, Proponent Alternative										
E	31.8	18.8	0.0	0.0	0.0	0.0	4.2	0.0	0.0	8.8
F	25.3	3.1	0.0	0.0	0.0	0.0	0.0	15.1	0.0	7.1
Ga	25.7	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	12.4
Gb	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.9
Gc	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	6.6
I	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
J	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Route Group 2 Route Variations										
P7a	31.2	0.0	0.0	0.0	0.0	0.0	0.0	10.6	0.0	20.6
P7b	10.5	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	6.1
P7c	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.5
P7d	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Route Group 2 Local Alternatives										
LD1	35.4	19.5	0.0	0.0	0.0	0.0	1.9	5.0	0.0	9.1
LD2	8.9	3.6	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.2
LD3a	26.6	11.7	0.0	0.0	0.0	0.0	11.8	0.0	0.0	3.1
LD3b	2.2	1.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
LD4	53.7	39.7	0.0	0.0	0.0	0.0	1.1	12.9	0.0	0.0
LD4-Option 4	6.4	0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0
LD4-Option 5	12.3	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	1.6
WC1	14.8	0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	10.4

As described in Section 3.11.1, "Land Use," avoidance areas may allow for ROWs under special terms and conditions. Further, each segment proposed under route group 2 that would intersect an avoidance area is located within or along existing ROWs.

Segment Gb is adjacent to an avoidance area in the northwest corner of Willcox Playa.

Impacts to state, county, tribal, and private land ownership and management of lands would be the same as described above in "Impacts Common to all Action Alternatives."

Land Use Authorizations and Rights-of-Way

If subroute 2.1 is authorized, the Project would have to conform to the terms and conditions of previously issued BLM, state, tribal, county, city, and private ROWs in route group 2, if applicable (e.g., other linear ROWs). Valid existing rights of other ROW holders would remain in place[2], which are administered by the BLM Las Cruces District Office in New Mexico and Safford Field Office in Arizona. There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs since the Project would span all pipelines, and tower construction would avoid other facilities. Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 23.1 percent of the total subroute 2.1) within the proposed Project would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted during construction since all towers and disturbance would be located outside existing structures (i.e., the spans would cross over the existing structures without impact). Refer to section 4.11.2 for discussions of impacts to grazing.

Impacts to state, county, tribal, and private land use authorizations and ROWs would be the same as described above in "Impacts Common to all Action Alternatives."

Future or Planned Land Use

All future or planned land uses in Cochise County, Arizona, would be required to conform to the terms and conditions of the proposed Project and alternatives where applicable, if a ROW is granted by the BLM.

Operation and Maintenance

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within subroute 2.1 would be the same as described under subroute 2.1, "Construction." Impacts to existing land use authorizations, ROWs, and future or planned land during construction would be the same as described under construction.

Subroute 2.2 – Proponent Alternative

Construction

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within route group 2 would be the same as described under subroute 2.1, "Construction." Impacts to land use authorizations, ROWs, and future or

[2] A list of existing and pending ROW holders is provided in appendix J.

planned land use during construction would be the same as described for subroute 2.1, except as described below.

Operation and Maintenance

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land use during operation and maintenance would be the same as described for subroute 2.1, "Construction."

Route Variations

Route variations P7a through P7d would occur in areas south east of Willcox Playa that include agricultural lands and vineyards. At least four of the vineyards in the Willcox area are located on the Willcox Bench, in relative proximity to the P7a, P7b, P7c, and P7d route variations. As noted in chapter 2, ROWs for transmission line facilities on private lands would be obtained as easements. Therefore, none of the route variations in route group 2 would impact land ownership or change the management of lands along these routes.

Local Alternatives

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Construction

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within route group 2 would be the same as described under subroute 2.1, "Construction," except as described below.

Segment LD2 would cross the Butterfield Trail avoidance area. The Butterfield Trail travels in an east-west direction along this avoidance area, as would segment LD2. As specified in chapter 3, the Mimbres RMP prescribes the following stipulation for the Butterfield Trail avoidance area:

- Facilities will not be located parallel to the CDNST or Butterfield Trail (BLM 1991).

As such, segment LD2 would be in direct conflict with the management of the BLM lands that surround segment LD2 within the Butterfield Trail avoidance area. However, if a plan amendment were implemented to address the Butterfield Trail avoidance area incompatibility, the proposed Project would no longer conflict with the Mimbres RMP, and the impact would no longer exist. There are no existing transmission lines or pipelines along the proposed route for segment LD2.

Impacts to state, county, tribal, and private land ownership and management of lands would be the same as described above in "Impacts Common to all Action Alternatives."

Land Use Authorizations and Rights-of-Way

Construction activities would not impact existing land use authorizations or BLM, state, tribal, county, city and private ROWs since all temporary disturbances (approximately 23.5 percent of the total route group 2 local alternatives) within the proposed Project would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted).

Future or Planned Land Uses

Unknown future or unplanned land uses would be precluded by the proposed Project, but could be located parallel to the proposed Project; in addition, many land uses would be compatible (recreation, commercial use, grazing, etc.) with the proposed Project. Refer to section 4.11.2 for discussions of impacts to grazing.

Operation and Maintenance

Land Ownership and Management of Lands

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land during operation and maintenance would be the same as described for subroute 2.1, "Construction."

ROUTE GROUP 3 – APACHE SUBSTATION TO PANTANO SUBSTATION

Subroute 3.1 – Proponent Preferred

Construction

Land Ownership and Management of Lands

All segments that form route group 3 are proposed Upgrade Section segments. Impacts to the BLM land ownership and the management of lands within route group 3 would be the same as described under subroute 1.1, "Construction," except there would be no avoidance areas that would occur within route group 3, and as described below.

Impacts to Pima County CLS lands would be minor and limited to the construction period only. The minor indirect impacts would include temporary increases in ambient noise and surface disturbance from construction activities in the ROW and use of access roads. All areas of the proposed Project that would intersect with CLS lands occur within the existing Western ROWs, and no new transmission line structures would be constructed outside the footprints of the existing ROW across CLS lands (refer to Section 4.12, "Special Designations," for additional analysis on CLS lands). Project construction activities would not directly affect the functioning or mission of CLS lands to provide their intended land use; for instance, the approximately 300 acres of Biological Core Management Area that would be crossed by segment U3a would experience minor indirect impacts during construction activities (e.g., increased noise, construction workers present); once construction is complete, the areas would continue to function as their intended CLS land use, as described below under "Operation and Maintenance."

In some cases, particularly between the Del Bac and Rattlesnake substations within the Tucson metropolitan area and across Bar V Ranch, additional ROW would not be obtained and all upgrade activities would be conducted within Western's existing 100-foot ROW.

Where Pima County CLS designations that are owned and/or managed by Pima County would be crossed by segment U3a (e.g., "Biological Core Management Areas" like Bar V Ranch (portions of which are owned and managed by Pima County)), the proposed Project would be required to be in compliance with CLS land-use policies. However, since there is an existing ROW with no ROW expansion planned for segment U3a where it intersects Bar V Ranch, none of the CLS land-use policies would be affected. There would be no new construction on CLS lands that are owned by Pima County. Within Bar V Ranch, the existing Western line is classified as "multiple use management areas," which are CLS lands that have been identified to fulfill most of the tenants of the CLS, but are primarily distinguished from other lands

within the CLS by their inability to support high-value habitat for priority vulnerable species. Thus, the existing ROW would not result in CLS lands requiring reclassification/rezoning as a result of segment U3a's construction, operation, or maintenance.

Minor indirect impacts to the function or mission of CLS lands that are owned by other entities apart from the County would occur during construction activities as a result of construction noise and surface disturbance, but would be temporary, and would not persist once construction is complete. CLS designations crossed by route group 3 are provided below in table 4.11-6. CLS lands are further discussed in Section 4.12 "Special Designations."

Table 4.11-6. Route Group 3 Pima County Conservation Lands System

Segments	Biological Core Management Areas (acres crossed)	Important Riparian Areas (acres crossed)	Multiple Use Management Areas (acres crossed)	Agriculture Inholdings within Conservation Lands System (acres crossed)
Subroute 3.1, Proponent Preferred				
U2	16.3	0.0	0.0	0.0
U3a	300.3	14.6	41.8	0.0
Route Group 3 Local Alternative				
H	46.5	1.3	0.0	0.0

Table 4.11-7 shows the total land ownership of each segment within route group 3.

Otherwise, impacts to state, county, tribal, and private land ownership and management of lands would be the same as described above in "Impacts Common to all Action Alternatives."

Table 4.11-7. Route Group 3 Land Ownership

		Land Ownership							
	Total Miles	BLM	BIA	DOD	Forest Service	Reclamation	State of Arizona	County	Private
Subroute 3.1, Proponent Preferred									
U1a	16.1	0.4	0.0	0.0	0.5	0.0	8.8	0.0	6.4
U1b	2.9	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
U2	15.8	0.0	0.0	0.0	0.0	0.0	3.3	0.0	12.5
U3a	35.6	0.2	2.9	0.0	0.0	0.2	20.7	0.0	11.6
Route Group 3 Local Alternative									
H	19.3	0.0	0.0	0.0	0.0	0.0	15.3	0.0	4.0

Land Use Authorizations and Rights-of-Way

If subroute 3.1 is authorized, the Project would be required to conform to the terms and conditions of previously issued BLM, state, tribal, county, city, and private ROWs in the route 3 group, if applicable (e.g., other linear ROWs). Valid existing rights of other ROW holders would remain in place, which are administered by the Tucson and Safford Field Offices. There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs since the Project would span all pipelines, and tower construction would avoid other facilities. Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 28.1 percent of the total subroute 3.1) within the proposed Project would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted during construction. Refer to section 4.11.2 for discussions of impacts to grazing.

Future or Planned Land Use

All future or planned land uses in Pima County, Arizona, would be required to conform to the terms and conditions of the proposed Project and alternatives where applicable, if a ROW is granted by the BLM.

Operation and Maintenance

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land during operation and maintenance would be the same as described for subroute 3.1, "Construction," except as described below.

All areas of Pima County CLS lands that would be crossed by subroute 3.1 would be intersected by existing ROWs; no new ROWs would be required on lands classified by the CLS and owned by Pima County. The operation and maintenance of segment U2 and U3i, if constructed, would not introduce any land management conflicts that are not already in place, since the existing Western line already intersects these CLS lands.

Local Alternatives

There is one local alternative for route group 3—local alternative H.

Construction

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within route group 3 would be the same as described under subroute 3.1, "Construction." Impacts to land use authorizations, ROWs, and future or planned land use during construction of the local alternative for route group 3 would be the same as described for subroute 3.1, "Construction."

Operation and Maintenance

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land use during operation would be the same as described for subroute 3.1, "Construction."

ROUTE GROUP 4 – PANTANO SUBSTATION TO SAGUARO SUBSTATION

Subroute 4.1 – Proponent Preferred

Construction

Land Ownership and Management of Lands

All segments that comprise route group 4 are proposed Upgrade Section segments. Impacts to the BLM land ownership and the management of lands within route group 4 would be the same as described under subroute 1.1, "Construction," except there would be no avoidance areas that occur within route group 4, and as described below.

Proposed expansions for substations in the Tucson metropolitan area would not require condemnation of existing land ownership nor would they require changes to existing land categorizations of residential and commercial land uses.

Impacts to Pima County CLS designations would be the same as described under subroute 3.1, except the acreages would be different. Where Pima County CLS designations that are owned by Pima County would be crossed by segments U3i and U3b (e.g., "Important Riparian Areas" within the Santa Cruz River corridor (portions of which may be owned and managed by Pima County Regional Flood Control District)), the proposed Project would be required to be in compliance with CLS land-use policies. However, as segments under subroute 4.1 would all include upgrades to the existing Western line within an existing ROW, there would be no changes to CLS classifications. Pima County CLS designations crossed by route group 4 are provided below in table 4.11-8. CLS lands are further discussed in Section 4.12, "Special Designations."

Table 4.11-9 shows the total land ownership of each segment within route group 4.

Otherwise, impacts to state, county, tribal, and private land ownership and management of lands would be the same as described above in "Impacts Common to all Action Alternatives."

Table 4.11-8. Route Group 4 Pima County Conservation Lands System

Segments	Biological Core Management Areas (acres crossed)	Important Riparian Areas (acres crossed)	Multiple Use Management Areas (acres crossed)	Agriculture Inholdings within Conservation Lands System (acres crossed)
Subroute 4.1, Proponent Preferred				
U3b	0.0	1.2	0.0	0.0
U3c	0.0	1.1	1.3	0.0
U3d	0.0	0.9	0.3	0.0
U3e	0.0	0.0	10.7	0.0
U3f	0.0	0.0	8.1	0.0
U3g	0.0	0.0	0.7	0.0
U3h	0.0	1.0	0.2	0.0
U3i	12.8	59.2	35.0	0.0
U3k	0.0	0.0	154.2	30.1
Route Group 4 Route Variation	-	-	-	-

Table 4.11-8. Route Group 4 Pima County Conservation Lands System (Continued)

Segments	Biological Core Management Areas (acres crossed)	Important Riparian Areas (acres crossed)	Multiple Use Management Areas (acres crossed)	Agriculture Inholdings within Conservation Lands System (acres crossed)
Route Group 4 Local Alternatives				
TH1a	0.0	0.0	17.1	0.0
TH1b	0.0	0.0	0.3	0.0
TH1-Option	0.0	0.0	11.78	0.0
TH3-Option A	0.0	3.6	2.1	0.0
TH3-Option B	0.0	0.8	1.1	0.0
TH3-Option C	0.0	6.2	9.8	0.0
TH3a	0.0	4.6	0.0	0.0
TH3b	0.0	48.5	4.5	0.0

Table 4.11-9. Route Group 4 Land Ownership

		Land Ownership							
	Total Miles	BLM	BIA	DOD	Forest Service	Reclamation	State of Arizona	County	Private
Subroute 4.1, Proponent Preferred									
U3b	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
U3c	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
U3d	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.0
U3e	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
U3f	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4
U3g	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
U3h	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
U3i	18.2	0.0	0.0	0.0	0.0	0.2	2.7	0.0	15.3
U3j	0.9	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
U3k	16.7	0.0	0.0	0.0	0.0	0.0	10.8	0.0	5.9
U3l	1.6	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.4
U3m	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4
U4	1.9	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Route Group 4 Route Variation									
U3aPC	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2

Table 4.11-9. Route Group 4 Land Ownership (Continued)

	Total Miles	Land Ownership							
		BLM	BIA	DOD	Forest Service	Reclamation	State of Arizona	County	Private
Route Group 4 Local Alternatives									
MA1	1.1	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0
TH1a	1.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.2
TH1b	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4
TH1c	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
TH1-Option	1.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3
TH3-Option A	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
TH3-Option B	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
TH3-Option C	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
TH3a	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
TH3b	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5

Land Use Authorizations and Rights-of-Way

If subroute 4.1 is authorized, the Project would be required to conform to the terms and conditions of previously issued BLM ROWs in the route 4 group, if applicable (e.g., other linear ROWs). Valid existing rights of other ROW holders would remain in place, which are administered by the Tucson Field Office. There would be no impacts to BLM-designated utility corridors and other existing BLM ROWs since the Project would span all pipelines, and tower construction would avoid other facilities. Construction activities would not impact existing land use authorizations or BLM ROWs since all temporary disturbances (approximately 33.6 percent of the total subroute 4.1) within the Project footprint would avoid existing land use authorizations and BLM ROWs (i.e., preexisting authorizations would continue as permitted). Existing, authorized adjacent or intersecting linear land use facilities (transmission and utility corridors) would not be impacted during construction. Refer to section 4.11.2 for discussions of impacts to grazing.

Operation and Maintenance

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land uses during operation and maintenance would be the same as described for subroute 4.1, “Construction.”

Local Alternatives

There are 10 local alternatives within route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C.

Construction

Land Ownership and Management of Lands

Impacts to the land ownership and the management of lands within route group 4 would be the same as described under subroute 4.1, "Construction." Impacts to land use authorizations, ROWs, and future or planned land use during construction of the local alternative for route group 4 would be the same as described for subroute 4.1, "Construction."

Land Use Authorizations and Rights-of-Way

Impacts would be the same as described under subroute 4.1, "Construction," except the following. Reclamation administers the CAP that occurs within subroute 4.1. Specifically, local alternative MA1 would cross Reclamation-owned lands. No impacts to the land uses of these Reclamation-owned lands would occur since there are existing facilities within the Project footprint, and these existing facilities have been previously authorized by Reclamation.

Operation and Maintenance

Impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land uses during operation and maintenance would be the same as described for subroute 4.1, "Construction."

Route Variations

As recommended by Pima County, route variation U3aPC was developed to be more consistent with the City of Tucson and Pima County's planned land uses south of the Tucson International Airport. U3aPC would run parallel to an existing road and would reduce the impacts to the management of county lands along segment U3a by relocating the diagonal alignment across lands planned for the future Hughes Road realignment. U3aPC would not intersect with lands identified by Pima County as CLS lands.

AGENCY PREFERRED ALTERNATIVE

The Agency Preferred Alternative would not conflict with existing land use authorizations, and would not change any future or planned land use under route groups 1, 2, 3, and 4. The Agency Preferred Alternative would not change land ownership, except in site-specific locations for substation expansion as described in chapter 2. The Agency Preferred Alternative would cross land owned by the following: approximately 3 miles of BIA lands; 100 miles of BLM lands; 0.5 mile of Forest Service lands; 0.5 mile of Reclamation lands; 129 miles of State lands; 0.4 mile of County lands; and 132 miles of private lands.

The Agency Preferred Alternative alignments included in route group 1 would not occur within ROW avoidance areas, except for segment P2 (crosses 12.7 miles of areas identified for disposal) and P4a (crosses 0.5 mile of CDNST avoidance area). As previously stated, ROW avoidance areas designated for disposal are not subject as exclusion areas for ROW locations, therefore the 12.7 miles of segment P2 that cross areas identified as suitable for disposal would be a negligible impact. The area where P4a would cross the CDNST avoidance area includes existing transmission line ROWs, access roads, and is located approximately 0.6 mile southeast of the existing Hidalgo Substation. The existing transmission lines, access roads, and general developed character dictates how these lands are currently managed, and the Agency Preferred Alternative would not require changes to how these lands area managed. Therefore, impacts of construction and operation and maintenance would be minor, and compliance with the management of these lands (i.e., CDNST avoidance areas) would not be changed. The management of the

CDNST corridor would remain the same in this area. Further, the location where P4a crosses the actual CDNST is outside the CDNST avoidance area on New Mexico State land.

The Agency Preferred Alternative alignments included in route group 2 would not occur within ROW avoidance areas, except for segment P5b, which crosses 3.0 miles of desert bighorn sheep habitat. As previously stated, impacts to these habitats are not anticipated since the proposed Project would be located along existing facilities that are already in place within these avoidance areas.

The Agency Preferred Alternative alignments included in route groups 3 and 4 would not occur within designated ROW avoidance areas. Impacts to Pima County CLS lands would be indirect, minor, and limited to the construction period only. The minor impacts would include temporary increases in ambient noise.

Where Pima County CLS designations that are owned by Pima County would be crossed by segment U3a (e.g., "Biological Core Management Areas" like Bar V Ranch (portions of which are owned and managed by Pima County)), the proposed Project would be in compliance with CLS land-use policies. There would be no conflicts with CLS classifications since there is an existing ROW with no ROW expansion planned for segment U3a where it intersects Bar V Ranch. There would be no new construction on CLS lands that are owned by Pima County along segment U3a, U3b, and U3i. The management of other state, tribal, or private lands included in the Agency Preferred Alternative under route groups 3 and 4 would experience minor, short-term impacts, as described under "Impacts Common to All Action Alternatives."

Residual Impacts

With the implementation of PCEMs, residual impacts to land use would be the same as discussed under all action alternatives.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts to land ownership and management of lands, existing land use authorizations, ROWs, and future or planned land uses.

Short-term Uses versus Long-term Productivity

Short-term effects on land uses in the analysis area would result if a ROW were granted for the proposed Project and the subsequent encumbrance of the lands involved for any other uses such as recreational use. These short-term effects would only occur in areas where construction activities for the transmission towers or ancillary facilities physically occupy the ROW. Long-term impacts to land use would be expected for the areas in which the physical occupation of the transmission line towers and substations would preclude recreational use and grazing activities; future removal of the transmission line and ancillary facilities at the end of the life of the Project would not preclude land use form reverting to previous uses or to be converted to new uses, as allowed under managing land use plans.

Impacts to recreational and range resources would result from construction activities and physical, permanent occupancy of the transmission towers and ancillary facilities. Long-term losses in the productivity of recreational and range resources would not be expected, since forage and recreational opportunity would be restored with rehabilitation of the ROW at the end of the life of the Project.

Irreversible and Irretrievable Commitments of Resources

There would not be an irreversible commitment of land use resulting from the Project. Land use allocations and encumbrances could be reversed if the proposed Project and elements were removed in the future.

4.11.2 Farmlands and Rangelands Introduction

This section describes the impacts to farmlands and rangelands associated with the construction, operation, and maintenance of the proposed Project. Impacts are discussed in terms of loss of acreage of prime or unique farmlands or those of statewide importance. The analysis also considers those lands that could be farmed with adequate irrigation, or playas that would be suitable for farming when facilitated by sufficient precipitation. For rangelands, impacts are assessed based on loss of AUMs resulting from either temporary land use or permanently developed lands no longer available in grazing leases.

Methodology and Assumptions

Impacts in this section were confined to the representative ROW defined below. The ROW was compared with a GIS database to intersect NRCS classified prime and unique farmland, and farmland with irrigation potential, to calculate temporary disturbance (structure and laydown yards) of farmland acres and acres to be impacted by permanent disturbance (access roads, substation expansion, and structure foundations). Permanent disturbance would result in a conversion of NRCS classified farmland to non-farmable land, removing it from production, while temporary disturbance would not remove lands from production.

It is important to note that the NRCS classifies farmlands based on the physical, chemical, climatological, and sociological characteristics of the soils and land. The NRCS classifications do not imply that prime or unique farmlands or farmlands of statewide or local importance are currently being actively farmed or have ever been actively farmed. Therefore, it can be assumed that the calculation of acres of impacts to farmlands based on NRCS classifications will represent a larger impact to farmlands than would actually occur if the proposed transmission lines were constructed.

Due to the length of the proposed Project, the number of individual grazing leases was extensive. Therefore, rather than list each lease, the total lease acreage that intersected each segment of the action alternatives was used in the analysis. The total lease acreage was divided by the total AUMs set by the leasing entity to obtain an approximate average acreage per AUM. That number was then divided into the total temporary disturbance acres to calculate a short-term loss of AUMs. Permanent loss of AUMs was calculated by dividing the total permanent disturbance acres by the average acreage per AUM.

Limited AUM data were available for rangeland in Arizona. Based on data received on State leases, an average of one AUM per 17 acres was calculated and used for analysis on BLM lands, where AUM data were absent (represented with a dash in tables below).

ANALYSIS AREA

New Build Section

The environmental consequences for farmlands and rangelands for the New Build Section are based on a 200-foot-wide representative ROW. As noted in chapter 2, major portions of many alternatives parallel existing infrastructure. The actual construction ROW would likely be configured to avoid certain environmental impacts, or for other logistical reasons. Therefore farmland and rangeland resources impacted by the representative ROW may or may not be impacted by the final construction ROW.

However, use of the representative ROW allows disclosure of the approximate magnitude of impacts associated with each route group and route segment.

Environmental consequences for farmlands and rangelands may extend beyond the representative ROW in order to incorporate the potential for indirect impacts.

Upgrade Section

The environmental consequences for farmlands and rangelands for the Upgrade Section are based on a 100 to 150-foot ROW. As noted in land use, the Upgrade Section is located in a relatively urban area where farming and grazing would not occur. This urbanized environment has already resulted in conversion of most lands within the ROW to non-farmable land. Similar to the New Build Section, indirect environmental effects may extend beyond the representative ROW into adjacent areas.

ANALYSIS ASSUMPTIONS

Estimate of AUM loss is based on the stocking rates recommended by the leasing agencies and does not reflect actual conditions. Due to the recent drought and related range decline, stocking rates may actually be considerably lower than what has been recommended. The agencies occasionally conduct range assessments so that rates can be adjusted. However, it is unclear how accurately the recommended rates reflect the real ones. Therefore, it can be assumed that acreage per AUM is an underestimate, and that the loss in AUMs in this analysis represents an overestimate.

A similar assumption applies to farmlands, since the dry conditions may eliminate or restrict irrigation opportunities due to lack of water. Many farmers make decisions regarding whether to plant based on what they assume will be an availability of irrigation water. With pending drought, many farmers may have preferred to leave land fallow than to absorb the cost of raising crops. Consequently, farming acreages could be overestimates. It is also important to note that the NRCS classifies farmlands based on the characteristics of the soil and land. It does not imply that areas classified as prime or unique farmlands or farmlands of statewide or local importance are currently being actively farmed or have ever been actively farmed.

To assess the significance of impacts, total acreage of NRCS classified farmlands of unique or statewide importance were divided by the total acreage per subroute. This represents a very conservative approach since the final design of the transmission line, substations, and laydown areas has not been determined, and some flexibility would be available to minimize impacts to such designated farmlands. This analysis focuses on permanent disturbance only, assuming that during construction planning an effort would be made to avoid these farmlands when selecting a location for laydown yards. At locations where laydown areas cannot avoid farmlands, the proponent would receive approval from the landowner of the farmland to lease the land required for the laydown area.

Additionally, the analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

IMPACT INDICATORS

- Acres of impacts to existing NRCS prime farmlands or Farmlands of Statewide Importance
- Acres of impacts to grazing allotments on BLM, ASLD, and NMSLO lands and subsequent potential reduction in AUMs

SIGNIFICANT IMPACTS

This analysis recognizes the complexity of calculating active farming acreages or grazing AUMs in any particular year. For example, due to recent drought conditions, many areas may not currently be actively farmed and on many grazing lands stocking rates have declined as range condition has deteriorated. In addition, the AUMs are estimates based on past conditions and do not accurately reflect the present stocking rates. Most of the leases that intersect the ROW are large, in the tens or even hundreds of thousands of acres, and it would be extremely difficult to tease out the impact of a small loss in acreage from the already devastating effect of drought on farming or grazing lands. Therefore, for the purposes of this analysis, a statistically relevant measure of 10 percent loss of farmlands and rangelands was used if it were determined to result from construction, operation, and maintenance of the action alternatives. The following were considered significant impacts:

- Loss of greater than 10 percent of prime or unique farmlands;
- Loss of greater than 10 percent AUMs from local grazing leases.

Impacts Analysis Results

NO ACTION ALTERNATIVE

Under the no action alternative, the BLM would not issue a ROW grant to the Southline. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). These existing lines have already resulted in conversion of land to non-farmable land. No additional farmland or rangeland would be removed from production and there would be no direct or indirect effects.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Construction

Construction of the transmission line would have direct effects on farmlands and rangelands by converting farmable land to non-farmable land, thereby removing land acreage from productivity. As noted in sections 3.8.1 and 4.8.1, fugitive dust could affect vegetation in certain conditions. As such, potential indirect effects could occur if dust and particulate matter resulting from the construction activities covered crops in a layer thick enough to impair photosynthesis and impede plant growth.

Construction could have minor impacts on rangeland improvements, such as pasture fencing, corrals, stock tanks, and pipelines. The minor impacts to rangeland improvements would only occur where there currently is no physical access to the ROW. Impacts to fences would be minimized by installing temporary gates to prevent livestock from escaping pastures and accessing roadways. Fences and gates would be repaired or replaced to their original, pre-disturbed condition, as required by the landowner or the land manager if they are damaged or destroyed by construction activities. The final siting of the transmission line structures would avoid other improvements such as corrals and stock tanks; therefore there would be no direct impact to rangeland improvements.

Operation and Maintenance

Except under extraordinary circumstances, all operation and maintenance activities would occur within the transmission line ROW and access roads. These activities would not directly or indirectly impact adjacent farmlands or rangelands. EMFs generated by the flow of electricity from the transmission line

could potentially interfere with radio signals used in automated irrigation or fertilization systems located in close proximity to the line. However, these systems generally operate at different frequencies than the 60-hertz range of the transmission line and existing transmission lines are not known to interfere with these systems' radio signals at existing farmlands. In addition, the final siting of the transmission lines would either avoid crossing active farmlands or maximize the distance between the transmission lines and automated irrigation or fertilization systems. Therefore, EMFs from the proposed transmission lines are unlikely to cause a direct impact to automated irrigation or fertilization systems located on farms adjacent to the proposed transmission lines. In studies on livestock, EMFs have not been shown to have any detectable effects on health or behavior (EMF.info 2014). Therefore, EMFs from the proposed transmission lines are unlikely to cause a direct impact to livestock grazing in the vicinity of the proposed transmission lines. There would be no impact to rangeland improvements from the transmission line spans.

No direct effect would occur to farmlands and rangelands during the operation and maintenance phase of the Project beyond the loss of lands resulting from Project construction. Because the direct and indirect effects of operation and maintenance are the same for all action alternatives, no further discussion is included under each route group.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Approximately 8 percent of the 3,566.1 acres of representative ROW for the Proponent Preferred (subroute 1.1) consists of Farmland of Statewide Importance (table 4.11-10). The construction of the transmission line would result in a direct effect by removing NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated. This does not represent a significant reduction in the NRCS farmland classification acreage resulting from the Proponent Preferred (subroute 1.1). Additional efforts to avoid farmlands would be made during completion of the final design.

Nearly 221 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Preferred (subroute 1.1). This acreage represents 0.01 percent of the total lease acreage intersecting the proposed route (table 4.11-11). Based on expected stocking rates, the removal of the rangeland acres would result in a potential reduction of about 15 AUMs, or 0.02 percent. This reduction in stocking rates is not considered significant.

Table 4.11-10. Route Group 1 Summary of Acres of Impacted Farmlands

	Total ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Subroute 1.1, Proponent Preferred					
P1	124.4	0	0	0	0
P2	2,471.9	272.9	0	0	0
P3	753.3	0	0	0	0
P4a	216.5	0	0	0	0
Total	**3,566.1**	**272.9**	**0**		

Table 4.11-10. Route Group 1 Summary of Acres of Impacted Farmlands (Continued)

	Total ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Subroute 1.2, Proponent Alternative					
S1	324.3	0	0	0	0
S2	268.6	27.2	0	0	0
S3	311.6	8	0	0	0
S4	257.8	0	0	0	0
S5	719.7	104.3	0	0	0
S6	182.2	0	0	0	0
S7	1,006.9	262	0	0	0
S8	352.5	329	0	0	0
Total	**3,423.5**	**732.3**	**0**		
Route Group 1 Local Alternatives					
DN1	1,029.5	119.4	0	0	0
A	422.9	0	0	0	0
B	291.5	0	0	0	0
C	215.7	0	0	0	0
D	551.1	399.7	0	68.6	0

Table 4.11-11. Route Group 1 Summary of Acres of Impacted Rangelands

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Subroute 1.1, Proponent Preferred						
P1	124.4	111,823.1	8,388	10.4	0.8	0.01
P2	2,471.9	918,415.2	55,769	136.1	8.3	0.01
P3	753.3	265,353.56	18,786	63.4	4.5	0.02
P4a	216.5	155,185.1	12,871	11.1	0.9	0.01
Total	**3,566.1**	**1,450,777**	**95,814**	**221**	**14.6**[†]	**0.02**[†]
Subroute 1.2, Proponent Alternative						
S1	324.3	223,327.4	17,006	21.8	1.7	0.01
S2	268.6	256,205.7	13,394	22.4	1.2	0.01
S3	311.6	147,578.4	13,197	8.4	0.8	0.01
S4	257.8	131,857.8	14,682	21.4	2.4	0.02
S5	719.7	260,206.8	31,826	30.2	3.7	0.01
S6	182.2	100,680.0	16,278	13.6	2.2	0.01
S7	1,006.9	374,121.0	53,025	52.2	7.4	0.01
S8	352.5	135,186.4	1,135	29.7	0.2	0.02
Total	**3,423.5**	**1,629,163.5**	**160,543**	**199.7**	**19.7**[†]	**0.01**[†]

Table 4.11-11. Route Group 1 Summary of Acres of Impacted Rangelands (Continued)

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Route Group 1 Local Alternatives						
DN1	1,029.5	415,285.1	12,086	92.9	2.7	0.02
A	422.9	256,205.7	13,394	21.5	1.1	0.01
B	291.5	131,857.8	14,682	7.2	0.8	0.01
C	215.7	201,360.0	32,556	6.1	1.0	<0.01
D	551.1	191,671.7	10,599	28.1	1.6	0.01

*Includes acres both inside and outside the Representative ROW.

†Total reduction in AUMs was calculated from subroute totals, and is not additive.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Approximately 21 percent of the 3,423.5 acres of representative ROW in the Proponent Alternative (subroute 1.2) consists of Farmland of Statewide Importance. The construction of the transmission line would result in a direct effect by removing NRCS classified farmland from production, if it cannot be avoided. This represents a reduction in the NRCS farmland classification acreage resulting from the Proponent Alternative, but does not take into account avoidance of farmlands during completion of the final design or whether active farmlands are present. Because the proponent would avoid existing active farmlands, direct impacts to farmlands would not be considered significant.

Approximately 200 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Alternative (subroute 1.2). This acreage represents 0.01 percent of the total lease acreage intersecting the proposed route. Based on expected stocking rates, the removal of the rangeland acres would result in a potential reduction of about 20 AUMs, or 0.01 percent. This reduction in stocking rates is not considered significant.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

Of the route group 1 local alternatives, only DN1 and D would have a direct effect on Farmland of Statewide Importance. Local alternative DN1 would affect 12 percent and local alternative D would affect 73 percent. The construction of the transmission line would result in a direct effect by removing the NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated. This represents a significant reduction in the farmland acreage resulting from these two alternatives, but does not take into account avoidance of farmlands during completion of the final design.

None of the local alternatives considered would result in significant loss of rangeland acreage or AUMs.

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Approximately 7 percent of the 2,308.5 acres of representative ROW in the Proponent Preferred (subroute 2.1) consists of Farmland of Statewide or Unique Importance (table 4.11-12). The construction of the transmission line would result in a direct effect by removing NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated. This does not represent a significant reduction in NRCS farmland classification acreage resulting from the Proponent Preferred (subroute 2.1). Additional efforts to avoid farmlands would be available during completion of the final design.

Nearly 119 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Preferred (subroute 2.1). This acreage represents 0.02 percent of the total lease acreage intersecting the proposed route (table 4.11-13). Based on expected stocking rates, the removal of the rangeland acres would result in a potential reduction of about 14 AUMs, or 0.01 percent. This reduction in stocking rates is not considered significant.

Table 4.11-12. Route Group 2 Summary of Acres of Impacted Farmlands

	Total Representative ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Subroute 2.1, Proponent Preferred					
P4b	335.3	32.4	0	34.9	0
P4c	44.9	19.0	0	10.6	0
P5a	233.0	67.4	0	5.4	0
P5b	511.1	5.7	32.7	1.1	4.1
P6a	21.2	0	0	21.2	0
P6b	545.1	0	0	176.0	53.1
P6c	68.2	0	0	0	0
P7	540.8	0	0	14.9	7.0
P8	9.0	0	0	8.2	0.8
Total	**2,308.5**	**124.5**	**32.7**		
Subroute 2.2, Proponent Alternative					
E	766.6	58.3	78.7	27.3	69.5
F	611.1	0	0	139.6	12.9
Ga	622.4	0	0	200.5	146.6
Gb	25.9	0	0	0	25.9
Gc	179.6	0	0	21.0	142.2
I	55.4	0	0	0	0
J	55.6	0	0	0	0
Total	**2,316.6**	**58.3**	**78.7**		

Table 4.11-12. Route Group 2 Summary of Acres of Impacted Farmlands (Continued)

	Total Representative ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Route Group 2 Route Variations					
P7a	755.8	0	0	238.6	125.1
P7b	251.8	0	1.4	121.5	109.7
P7c	24.1	0	0	23.2	0
P7d	47.9	0	0	31.0	17.0
Route Group 2 Local Alternatives					
LD1	856.9	131.6	114.4	48.5	30.6
LD2	214.4	137.0	0	21.1	0
LD3a	644.3	177.0	0	22.7	0
LD3b	52.5	24.7	0	4.1	0
LD4	1,300.3	33.4	0	31.2	0
LD4-Option 4	154.8	0	0	0	0
LD4-Option 5	296.1	0	0	0	0
WC1	358.3	0	3.6	75.2	19.3

Table 4.11-13. Route Group 2 Summary of Acres of Impacted Rangelands

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Subroute 2.1, Proponent Preferred						
P4b	335.3	148,656.5	18,756	28.1	3.5	0.02
P4c	44.9	168,516.8	14,448	3.9	0.3	<0.01
P5a	233.0	180,805.6	29,168	11.4	1.8	0.01
P5b	511.1	41,815.8	19,280	21.5	9.9	0.05
P6a	21.2	53,042.1	–	0.7	0.0	<0.01
P6b	545.1	91,054.0	–	25.8	1.5	0.03
P6c	68.2	0	0	3.2	0	0
P7	540.8	99,908.3	–	23.8	1.4	0.02
P8	9.0	0	0	0.1	0	0
Total**	**2,308.5**	**783,799.10**	**96,005.20**	**118.5**	**14.1**[†]	**0.01**[†]
Subroute 2.2, Proponent Alternative						
E	766.6	141,653.9	18,640	61.2	8.1	0.04
F	611.1	53,042.1	–	33.1	1.9	0.06
Ga	622.4	622.4	–	35.7	2.1	5.7
Gb	25.9	10,334.3	–	1.7	0.1	0.02

Table 4.11-13. Route Group 2 Summary of Acres of Impacted Rangelands (Continued)

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Subroute 2.2, Proponent Alternative, cont'd.						
Gc	179.6	7,899.7	–	4.6	0.3	0.06
I	55.4	55.4	–	4.7	0.3	8.48
J	55.6	55.6	–	3.0	0.2	5.40
Total	**2,316.6**	**213,663.40**	**22,875.85**	**144.00**	**15.4†**	**0.07†**
Route Group 2 Route Variations						
P7a	755.8	43,079.3	-	34.8	2.0	0.08
P7b	251.8	12,114.6	-	11.6	0.7	0.10
P7c	24.1	16,157	-	0.5	<0.1	<0.01
P7d	47.9	0	0	1.5	0	0
Route Group 2 Local Alternatives						
LD1	856.9	153,600.7	–	56.5	3.3	0.04
LD2	214.4	386.1	–	18.1	1.1	4.69
LD3a	644.3	287,796.0	–	43.9	2.6	0.02
LD3b	52.5	63.8	–	4.4	0.3	6.90
LD4	1,300.3	230,121.1	–	113.1	6.7	0.05
LD4-Option 4	154.8	0	0	14.2	0	0
LD4-Option 5	296.1	0	0	22.2	0	0
WC1	358.3	0	0	28.3	0	0

*Includes acres both inside and outside the Representative ROW.
**Disturbance acreage for segments not intersected by grazing leases was not factored into total reduction in AUM calculations for the respective subroute.

†Total reduction in AUMs was calculated from subroute totals, and is not additive.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Approximately 6 percent of the 2,316 acres of representative ROW in the Proponent Alternative (subroute 2.2) consists of Farmland of Statewide or Unique Importance. The construction of the transmission line would result in a minor direct effect by removing NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated. This does not represent a significant reduction in the NRCS farmland classification acreage resulting from the Proponent Alternative (subroute 2.2). Additional efforts to avoid farmlands would be available during completion of the final design.

Approximately 144 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Alternative (subroute 2.2). This acreage represents 0.07 percent of the total lease acreage intersecting the proposed route. Based on expected stocking rates, the removal of the rangeland acres would result in a potential reduction of about 16 AUMs, or 0.07 percent. This reduction in stocking rates is not considered significant.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1, and four route variations: P7a, P7b, P7c, and P7d.

Construction

Four of the local alternatives—LD1, LD2, LD3a, and LD3b—would result in significant effects on Farmland of Statewide or Unique Importance. The construction of the transmission line would result in a direct effect by removing NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated for any of the local alternatives.

The four route variations cross lands that are actively being farmed, and include center pivots and vineyards. Although they are not classified as Farmland of Statewide or Unique Importance, greater than 90 percent of segments P7b, P7c, and P7d are classified as Prime Farmland if irrigated, or if other conditions are met. While this represents a reduction in the NRCS farmland classification acres resulting from the route variations, it does not take into account avoidance of farmlands during completion of the final design. Because the proponent would avoid existing active farmlands (including vineyards), direct impacts to farmlands would not be considered significant. No indirect effects to farmlands are anticipated for the route variations.

None of the local alternatives or route variations considered would result in significant loss of acreage to rangeland or AUMs.

Route Group 3 – Apache Substation to Pantano Substation

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

No Farmlands of Statewide or Unique Importance occur in the 1,269.4 acres of representative ROW under the Proponent Preferred (subroute 3.1; table 4.11-14). Construction of the transmission line would not result in any direct effects to NRCS classified farmland. No indirect effects to farmlands are anticipated.

Table 4.11-14. Route Group 3 Summary of Acres of Impacted Farmlands

	Total Representative ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Subroute 3.1, Proponent Preferred					
U1a	291.9	0	0	48.8	9.9
U1b	52.7	0	0	0	0
U2	287.5	0	0	0	15.8
U3a	637.4	0	0	9.0	68.1
Total	**1,269.4**	**0**	**0**		
Route Group 3 Local Alternative					
H	350.2	0	0	0	12.6

Approximately 82 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Preferred (subroute 3.1). This acreage represents 0.2 percent of the total lease acreage intersecting the proposed route (table 4.11-15). Based on expected stocking rates, the removal of the rangeland acres would result in a potential reduction of one AUM, or 0.06 percent. This reduction in stocking rates is not considered significant.

Table 4.11-15. Route Group 3 Summary of Acres of Impacted Rangelands

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Subroute 3.1, Proponent Preferred						
U1a	291.9	34,672.3	-	19.1	1.1	0.06
U1b	52.7	0	0	2.5	0	0
U2	287.5	0	0	28.2	0	0
U3a	637.4	0	0	32.4	0	0
Total**	**1,269.4**	**34,672.30**	**2,039.5**	**82.2**	**1.1**†	**0.06**†
Route Group 3 Local Alternative						
H	350.2	0	0	24.8	0	0

*Includes acres both inside and outside the Representative ROW.

** For segments that do not intersect any grazing leases, the disturbance for that segment was not factored into total reduction in AUM calculations for the subroute.

†Total reduction in AUMs was calculated from subroute totals, and is not additive.

LOCAL ALTERNATIVES

Construction

No Farmlands of Statewide or Unique Importance occur in the 350.2 acres of representative ROW for local alternative H. This alternative would not result in the loss of any farmlands.

Approximately 28 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under alternative H. However, no grazing allotment acreage is included in the area represented by alternative H, and therefore no loss of AUMs would occur as a result of construction under this alternative.

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

Approximately 3 percent of the 722.8 acres of representative ROW in the Proponent Preferred (subroute 4.1) consists of Farmland of Statewide or Unique Importance (table 4.11-16). The construction of the transmission line would result in a minor direct effect by removing NRCS classified farmland from production, if it cannot be avoided. No indirect effects to farmlands are anticipated. This does not represent a significant reduction in the NRCS farmland classification acreage resulting from the Proponent Preferred (subroute 4.1). Additional efforts to avoid farmlands would be available during

completion of the final design. Consultation with the NRCS found that updating this section of the transmission line would not significantly affect farmland.

Table 4.11-16. Route Group 4 Summary of Acres of Impacted Farmlands

	Total Representative ROW Acreage	Farmland of Statewide Importance	Farmland of Unique Importance	Prime Farmland If Irrigated	Prime Farmland If Meeting Other Conditions
Subroute 4.1, Proponent Preferred					
U3b	5.5	0	0	0	0
U3c	11.6	0	0	0	4.7
U3d	41.6	0	0	0	0.4
U3e	10.7	0	0	0	0
U3f	8.1	0	0	0	0
U3g	10.8	0	0	0	4.4
U3h	13.2	0	1.0	0	10.1
U3i	230.0	0	6.3	56.2	82.7
U3j	15.0	0	0	15.0	0
U3k	303.5	0	14.1	148.8	99.3
U3l	27.9	0	0	27.0	0
U3m	10.1	0	0	10.1	0
U4	34.7	0	0	0	13.8
Total	**722.8**	**0**	**21.4**		
Route Group 4 Route Variation					
U3aPC	112.6	0	0	0	30.3
Route Group 4 Local Alternatives					
MA1	19.9	0	0	19.9	0
TH1a	17.1	0	0	0	0
TH1b	18.9	0	0	0	1.1
TH1c	3.1	0	0	0	3.1
TH1-Option	11.8	0	0	0	0
TH3-Option A	9.8	0	0	0	2.5
TH3-Option B	9.8	0	0	0	7.8
TH3-Option C	20.3	0	2.1	0	14.4
TH3a	33.0	0	2.8	0	7.8
TH3b	54.4	0	17.1	0	14.4

Approximately 44 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under the Proponent Preferred (subroute 4.1). However, no grazing allotment acreage is included (table 4.11-17). Therefore, no reduction in stocking rates would occur as a result of the Proponent Preferred (subroute 4.1).

No direct or indirect effects of rangelands are expected to occur during the Project operation.

Table 4.11-17. Route Group 4 Summary of Acres of Impacted Rangelands

	Total Representative ROW Acreage	Total Grazing Allotment Acres*	Estimated AUMs	Acres Permanently Removed	Reduction in AUMs	Percent reduction in AUMs
Subroute 4.1, Proponent Preferred						
U3b	5.5	0	0	0.3	0	0
U3c	11.6	0	0	0.2	0	0
U3d	41.6	0	0	2.8	0	0
U3e	10.7	0	0	0.7	0	0
U3f	8.1	0	0	0.6	0	0
U3g	10.8	0	0	0.4	0	0
U3h	13.2	0	0	0.2	0	0
U3i	230.0	0	0	14.1	0	0
U3j	15.0	0	0	0.7	0	0
U3k	303.5	0	0	21.3	0	0
U3l	27.9	0	0	1.3	0	0
U3m	10.1	0	0	0.2	0	0
U4	34.7	0	0	1.6	0	0
Total	**722.8**	**0**	**0**	**44.4**	**0**	**0**
Route Group 4 Route Variation						
U3aPC	112.6	0	0	3.2	0	0
Route Group 4 Local Alternatives						
MA1	19.9	0	0	0.3	0	0
TH1a	17.1	0	0	0.3	0	0
TH1b	18.9	0	0	1.1	0	0
TH1c	3.1	0	0	0.1	0	0
TH1-Option	11.8	0	0	0.1	0	0
TH3-Option A	9.8	0	0	0.9	0	0
TH3-Option B	9.8	0	0	0.6	0	0
TH3-Option C	20.3	0	0	2.5	0	0
TH3a	33.0	0	0	2.7	0	0
TH3b	54.4	0	0	3.3	0	0

*Includes acres both inside and outside the Representative ROW.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C; and one route variation: U3aPC.

Construction

Only two of the local alternatives—TH3b and TH3-Option C—would result in minor direct effects to Farmlands of Unique Importance. The construction of the transmission line would result in a direct effect by removing NRCS classified farmland from production. While the soils intersected by these local alternatives are classified as Farmlands of Unique Importance, the two segments pass through urbanized areas around Tumamoc Hill where development has already resulted in conversion of land to non-farmable land. Therefore direct impacts to farmlands would not be considered significant. No indirect effects to farmlands are anticipated for any of the local alternatives or route variations.

Minimal acres of rangeland in the ROW would be directly affected by the construction of the transmission line under any of these local alternatives. No grazing allotment acreage is included in the areas represented by the alternatives, and therefore no loss of AUMs would occur as a result of construction under any of these alternatives.

No Farmlands of Statewide or Unique Importance occur in the 112.6 acres of representative ROW for route variation U3aPC. This alternative would not result in the loss of any farmlands.

Approximately 3.2 acres of rangeland in the ROW would be directly affected by the construction of the transmission line under route variation U3aPC. However, no grazing allotment acreage is included in the area represented by route variation U3aPC, and therefore no loss of AUMs would occur as a result of construction under this alternative.

Agency Preferred Alternative

Like all the action alternatives, construction of the Agency Preferred Alternative would have direct effects on farmlands and rangelands by removing land acreage from productivity. Approximately 480 acres of Farmland of Statewide Importance would be impacted under the Agency Preferred Alternative. Approximately 54 acres of Farmland of Unique Importance would be impacted under the Agency Preferred Alternative. Approximately 568 acres of Prime Farmland (irrigated) and 401 acres of Prime Farmland (other) would be impacted under the Agency Preferred Alternative. These totals would not exceed a 10% or greater loss of NRCS classified prime or unique farmlands, and impacts would be the same as described under “Impacts Common to All Action Alternatives.” The impacts would be short-term in duration, and except in extraordinary circumstances, would cease during operation and maintenance since siting of the Agency Preferred Alternative would allow for prime and unique farmlands to be spanned by the transmission line. Additional efforts to avoid farmlands would be made during completion of the final design.

Approximately 473 acres of existing BLM allotment acreages would be permanently removed from existing grazing allotments under the Agency Preferred Alternative. This permanent removal would be required since the footprints of the transmission line towers would preclude grazing. The impact to rangeland would be minor since this reduction represents a 0.02 percent reduction in total acres for allotments within the analysis area, but would be a long-term impact that would persist throughout the life of the proposed Project.

Residual Impacts

The PCEMs suggested in chapter 2 should address residual impacts to farmlands and rangelands. Residual impacts remaining would consist of loss of minimal acres of farm and rangeland. This loss would not exceed 10 percent of the analysis area and would not be a significant impact.

Unavoidable Adverse Impacts

Loss of productive farmland and rangeland would occur as a result of the construction of the transmission line and associated infrastructure, although the total acreage removed as a comparison to the total acres in each use would not be significant. These impacts would reduce the amount of agriculturally productive acreage on existing farmlands, and result in small decreases in stocking rates on some grazing allotments.

Short-term Uses versus Long-term Productivity

Short-term effects on farmlands would result if laydown areas were located in active agricultural areas with permission to lease the land from the landowner. Similar effects would occur in rangelands areas, since these locations would need fencing to prohibit access from livestock during construction. However, these impacts would be minimal because laydown areas would be largely or entirely selected to be located on previously disturbed areas. As such, these areas would provide little or no forage, and would not represent a reduction in forage. Any laydown areas that are not able to be located on previously disturbed areas would revert back to productive agriculture or rangelands following termination of construction activities.

The action alternatives would result in long-term losses of agricultural and rangeland productivity where substations, roads, and other permanent disturbance would occur. Rehabilitation of the temporary rangeland disturbances in the ROW would be completed, but due to low precipitation and semi-arid conditions in the region, these areas may not be available in the short-term for livestock grazing. No long-term loss of temporarily disturbed farmlands would be expected to occur since these lands are more easily rehabilitated by planting and irrigation.

Irreversible and Irretrievable Commitments of Resources

There would be an irreversible loss of minimal acreage of productive farmland where impacts to this resource cannot be avoided. Loss of some rangeland would also occur, but the reduction in grazing acreage available would have an insignificant overall impact on stocking rates. The temporary disturbance to farmlands and rangelands would not be considered an irretrievable loss.

4.11.3 Military Operations Introduction

This section describes the impacts to military uses associated with the construction and operation and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to military uses are discussed in terms of direct impacts on DOD-owned land, leased land, or withdrawn Federal land; military bases, bombing ranges, gunnery ranges (including EPGs), airports, and airspace; parachute drop zones; and MTRs. The analysis indicates whether the proposed Project directly or indirectly results in impacts to access to military owned, leased, or withdrawn (including EPGs) lands as a result of fencing or other physical or legal barriers necessary for construction, operation, and maintenance of the proposed Project (any of the action alternatives). The analysis indicates whether the proposed Project would conflict with, or put limitations on, existing and/or future military activities and/or missions.

Methodology and Assumptions

ANALYSIS AREA

The analysis area military operations for both the New Build Section and Upgrade Section includes any military operation, MTRs, and military installation that may intersect with the footprint for the action

alternatives. This includes a 1-mile buffer around the BSETR. The analysis area includes the proposed Project footprint total acreage (approximately 0 to 2,000 acres, depending upon alternative) as well as the intersection of the proposed Project with the 1.6 million-acre BSETR. The 1-mile buffer also accounts for potential EMF impacts along transmission lines, which according to military staff from the BSETR is up to 1 km on either side of a transmission line. This analysis area is used to identify military operations, MTRs, and military installations that could be directly, indirectly, or cumulatively impacted by surface disturbance, above-surface facilities (i.e., towers, spans) and where construction materials, equipment, and workers may be present. All mileage calculations of MTRs that cross the analysis area have been provided by the Arizona Air National Guard.

ANALYSIS ASSUMPTIONS

The analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

IMPACT INDICATORS

The impact indicator is the presence of any military operation, MTRs, and military installation within the analysis area.

SIGNIFICANT IMPACTS

For the purposes of this analysis, a significant impact on military uses could result if any of the following were to occur from construction, operation, or maintenance of the Project:

- Physically conflicts with existing military uses (i.e., displacement of MTRs, increased EMF or displacement of parachute drop zones).
- Changes military air traffic patterns, including either an increase in traffic levels or a change in location that results in safety risks.
- Directly or indirectly impacts access to military owned, leased, or withdrawn (including EPGs) land as a result of fencing, or other physical or legal barriers necessary for construction, operation, and maintenance of the proposed Project and alternatives.
- Conflicts with, or puts limitations on existing and/or future military activities and/or missions.

Impacts Analysis Results

NO ACTION ALTERNATIVE

Under the no action alternative the BLM would not grant the ROW for the proposed Project. However, under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). There would be no new impacts on military uses from the no action alternative. Current military operations would continue as they currently take place.

IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Construction

Potential impacts from construction activities that would be common to all action alternatives would include temporary ground disturbance in areas where the transmission line, substations, and ancillary facilities intersect with military owned, leased, or withdrawn (including EPGs) land. The transmission

lines would be constructed on lands below MTR visual routes (VRs) or in areas where training is for electronics and communications. The MTR VRs that would include construction only occur on portions of the analysis area and do not affect the entire MTR VRs. Impacts on military uses from ground disturbance would not be significant as all operations/training occurring in VRs is aerial in nature and the BSETR is used for electronics and communications testing. Further, these impacts would be below the AGL thresholds since the areas that may intersect MTR VRs include existing transmission line facilities that are already below AGL thresholds, and the military operations have operated in conjunction with these facilities previously.

The airspace included in some VRs would be impacted since construction of the towers and spans would introduce a new/higher obstruction than previously existed. Where poles are replaced with higher height single poles and increased power transmission, this could have an effect on operations on the approach and departure end of the runway and helipads used in area of operations and could have an effect on the drop zones. The increase height and power could have an effect on radio transmissions. This airspace may be used by manned or unmanned vehicles. Since most of the construction is being performed on areas that currently already occupy airspace, most of the impacted VRs are already avoided by the military. However, construction activities (e.g., cellular phone and/or 2-way radio use) may have minor, short-term impacts to BSETR activities.

Helicopters may be used during construction and maintenance activities. To avoid conflicts with military airspace, the appropriate military scheduler(s) and the CBP representative(s) would be contacted to schedule airspace usage for any construction and maintenance activity on lands that could be used for military and/or CBP training or other flights.

Operation and Maintenance

Potential impacts from operation and maintenance that would be common to all action alternatives include physical conflicts where Project facilities penetrate the floor (minimum flight elevation) of restricted airspace. This could require changes to military air traffic patterns to increase the minimum flight elevation(s) for low-level training in MTR VRs to avoid potential collisions with transmission lines. Changes to military air traffic patterns would be a moderate impact, since flight operations would not need to be relocated, but would need to be adjusted where an intersection of military operations with the proposed Project or alternatives would occur. This moderate impact would require advanced planning and coordination amongst the military operations command and planning documents/procedures.

Other impacts would include changes to the “zero point” level for electronics and communications testing purposes on the BSETR, which would require Fort Huachuca to revise its radio frequency emitter inventory for this area to account for the new design and operation of the line. Revisions to radio frequency emitter inventories would be a moderate impact, since the inventories would not need to be relocated, but would need to be adjusted where an intersection of military operations with the proposed Project or alternatives would occur. This moderate impact would require advanced planning and coordination amongst the military operations command and planning documents/procedures. It is important to note that the existing transmission lines that are currently in operation within the analysis area are already accounted for in the existing EMF calculations.

Access road construction may increase access for OHV and other users in areas where the Project facilities occur on the BSETR. This could lead to increased levels of unauthorized use in areas that are closed to OHV and other uses; however, locked gates and fencing would preclude unauthorized OHV use where prohibited. Refer to “Additional Mitigation Measures,” below.

The operational impacts to the Upgrade Section of the proposed Project and alternatives would be minor since the existing facilities are already be accounted for during military operations. These moderate

impacts would require future military operations planning to account for the action alternatives (if the Project ROW is granted), thus moderately increasing the limitations for future or planned military uses.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Segments P2 and P4a of subroute 1.1 would cross MTR VR-263 (table 4.11-18). Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Table 4.11-18. Route Group 1 Military Uses Resource Inventory Data

	Total Miles	MTR VRs (miles)	MOAs (miles)	Willcox Playa DOD (miles)	BSETR (miles)
Subroute 1.1, Proponent Preferred					
P1	5.1	0	0	0	0
P2	102.0	19.3	0	0	0
P3	31.1	0	0	0	0
P4a	8.9	8.9	0	0	0
Subroute 1.2, Proponent Alternative					
S1	13.4	0	0	0	0
S2	11.1	0	0	0	0
S3	12.9	0	0	0	0
S4	10.6	0	0	0	0
S5	29.7	0	0	0	0
S6	7.4	0	0	0	0
S7	41.5	34.1	0	0	0
S8	14.6	14.6	0	0	0
Route Group 1 Local Alternatives					
DN1	42.5	6.8	0	0	0
A	17.5	0	0	0	0
B	12.2	0	0	0	0
C	9.0	0	0	0	0
D	22.8	7.3	0	0	0

Operation and Maintenance

Segments P2 and P4a of subroute 1.1 would cross MTR VR-263. At the crossing of VR-263 the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263.

No other military installations or MTRs are present in subroute 1.1. Impacts for operation and maintenance of this subroute were described above in "Impacts Common to All Action Alternatives."

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

MTR VR-263 would be crossed by segments S7 and S8 of subroute 1.2. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

MTR VR-263 would be crossed by segments S7 and S8 of subroute 1.2. At the intersection of subroute 1.2 and MTR VR-263 the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, segments S7 and S8 would result in moderate impacts to MTR VR-263 due to the potential for airspace limitations at 100 feet AGL. No other military installations or MTRs are present within subroute 1.2. The Tombstone MOA is located approximately 3 miles south of the subroute and would not be impacted by subroute 1.2. Impacts for operation and maintenance of this subroute would be as described above in "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

Local alternatives A, B, and C do not intersect with any military facilities or MTR VRs. However, local alternatives DN1 and D would cross MTR VR-263. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Local alternatives A, B, and C do not intersect with any military facilities or MTR VRs. However, local alternatives DN1 and D would intersect with MTR VR-263. At the intersection of local alternatives DN1 and D with MTR VR-263, the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, DN1 and D would result in moderate impacts to MTR VR-263 due to the potential for airspace limitations at 100 feet AGL. Impacts for operation and maintenance of the local alternatives were described above in "Impacts Common to All Action Alternatives."

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Segment P7 of subroute 2.1 would cross the Willcox Playa, which is managed by the BSETR and is a possible site for test operations. Segments P4b, P6b, P7, and P8 would cross MTRs VR-259, VR-260, VR-263, and VR-1233 (table 4.11-19). Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Table 4.11-19. Route Group 2 Military Uses Resource Inventory Data

Segment	Total Miles	MTR VRs (miles)	MOAs (miles)	Willcox Playa DOD (miles)	BSETR (miles)
Subroute 2.1, Proponent Preferred					
P4b	13.9	13.9	0	0	0
P4c	1.9	0	0	0	0
P5a	9.6	0	0	0	0
P5b	21.1	0	0	0	0
P6a	0.9	0	0	0	0
P6b	22.5	5.9	0	0	0
P6c	2.8	0	0	0	0
P7	22.3	13.4	0	0.2	0
P8	0.5	0.5	0	0	0
Subroute 2.2, Proponent Alternative					
E	31.8	0	0	0	0
F	25.3	5.9	0	0	0
Ga	25.7	1.3	0	0	0
Gb	1.1	1.1	0	0	0
Gc	7.4	7.4	0	0	0
I	2.3	0	0	0	0
J	2.3	0	0	0	0
Route Group 2 Route Variations					
P7a	31.2	25.3	0	0	0
P7b	10.5	2.7	0	0	0
P7c	1.0	0	0	0	0
P7d	2.0	1.2	0	0	0
Route Group 2 Local Alternatives					
LD1	35.4	0	0	0	0
LD2	8.9	4.1	0	0	0
LD3a	26.6	26.6	0	0	0
LD3b	2.2	0	0	0	0
LD4	53.7	51.5	19.2	0	0
LD4-Option 4	6.4	0	0	0	0
LD4-Option 5	12.3	5.1	0	0	0
WC1	14.8	1.3	0	0	0

Operation and Maintenance

Segment P7 of subroute 2.1 would cross the Willcox Dry Lake Bombing Range, a former defense site. As noted in section 3.11, the Willcox Playa (Dry Lake Bombing Range) is under a perpetual lease to the Fort Huachuca's EPG operations by DOD and is currently used for aerial training by the EPG. Segment P7 crosses DOD land for approximately 0.2 mile. This impact would be minor since P7 follows an existing transmission line and the military is already avoiding this area due to the presence of the existing 230-kVtransmission line. The Proponent Preferred subroute 2.1 would lead to changes in the "zero point" level for electronics and communications testing purposes on the BSETR. Where subroute 2.1 intersects with MTR VR-259 (segments P7 and P8), VR-260 (segments P6b and P7), and VR-1233 (segment P4b), the minimum flight altitudes are 700 feet AGL (VR-259) and 300 feet AGL (VR-260, VR-1233), respectively. This is well above the proposed structure height of 90 to 170 feet, as described in section 2.4.2. On the other hand, wherever subroute 2.1 (segment P4b) intersects with MTR VR-263, the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, segment P4b would result in moderate impacts to MRT VR-263 due to the potential for airspace limitations at 100 feet AGL. Impacts for operation and maintenance of this subroute were described above in "Impacts Common to All Action Alternatives."

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Temporary ground disturbance would occur during construction activities where segments F, Ga, Gb, and Gc would cross MTRs VR-259 and VR-260. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Segments F, Ga, Gb, and Gc of subroute 2.2 would cross MTRs VR-259 and VR-260. Where VR-259 would intersect with subroute 2.2 the minimum flight altitude is 700 feet AGL. Where VR-260 would intersect the subroute the minimum flight elevation is 300 feet AGL. The impacts of these intersections would be minor since they would occur below the MTR's AGL. Impacts for operation and maintenance of this subroute were described above in "Impacts Common to All Action Alternatives."

ROUTE VARIATIONS

Construction

Temporary ground disturbance would occur during construction activities where route variations P7a, P7b, and P7d would cross MTRs VR-259 and VR-260. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Route variations P7a, P7b, and P7d would cross MTR VR-259 and route variations P7a and P7b would also cross MTR VR-260. The minimum flight altitudes are 700 feet AGL (VR-259) and 300 feet AGL (VR-260), and are therefore well above the proposed structure height of 90 to 170 feet, as described in section 2.4.2. The impacts of these intersections would be minor since they would occur below the MTR's AGL. Impacts for operation and maintenance of these route variations were described above in "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Construction

Local alternatives LD3a, LD4, LD4-Option 5, and WC1 intersect one or more of the following MTRs: VR-259, VR-260, VR-263, and VR-1233. LD3a intersects both VR-263 and VR-1233. Both LD4 and LD4-Option 5 intersect VR-260, VR-263, and VR-1233. LD4 would also intersect with the Morenci MOA. WC1 intersects only VR-259. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Local alternatives LD3a, LD4, LD4-Option 5, and WC1 intersect one or more of the following MTRs: VR-259, VR-260, VR-263, and VR-1233. LD3a intersects both VR-263 and VR-1233. Both LD4 and LD4-Option 5 intersect VR-260, VR-263, and VR-1233. WC1 intersects only VR-259. Where LD3a, LD4, LD4-Option 5, and WC1 do not intersect with VR-263, but only intersect with VR-259, VR-260, and/or VR-1233, the minimum flight altitudes are 700 feet AGL (VR-259) and 300 feet AGL (VR-260, VR-1233), respectively. This is well above the proposed structure height of 90 to 170 feet, as described in section 2.4.2. On the other hand, wherever LD3a, LD4, and LD4-Option 5 intersect with MTR VR-263, the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, segments LD3a, LD4, and LD-Option 5 would result in moderate impacts to MTR VR-263 due to the potential for airspace limitations at 100 feet AGL. LD4 would also cross the Morenci MOA. The Morenci MOA occurs at an altitude between 1,500 feet AGL and 17,999 feet AMSL. As Project activities would occur approximately 200 feet AGL, it is not anticipated that the MOA would be impacted by LD4. Additional impacts for operation and maintenance of the local alternatives were described above in "Impacts Common to All Action Alternatives."

Route Group 3 – Apache Substation to Pantano Substation

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

Temporary ground disturbance would occur during construction activities where the analysis area (segments U1a, U1b, U2, and local alternative H), the Adams Tap Substation expansion, and representative staging area 10 would cross the BSETR (table 4.11-20). The substation expansion would occur on 5.7 acres and the representative staging area would occur on approximately 20 acres within the BSETR. This would not be a significant impact for subroute 3.1, since it would occur in the BSETR, which is used for electronics and communications testing. Additional construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Table 4.11-20. Route Group 3 Military Uses Resource Inventory Data

	Total Miles	MTR VRs (miles)	MOAs (miles)	Willcox Playa DOD (miles)	BSETR (miles)
Subroute 3.1, Proponent Preferred					
U1a	16.1	1.5	0	0	10.3
U1b	2.9	0	0	0	2.9
U2	15.8	0	0	0	10.0
U3a	35.6	0	0	0	0
Route Group 3 Local Alternative					
H	19.3	0	0	0	8.7

Operation and Maintenance

Segment U1a would cross 1.5 miles of MTR 25 that has an AGL of 700 feet, which is well above the proposed structure height of 90 to 170 feet. Segments U1a, U1b, and U2 of subroute 3.1 would cross the BSETR. The upgrade of the existing Western 115-kV transmission line between Apache and Benson to a double-circuit 230-kV design, therefore, would require Fort Huachuca to revise its radio frequency emitter inventory for this area to account for the new design and operation of the line An upgrade of the existing line would include a higher electronic emission; however, any transmission line design would use best available technology to minimize EMF; therefore, upgrading the existing line could actually reduce EMF from current emissions. Thus, the impacts of the Agency Preferred Alternative to military uses in the BSETR would also be negligible. Finally, the BLM and Western are working with the DOD clearinghouse, BSETR, and EPG to develop mitigation (see “Additional Mitigation Measures” below).

The Adams Tap Substation expansion and representative staging area 10 would occur within portions of the BSETR. The substation expansion would occur on 5.6 acres and the representative staging area would occur on 19.8 acres of the ETR. This would not be a significant impact for subroute 3.1, since it would occur in the BSETR, which is used for electronics and communications testing. Subroute 3.1 (Proponent Preferred) lead to ground disturbance and changes in the “zero point” level for electronics and communications testing purposes on the ETR. Approximately 13 miles of segment U1 and U1b and approximately 9 miles of segment U2 of subroute 3.1 would intersect the BSETR.

No other military facilities are located within the analysis area for subroute 3.1. Impacts for operation and maintenance of this subroute were described above in “Impacts Common to All Action Alternatives.”

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H.

Construction

Temporary ground disturbance would occur during construction activities within the analysis area. Construction impacts would be as described above in “Impacts Common to All Action Alternatives.”

Operation and Maintenance

Local alternative H would cross the BSETR for a length of approximately 8 miles. The construction of local alternative H, instead of upgrading the existing Western line along I-10, would lead to changes in the "zero point" level for electronics and communications testing purposes on the BSETR. Implementation of local alternative H would shift the EMF impacts north away from I-10, into an area used by EPG for electronic and communications testing.

No other military facilities are located within this local alternative. Impacts for operation and maintenance of this local alternative were described above in "Impacts Common to All Action Alternatives."

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

No military facilities are located within the analysis area in subroute 4.1 (table 4.11-21). Therefore, there would be no construction-related impacts on military uses in subroute 4.1.

Table 4.11-21. Route Group 4 Military Uses Resource Inventory Data

Segment	Total Miles	MTR VRs (miles)	MOAs (miles)	Willcox Playa DOD (miles)	BSETR (miles)
Subroute 4.1, Proponent Preferred					
U3b	0.5	0	0	0	0
U3c	1.0	0	0	0	0
U3d	3.4	0	0	0	0
U3e	0.9	0	0	0	0
U3f	0.7	0	0	0	0
U3g	0.9	0	0	0	0
U3h	1.1	0	0	0	0
U3i	18.2	0	0	0	0
U3j	0.9	0	0	0	0
U3k	16.7	0	0	0	0
U3l	1.6	0	0	0	0
U3m	0.6	0	0	0	0
U4	1.9	0	0	0	0
Route Group 4 Route Variations and Local Alternatives					
U3aPC	6.2	0	0	0	0
MA1	1.1				
TH1a	1.4	0	0	0	0
TH1b	1.6	0	0	0	0
TH1c	0.3	0	0	0	0

Table 4.11-21. Route Group 4 Military Uses Resource Inventory Data (Continued)

Segment	Total Miles	MTR VRs (miles)	MOAs (miles)	Willcox Playa DOD (miles)	BSETR (miles)
Route Group 4 Route Variations and Local Alternatives, cont'd.					
TH1-Option	1.0	0	0	0	0
TH3-Option A	0.8	0	0	0	0
TH3-Option B	0.8	0	0	0	0
TH3-Option C	1.8	0	0	0	0
TH3a	2.7	0	0	0	0
TH3b	4.5	0	0	0	0

Operation and Maintenance

No military facilities are located within the analysis area in subroute 4.1. Davis-Monthan Air Force Base and Pinal Airpark are located 3.7 miles from the analysis area. Tucson International Airport and the Silverbell Army Heliport are located approximately 2 miles and 1 mile, respectively, from the analysis area. No impacts would occur at the Davis-Monthan Air Force Base or Tucson International Airport. Minor impacts to military operations at Pinal Airpark and Silverbell Army Heliport are anticipated from the Proponent Preferred, subroute 4.1 since the upgrades would introduce new tower heights and the increased transmission capacity may interfere with radio transmissions. Specifically, higher height single poles and increase power could have an effect on Pinal Airpark and Silver Bell Army Heliport's area of operations on the approach and departure end of the runway and helipads to the North of Pinal Airpark and Silver Bell Army Heliport's area of operations and could have an effect on the parachute drop zone from the west. The increased height and power could have an effect on Pinal Airpark and Silver Bell Army Heliport area of operation radio transmissions.

ROUTE VARIATION

As noted in table 4.11-21, there are no military uses along route variation U3aPC. Impacts for construction, operation and maintenance of this route variation would be the same as described above in "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C.

Construction

Local alternatives MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C would not intersect with any areas of military uses. Therefore, they are not anticipated to have any construction-related impact on military uses.

Operation and Maintenance

Local alternatives MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C would not intersect with any areas of military uses. Therefore, they are not anticipated to have any operational or maintenance-related impact on military uses.

Agency Preferred Alternative

During construction as well as operation and maintenance, the Agency Preferred Alternative would result in short-term and moderate impacts to military use of airspace along the Upgrade Section of the Agency Preferred Alternative, due to taller tower heights and an increase in power flow. The increase height and power could have an effect on radio transmissions for military uses.

The Agency Preferred Alternative was developed in coordination with the DOD clearinghouse, as well as staff from BSETR and the EPG. The Agency Preferred Alternative was identified in order to minimize impacts to military operations near Willcox Playa and to the BSETR. The Agency Preferred Alternative includes segment P7, which is located south and east of the Willcox Playa and away from the most sensitive military use areas on the north side of the Willcox Playa and BSETR. Reduced tower heights in segments such as P4b in MTR VR-263 would reduce impacts to MTR airspace limitations of 100 feet AGL.

Similarly, though upgrade of the existing Western line (segments U1a, U1b, and U2 of the Agency Preferred Alternative) crosses the BSETR, electromagnetic interference from the existing line is already part of the baseline calculations within BSETR. Further, no electronic testing is currently conducted in the area of the existing Western 115-kV line because of the existing line, I-10 corridor, topography, and other interference disturbances. An upgrade of the existing line would include a higher electronic load; however, any transmission line design would use best available technology to minimize electromagnetic interference, therefore upgrading the existing line could actually reduce electromagnetic interference from current levels. Thus, the impacts of the Agency Preferred Alternative to military uses in the BSETR would also be negligible. Finally, the DOD clearinghouse, BSETR and EPG provided specific PCEMs that are considered in this analysis (see table 2-8 in chapter 2 of this EIS).

Residual Impacts

Residual impacts could include the loss of airspace along MTR VRs if mitigation to lower the transmission lines in areas intersecting the VRs is not successful in lowering the lines below the minimum flight elevations. Because flight operations would not be required to relocate, the residual loss of airspace along MRT VRs would be a moderate impact.

Unavoidable Adverse Impacts

The construction, operation and maintenance of the proposed Project would not cause unavoidable adverse impacts on military uses.

Short-term Uses versus Long-term Productivity

The construction, operation and maintenance of the proposed Project and action alternatives is unlikely to cause short-term uses of the environment that would affect the long-term productivity of military uses.

Irreversible and Irretrievable Commitments of Resources

No irreversible or irretrievable commitment of military uses resources would occur as a result of the action alternatives.

4.12 SPECIAL DESIGNATIONS

4.12.1 Introduction

This section describes the impacts to special designations associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Potential impacts to special designations are discussed in terms of Project activities directly or indirectly altering, conflicting, or requiring new management prescriptions for special designations.

4.12.2 Methodology and Assumptions

The analyses for special designations include an assessment of whether Project-related actions would alter, conflict with, or require new management prescriptions and objectives, or otherwise physically or administratively affect State or federally established, designated, or reasonably foreseeable planned special use areas. All BLM special designations are intended to conserve, protect, enhance, and manage public lands for the benefit and enjoyment of present and future generations.

Analysis Area

As discussed in chapter 3, section 3.12, the analysis area for special designation is the representative ROW with a 1-mile buffer on each side of the centerline for route groups 1 and 2 and a 200-foot buffer on each side of the existing 100-foot ROW for route groups 3 and 4.

Analysis Assumptions

The analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

- Whether the proposed Project would conflict with the goals, objectives, and resources a particular special designation is intended to protect.

Significant Impacts

Effects on special designations would occur if construction and operation/maintenance of the Project conflicts with the objectives of the special designation. The Project could have potential effects on natural qualities, outstanding opportunities for solitude and primitive recreation, and values such as visual resources and visibility from special designations.

For the purposes of this analysis, a significant impact on special designations would occur if:

- The proposed Project would conflict with the goals, objectives, and resources a particular special designation is intended to protect.

4.12.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not grant the ROW for the proposed Project. Analysis area conditions would likely continue at current levels and trends. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). However, there would be no impacts on special designations within the analysis area from the no action alternative since no activities would conflict with the goals, objectives, and resources of special designations.

Impacts Common to All Action Alternatives

CONSTRUCTION

Potential impacts from construction activities that would be common to all action alternatives include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect with special designations. The only BLM special designations that would be intersected by the proposed Project would be National Trails and/or Trails Recommended as Suitable for National Trail Designation and the planning acquisition district (SVAPD). Though other special designations may be included in the analysis area, only National Trails would be intersected by the proposed Project. No BLM lands within the SVAPD would be intersected by the proposed Project. Increases in ambient noise levels, the presence of equipment, and dust would be temporary and would decrease with the completion of construction activities. Impacts to special designations during construction would be minor since the activities would be short-term in nature, and would not occur within special designations; National Trails being the exception (refer to appendix F for a detailed National Trails Assessment). Substation expansions that may occur within County special designations would be constructed in areas that are already in operation and have been previously disturbed.

OPERATION AND MAINTENANCE

Potential impacts common to all action alternatives could include indirect impacts to Wilderness, WSAs, ACECs, and National Monuments, where Project facilities would be sited near these special designations. Potential indirect impacts could include changes to the natural, historic, cultural, or visual character of some special designations. Other impacts could include increased access to areas due to the presence of access roads. This could lead to increased use of areas by OHV users, which could conflict with management objectives for some special designations.

There would be no direct impacts on designated wilderness areas and WSAs, as no facilities would be sited within wilderness area or WSA boundaries. Potential indirect impacts would include loss of outstanding opportunities for solitude or primitive and unconfined recreation as a result of changes to the visual character of the surrounding lands; these impacts are anticipated to be minor since existing facilities (e.g., transmission lines, pipelines, roads) would also be visible.

Despite potential indirect impacts on wilderness areas and WSAs from changes in the visual character of the surrounding lands, the impacts to wilderness and/or WSAs would be minor. The New Mexico Wilderness Act of 1980, the Arizona Wilderness Act of 1984, and the Arizona Desert Wilderness Act of 1990 all indicate that Congress did not intend for the designation of wilderness areas to lead to the creation of protective perimeters and buffer zones. The acts state, "The fact that nonwilderness activities or uses can be seen or heard from within the wilderness shall not, of itself, preclude such activities or uses

up to the boundary of the wilderness area." As such, while indirect visual or noise-related impacts from the proposed Project could affect outstanding opportunities for solitude or primitive and unconfined recreation in wilderness areas or WSAs, these actions would not preclude the proposed Project or alternatives.

Potential impacts on trails would include direct impacts where facilities would be sited within the designated trail corridor. Potential indirect impacts could include changes to the visual character, historic, natural, or cultural qualities of the trail as well as temporary increases in ambient noise levels during maintenance activities. However, these impacts would be minor since all crossings of National Trails (including trails under study for national designation) would occur in areas that include existing transmission facilities.

Potential impacts on ACECs would not include direct impacts, as none of the proposed Project or alternatives would be sited within ACEC boundaries. Indirect impacts could include changes to the natural, historic, cultural, or visual character of the ACEC. These impacts would be minor since none of the disturbance would take place within the ACEC, and the proposed Project would be located along existing utilities in the areas where the Project would be adjacent to the ACECs.

Potential indirect impacts on National Monuments would include changes to the natural character of lands adjacent to the National Monument, since the setting would change from an undeveloped landscape into a ROW with access roads, transmission line towers, and transmission line spans. However, these potential indirect impacts would not be in conflict with the goals, objectives, and resources of the National Monuments since the goals, objective and resources for which the designation is intended to protect only applies to lands within the boundary of the National Monuments.

Potential impacts on county and city special designations (e.g., Pima County CLS) would be negligible since the facilities to-be-upgraded are pre-existing. The ROW for the portions of the Upgrade Section between the existing Del Bac and Rattlesnake substations (within Tucson) would not be widened. Portions of the Upgrade Section that may cross CLS lands intended to protect (1) agriculture in-holdings; (2) biological core management areas; (3) important riparian areas; and (4) multiple-use management areas would not expand the existing transmission line ROW and would not decrease the acreages for CLS lands. All activities would be limited to the existing ROW across CLS lands.

For route groups 3 and 4, the magnitude of impacts would be reduced compared with those in route groups 1 and 2, as the existing line would be upgraded rather than a new build. Impacts to visual resource management areas are described in Sections 4.10 and 4.11.1, "Visual Resources" and "Land Use," respectively.

Route Group 1 – Afton Substation to Hidalgo Substation

Table 4.12-1 describes which segments within route group 1 would intersect special designations. Acreages are not additive and may overlap.

Table 4.12-1. Route Group 1 Special Designations Resource Inventory Data

Segment	Total Miles	Continental Divide Trail (miles)	Butterfield Trail (miles)	Organ Mountains–Desert Peaks National Monument (miles)
Subroute 1.1, Proponent Preferred				
P2	102.0	0	0.001	0
P4a	8.9	0.1	0	0

Table 4.12-1. Route Group 1 Special Designations Resource Inventory Data (Continued)

Segment	Total Miles	Continental Divide Trail (miles)	Butterfield Trail (miles)	Organ Mountains–Desert Peaks National Monument (miles)
Subroute 1.2, Proponent Alternative				
S8	14.6	0	0.001	0
Route Group 1, Local Alternatives				
D	22.8	0.001	0	0

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Segment P2 and P4a would cross the Butterfield Trail and the CDNST, respectively. Segment P2 would pass within 1 mile of the Aden Hills OHV area, but would not intersect the OHV area. No segments would intersect the Organ Mountains-Desert Peaks National Monument. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Indirect impacts on WSAs may occur where the proposed transmission line and other facilities are visible from WSAs. The proposed transmission line would pass within 5 miles of and would likely be visible from the southern and eastern portions of the Aden Lava Flow and Mount Riley/West Potrillo Mountains WSAs (refer to sections 3.10 and 4.10 for visual resources analysis).

As noted above, segment P2 would cross the Butterfield Trail and segment P4a would cross the CDNST. The crossing of the CDNST would occur approximately 7 miles northeast of Lordsburg on New Mexico State land. The 2009 comprehensive plan for the CDNST does not classify lands along the trail at the point of intersection. In addition, the BLM has not designated ROS classes or management prescriptions for the trail in the area of the intersection. The Mimbres RMP goals for the trail are to "manage to maintain scenic and primitive recreation values in accordance with the enabling legislation."

Because of the physical and visual proximity to rural and/or developed areas, the location where the CDNST would be intersected by segment P4a would be classified as rural and/or roaded natural. Both the roaded natural and rural classifications assume that the natural setting may have strong modifications, including those that are strongly dominant. The rural classification specifically anticipates the presence of utility corridors. Thus, the impact to the CDNST would be negligible. The comprehensive plan for the CDNST (CDNST Interagency Leadership Council 2009), Section 5, "Recreation Resource Management," indicates that in areas where the ROS classification would be roaded natural or rural, VRM Class III areas would be the norm. Therefore, the proposed Project would be consistent with the existing management of the CDNST in the analysis area and would result in minor, long-term impacts to the CDNST.

The Butterfield Trail does not yet have a management plan; however, the Mimbres RMP goals for the trail are to "manage to protect and interpret historical values." In the area where the subroute would cross the Butterfield Trail, there are no existing management prescriptions or ROS classes designated. Further, segment P2 would intersect the Butterfield Trail on New Mexico State lands in areas that include previous disturbance. Thus, the impact to the Butterfield Trail would be negligible. Therefore, the proposed Project would be consistent with the existing management of that area. A National Trails assessment, in accordance with BLM Manual 6280, is provided in appendix F of this EIS.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Segment S2 would pass within 1 mile of the Mount Riley/West Potrillo Mountains WSAs, but would not intersect the WSA. Segment S2 would be adjacent to the southeast corner of the Organ Mountains–Desert Peaks National Monument. The Presidential Proclamation (BLM 2014c) for Organ Mountains–Desert Peaks National Monument states that nothing shall preclude the Secretary of the Interior from renewing or authorizing the upgrading of existing utility line ROWs within the physical scope of each such ROW that exists on or before May 21, 2014. ROWs that may exist after the Proclamation date of May 21, 2014 would be authorized only if they are necessary for the care and management of the objects for which the Organ Mountains–Desert Peaks National Monument was designated.

The construction of Segment S2 would not result in direct impacts to the Organ Mountains–Desert Peaks National Monument since it would be micro-sited to be located outside the boundary of the Organ Mountains–Desert Peaks National Monument. Therefore, construction of Segment S2 would not impact the objects for which the Organ Mountains–Desert Peaks National Monument was designated. However, there could be indirect, minor and short-term impacts during construction to biologic resources of scientific interest that may be present within the Organ Mountains–Desert Peaks National Monument, such as wildlife movement (see section 4.8.1 for a discussion of impacts to wildlife). These potential impacts would be the same as described above in "Impacts Common to all Action Alternatives" and would cease once construction was completed.

Segment S8 would cross the Butterfield Trail. Construction impacts to the Butterfield Trail would be as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Indirect impacts on WSAs may occur where subroute 1.2 and other facilities are visible from WSAs. Segment S3 would be within 200 feet of and would be visible from portions of the Aden Lava Flow WSA and the Mount Riley/West Potrillo Mountains WSAs. This would be an indirect, minor impact to the WSAs, as discussed under "Impacts Common to all Action Alternatives."

Segment S2 would be adjacent to the East Potrillo Mountains portion of the Organ Mountains–Desert Peaks National Monument. This would be an indirect, minor, and long-term impact to the Organ Mountains–Desert Peaks National Monument. Since subroute 1.2 would be located outside the boundary of the Organ Mountains–Desert Peaks National Monument, it would not conflict with the management of the objects for which the Organ Mountains–Desert Peaks National Monument was designated. Therefore, operation of maintenance of subroute 1.2 would not be in direct conflict with the goals, objectives, and resources of the Organ Mountains–Desert Peaks National Monument. However, the existence and proximity of subroute 1.2 to the Organ Mountains–Desert Peaks National Monument could indirectly impact the natural landscape elements (i.e., historic and prehistoric landscape settings and/or biologic resources of scientific interest) that may be present within the Organ Mountains–Desert Peaks National Monument.

Segment S8 would cross the Butterfield Trail. The Butterfield Trail does not yet have a management plan; however, the Mimbres RMP goals for the trail are to "manage to protect and interpret historical values." In the area where the subroute would cross the Butterfield Trail, there are no existing management prescriptions or ROS classes designated. Transmission line towers would be constructed, operated and maintained so that only the transmission line span would intersect the Butterfield Trail; no facilities would be constructed upon the trail proper. Further, Segment S8 would intersect the Butterfield Trail on

New Mexico State lands in areas that include previous disturbance. Thus, the impact to the Butterfield Trail would be negligible. The proposed Project would be consistent with the existing management of that area.

Other impacts for operation/maintenance of this subroute would be as described above in "Impacts Common to all Action Alternatives."

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D.

Construction

Local alternatives A and B do not intersect with any special designations. However, local alternative B does cross within 200 feet of the Mount Riley/West Potrillo Mountains WSAs and would be visible from portions of the WSAs. Construction impacts would be the same as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Local alternative B would cross within 2 miles of the West Potrillo Mountains WSA and would be visible from portions of the WSA. Impacts of local alternative D on the CDNST would be similar in nature to those described above for subroute 1.1. Other impacts for operation/maintenance of the local alternatives would be as described above in "Impacts Common to all Action Alternatives."

Route Group 2 – Hidalgo Substation to Apache Substation

Table 4.12-2 describes which segments within route group 2 would intersect special designations. Acreages are not additive and may overlap.

Table 4.12-2. Route Group 2 Special Designations Resource Inventory Data

	Total Miles	Butterfield Trail (miles)
Subroute 2.1, Proponent Preferred		
P4c	1.9	0.001
P5b	21.1	0.001
Subroute 2.2, Proponent Alternative		
E	31.8	0.1
Route Group Route Variations		
P7a	31.2	0.2[†]
P7b	10.5	0.1
Route Group 2 Local Alternatives		
LD1	35.4	0.1
LD2	8.9	0.2
LD3a	26.6	0.001

[†] Route Variation P7a would cross the Butterfield Trail in two locations.

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Segments P4c and P5b would cross the Butterfield Trail. Segment P5b would pass within 1 mile of the Peloncillo Mountains Wilderness Area. The proposed transmission line would be visible from portions of the wilderness area. Construction impacts to these special designations would be the same as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Impacts for operation/maintenance of this subroute would be the same as described above in "Impacts Common to all Action Alternatives."

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Segment E of subroute 2.2 would cross the Butterfield Trail. It would also cross within 5 miles of the Peloncillo Mountains Wilderness Area and would likely be visible from the wilderness area. Construction impacts would be the same as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Impacts for operation/maintenance of this subroute would be the same as described above in "Impacts Common to All Action Alternatives."

ROUTE VARIATIONS

Route variations P7a and P7b would intersect the Butterfield Trail (refer to appendix F) on private lands in three locations. Recreation activities in this vicinity are limited since the area is currently comprised of agricultural fields with center-pivot irrigation systems in use. Impacts for operation/maintenance of the route variations would be the same as described above in "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Construction

Local alternatives LD2, LD3a, LD3b, and LD4 would occur within 5 miles of the Peloncillo Mountains Wilderness Area and would likely be visible from portions of the wilderness area. Local alternative LD1would intersect the Butterfield Trail. LD2 and LD3a would also cross the Butterfield Trail. Construction impacts would be the same as described above in "Impacts Common to all Action Alternatives."

Operation and Maintenance

Local alternatives LD2, LD3a, LD3b, and LD4 would occur within 5 miles of the Peloncillo Mountains Wilderness Area and would likely be visible from portions of the wilderness area. Impacts to the

Butterfield Trail for operation/maintenance of these local alternatives would be the same as described above in "Impacts Common to All Action Alternatives."

Route Group 3 – Apache Substation to Pantano Substation

Table 4.12-3 describes which segments within route group 3 would intersect special designations. Acreages are not additive and may overlap.

Table 4.12-3. Route Group 3 Special Designations Resource Inventory Data

	Total Miles	Pima County Biological Core Management Areas (acres)	Pima County Important Riparian Areas (acres)	Pima County Multiple Use Management Areas (acres)	Sonoita Valley Planning Acquisition District (acres)	Arizona National Scenic Trail (miles)	Butterfield Trail (miles)
Subroute 3.1, Proponent Preferred							
U1a	16.1	0	0	0	0	0	0.1
U2	15.8	16.2	0	0	0	0	0.3
U3a	35.6	298.9	15.2	41.8	86	0.1	0
Route Group 3 Local Alternative							
H	19.3	46.5	1.3	0	0	0	0.1

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

Subroute 3.1 would cross Pima County CLS Biological Core Management Areas, IRAs, and Multiple Use Management Areas. Project activities would not significantly affect the functioning or mission of CLS lands. The impacts to Pima County special designations (e.g., Bar V Ranch) would be negligible since subroute 3.1 is an upgrade of the existing Western lines. Additionally, the existing Western ROW would not be expanded across Bar V Ranch. Further, the existing Western line was constructed in 1951; thus, the line and ROW pre-date Pima County CLS designations. The impact would be negligible to the Multiple Use areas since transmission lines are an allowable use for this designation, and existing Western lines are already in operation for all portions of subroute 3.1.

Subroute 3.1 would also cross the SVAPD, the Butterfield Trail, and Arizona National Scenic Trail. All of these crossings would occur where the existing Western line would be upgraded; therefore, the impact to special designations would be negligible since the management prescriptions for these special designations were already in place; further, where the existing ROW may be expanded (i.e., expanded from 100 to 150 feet), the expansion would be micro-sited to avoid impacts to special designations. The areas of the SVAPD that would be intersected by segment U3a would all occur on non-BLM lands.

Subroute 3.1 would include upgrade of the existing Western line across 9.0 acres of the Coronado National Forest. There would be no impacts to special designations since no special designations are found within the analysis area of the Coronado National Forest.

Operation and Maintenance

Subroute 3.1 would cross Pima County CLS Biological Core Management Areas, IRAs, and Multiple Use Management Areas. Subroute 3.1 would also cross portions of the SVAPD. The impacts to these special designations would be negligible since this area is an upgrade of the existing Western line.

Subroute 3.1 would also cross the Butterfield Trail and the Arizona NST. Impacts on the Butterfield Trail would be similar in nature to those described above for subroute 1.1; however, the scope of the impacts would be commensurately less since subroute 3.1 would upgrade an existing line in this area.
The subroute would cross the Arizona NST within 1 mile of I-10 and within 2 miles of Vail, Arizona. As subroute 3.1 would cross the trail along I-10 and near a developed area, there would be no change to the visual character of the trail at this location.

Operation and maintenance of subroute 3.1 on the Coronado National Forest would not impact special designations since none are located within the analysis area of the Coronado National Forest.

LOCAL ALTERNATIVES

There is one local alternative for route group 3: local alternative H.

Construction

Local alternative H would cross the Butterfield Trail and Pima County Biological Core Management Areas and IRAs. As above for subroute 3.1, project activities would not significantly affect the functioning or mission of CLS lands. The Butterfield Trail would be crossed by the local alternative on Arizona State land. Construction impacts would be the same as described above in "Impacts Common to All Action Alternatives."

Operation and maintenance

As above, local alternative H would cross the Butterfield Trail and Pima County Biological Core Management Areas and IRAs. Impacts for operation/maintenance of this local alternative would be the same as described above in "Impacts Common to All Action Alternatives."

Route Group 4 – Pantano Substation to Saguaro Substation

Table 4.12-4 describes which segments within route group 4 would intersect special designations. Acreages are not additive and may overlap.

The total acreage of ROW that intersects Pima County CLS lands under all segments included in route group 4 (subroute 4.1, route variations, and local alternatives) are as follows:

- Pima County Biological Core Management Areas: 18.8 acres
- Pima County Important Riparian Areas: 116.8 acres
- Pima County Multiple Use Management Areas: 291.9 acres
- Pima County Agricultural Inholding Areas: 60.4 acres

Table 4.12-4. Route Group 4 Special Designations Resource Inventory Data

	Total Miles	Pima County Biological Core Management Areas (acres)	Pima County Important Riparian Areas (acres)	Pima County Multiple Use Management Areas (acres)	Pima County Agricultural Inholdings (acres)	Butterfield Trail (miles)	Juan Bautista De Anza National Historic Trail (miles)
Subroute 4.1, Proponent Preferred							
U3b	0.5	0	1.3	0*	0	0	0
U3c	1.0	0	1.7	1.9	0	0	0.1
U3d	3.4	0	1.3	0.5	0	0	0
U3e	0.9	0	0	16.1	0	0	0
U3f	0.7	0	0	12.4	0	0	0
U3g	0.9	0	0	1.0	0	0	0
U3h	1.1	0	1.5	0.3	0	0*	0
U3i	18.2	18.8	89.1	52.3	0	0.1	0.1
U3k	16.7	0	0	154.2	30.2	0	0*
U3l	1.6	0	0	0	0	0.1	0
U4	1.9	0	0	0	30.2	0	0
Route Group 4 Route Variation	-	-	-	-	-	-	-
Route Group 4 Local Alternatives							
TH1a	1.4	0	0	25.7	0	0	0
TH1b	1.6	0	0	0.6	0	0	0
TH1-Option	1.0	0	0	7.7	0	0	0
TH3-Option A	0.8	0	5.3	3.4	0	0	0
TH3-Option B	0.8	0	1.2	1.3	0	0	0*
TH3-Option C	1.8	0	8.3	14.5	0	0	0
TH3a	2.7	0	7.1	0.001	0	0	0
TH3b	4.5	0	0	0	0	0.001	0.2

* Value greater than zero but less than 0.1.

Table 4.12-5 describes which segments within route group 4 would include special designations in terms of local and county parks. Acreages are not additive and may overlap.

Table 4.12-5. Route Group 4 Special Designations Resource Inventory Data for Local and County Parks

	Total Miles	Christopher Columbus Park (acres)	Santa Cruz River Park (acres)	Kennedy Park (acres)	Tucson Mountain Park acres)	Joaquin Murrieta Park (acres)	Greasewood Park (acres)	Tumamoc Hill (acres)
Subroute 4.1, Proponent Preferred								
U3d	3.4	0	0	7.8	8.0	0	0	0.1
U3e	0.9	0	0	0	0	0	0	14.3
U3f	0.7	0	0	0	0	0	0	0.4
U3h	1.1	0	0.6	0	0	5.0	0	0
U3i	18.2	20.9	1.6	0	0	0	0	0
Route Group 4 Local Alternatives								
TH1a	1.4	0	0	0	0	0	0	21.7
TH1b	1.6	0	0	0	0	0	3.0	0
TH3-Option A	0.8	0	3.6	0	0	0	0	0
TH3-Option B	0.8	0	0.3	0	0	0	0	0
TH3-Option C	1.8	0	9.2	0	0	0	0	0
TH3b	4.5	0	36.4	0	0	0	0	0
Route Group 4 Route Variation	-	-	-	-	-	-	-	-

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

Subroute 4.1 would cross Pima County CLS Biological Core Management Areas, IRAs, Multiple Use Management Areas, and Agricultural Inholdings. Project activities would not significantly affect the functioning or mission of CLS lands. The subroute would also cross the Butterfield Trail and Anza NHT. Impacts to these special designations would be the same as described under subroute 3.1, since existing Western line is already in operation for all portions of subroute 4.1.

Representative staging area 13 would cross the Anza NHT for less than 0.1 mile. This area of the Anza NHT is highly disturbed, includes existing Western transmission lines and is located in an urban setting. The existing Western line is, also subroute 4.1 would be, located within Pima County Biological Core Management Areas for 0.8 acre and Pima County IRAs for 19.5 acres. One proposed staging area (number 11) would cross on 19.5 acres of Pima County Biological Core Management Areas. Project activities would not significantly affect the functioning or mission of CLS lands to provide their intended uses; the existing Western line was constructed in 1951; thus, the line and ROW pre-date Pima County CLS designations. Impacts from the staging areas would be temporary and would be within an existing ROW that already includes a Western transmission line, as well as access roads. Further, the areas would be reclaimed after the completion of construction activities, thus resulting in a short-term, minor impact to these county special designations.

The Marana Substation expansion would occur on 14.5 acres of Pima County Multiple Use Management Areas. The Pantano Substation expansion would occur on 25.0 acres of Pima County Biological Core Management Areas and 0.5 acre of Pima County IRAs.

Subroute 4.1 would also intersect with some local and county parks. The impacts to these city special designations would be negligible since Subroute 4.1 would be an upgrade of the existing Western transmission line. Further, the transmission line would span the parks as the existing Western existing lines between the Apache and Saguaro substations currently do. It would cross Christopher Columbus Park, Santa Cruz River Park, Kennedy Park, Joaquin Murrieta Park, and Tumamoc Hill. Construction impacts would be the same as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Subroute 4.1 would cross Pima County Biological Core Management Areas, IRAs, Multiple Use Management Areas, and Agricultural Inholdings. As stated in chapter 3, section 3.12, the area included under the planning area for CLS lands include a variety of land owners; the CLS policies only apply to Pima County-owned and/or managed lands. The subroute would also cross the Butterfield Trail and the Anza NHT. Impacts to these special designations would be the same as described under subroute 3.1.

Minor changes would occur to the visual character of the Butterfield Trail and Anza NHT in areas where the subroute would intersect with the trail. However, these impacts would be minor as the trails in this subroute would pass through the urbanized area in and around Tucson and work at the intersections would involve upgrading an already existing transmission line.

Representative staging area 13 would cross the Anza NHT for less than 0.1 mile. It would also occur within Pima County Biological Core Management Areas for 0.8 acre and Pima County IRAs for 19.5 acres. Representative staging area 11 would occur on 19.5 acres of Pima County Biological Core Management Areas. Impacts from the staging areas would be temporary and the areas would be reclaimed after the completion of construction activities.

The Marana Substation expansion would occur on 14.5 acres of Pima County Multiple Use Management Areas. The Pantano Substation expansion would occur on 25.0 acres of Pima County Biological Core Management Areas and 0.5 acre of Pima County IRAs.

Subroute 4.1 would also intersect with some local and county parks. It would cross Christopher Columbus Park, Santa Cruz River Park, Kennedy Park, Joaquin Murrieta Park, and Tumamoc Hill. Impacts from operations and maintenance would be the same as described above in "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are 10 local alternatives are available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C. These local alternatives represent options that would enable the proposed Project to avoid Tumamoc Hill.

Construction

Local alternatives that would occur on lands managed by Pima County as IRAs would be TH3a, TH3-Option A, TH3-Option B, and TH3-Option C. Local alternatives that would occur on lands managed by Pima County as Multiple Use Management Areas would be TH1a, TH1b, TH1-Option, TH3a, TH3-Option A, TH3-Option B, and TH3-Option C. These impacts would be the same as described under subroute 2.1

Local alternatives TH3b and TH3-Option B would cross the Anza NHT. TH3b would also cross the Butterfield Trail. Impacts on the Butterfield and Anza NHT would be the same as described above for subroute 4.1.

Local alternatives would occur in local and county parks. Local alternatives TH3b, TH3-Option A, TH3-Option B, and TH3-Option C would occur in the Santa Cruz River Park. TH1b would occur in Greasewood Park, and TH1a would cross Tumamoc Hill. Construction impacts would be the same as described above in "Impacts Common to All Action Alternatives."

Operation and Maintenance

Local alternatives that would occur on lands managed by Pima County as IRAs would be TH3a, TH3-Option A, TH3-Option B, and TH3-Option C. Local alternatives that would occur on lands managed by Pima County as Multiple Use Management Areas would be TH1a, TH1b, TH1-Option, TH3a, TH3-Option A, TH3-Option B, and TH3-Option C.

Local alternatives TH3b and TH3-Option B would cross the Anza NHT. TH3b would also cross the Butterfield Trail. Impacts on the Butterfield and Anza NHT would be as described above for subroute 4.1. RDEP nominated sites would be crossed by TH3a and TH3-Option C.

Local alternatives would occur in local and county parks. Local alternatives TH3b, TH3-Option A, TH3-Option B, and TH3-Option C would occur in the Santa Cruz River Park. TH1b would occur in Greasewood Park, and TH1a would cross Tumamoc Hill. Impacts from operations and maintenance would be the same as described above in "Impacts Common to All Action Alternatives."

ROUTE VARIATION

There are no special designations that would be intersected by route variation U3aPC.

Agency Preferred Alternative

The Agency Preferred Alternative would not conflict with the goals, objectives, or resources of special designations. Short-term, minor impacts would occur at the intersections of segments P2, P4a, U1a, U2, U3a, U3i, U3h, U3k, and U3l and National Trails during construction, as described under "Impacts Common to All Action Alternatives."

Short-term, indirect minor impacts to special designations would occur at the intersections of the Agency Preferred Alternative segments in the Upgrade Section of the Project with National Trails, Aden Hills OHV area, Bar V Ranch, Tucson Mountain Park, Tumamoc Hill, Joaquin Murrieta Park, Santa Cruz River Park, and Christopher Columbus Park during construction, as described under "Impacts Common to All Action Alternatives." As noted previously, the existing Western line was constructed in 1951; thus, the line and ROW pre-date Pima County CLS designations. As a result, potential impacts would be minor. In addition, the ROW would not be expanded between the Del Bac and Rattlesnake substations, where the majority of the Tucson city parks are located. The ROW would not be expanded where the SVAPD and Bar V Ranch are located.

Residual Impacts

Residual impacts would include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect with special designations, which is limited to the following BLM special designations: CDNST, Butterfield Trail, Arizona NST , and the Anza NHT; county or city special designations would also be intersected but

would wholly be contained in areas that already include Western transmission lines. Increases in ambient noise levels would be temporary and would decrease with the completion of construction activities. Other impacts would include changes to the natural qualities, outstanding opportunities for solitude and primitive recreation, and values such as visual resources and visibility from special designations. Because proposed Project facilities that intersect with special designations would be located adjacent to existing similar facilities, the residual impacts to special designations would be minor.

Unavoidable Adverse Impacts

The construction and operation/maintenance of the proposed Project would cause minor unavoidable adverse impacts on the city special designations as described in table 4.12-5 above.

Short-term Uses versus Long-term Productivity

The construction and operation/maintenance of the proposed Project is unlikely to cause short-term uses of the environment that would affect the long-term productivity of the BLM establishing future special designations, since most of the proposed Southline transmission line has been routed to avoid sensitive resources.

Irreversible and Irretrievable Commitments of Resources

No irreversible or irretrievable commitment of special designation resources would occur as a result of the proposed Project.

4.13 WILDERNESS CHARACTERISTICS

4.13.1 Introduction

This section describes the impacts to BLM lands that may possess wilderness characteristics associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Potential impacts to wilderness characteristics are discussed in terms of proposed Project activities directly or indirectly conflicting with one or more of the characteristics for which lands with wilderness characteristics must possess (as provided in Section 2(c) of the Wilderness Act of 1964). As described in section 3.13, there are lands which may possess wilderness characteristics that would be intersected by portions of the proposed Project and/or alternatives; however, no portions of the Agency Preferred Alternative would cross WIUs that have been identified to possess wilderness characteristics.

4.13.2 Methodology and Assumptions

Analysis of potential impacts to wilderness characteristics involves determining whether potential impacts of the proposed Project would result in changes to any of the four tangible qualities of wilderness that make up the description of lands managed to maintain wilderness characteristics, as discussed above in section 3.13. BLM lands that possess or are managed to maintain wilderness characteristics are not managed the same as Congressionally designated wilderness. As noted in section 3.13, field verification was conducted for WIUs that would be intersected by the Agency Preferred Alternative.

Effects are quantified where possible (i.e., acreages of surface disturbance under the action alternative). In the absence of quantitative data, BLM local Field Office specialists' input and best professional

judgment was used. Impacts are sometimes described using a range of potential impacts or in qualitative terms, if appropriate.

Analysis Area

The wilderness characteristics analysis area is the Project ROW with a 1-mile buffer on each side of the centerline for all four route groups. The 1-mile buffer on each side of the Project centerline represents a reasonable distance for analyzing potential impacts to the four tangible qualities of a wilderness, and is commensurate with other resources that share the value of wilderness characteristics such as recreation, special designations, and visual resources.

Analysis Assumptions

As noted in chapter 3, no WIUs are present within the analysis area in route groups 3 and 4, and non-BLM lands are not considered for their wilderness characteristics. Therefore, the following discussion does not consider impacts to route groups 3 and 4 as there are no BLM lands with wilderness characteristics intersected by the proposed Project and/or alternatives.

The analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS). This analysis assumes that state, tribal, county, city, and private lands do not manage lands to maintain wilderness characteristics. Other federal agencies, such as the Coronado National Forest, Reclamation, and DOD do not manage their lands for wilderness characteristics within the analysis area.

The impact indicators are described in the context of whether the four tangible qualities that comprise wilderness characteristics would change if the ROW was granted:

Impact Indicators

- Whether the proposed Project would reduce the size of identified and inventoried contiguous, roadless WIUs greater than 5,000 acres;
- Whether the proposed Project would decrease natural ecological conditions[3];
- Whether the proposed Project would decrease the opportunities for solitude or primitive, unconfined recreation; and
- Whether the proposed Project would affect supplemental values of wilderness characteristics (i.e., ecological, geological, or other features of scientific, educational, scenic, or historic value).

Significant Impacts

Effects on BLM lands possessing wilderness characteristics (WIUs) would occur if construction and operation/maintenance of the Project reduces any of the four tangible qualities that comprise wilderness characteristics.

Changes in wilderness characteristics could result from reductions in size, decreased naturalness, and/or loss of outstanding opportunities for solitude or primitive and unconfined recreation. A reduction in size that would result in the WIU becoming less than 5,000 acres would be a major, long-term impact. A reduction in size that would not result in a reduction in acreage of the WIU (but still above 5,000 acres) would be a moderate, long-term impact.

4.13.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not grant the ROW for the proposed Project. Wilderness characteristics within the analysis area would likely continue at current levels and trends. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). However, there would be no impacts to wilderness characteristics within the analysis area from the no action alternative, since no activities would occur that could impact one or more of the four wilderness characteristics criteria.

Impacts Common to All Action Alternatives

CONSTRUCTION

For the purpose of analysis, where the proposed Project and/or alternatives would intersect lands that possess wilderness characteristics, there would be potential impacts from construction activities including direct ground disturbance and temporary increases in ambient noise levels. See a discussion of impacts by route group for specifics by proposed Project segment.

Ground disturbance would not occur across the entire Project footprint; approximately 23 percent of the Project footprint would be temporarily disturbed within route groups 1 and 2. Additional impacts would also include increases in ambient noise levels would be temporary and would decrease with the completion of construction activities. This would be a short-term, minor impact to the opportunities for solitude and primitive, unconfined recreation in the immediate area. Ground disturbance and temporary increases in ambient noise levels would be a minor, short-term impact to the naturalness of the immediate area.

For construction related to all alternatives, the proposed Project would require staging areas along the ROW. These are located on rugged terrain or road and utility crossings adjacent to the ROW to allow for additional maneuvering in difficult areas. During construction, the extra work spaces and staging areas included in the analysis area would affect the size, naturalness, opportunities for solitude or primitive and unconfined recreation, and supplemental values (if any) of a given WIU.

The proposed Project would use existing public and private roads and would construct new roads to gain access to the area during the construction period (short-term). Many of the existing access roads are presently in a condition that could accommodate construction traffic without significant modification or improvement. Some roads, however, are small, impassable, and are not currently suitable for construction traffic. Additionally, in some areas access roads may not exist, requiring new construction. The Project would improve unsuitable access roads through grading, filling, and/or widening. Following construction, roads would be returned to their preconstruction condition, unless otherwise requested in writing by the landowner or land-managing agency. It is not know specifically where all road improvements would be required along any given road, and this information would not be available until after Project design, engineering, and plan profiles are completed and after Southline's construction contractor identifies which access roads it prefers to use and how it prefers to use the roads and ROW is obtained for them. Therefore, for the purposes of this analysis, it is estimated that all access roads could need to be improved over their entire length.

Creation of new roads, maintenance of existing roads, and use of access roads for construction would decrease the size, affect naturalness, and limit opportunities for solitude and/or primitive and unconfined

recreation in areas with wilderness characteristics. This would be a short-term, moderate impact by introducing the presence and noise of access roads and construction equipment within sight or sound of WIU visitors. Because Southline cannot identify which roads would be used during construction, the analysis cannot calculate the effects of the sight or sound of equipment on wilderness visitors in areas with wilderness characteristics. Instead, using the noise analysis presented in section 4.3 to determine the effects on naturalness, opportunities for solitude or primitive and unconfined recreation, it is assumed that visitors to areas with wilderness characteristics within 1 mile of a transmission line or access roads used for construction may be able to hear or see equipment during the construction period, and may experience temporary changes to naturalness, outstanding opportunities for solitude, or primitive and unconfined recreation.

OPERATION AND MAINTENANCE

Following the completion of construction, where an alternative the presence of the transmission lines and ancillary facilities would be a long-term impact to wilderness characteristics in areas where they did not previously exist. As noted in chapter 2, over 85 percent of the proposed Project parallels existing linear infrastructure in route group 1, over 90 percent for route group 2, and nearly 100 percent for route groups 3 and 4. The permanent ROW with access roads to provide for inspection and maintenance of the transmission lines and ancillary facilities would be constructed. As described in chapter 2 of the EIS, localized areas of the ROW would be cleared of trees and large brush where needed to allow for maintenance of the transmission line and related facilities, as mandated by Federal, State, and local law. Occasional maintenance trucks would also be used along the ROW. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration.

Indirect impacts to other WIUs may occur where the proposed transmission line towers, spans, and other facilities are visible from the WIUs. Impacts to naturalness during operation and maintenance would result from the presence (e.g., in sight) of the transmission line and ancillary facilities, and vegetation clearing of the ROW.

Motorized travel along the ROW inspection, maintenance, and brush clearing of the permanent ROW in or adjacent to a given WIU would result in sounds that would degrade the setting needed to support experiences of outstanding opportunities for solitude and primitive or unconfined recreation opportunities. Sound generated during operation and maintenance (including helicopters) would be expected to occur intermittently for the life of the Project in a given WIU that would be intersected by the proposed project. These noise levels would be site-specific, moderate, and temporary impacts to wilderness characteristics and would not persist for extended periods of time.

These would be long-term but minor impacts to the naturalness, outstanding opportunities for solitude, or primitive and unconfined recreation of the areas in a given WIU within 1 mile of the proposed Project as a result of changes in the visual character of the surrounding lands and periodic maintenance activities.

Route Group 1 – Afton Substation to Hidalgo Substation

As noted in the section 3.13, the June 2014 field verification was conducted for WIUs that would be intersected by the Agency Preferred Alternative. As a result, NM-LC-003 no longer meets the size criteria for a WIU. If a WIU is not at least 5,000 acres, it is not considered to possess wilderness characteristics. Based on the field verification for NM-LC-004, NM-LC-010 and NM-LC-016, these units no longer meet the naturalness, outstanding opportunities for solitude, or supplemental values criterion. If a WIU is does not possess naturalness, outstanding opportunities for solitude, or supplemental values, it does not possess

wilderness characteristics. Please refer to figure 3.13-1 for the locations of these four WIUs. These WIUs are not analyzed here in chapter 4.

Table 4.13-1 lists which project segments within route group 1 would intersect with WIUs. Acreages are not additive and may overlap. In addition, some segments may intersect more than one WIU.

Table 4.13-1. Route Group 1 Wilderness Characteristics Resource Inventory Data

Segment	Total Miles	WIU No.	WIU Name	WIU Size (acres)	Miles of Segment Intersection with WIUs
Subroute 1.1, Proponent Preferred		–	–	–	–
Subroute 1.2, Proponent Alternative					
S1	13.4	NM-LC-008	Rutter South 3	6,196	2.3
S1	–	NM-LC-009	Rutter South 1	6,017	0.02
S2	11.1	NM-LC-005	South Doña Ana	55,790	5.2
S2	–	NM-LC-006	East Potrillo Mountains	25,182	2.7
S2	–	NM-LC-007	Rutter South 2	6,680	1.6
S2	–	NM-LC-008	Rutter South 3	6,196	0.0002
S6	7.4	NM-LC-015	Apache Hills-Hatchita Valley	229,889	3.0
S7	41.5	NM-LC-001	Black Mountain-Grant	18,948	6.0
		NM-LC-015	Apache Hills-Hatchita Valley	229,889	12.7
Route Group 1, Local Alternatives					
DN1	42.5	NM-LC-002	China Draw	9,813	2.1
A	17.5	NM-LC-005	South Doña Ana	55,790	5.8
A	–	NM-LC-006	East Potrillo Mountains	25,182	1.4
A	–	NM-LC-007	Rutter South 2	6,680	0.6
A	–	NM-LC-008	Rutter South 3	6,196	0.5
C	9.0	NM-LC-015	Apache Hills-Hatchita Valley	229,889	0.1
D[†]	22.8	NM-LC-013	Aberdeen Peak	17,529	2.3

[†] NM-LC-013 would intersect alternative D which occurs in both route group 1 and route group 2.

SUBROUTE 1.1 – PROPONENT PREFERRED

No WIUs would be crossed by subroute 1.1 (see table 4.13-1).

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Seven WIUs would be crossed by subroute 1.2 (see table 4.13-1). The potential impacts are described below.

Construction

Minor, long-term impacts to the size characteristic would be the same as described under “Impacts Common to all Action Alternatives.” The East Potrillo Mountains WIU is now within the newly

designated Organ Mountains–Desert Peaks National Monument, but would not be intersected by subroute 1.2.

Project construction would have minor, short-term effects to the natural and solitude characteristics of the seven WIUs that would be intersected by subroute 1.2 for the same reasons as described above under "Impacts Common to All Action Alternatives."

Operation and maintenance

Long-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described above under "Impacts Common to All Action Alternatives."

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1: DN1, A, B, C, and D. Four of these five local alternatives would intersect seven WIUS (see table 4.13-1).

Construction

Minor, long-term impacts to the size characteristics of the WIUs that would be intersected by the local alternatives would be the same as described under "Impacts Common to all Action Alternatives," except the acreages of the impacts would be different.

Project construction would affect the naturalness and outstanding opportunities for solitude or a primitive and unconfined type of recreation characteristics of seven WIUs that would be intersected by the local alternatives for the same reasons as described above under "Impacts Common to All Action Alternatives."

Operation and Maintenance

Long-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described above under "Impacts Common to All Action Alternatives."

Route Group 2 – Hidalgo Substation to Apache Substation

As noted in table 4.13-2, only segment E would intersect with a WIU (NM-LC-012).

Table 4.13-2. Route Group 2 Wilderness Characteristics Resource Inventory Data[†]

	Total Miles	WIU No.	WIU Name	WIU Size (acres)	Miles of Segment Intersection with WIUs
Subroute 2.1, Proponent Preferred		–	–	–	–
Subroute 2.2, Proponent Alternative					
E	31.8	NM-LC-012	Lordsburg Playa South	10,784	3.7
Route Group 2 Local Alternatives and Route Variations	–	–	–	–	–

[†] NM-LC-013 would intersect alternative D in both route group 1 and route group 2; refer to Table 4.13-1.

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Short-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

Project construction of subroute 2.1 would affect the natural characteristics of three WIUs.

Operation and Maintenance

Long-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Short-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

Project construction would affect the natural characteristics of one WIU, Lordsburg Playa North.

Operation and Maintenance

Long-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Construction

Short-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

Operation and Maintenance

Long-term impacts to size, naturalness, and solitude and primitive/unconfined recreation would be the same as described under "Impacts Common to All Action Alternatives," except the acreages of the impacts would be different.

Agency Preferred Alternative

The Agency Preferred Alternative does not intersect any lands with wilderness characteristics. Where the Agency Preferred Alternative intersects WIUs, those units were found not to possess the requisite wilderness characteristics. The potential impacts of the proposed Project to recreation values are discussed in sections 3.14 and 4.14.

Residual Impacts

Residual impacts would include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect with lands with wilderness characteristics. Increases in ambient noise levels would be temporary and would decrease with the completion of construction activities. Other impacts would include changes to the natural qualities, outstanding opportunities for solitude and primitive recreation, and supplemental values such as visual resources and visibility.

Unavoidable Adverse Impacts

The construction and operation of the proposed Project is unlikely to cause short-term uses of the environment that would affect the long-term productivity of wilderness characteristics, since the Project would be nearly 100 percent located along existing disturbed areas such as railroad beds, roadways, and other utility ROWs. In addition, none of the WIUs that would be intersected by the Agency Preferred Alternative were found to possess wilderness characteristics.

If the ROD for this Project indicates that an alternative or combination of alternatives other than the Agency Preferred Alternative is chosen, a separate wilderness characteristic field verification would need to be conducted.

Irreversible and Irretrievable Commitments of Resources

There are no irreversible and irretrievable commitment of wilderness characteristics that would occur as a result of the proposed Project.

4.14 RECREATION

4.14.1 Introduction

This section describes the potential impacts to recreation resources associated with the construction and operation and maintenance of the proposed transmission line, substations, and ancillary facilities. Impacts to recreation resources are discussed in terms of recreation opportunities and activities, recreation settings, desired recreation experiences, and adjacent recreation areas.

4.14.2 Methodology and Assumptions

Analysis Area

The analysis area for recreation resources is the same for the New Build Section and the Upgrade Section and includes the proposed Project footprint. The analysis area for recreation resources does not include a continuous, equidistant buffer as with other resources, since large areas of land likely have similar

existing recreation conditions and settings. Because the proposed Project could affect adjacent areas where recreation conditions and use could intensify and vary widely, some adjacent recreation areas are included in the analysis area. Therefore, as noted in section 3.14.2, in addition to the proposed Project footprint, adjacent recreation areas that could be directly or indirectly affected by the proposed Project are also included in the analysis area.

Analysis Assumptions

The analysis to determine potential impacts to recreation is based on existing recreation resource management and data from the BLM Las Cruces District, BLM Safford and Tucson Field Offices, State, County, and local recreation resource management. Spatial/GIS information was also used in this analysis and includes designated recreation sites, special designations, transportation inventory, Coronado National Forest ROS settings, historic and recreational trails, and known cultural sites. As outlined in section 3.14, the changes (based on the proposed Project as described in chapter 2) to the resource condition indicators provide the basis for assessing impacts to recreation resources. The impact analysis is also based on review of existing literature and information provided by resource team experts in the BLM, NPS, Forest Service, and other agencies.

Additionally, the analysis assumes that all design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

Recreation Opportunities/Activities:

- Assess whether a change in (loss or creation of) recreational activities would result with development of the proposed Project and improvement of access roads.
    - Specifically, assess whether the change would increase or decrease the qualities of the hunting experience.

Recreation Settings:

- Assess changes in the recreation setting (e.g., undeveloped or rural settings) within the analysis area as a result of the proposed Project. Specifically, assess whether the settings that support existing OHV, hiking, camping, target shooting, or hunting opportunities, as well as settings that provide for remoteness, quiet or solitude, would change (increase or decrease).

Desired Recreation Experiences:

- Assess the potential for diminishment or loss of developed recreational values and quality (e.g., OHV, hiking, camping, target shooting) and undeveloped recreational values and quality in the analysis area/region.
- Assess potential changes in recreation (opportunities/activities, settings, and experiences) on lands adjacent to the Project, if present.

Significant Impacts

For the purposes of this analysis, a significant impact on recreation resources could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- changes that alter existing recreation opportunities and activities to levels that would conflict with existing management prescriptions;

- changes that alter existing recreation settings that have been prescribed by land managing agencies;
- changes that alter the desired recreation experiences that local users currently seek; and
- changes that alter existing recreation opportunities and activities, recreation settings, and desired recreation experiences of adjacent recreation areas.

4.14.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, no ROW would be granted for the New Build Section and the transmission line, substation, and ancillary facilities would not be constructed. The BLM land on which the New Build Section is proposed would continue to be managed as it currently exists. Lands in the analysis area would remain as is, which is primarily developed desert land available for dispersed recreation, subject to existing closures or restrictions. Current recreational use (recreation opportunities and activities, recreation settings, desired recreation experiences, and adjacent recreation areas) in the analysis area described in Section 3.14, "Recreation," would continue under the no action alternative.

There would be no changes that would alter existing recreation opportunities and activities, settings, desired experiences, or adjacent recreation areas in the New Build Section beyond current conditions. Impacts to recreation resources would be negligible under the no action alternative. In the Upgrade Section, even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

CONSTRUCTION

Recreation Opportunities/Activities

Construction of the proposed Project is not expected to permanently preclude the use of or access to any existing recreation opportunities or activities, but some short-term impacts to these resources would occur during the construction phases of the proposed Project. Dispersed recreation activities such as hiking, camping, bird watching, or equestrian use would be temporarily affected as construction noises, visual disturbances, and/or the presence of other humans could detract from these recreation opportunities and activities. Recreation users that seek opportunities for solitude commonly seek areas where they would be less likely to see other humans.

Potential construction related impacts would be localized and short-term. As described in chapter 2, table 2-8 (PCEMs), Southline would post signage for all closures and would avoid temporary closures during heavy recreational use periods (e.g., holidays or special events). Some unauthorized OHV use could occur during construction when workers are not present (such as on weekends or in between construction phases).

Hunting

Hunting opportunities (both big- and small-game) that could be displaced by the construction of the transmission line, substations, and ancillary facilities would not represent a significant impact, since the areas within GMUs that are outside of Project footprint would remain available for hunting, subject to

applicable laws and regulations. As stated in chapter 2, table 2-8, sequencing of construction activities would avoid big-game hunting seasons, where feasible and in coordination with the AGFD and NMDGF as appropriate. The AGFD and NMDGF would post signs in accordance with the laws and regulations for hunting to indicate the ROW would be closed to hunting during construction activities. For hunting seasons that occur year-round or construction activities that cannot be sequenced to avoid hunting seasons, hunting with a firearm for those species would be precluded in the proposed Project footprint since the laws and regulations for manner and method of taking wildlife would make it illegal to discharge firearms near the construction activities; in this case, construction of the proposed Project. In addition, and as noted in section 4.8.2, human presence and construction activities would likely cause some wildlife species to temporarily avoid these areas; therefore, even if hunting were not precluded, many of the wildlife species being hunted would likely not be present during construction due to increased noise and human activity. Following construction activities, the area would return to existing conditions, wildlife would likely no longer avoid the areas, and impacts to hunting would cease. Therefore, potential impacts to hunting opportunities within the ROW during construction activities would be a temporary, minor impact since construction activities would not persist the entire hunting season. The number of New Mexico and Arizona hunting permits that are issued in individual GMUs would not change as a result of construction of the Project. The availability to hunt in GMUs that are included within the Project footprint (see section 3.14) and the number of hunting permits per GMU would not be affected by the Project since the ROW, if granted, would represent less than 5 percent of the total GMU available. Further, hunter days would not change under any alternative, since hunting could persist elsewhere in the GMU.

If construction sequencing to avoid hunting seasons is not attainable in some instances, there could be site-specific and localized moderate impact to individual hunters during construction if their preferred access is temporarily closed or restricted during construction. This impact would not extend to hunting overall, but could represent an obstacle to an individual hunter's preferred access to a particular area. Coordination with the AGFD and NMDGF, as specified in table 2-8, would attempt to avoid and minimize these impacts.

Recreation Settings

The Mimbres, Safford, and Phoenix RMPs specify that all BLM lands, unless otherwise designated and subject to travel management rules, are open to recreational use.

Although BLM lands within the analysis area have not been classified with ROS settings, the overall recreation setting of the Project footprint can be characterized as mostly roaded natural, with areas of urban, rural, and semi-primitive motorized in site-specific areas. Motorized use in the Project footprint would be limited to existing roads and ways, as specified in land management plans. Specially designated areas and the recreational settings therein, while within the analysis area, would be outside the Project footprint.

The removal of vegetation during construction of the proposed Project would have an indirect impact on adjacent recreational users in the analysis area by altering the quality of the recreational setting. Similarly, the construction of the transmission lines could have indirect impacts to the recreation settings in areas that do not already include existing, similar structures due to the visual contrast these facilities could introduce to the existing landscape. Although the sight of transmission line facilities would not affect some recreational users (e.g., hunting or OHV driving), those seeking the features of a natural, non-motorized setting in the analysis area would see the existing landscape change to an area characterized by transmission line development as a substantial modification of the landscape (refer to Section 4.10, "Visual Resources"). Where the proposed Project would upgrade existing facilities, the changes to the

recreation settings would be temporary (e.g., increased noise, dust, and construction activity), and would cease following construction activities.

Desired Recreation Experiences

The desired recreation experiences (as specified in the Mimbres, Safford, and Phoenix RMPs) would not change under any alternative, since the ROW would only preclude recreational opportunities and experiences temporarily during construction. The desired recreation experiences in areas outside the site-specific areas where the physical occupancy of the transmission line tower, substation, or ancillary facility would be located would not change. The individual impacts of transmission line towers, substations, and ancillary facilities are discussed under each route group.

Adjacent Recreation Areas

The construction impacts to adjacent recreation areas would vary by alternative and are discussed under each route group.

OPERATION AND MAINTENANCE

Recreation Opportunities/Activities

Recreation opportunities and activities would continue during operation and maintenance since operation and maintenance would be temporary in terms of the amount of time activities would take place in a given area and the amount of time that passes between operation and maintenance activities, which may be many months to years in duration. Thus, since the potential for displacing recreation opportunity and activities may occur, there would be minor impacts to recreation. Further, unless specifically closed to public access, all areas within the ROW (i.e., beneath spans) would be accessible for recreational opportunity and activities.

Dispersed recreation and hunting would continue upon completion of construction within the ROW in areas that are outside of the footprint of the transmission line, substations, and ancillary facilities, subject to applicable laws such as NMAC Title 19, Chapter 31, “Hunting and Fishing,” Article 10.18, and ARS Title 17, Chapter 3, “Game and Fish,” Articles 17-301 and 17-309 A(12).

Intentional acts of destruction (e.g., using transmission line towers or facilities for target shooting) is discussed in section 4.19 of this EIS.

Following construction activities, the presence of new access roads (as described in chapter 2) that would be used for operation and maintenance of the proposed Project could permanently change the OHV use patterns in the area, subject to Federal, State, and local OHV and traffic laws and regulations. New access roads would be signed and would be closed to the public, but illegal OHV use would not be entirely preventable on the new access roads. This would result in an increased chance for “wildcat” and user-created route proliferation. An increase in “wildcat” and user-created trails would conflict with the BLM’s OHV-use strategies, creating management challenges and potentially increasing user conflicts. The resultant impact from increased OHV use would be a moderate impact to recreation opportunities/activities. Mitigation of locked gates and signage indicated road status would decrease the magnitude of these impacts. However, illegal and/or unauthorized use of access roads would be enforceable by BLM law enforcement, or other local jurisdiction law enforcement (e.g., county or State).

It should be noted that recreation opportunities/activities may only be permitted on public and State lands. Once the ROW crosses into private land, the recreation opportunity/activity may no longer be permitted;

thus, private land boundaries may also form the boundaries for allowable recreation opportunities and activities.

Near the Willcox Playa, recreation activities such as bird watching could be permanently affected by the addition of new transmission lines and towers; the potential impacts would vary by alternative and are discussed under each route group. For a discussion on the impacts to wildlife see Section 4.8.2, "Wildlife."

Recreation Settings

Impacts to recreation settings during operation and maintenance, common to all action alternatives would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences during operation and maintenance, common to all action alternatives would be the same as described under construction.

Adjacent Recreation Areas

The operation and maintenance impacts to adjacent recreation areas would vary by alternative and are discussed under each route group.

Route Group 1 – Afton Substation to Hidalgo Substation

SUBROUTE 1.1 – PROPONENT PREFERRED

Construction

Recreation Opportunities/Activities

No construction activities for subroute 1.1 would occur within any designated recreation sites or areas. Recreation access that does not depend on vehicles, OHV use, or access roads (e.g., hiking or equestrian-based recreation) would not be impacted during construction. Similarly, dispersed recreation would only be impacted within the ROW, due to safety concerns that would preclude dispersed recreation; however, once construction activities are completed on subroute 1.1, the access to dispersed recreation would be restored.

The construction of subroute 1.1 that would cross one national trail and one trail recommended as suitable for national trail designation (segments P4a and P2), would be in areas that would be comparable to a roaded-natural setting. Each of the national trail crossings across subroute 1.1 occurs along existing dirt roads and within 5 miles of I-10. Subroute 1.1 would cross approximately 0.12 mile of the Butterfield Trail and approximately 0.06 mile of the CDNST. During construction, access to the Butterfield Trail and CDNST would be maintained. There could be temporary delays as equipment crosses the trails, but these delays would only last as long as it would take to move equipment across the trails and into the ROW and/or staging areas. The temporary construction impacts to the Butterfield Trail and CDNST would be minor and would cease once construction is completed.

Hunting in the immediate vicinity of subroute 1.1 would be temporarily impacted by construction, as described above under "Impacts Common to All Action Alternatives." Table 4.14-1 below provides the acreages of each GMU that would be affected by the construction of the subroutes included in route group 1. The greatest reduction of land available for hunting during construction would occur along segment P2

(within GMU 23) in New Mexico–1,101.1 acres. However, since P2 is largely paralleling existing facilities, nearly all existing hunting activities in this vicinity likely already occur outside of the ROW. The reduction to land available for hunting within GMU 23 (totaling over 1 million acres) would represent a less than 0.05 percent reduction, a negligible impact.

Table 4.14-1. Route Group 1 Game Management Unit (New Mexico) Inventory Data

	Total Miles	New Mexico GMU 21B (acres)	New Mexico GMU 23 (acres)	New Mexico GMU 24 (acres)	New Mexico GMU 25 (acres)	New Mexico GMU 26 (acres)	New Mexico GMU 27 (acres)
Subroute 1.1, Proponent Preferred							
P1	5.1	–	–	–	125.1	–	–
P2	102.0	462.5	1,101.1	130.44	778.0	–	–
P3	31.1	20.9	–	–	732.4	–	–
P4a	8.9	–	162.0	–	–	–	–
Subroute 1.2, Proponent Alternative							
S1	13.4	–	–	–	325.3	–	–
S2	11.1	–	–	–	267.7	–	–
S3	12.9	–	–	–	314.0	–	–
S4	10.6	–	–	–	255.2	–	–
S5	29.7	–	–	–	720.1	–	–
S6	7.4	–	–	–	182.1	–	–
S7	41.5	–	–	–	495.8	511.2	–
S8	14.6	–	171.0	–	–	181.9	–
Route Group 1 Local Alternatives							
DN1	42.5	21.3	741.1	268.0	–	–	–
A	17.5	–	–	–	422.9	–	–
B	12.2	–	–	–	291.5	–	–
C	9.0	–	–	–	215.7	–	–
D	22.8	–	–	–	–	506.8	44.4

Recreation Settings

The recreation setting within the subroute 1.1 ROW would be slightly modified during construction. Though subroute 1.1 is new construction, it has been designed to be located along similar, existing facilities (i.e., transmission lines, pipelines, and roads). Since the construction activities would not be introducing facilities that are not similarly present amongst the recreation settings, construction impacts would be minor and short-term, and limited to temporary delays at access roads and national trail/trail recommended as suitable for national trail designation as equipment is moved into the ROW, but these delays would only last as long as it would take to move equipment across and into the ROW and/or staging areas.

Desired Recreation Experiences

Construction of subroute 1.1 would not change the desired recreation experiences. Subroute 1.1 occurs along existing facilities such as transmission lines, pipelines, and roads. Since access would be maintained to all public, existing, and legal roads (refer to Section 4.18, "Transportation"), any vehicular-based desired recreation experiences would continue during construction. Therefore, there would be no impacts to desired recreation experiences under subroute 1.1.

Adjacent Recreation Areas

Segment P2 would pass just south of the Aden Hills OHV area (approximately 11 miles west of the Afton Substation on the north side of I-10), and the presence of construction activities outside the OHV area would not be in conflict with the purposes of the Aden Hills OHV area. During construction, access to the OHV area would be maintained. There could be temporary traffic delays as equipment crosses access roads, but these delays would only last as long as it would take to move equipment across the access roads and into the ROW and/or staging areas. The temporary impacts would be minor and would cease once construction is completed.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW for subroute 1.1 is approximately 8.4 percent. Therefore, recreation opportunities and activities would remain available in approximately 91.6 percent of the subroute 1.1 ROW throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under subroute 1.1, construction.

Recreation Settings

Impacts to the recreation settings of subroute 1.1 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the subroute 1.1 ROW would be the same as described under construction.

Adjacent Recreation Areas

There would be no impacts to recreation areas adjacent to subroute 1.1 during operation and maintenance.

SUBROUTE 1.2 – PROPONENT ALTERNATIVE

Construction

Recreation Opportunities/Activities

No construction activities would occur along subroute 1.2 within any designated recreation sites or areas. Segment S3 would not cross into the WSAs located along route group 1, and follows an existing road. Construction of segment S2 may preclude some flying opportunities for paragliding/parasailing, which would be a moderate, long-term impact.

Hunting in the vicinity of subroute 1.2 may be temporarily displaced during construction, as described above under "Impacts Common to All Action Alternatives." Segment S7 that would be in GMUs 25 and 26 in New Mexico would have the greatest reduction of land available for hunting during construction, at 495.8 and 511.2 acres, respectively. Since S7 is parallels over 21 miles of existing facilities, nearly all existing hunting activities in this vicinity likely already occur outside of the ROW. The reduction to land available for hunting within GMUs 25 and 26 (comprising over 2 million acres and 1.4 million acres, respectively) would represent a less than 0.02 percent reduction to GMU 25 and a less than 0.04 percent reduction to GMU 26, a negligible impact.

Recreation Settings

Segments S1 and S2 of subroute 1.2, located east of the Aden Lava Flow WSA and Mount Riley/West Potrillo Mountains WSAs, would be constructed on undeveloped land, resulting in a moderate change to the recreation setting. There are no existing facilities that would be paralleled by segments S1 and S2. The total temporary disturbance during construction of segment S1 and S2 would be approximately 23.1 percent of the ROW, for each segment, respectively. However, none of S1 or S2 would occur within the WSAs, and would not change the recreation settings within the WSAs.

Segments S3–S7 all occur along an existing State highway in New Mexico (NM 9) and construction would not result in changes to the existing recreation setting.

Desired Recreation Experiences

Construction of subroute 1.2 would not change the desired recreation experiences.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 1.2.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW of subroute 1.2 is approximately 5.8 percent. Therefore, recreation opportunities and activities would remain available in approximately 94.2 percent of the subroute 1.2 ROW throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under subroute 1.2, construction.

The new access roads along segments S1 and S2 could permanently change the OHV use patterns in the area, subject to Federal, State, and local OHV and traffic laws and regulations. These impacts would be the same as described under "Impacts Common to All Action Alternatives."

Recreation Settings

Impacts to the recreation settings of subroute 1.2 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the ROW for subroute 1.2 would be the same as described under construction.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 1.2.

LOCAL ALTERNATIVES

There are five local alternatives available for route group 1. These local alternatives include DN1, A, B, C, and D.

Construction

Recreation Opportunities/Activities

Local alternative B would not cross into the WSAs located along route group 1.

Hunting in the vicinity of the route group 1 local alternatives may be impacted by construction, as described above under "Impacts Common to All Action Alternatives." The alternative D segment that would occur in GMUs 26 and 27 in New Mexico would have the greatest reduction of land available for hunting during construction, at 506.8 and 44.4 acres, respectively. The reduction to land available for hunting within GMUs 26 and 27 (comprising 1.4 million acres and 663,000 acres, respectively) would represent a less than 0.04 percent reduction to GMU 26 and a less than 0.01 percent reduction to GMU 27, a negligible impact.

Recreation Settings

Local alternative DN1 of route group 1 would be constructed on undeveloped lands and the construction impacts would be the same as described for segments S1 and S2 under subroute 1.2.

Desired Recreation Experiences

Construction of route group 1 local alternatives would not change the desired recreation experiences. In the vicinity where the local alternatives of route group 1 would cross the CDNST, existing roads and disturbed areas are amongst the landscape, resulting in a desired recreation experience that would be commensurate with the allowable uses surrounding the CDNST (see Appendix F, "National Scenic and Historic Trails Assessment").

Adjacent Recreation Areas

There are no recreation areas adjacent to the route group 1 local alternatives.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW of route group 1 local alternatives is approximately 4.9 percent. Therefore, recreation opportunities and activities would remain available in approximately 95.1 percent of the route group 1 local alternatives ROW throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under route group 1 local alternatives, "Construction."

The new access roads along segments S1 and S2 could permanently change the OHV use patterns in the area, subject to Federal, State, and local OHV and traffic laws and regulations. These impacts would be the same as described under "Impacts Common to All Action Alternatives."

Recreation Settings

Impacts to the recreation settings of route group 1 local alternatives would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the route group 1 local alternatives ROW would be the same as described under construction.

Adjacent Recreation Areas

There are no adjacent recreation areas to the route group 1 local alternatives.

Route Group 2 – Hidalgo Substation to Apache Substation

SUBROUTE 2.1 – PROPONENT PREFERRED

Construction

Recreation Opportunities/Activities

The recreation opportunities/ activities that currently exist within the analysis area for subroute 2.1 would be impacted by construction in the same ways as described above under "Impacts Common to All Action Alternatives." Construction activities in support of subroute 2.1 would not occur within any designated recreation sites or areas.

Subroute 2.1 would cross sections of the CDNST and Butterfield Trail. The impacts to the CDNST and Butterfield Trail would be the same as described under route group 1, subroute 1.1, except as described below.

Segment P5b would cross the Butterfield Trail in an area that includes existing pipelines and dirt roads. Segment P4c would cross the Butterfield Tail in an area that does not include existing transmission lines, pipelines, or roads. The construction of segment P4c would result in moderate, long-term impacts to the Butterfield Trail.

Bird-watching at Willcox Playa (specifically, the intersection of segment P7 with AGFD's Willcox Wildlife Area) would be temporarily impacted during construction, as described above under "Impacts Common to All Action Alternatives."

Hunting in the vicinity of subroute 2.1 would also be temporarily impacted during construction, as described above under "Impacts Common to All Action Alternatives." Table 4.14-2 provides the acreages of each GMU that would be affected by the construction of the subroutes included in route group 2. Segment P6b would cross GMU 29 and 30A in Arizona and would have the greatest reduction of land available for hunting during construction, at 186.3 and 358.8 acres, respectively. As 100 percent of P6b parallels existing pipelines and roadways, existing hunting activities in this vicinity likely would continue to occur near and within the ROW due to the presence of existing roads that are likely to continue to be used to access areas open to legal hunting. Hunting activities within and adjacent to the ROW would be precluded during construction; impacts would be temporary and site-specific. Following construction, the

ROW would be available for hunting, as described under Impacts Common to All Action Alternatives. The reduction to land available for hunting within GMUs 29 and 30A (comprising 648,000 acres and 1.1 million acres, respectively) would represent a less than 0.03 percent reduction in lands available for hunting for both GMU 29 and 30, a negligible impact.

Table 4.14-2. Route Group 2 Game Management Unit (New Mexico and Arizona) Inventory Data

	Total Miles	New Mexico GMU 23 (acres)	New Mexico GMU 26 (acres)	New Mexico GMU 27 (acres)	Arizona GMU 28 (acres)	Arizona GMU 29 (acres)	Arizona GMU 30A (acres)	Arizona GMU 30B (acres)	Arizona GMU 31 (acres)	Arizona GMU 32 (acres)
Subroute 2.1, Proponent Preferred										
P4b	13.9	117.1	–	133.4	–	–	–	–	–	–
P4c	1.9	–	–	44.9	–	–	–	–	–	–
P5a	9.6	–	–	233.5	–	–	–	–	–	–
P5b	21.1	–	–	106.6	404.4	–	–	–	–	–
P6a	0.9	–	–	–	18.6	2.7	–	–	–	–
P6b	22.5	–	–	–	–	186.3	358.8	–	–	–
P6c	2.8	–	–	–	–	–	68.3	–	–	–
P7	22.3	–	–	–	–	–	530.7	10.1	–	–
P8	0.5	–	–	–	–	–	–	9.0	–	–
Subroute 2.2, Proponent Alternative										
E	31.8	–	–	346.4	420.2	–	–	–	–	–
F	25.3	–	–	–	526.0	–	–	–	85.1	–
Ga	25.7	–	–	–	–	–	2.0	–	295.2	325.2
Gb	1.1	–	–	–	–	–	23.3	2.6	–	–
Gc	7.4	–	–	–	–	–	-	179.6	–	–
I	2.3	–	–	–	–	–	54.6	–	0.8	–
J	2.3	–	–	–	–	–	54.0	–	1.7	–
Route Group 2 Route Variations										
P7a	31.2	–	–	–	–	–	714.7	40.1	–	–
P7b	10.5	–	–	–	–	–	251.8	–	–	–
P7c	1.0	–	–	–	–	–	24.1	–	–	–
P7d	2.0	–	–	–	–	–	47.9	–	–	–

Table 4.14-2. Route Group 2 Game Management Unit (New Mexico and Arizona) Inventory Data (Continued)

	Total Miles	New Mexico GMU 23 (acres)	New Mexico GMU 26 (acres)	New Mexico GMU 27 (acres)	Arizona GMU 28 (acres)	Arizona GMU 29 (acres)	Arizona GMU 30A (acres)	Arizona GMU 30B (acres)	Arizona GMU 31 (acres)	Arizona GMU 32 (acres)
Route Group 2 Local Alternatives										
LD1	35.4	–	129.1	290.6	–	437.5	–	–	–	–
LD2	8.9	–	–	214.9	–	–	–	–	–	–
LD3a	26.6	312.0	–	417.2	–	–	–	–	–	–
LD3b	2.2	–	–	52.2	–	–	–	–	–	–
LD4	53.7	–	–	144.0	927.9	–	–	–	229.3	-
LD4–Option 4	6.4	–	–	–	–	–	27.6	–	128.5	–
LD4–Option 5	12.3	–	–	–	–	–	53.9	–	242.8	–
WC1	14.8	–	–	–	–	–	359.1	–	–	–

Recreation Settings

The overall recreation setting of subroute 2.1 would not be changed since subroute 2.1 has been designed to follow existing transmission lines, pipelines, and roads. Further, much of subroute 2.1 would pass through rural areas near the town of Lordsburg, New Mexico, and the agricultural fields of the San Simon Valley, avoiding the primitive recreation settings that exist to north in the Peloncillo Mountains and to the south in the Dos Cabezas Mountains.

Segment P5b would be located approximately 0.5 mile south of the Peloncillo Mountains Wilderness boundary, located along existing pipelines and roadways, and would not detract from any of the characteristics for which the Wilderness was designated by Congress (refer to Section 4.12, “Special Designations”).

Desired Recreation Experiences

The impacts of construction of subroute 2.1 would not change the desired recreation experiences and would be the same as described under route group 1, subroute 1.1.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 2.1.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW of subroute 2.1 would be approximately 8.4 percent. Therefore, recreation opportunities and activities would remain available in approximately 91.6 percent of the ROW for subroute 2.1 throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would

therefore be commensurately less than described under subroute 2.1, construction. However, minor but long-term impacts to bird-watching and hunting would be anticipated in the areas where subroute 2.1 crosses the Willcox Wildlife Area. Though there is an existing SWTC transmission line already across the Willcox Playa, just north of the Willcox Wildlife Area, the addition of the proposed Project may affect the sandhill crane, which is further discussed under Section 4.8.2, "Wildlife."

Recreation Settings

Impacts to the recreation settings of subroute 2.1 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the subroute 2.1 ROW would be the same as described under construction.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 2.1.

SUBROUTE 2.2 – PROPONENT ALTERNATIVE

Construction

Recreation Opportunities/Activities

Construction activities in support of subroute 2.2 would not occur within any designated recreation sites or areas.

Hunting in the vicinity of subroute 2.2 would be impacted by construction, as described above under "Impacts Common to All Action Alternatives." Segments E and F would cross GMU 27 in New Mexico and GMU 28 in Arizona would have the greatest reduction of land available for hunting during construction, at 346.4 and 420.2 acres and 526 acres, respectively. Alternative E and Alternative F would be constructed primarily in areas that do not currently include existing transmission lines, pipelines, or roads. The reduction to land available for hunting within GMU 27 in New Mexico and GMU 28 in Arizona (comprising 663,000 and 1.4 million acres, respectively) would represent a less than 0.05 percent reduction to GMU 27 in New Mexico and a less than 0.03 percent reduction to GMU 28 in Arizona, a negligible impact.

Segment E would cross the Butterfield Trail; and in the immediate area of the intersection with the Butterfield Trail, there are currently no existing transmission lines or pipelines, resulting in a moderate impact to the Butterfield Trail recreational setting (see Appendix F, "National Scenic and Historic Trails Assessment").

Recreation Settings

Segment E of subroute 2.2, would be constructed on predominantly undeveloped land from the Lordsburg Playa west to the San Simon Creek, resulting in a moderate, long-term change to the recreation setting. Of the 31.6 total miles of Segment E, the alignment would parallel existing facilities for 4.6 miles. The total temporary disturbance during construction of segment E would be 23.2 percent of the ROW.

Desired Recreation Experiences

Construction of subroute 2.2 would not change the desired recreation experiences.

Adjacent Recreation Areas

There are no adjacent recreation areas to subroute 2.2.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW of subroute 2.2 is approximately 6.2 percent. Therefore, recreation opportunities and activities would remain available in approximately 93.8 percent of the ROW for subroute 2.2 throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under subroute 2.2, construction.

The new access roads along segment E could permanently change the OHV use patterns in the area, subject to Federal, State, and local OHV and traffic laws and regulations. These impacts would be the same as described under "Impacts Common to All Action Alternatives."

Recreation Settings

Impacts to the recreation settings of subroute 2.2 would be the same as described under construction, except the total permanent disturbance during operation and maintenance of segment E would be 8 percent of the ROW.

Desired Recreation Experiences

Impacts to desired recreation experiences within the subroute 2.2 ROW would be the same as described under construction.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 2.2.

ROUTE VARIATIONS

The route variations (P7a through P7d) included in route group 2 (generally located southeast of the Willcox Playa) occur on ASLD and privately owned lands. Recreation opportunities/activities in this area on ASLD lands, such as wildlife viewing, would be the same as described above under "Impacts Common to all Action Alternatives." Recreational opportunities/activities on the privately owned lands would require permission from the landowner; impacts would be the same as described above under "Impacts Common to all Action Alternatives."

LOCAL ALTERNATIVES

There are eight local alternatives available for route group 2: LD1, LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1.

Construction

Recreation Opportunities/Activities

The overall impacts to recreation opportunities and activities would be the same as described under subroute 2.2, except as described below.

Hunting in the vicinity of the route group 2 local alternatives would be impacted by construction, as described above under "Impacts Common to All Action Alternatives." Local alternative LD4 would cross GMU 27 in New Mexico and GMUs 28 and 31 in Arizona and would have the greatest reduction of land available for hunting during construction, at 144.0, 927.9, and 223.3 acres, respectively. LD4 would parallel the approved but not yet constructed SunZia project and other existing transmission lines for the entire segment. The reduction to land available for hunting within GMU 27 in New Mexico and GMUs 28 and 31 in Arizona (comprising 663,000, 1.4 million, and 776,000 acres, respectively) would represent a less than 0.02 percent reduction to GMU 27 in New Mexico, and a less than 0.06 percent and 0.03 percent reduction to GMUs 28 and 31 in Arizona, respectively, a negligible impact.

Recreation Settings

LD3a could have minor indirect impacts to the recreation setting of the Peloncillo Mountain WSA in New Mexico. However, since the LD3a segment would follow existing transmission lines, pipelines, and/or roads, the impact would be minor because the recreation setting already includes existing ROWs and facilities. The impact would be minor and indirect to the recreation setting of the Peloncillo WSA because LD3a would be located approximately 0.25 mile to the east of the WSA boundary, and the laws establishing WSAs specifically mandate that "the fact that nonwilderness activities or uses can be seen or heard from within the wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area" (Public Law: New Mexico Wilderness Act 1980, Arizona Wilderness Act 1984, Arizona Desert Wilderness Act 1990).

LD1 would cross the Butterfield Trail in an area that is heavily disturbed with existing agricultural fields, roadways, railroads, and transmission lines, and would not change the existing recreation setting.

LD2 would cross the Butterfield Trail at the Lordsburg Playa. Since LD2 would be constructed in an area that does not include existing linear infrastructure, there would be a moderate impact to the Butterfield Trail recreational setting. Segment LD3a would cross the Butterfield Trail just west of the Lordsburg Playa, but this area already includes existing transmission lines or pipelines and would follow the approved but not yet constructed SunZia project.

Desired Recreation Experiences

Construction of local alternatives within route group 2 would not change the desired recreation experiences. In the vicinity where the local alternatives within route group 2 would cross the Butterfield Trail, existing roads and disturbed areas are amongst the landscape, resulting in a desired recreation experience that would be commensurate with the allowable uses surrounding the Butterfield Trail.

Adjacent Recreation Areas

The Hot Well Dunes Recreation SRMA is located approximately 0.5 mile north of local alternative LD4. The primary recreation activities are camping and OHV driving, and the Hot Well Dunes area is designated as "open" to vehicles, permitting cross-country travel. The recreation setting of Hot Well Dunes SRMA would experience minor, short-term and localized impacts to the existing recreation setting during construction of LD4. Construction could result in the temporary access restrictions described under "Impacts Common to All Action Alternatives," but these delays would be temporary, minor impacts and would not persist once construction is complete. The impact would be minor due to the general compatibility of OHV driving and transmission line construction as not having an impact to the OHV driving experience.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW of local alternatives within route group 2 would be approximately 8 percent. Therefore, recreation opportunities and activities would remain available in approximately 92 percent of the route group 2 local alternatives ROW throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under local alternatives within route group 2, construction.

Recreation Settings

Impacts to the recreation settings of the local alternatives within route group 2 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences for the local alternatives within route group 2 would be the same as described under construction.

Adjacent Recreation Areas

Operation and maintenance activities to LD4 would not impact the Hot Well Dunes SRMA, and the footprint of the transmission towers, substations, and ancillary facilities would be outside of the SRMA, therefore not eliminating any BLM lands "open" to vehicles.

Route Group 3 – Apache Substation to Pantano Substation

For purposes of analysis in the Upgrade Section, the entire 100- to 150-foot ROW is considered in terms of impacts. Even though construction activities may not be included in the entire ROW, the recreation opportunities/activities, settings, and desired experiences would be temporarily changed in site-specific areas during construction, since the construction activities could be heard, seen, or their presence otherwise known by users. These minor, temporary impacts would only last during construction, and would cease once construction has progressed further down the proposed Project.

During operation and maintenance, where the proposed Project would not include an expansion to the ROW (e.g., through Bar V Ranch), there would be no permanent changes to the recreation opportunities/activities, settings, and desired experiences.

SUBROUTE 3.1 – PROPONENT PREFERRED

Construction

Recreation Opportunities/Activities

Since subroute 3.1 is an upgrade to an existing Western 115-kV transmission line, there would be no changes to the existing recreation and activities, except as described below.

Subroute 3.1 would cross sections of the Butterfield Trail. The impacts to the Butterfield Trail would be the same as described under route group 1, subroute 1.1, except as described below under "Recreation Settings."

Hunting in the vicinity of subroute 3.1 would be temporarily impacted during construction, as described above under "Impacts Common to All Action Alternatives." Table 4.14-3 below provides the acreages of each GMU that would be affected by the construction of the segments included in route group 3. The U3a segment that would occur in GMUs 34B and 38M in Arizona would have the greatest reduction of land available for hunting during construction, at 246.0 and 341 acres from the new, permanent ROW expansion disturbances, respectively. Since U3a is the existing Western line in an existing ROW, and crosses I-10 multiple times, existing hunting activities in this vicinity likely do not occur within the ROW. The reduction to land available for hunting (from the new, permanent ROW expansion disturbances) within GMUs 34B and 38M in Arizona (comprising 319,400 acres and 565,000 acres, respectively) would represent a less than 0.07 percent reduction in lands available for hunting for both GMUs 29 and 30, a negligible impact. Further, much of GMU 38M occurs within the municipal limits of the greater Tucson area, precluding hunting anywhere within 0.25 mile of an occupied structure.

Segment U3a would cross the SVAPD; the existing Western line already crosses the SVAPD. Construction for the upgrade to the existing Western line in the SVAPD could result in the temporary access restrictions described under "Impacts Common to All Action Alternatives," but these delays would be temporary, minor impacts and would not persist once upgrades are complete. Therefore, there would be no impacts to the recreation opportunities and activities within the SVAPD. Segment U3a would cross through the Bar V Ranch, the existing Western line already crosses the Bar V Ranch and the ROW would not be expanded across the ranch. The recreation opportunities and activities in Bar V Ranch would not change during construction as there would be no ROW expansion in this area.

Table 4.14-3. Route Group 3 Game Management Unit (Arizona) Inventory Data

	Total Miles	Arizona GMU 30B (acres)	Arizona GMU 32 (acres)	Arizona GMU 33 (acres)	Arizona GMU 34B (acres)	Arizona GMU 38M (acres)
Subroute 3.1, Proponent Preferred						
U1a	16.1	291.9	–	–	–	–
U1b	2.9	2.9	50.1	–	–	–
U2	15.8	–	82.8	189.6	14.6	–
U3a	35.6	–	245.8	–	246.0	341
Route Group 3 Local Alternative						
H	19.3	–	120.8	223.0	6.3	–

Recreation Settings

Segment U1a and U2 would cross the Butterfield Trail; the existing Western transmission line already crosses the Butterfield Trail. The upgrade of segments U1a and U2 would result in negligible impacts to the recreation setting of the Butterfield Trail during construction (see Appendix F, "National Scenic and Historic Trails Assessment").

Segment U1a would cross approximately 0.5 mile of semi-primitive motorized lands within the Coronado National Forest. Segment U1a would include the upgrade of the existing Western transmission line, and would not be in conflict with the semi-primitive motorized ROS setting that is designated under the 1988 Coronado National Forest Plan.

Segment U3a would cross the Arizona NST and the Anza NHT in areas that include existing transmission lines and dirt roads. The construction of segment U3a would result in negligible impacts to the recreation

setting of the Arizona NST and the Anza NHT (see Appendix F, "National Scenic and Historic Trails Assessment"); similarly, the recreation opportunities and activities of the Arizona NST and the Anza NHT would not change during construction of subroute 3.1.

Desired Recreation Experiences

The impacts of construction of subroute 3.1 would not change the desired recreation experiences and would be the same as described under route group 1, subroute 1.1, except as described below.

The semi-primitive motorized ROS setting establishes desired recreation experiences of a mostly natural landscape not dominated by roads or structures. Construction of U1a would result in moderate impacts to the desired recreation experience of the Coronado National Forest in a localized manner since the construction of transmission towers and access roads would dominate the areas within the ROW, detracting from a semi-primitive recreation experience. These impacts would be short-term and would include moderate impacts from construction noise, potential fugitive dust, and the visible contrast to the existing landscape. The impacts would be moderate due to the presence of the existing transmission line that U1a would parallel.

Adjacent Recreation Areas

There are no adjacent recreation areas to subroute 3.1.

Operation and Maintenance

Recreation Opportunities/Activities

Hikers, birders, and other users would continue their activities as they existing prior to construction since subroute 3.1 would be an upgrade to pre-existing facilities that already precluded some recreation opportunity and activity. The overall permanent disturbance within the ROW of subroute 3.1 is approximately 6.5 percent, a minor impact. Therefore, recreation opportunities and activities would remain available in approximately 93.5 percent of the ROW for subroute 3.1 throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under subroute 3.1, construction.

Recreation Settings

Impacts to the recreation settings of subroute 3.1 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the ROW for subroute 3.1 would be the same as described under construction.

The operation and maintenance of U1a would have negligible effects to the desired recreation experience of the Coronado National Forest, since U1a would be the upgrade of an existing transmission line.

Adjacent Recreation Areas

There are no recreation areas adjacent to subroute 3.1.

LOCAL ALTERNATIVES

There is one local alternative for route group 3–local alternative H.

Construction

Recreation Opportunities/Activities

The construction of local alternative H would not change the existing recreation opportunities or activities since it would be an upgrade to an existing transmission line for the entire segment. The overall impacts to recreation opportunities and activities would be the same as described under subroute 3.1, except as described below.

Hunting in the vicinity of local alternative H would result in minor impacts from construction, as described above under "Impacts Common to All Action Alternatives." Local alternative H would cross GMUs 32, 33, and 34B in Arizona and would result in reductions of 120.8, 223.0, and 6.3 acres to lands available for hunting, respectively. Alternative H would parallel existing transmission lines for the entire segment. The reduction to land available for hunting within GMUs 32, 33, and 34B in Arizona (comprising 981,000, 661,000, and 319,000 acres, respectively) would represent a less than 0.01 percent reduction to GMU 32, a less than 0.03 percent reduction to GMU 33, and a less than 0.01 percent reduction to GMU 34B in Arizona, a negligible impact.

Recreation Settings

Local alternative H would cross the Butterfield Trail in an area that includes an existing pipeline and dirt roads. Therefore, the recreation setting would not change from existing conditions as a result of the construction of alternative H.

Desired Recreation Experiences

Construction of alternative H would not change the desired recreation experiences. In the vicinity where alternative H would cross the Butterfield Trail, existing roads and disturbed areas are amongst the landscape. Construction would result in a desired recreation experience that would be commensurate with the allowable uses surrounding the Butterfield Trail.

Adjacent Recreation Areas

There are no recreation areas adjacent to local alternative H.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW for alternative H would be 13.4 percent. Therefore, recreation opportunities and activities would remain available in approximately 86.6 percent of the ROW for local alternative H throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would therefore be commensurately less than described under local alternative H, construction.

Recreation Settings

Impacts to the recreation settings within the ROW for local alternative H would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within ROW for local alternative H would be the same as described under construction.

Adjacent Recreation Areas

There are no adjacent recreation areas to subroute 3.1.

Route Group 4 – Pantano Substation to Saguaro Substation

SUBROUTE 4.1 – PROPONENT PREFERRED

Construction

Recreation Opportunities/Activities

The recreation opportunities and activities in the area of subroute 4.1 are unique among the proposed Project segments, in that subroute 4.1 would be located in urban areas in greater frequency than in undeveloped areas.

Hikers, birders, and other users would continue their activities as they existing prior to construction since subroute 4.1 would be an upgrade to the existing Western line that already precluded some recreation opportunity and activity. Multiple recreation areas, preserves, parks, and golf courses are present along subroute 4.1 (refer to Section 3.14, "Recreation"). Since subroute 4.1 is an upgrade to an existing transmission line, there would be no changes to the existing recreation and activities except as described below.

Hunting in the vicinity of subroute 4.1 would be temporarily impacted during construction, as described above under "Impacts Common to All Action Alternatives." Table 4.14-4 provides the acreages of each GMU that would be affected by the construction of the subroutes included in route group 4. Segment U3k segment would cross GMU 37A would have the greatest reduction of land available for hunting during construction, at 303.6 acres. Since U3k is the upgrade of an existing transmission lines and crosses I-10 multiple times, existing hunting activities in this vicinity likely would not occur within the ROW since the existing facilities already preclude hunting. The reduction to land available for hunting within GMU 37A (composed of 99,650 acres) would represent a less than 0.3 percent reduction in lands available for hunting for GMU 37A, a negligible impact. Further, much of GMU 37A occurs within the municipal limits of the town of Marana and along I-10, precluding hunting anywhere within 0.25 mile of an occupied structure.

Table 4.14-4. Route Group 4 Game Management Unit (Arizona) Inventory Data

	Total Miles	Arizona GMU 34B (acres)	Arizona GMU 37A (acres)	Arizona GMU 38M (acres)
Subroute 4.1, Proponent Preferred				
U3b	0.5	-	–	5.5
U3c	1.0	-	–	11.6
U3d	3.4	-	–	41.6
U3e	0.9	-	–	10.6
U3f	0.7	-	–	8.07

Table 4.14-4. Route Group 4 Game Management Unit (Arizona) Inventory Data (Continued)

	Total Miles	Arizona GMU 34B (acres)	Arizona GMU 37A (acres)	Arizona GMU 38M (acres)
Subroute 4.1, Proponent Preferred, cont'd.				
U3g	0.9	-	–	10.8
U3h	1.1	-	–	13.2
U3i	18.2	-	6.3	223.6
U3j	0.9	-	15.9	–
U3k	16.7	-	303.6	–
U3l	1.6	-	28.1	–
U3m	0.6	-	8.9	–
U4	1.9	-	–	34.7
Route Group 4 Route Variation				
U3aPC	6.2	-	–	113
Route Group 4 Local Alternatives				
MA1	1.1	-	19.0	–
TH1a	1.4	-	–	25.7
TH1b	1.6	-	–	28.4
TH1c	0.3	-	–	4.8
TH1-Option	1.0	-	–	7.7
TH3-Option A	0.8	-	–	15.1
TH3-Option B	0.8	-	–	14.5
TH3-Option C	1.8	-	–	29.3
TH3a	2.7	-	–	49.7
TH3b	4.5	-	–	81.4

Recreation Settings

As the recreation settings of route group 4 include the Tucson metropolitan area, the recreation settings in the areas are all well-established; impacts would be the same as described under "Impacts Common to All Action Alternatives."

Desired Recreation Experiences

The impacts of construction of subroute 4.1 would not change the desired recreation experiences and would be the same as described under route group 1, subroute 1.1, except as described below.

Adjacent Recreation Areas

Saguaro National Park is located approximately 0.5 mile west of segment U3i. The recreation opportunities and activities, recreation settings, and desired recreation experiences would not change if subroute 4.1 were constructed, since all construction activities would upgrade existing transmission

facilities. Short-term access interruptions (as described under "Impacts Common to All Action Alternatives") could occur but would be localized and minor.

IFNM is also located approximately 0.5 mile west of segment U3i near the town of Marana. The recreation opportunities and activities, recreation settings, and desired recreation experiences of adjacent recreation areas would not change if subroute 4.1 were constructed, since all construction activities would upgrade existing facilities. Short-term access (as described under "Impacts Common to All Action Alternatives") could occur but would be localized and minor.

Operation and Maintenance

Recreation Opportunities/Activities

Impacts to the recreation opportunities and activities within the ROW for subroute 4.1 would be the same as described under construction.

Recreation Settings

Impacts to the recreation settings of subroute 4.1 would be the same as described under construction.

Desired Recreation Experiences

Impacts to desired recreation experiences within the ROW for subroute 4.1 would be the same as described under construction.

Adjacent Recreation Areas

The impacts of operation and maintenance of subroute 4.1 to Saguaro National Park would be the same as described under construction.

ROUTE VARIATION

The route variation (U3aPC) included in route group 4 (generally located 3 miles northwest of the existing Nogales Substation) would occur on privately owned lands. Recreation in this area would be primarily limited to OHV driving since the proximity to occupied structures and mineral materials activities would prevent legal hunting form being pursued in nearly all areas along U3aPC. Recreational opportunities/activities on the privately owned lands would require permission from the landowner; impacts would be the same as described above under "Impacts Common to all Action Alternatives."

LOCAL ALTERNATIVES

There are 10 local alternatives available for route group 4: MA1, TH1a, TH1b, TH1c, TH1-Option, TH3a, TH3b, TH3-Option A, TH3-Option B, and TH3-Option C.

Construction

Recreation Opportunities/Activities

The construction of these local alternatives would change the existing recreation opportunities or activities since the local alternatives represent options for construction that are designed to avoid sensitive resources (as described in chapter 2); thus, they may not parallel existing ROWs and/or facilities. The overall impacts to recreation opportunities and activities would be the same as described under "Impacts Common to All Action Alternatives," except as described below.

Hunting is not legally permitted along the route group 4 local alternatives since all segments would be within urban areas that occur within the city limits of Tucson.

Recreation Settings

The recreation settings of the route group 4 local alternatives would be the same as the impacts that would change existing recreation settings, as described under "Impacts Common to All Action Alternatives."

Desired Recreation Experiences

The desired recreation experiences of the route group 4 local alternatives would be the same as impacts that would change existing desired recreation experiences, as described under "Impacts Common to All Action Alternatives."

Adjacent Recreation Areas

The recreation opportunities and activities, recreation settings, and desired recreation experiences of adjacent recreation areas would not change if route group 4 local alternatives were constructed, since all construction activities would upgrade existing facilities. Short-term access (as described under "Impacts Common to all Action Alternatives") could occur but would be localized and minor.

Operation and Maintenance

Recreation Opportunities/Activities

The overall permanent disturbance within the ROW for the route group 4 local alternatives would be 5.7 percent. Therefore, recreation opportunities and activities would remain available in approximately 94.3 percent of the ROW for the route group 4 local alternatives throughout operation and maintenance of the proposed Project, subject to existing laws and closures. The operational impacts to recreation opportunities and activities would be the same as described under subroute 4.1, "Construction."

Recreation Settings

Impacts to the recreation settings within the route group 4 local alternatives would be the same as described under subroute 4.1, "Construction."

Desired Recreation Experiences

Impacts to desired recreation experiences within the route group 4 local alternatives ROW would be the same as described under construction.

Adjacent Recreation Areas

Impacts to adjacent recreation areas within the route group 4 local alternatives would be the same as described under route group 4 local alternatives, "Construction."

Agency Preferred Alternative

The Agency Preferred Alternative would not change the recreation opportunities/activities and impacts would be the same as described under "Impacts Common to All Action Alternatives" and as described below.

The Agency Preferred Alternative segments included in route groups 1 and 2 would result in negligible changes to the recreation setting and desired recreation experiences during construction. The changes would be negligible because segments that comprise the Agency Preferred Alternative in route groups 1 and 2 would generally follow existing facilities; thus, the recreation setting and desired recreation experiences would already include/anticipate the presence of transmission lines.

Short-term, minor impacts to the existing recreation settings would occur in route groups 3 and 4 at the intersections of the Agency Preferred Alternative segments with national trails, trails recommended as suitable for national trail designation, Aden Hills OHV area, Bar V Ranch, Tucson Mountain Park, Tumamoc Hill, Joaquin Murrieta Park, Santa Cruz River Park, and Christopher Columbus Park during construction, as described under "Impacts Common to All Action Alternatives." These impacts would only occur during construction, when activities may change certain recreation settings. Impacts would be minor because the existing Western transmission line already intersects these resources and the ROW would only be expanded by 50 feet in certain places (see chapter 2). Construction activities have the potential to result in short-term changes to the recreation setting due to the presence of construction equipment, increased noise, and fugitive dust.

Residual Impacts

No residual impacts to recreation resources are identified.

Unavoidable Adverse Impacts

Dispersed recreation opportunities and activities would be lost permanently (for the life of the proposed Project) in areas that would be physically occupied by the transmission line towers, substations, and ancillary facilities. However, the total area occupied by permanent structures is very small and dispersed recreation would still occur in the immediate area surrounding the tower, substation or ancillary facility. In addition, users may simply go around, or even through (if the structure is steel lattice) the area that may be physically occupied by the Project and the ROW and access roads would be open and available for recreation activities, and would not be a barrier for access to other areas for recreation. Thus, unavoidable adverse impacts would be a negligible impact. The overall loss of BLM land available for dispersed recreation would represent far less than 1 percent of the Las Cruces District, Safford, and Tucson Field Offices, respectively.

Short-term Uses versus Long-term Productivity

Construction and operation and maintenance of the proposed Project would result in use of land and other resources for energy transmission and would preclude recreation in areas occupied by the transmission line towers, substations, and ancillary facilities. This change in land use and subsequent loss of recreation opportunities would be a very small amount (and thus a negligible impact) of acreage scattered along approximately 360 miles in New Mexico and Arizona. Implementation of the Project would not completely eliminate recreational access and activities in any of these areas in the long-term.
The temporary and negligible impacts to recreation are not anticipated to be long-term changes in hunting, hiking, and motorized vehicle use patterns because construction of the proposed Project would not significantly decrease (or in the case of new access roads, increase) the areas available for dispersed recreation. Implementation of the proposed Project may create long-term disruptions of the visual quality due to the contrast that transmission facilities create upon the existing landscape, but these impacts would not affect all users. There would be no maintenance or enhancement of recreational resources, but all existing access to recreation areas would be maintained during construction and operation and maintenance. However, due to the nature of the Project occurring in areas that largely already experience

these types of impacts (e.g., vehicle use patterns, desired recreation setting) the impact is negligible since the proposed Project would not eliminate recreation use.

Irreversible and Irretrievable Commitments of Resources

There would not be an irreversible commitment to recreation resulting from the Project. Existing recreation opportunities and activities, recreation settings, desired recreation experiences, and adjacent recreation areas could be restored to existing conditions if the proposed Project and facilities were removed in the future.

In addition, it could take years before the Project footprint is no longer visible, if it were restored to existing conditions after the life of the Project. Even when vegetation is established during reclamation efforts, the composition of plant species in the recovery area is often different than the original vegetation community. Typically, grasses establish early on, whereas shrubs take much longer to reestablish.

The Project footprint could visibly persist for years beyond restoration.

4.15 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.15.1 Introduction

This section describes the impacts to socioeconomics and environmental justice communities associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Impacts to socioeconomics are discussed in terms of effects on the economy, population, housing, tax revenues, public services, property values, the tourism- and recreation-related economy, and social impacts. The impacts described in this section are based on regional economic modeling incorporating projected construction and operation and maintenance activities, prior experience and analyses in other locations, and the other resource assessments provided in this EIS.

4.15.2 Methodology and Assumptions

This section describes the analysis area for socioeconomics, key assumptions and methods, impact indicators, and thresholds for determining significant impacts.

Analysis Area

As discussed in chapter 3, section 3.15, the analysis area for socioeconomics is based on the counties the Project alternatives traverse and where Project impacts are most likely to occur; these counties include Doña Ana County, Grant County, Hidalgo County, and Luna County in New Mexico, and Cochise County, Pima County, Pinal County, Graham County, and Greenlee County in Arizona. The New Build Section of the Project would generally be located within the four counties in New Mexico and Cochise County, Arizona. Under one New Build Section local alternative, the line would also cross Graham County and Greenlee County in Arizona. The Upgrade Section of the Project would be located in Cochise County, Pima County, and Pinal County in Arizona.

Given the large geographic area encompassing the proposed Project, and the limited availability of economic data for geographic areas smaller than counties, the socioeconomic impact analysis generally focuses on evaluating impacts for the two subareas within the overall analysis area—the New Build Section and the Upgrade Section—as a whole.

The analysis area for environmental justice includes Census tracts that fall within a representative ROW of the proposed Project alternatives: a 200-foot ROW within the New Build Section and a 100- to 150-foot ROW within the Upgrade Section. All of the Census tracts within the analysis area for environmental justice were analyzed for low-income and minority populations (see section 3.15).

Analysis Assumptions

DEFINITIONS

Direct socioeconomic impacts include effects that would be caused by the proposed Project and would occur at the same time. Indirect impacts include effects that would also be caused by the proposed Project, but would occur later in time or farther removed in distance. For socioeconomic resources, one example of a potential indirect effect would include any "multiplier" effects on the economy resulting from the recirculation of money spent by Southline for construction worker salaries or the purchase of construction goods and services within the analysis area.

Short-term effects include effects that would occur during construction. Long-term effects include effects that would continue to occur during operation and maintenance of the proposed Project.

ECONOMIC AND FISCAL EFFECTS

Economic effects from the proposed Project, and most fiscal effects, were estimated using IMPLAN regional economic models. IMPLAN is an input/output modeling system originally developed for the Forest Service and is widely used by both private-sector and public-sector economists for impact analyses throughout the United States. The IMPLAN models incorporated 2010 data for the analysis area.

Construction of the proposed Project would produce three types of revenue streams that would stimulate the local economy—procurement of locally sourced goods and materials, wages paid to local construction workers, and the local expenditures of non-local construction workers during the period in which they are located in the analysis area. Each of these revenue streams was incorporated in the IMPLAN analysis.

Even though the majority of the construction workforce would be temporary workers who would not permanently reside in the analysis area, they would still contribute to the overall economic impacts of the Project. Given that the non-local labor force would reside in the local community for the duration of the Project, they would inevitably spend a portion of their income in the local economy. These local expenditures would likely primarily include housing, food, and entertainment. For this analysis we have assumed that 50 percent of the non-local labor force's wages would be spent in the analysis area. The 50 percent estimate is uncertain, but reflects both professional judgment and the assumptions incorporated in previous IMPLAN studies involving large, transient labor forces. For example, a recent economic impact study of the Marcellus Shale in Pennsylvania bounded local spending to 50 percent of wages for transient workers (Marcellus Shale Education & Training Center 2011).

Although the IMPLAN model provides information on the tax revenues that would be produced by construction or operation and maintenance activities, it does not account for the ongoing property tax revenues that could accrue from the value of the constructed transmission line. For that purpose, several assumptions were made: the "market value" of the completed line was assumed to be equivalent to the full cost of construction, and the value of the line was assumed to be distributed across the analysis area (by county) based on the proportion of the line that would be located in each county.

POPULATION AND HOUSING EFFECTS

The economic effects of the Project could also lead to impacts on the population levels in the analysis area. Approximately 75 percent of the construction workforce is expected to consist of non-local employees who will reside in the analysis area during the construction period (CH2M Hill 2013p). Given the short-term and migratory nature of this Project, very few of these employees are expected to be accompanied by their families. In other recent environmental impact studies for proposed transmission lines, the proportion of non-local construction workers who would be accompanied by their families has been projected to be essentially zero (BLM 2013a) or up to 10 percent (BLM 2013p). To ensure this analysis does not inadvertently understate potential population-related impacts, the analysis assumes that 10 percent of the non-local construction workforce would be accompanied by a spouse and a school-aged child.

The local economic opportunities that result from construction-related payroll and construction expenditures for local goods and services could also lead to additional migration to the analysis area. The IMPLAN model provides estimates of the number of indirect jobs that would be created due to these expenditures. The extent to which these indirect jobs would be filled by existing residents in the analysis area, versus people drawn to the area by these new employment opportunities, is unknown. For purposes of estimating potential impacts on population, this analysis provides a range of potential population effects from the alternatives. At the low end, the indirect jobs are assumed to be filled entirely by local residents and estimates of population effects include only the direct Project construction workers and families. At the high end, all indirect jobs are assumed to be filled by workers who migrate to the analysis area. The composition of these workers' households is assumed to mirror the current average of 2.6 persons per household average within the analysis area (Census Bureau 2011).

Non-local workers, direct or indirect, will require housing in the analysis area. For purposes of considering potential effects on housing conditions, the number of projected non-local workers is compared to the estimated availability of rental housing, motel/hotel rooms, and RV sites within the analysis area.

SOCIAL EFFECTS

Rapid development and the presence of large numbers of temporary workers in rural areas can lead to impacts on social conditions. Sociologists and others have written extensively on social issues associated with rapid development in rural areas since the 1980s. Analysts have focused on past energy development campaigns in the western United States and impacts to the social well-being in host communities (BLM 2012k).

Prior studies have found mixed results in terms of social effects from rapid development in rural areas. Key areas of concern include the potential for changes in the "density of acquaintanceship;"[3] declines in local identity, solidarity, and trust in other community members; increased fear of crime; less control of deviant behavior, reduced respect for law and order, and less effective socialization of youth; and diminished community satisfaction and reduced attachment to the community. Whether these effects occur, and the degree to which they occur, appears to vary based on both the nature of the resource activity, the stage or phase of activity, and the characteristics of the affected communities (Montana Board of Crime Control 2013).

Social effects cannot be directly quantified except by surveys of affected community members. For purposes of this analysis, the rate of projected population change that could result from the proposed

[3] This may sometimes be expressed in statements like "we used to know everyone, now there are a lot of strangers in our community."

Project, relative to the existing population size of potentially affected communities, is considered to represent an indicator of the potential for adverse social effects. It is important to note, however, that the projected effects on population from construction of the proposed Project would be of very short duration and would not induce rapid regional growth but rather be in response to growth that would drive energy demand; thus any adverse social effects should not persist in the longer term.

ENVIRONMENTAL JUSTICE EFFECTS

Evaluation of environmental justice effects involves assessment of the potential for disproportionately high and adverse effects on minority or low-income populations. Minority and low-income populations in proximity to the ROW for the proposed Project and the alternatives were identified in chapter 3, on the basis of Census data at the Census tract level. Census tracts typically include 2,500 to 8,000 people and, in rural areas, can be quite large in geographic area. For purposes of this assessment the population in closest proximity to the ROW for the proposed Project and alternatives was assumed to have the same characteristics (e.g., minority or low-income status) as the overall Census tract in which it is located.

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Impact Indicators

Impact indicators were developed for key socioeconomic and environmental justice attributes. The attributes and impact indicators are:

- Regional economy – change in employment, labor earnings, and regional output
- Fiscal conditions – changes in local government tax revenues
- Demographic conditions – changes in total population
- Housing conditions – changes in demand for housing relative to available supply
- Social conditions – rate of population change, expressed as percent change per year
- Environmental justice – anticipated high and disproportionate adverse socioeconomic or environmental effects on environmental justice communities relative to effects across the analysis area as a whole

Significant Impacts

For the purposes of this analysis, a significant impact on socioeconomics or environmental justice could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- A short-term or long-term change (positive or negative) of 1 percent or more in employment, labor earnings, or regional output compared to current conditions.
- A short-term or long-term change (positive or negative) of 1 percent or more in tax revenues received by local governments.
- A short-term change of 1 percent or more in the population residing in the analysis area or within individual counties within the analysis area.
- Short-term demand for accommodations during construction exceeding one-third of the estimated available supply.
- High and disproportionate adverse effects on environmental justice communities.

4.15.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, Southline would not construct and operate the new section of transmission line in the New Build Section. Even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). In the short term, there would be no socioeconomic effects under the no action alternative.

In the long term, the no action alternative would not meet the purpose and need objectives of improving reliability of the electrical grid in southern New Mexico and southern Arizona, increasing the ability of the grid to meet demand growth in the region, or facilitating potential renewable generation development in the region. Adequate and reliable electricity supply, like other key infrastructure, is an important requirement for economic development. Absent alternative projects to upgrade electricity supplies in southern New Mexico and southern Arizona, the no action alternative could result in significant long-term adverse impacts on the economy, local utilities, and residents in the analysis area.

Impacts Common to All Action Alternatives

Each of the action alternatives would involve the construction and operation and maintenance of a new transmission line and appurtenant facilities, including electrical substations, in the New Build Section, and the upgrade and operation of similar existing facilities in the Upgrade Section.

During a projected construction period of approximately 24 months, Southline would hire a number of local workers and bring in a larger number of non-local workers to complete the Project. They would also spend money on materials and services for construction, with the majority of those expenditures going to suppliers outside the analysis area.

Southline has developed and provided estimates of the required workforce—and anticipated expenditures for labor, supplies, and materials—for the proposed Project. Comparable estimates of labor requirements and costs are not available for the other action alternatives, but the magnitude of the workforce and expenditures would likely be comparable to those anticipated for the proposed Project.

Overall, the action alternatives would meet the needs of future economic development and long-term job growth in the region by improving reliability of the electrical grid and increasing the ability of the grid to meet the demand of future growth.

NEW BUILD SECTION

Economic Effects

Construction

Based on information provided by Southline, an average of 325 workers would be required to complete the New Build Section over the 2-year construction period, at a projected cost of $28.5 million per year. Seventy-nine of these workers are expected to be hired from the local workforce at an annual cost of $5.7 million. Southline would spend a projected average of $117.85 million during each of the 2 years for materials and supplies, with approximately 5 percent ($5.9 million per year) of these expenditures accruing to local suppliers (CH2M Hill 2013p).

This information was incorporated into a regional IMPLAN economic model that included Doña Ana County, Grant County, Hidalgo County, and Luna County in New Mexico, and Cochise County in Arizona. As shown in table 4.15-1, construction of the proposed Project is projected to support approximately 235 short-term jobs in the New Build Section. This total includes the projected 79 direct jobs (local hires) associated with construction, as well as 156 indirect jobs that would be supported by local purchases of supplies and materials for construction, household expenditures by the locally hired workers, and local expenditures by non-local workers during the construction period. This employment total does not count the estimated 246 non-local workers anticipated to be hired for construction.

Table 4.15-1. Projected Annual Employment Impact from Construction of New Build Section

Construction Expenditures	Direct Employment	Indirect Employment	Total Employment
Local materials	0	65	65
Local labor	79	30	109
Non-local labor	0	61	61
Total	**79**	**156**	**235**

In addition to the $5.7 million in annual compensation anticipated to be paid to locally hired construction workers, construction of the New Build Section is projected to indirectly produce an additional $5.7 million in annual labor earnings during the 2-year construction period. This information is summarized in table 4.15-2. The projected total labor earnings impact in the New Build Section of approximately $11.4 million per year does not include the projected $22.8 million per year expected to be paid to non-local construction workers.

Table 4.15-2. Projected Annual Labor Earnings Impact from Construction of New Build Section

Construction Expenditures	Direct Labor Earnings	Indirect Labor Earnings	Total Labor Earnings
Local materials	$0	$2.7	$2.7
Local labor	$5.7	$1.0	$6.7
Non-local labor	$0	$2.0	$2.0
Total	**$5.7**	**$5.7**	**$11.4**

Note: Labor earnings reflect total compensation, including worker benefits, in millions of 2013 U.S. dollars.

Overall, construction of the New Build Section is projected to produce a short-term, annual increase in regional output of $24.8 million during the 2-year construction period. This total includes the projected $5.9 million increase in direct output due to the purchase of locally sourced construction goods and materials, along with $18.9 million in additional regional output due to recirculation of the wages paid to construction workers. This information is summarized in table 4.15-3. As noted previously, non-local workers were assumed to spend 50 percent of their disposable income within the analysis area during the construction period.

Table 4.15-3. Projected Annual Impact on Regional Output from Construction of New Build Section

Construction Expenditures	Direct Output	Indirect Output	Total Output
Local materials	$5.9	$8.8	$14.7
Local labor	$0	$3.3	$3.3
Non-local labor	$0	$6.7	$6.7
Total	**$5.9**	**$18.9**	**$24.8**

Note: Output is in millions of 2013 U.S. dollars; numbers may not add up due to rounding.

Operation and Maintenance

In contrast to the large workforce and expenditures required for construction, ongoing operations and maintenance would require few workers and have relatively little direct economic impact in the New Build Section. Ground inspections of the transmission line facilities could require up to three crew members and would be anticipated every 1 to 2 years. Insulator washing would occur no more than twice per year and would require approximately 30 minutes per transmission structure. Vegetation removal might be required in some locations on an annual basis. Repairs and replacements of transmission line components would be performed as needed. Substations would be unmanned and controlled remotely. Routine substation operations would require a monthly visit by a crew of one to two workers and a major maintenance once per year requiring up to 15 personnel over a 1- to 3-week period. These types of activities would have minimal effects on the local economy, and regional economic impacts from operations have not been estimated (see appendix N).

In contrast to the no action alternative, however, each of the action alternatives would meet the purpose and need for the proposed Project in improving reliability of the electrical grid in southern New Mexico and southern Arizona, increasing the ability of the grid to meet demand growth in the region, or facilitating potential renewable generation development in the region. The long-term economic impacts from these improvements have not been estimated, but could be significant.

Tax Revenue Effects

Construction

Construction-related economic activity would also generate additional tax revenues for local governments in the New Build Section. The largest sources of new State and local revenues would be sales taxes[4] and property taxes. Based on the IMPLAN analysis of regional economic effects, construction of the proposed Project would produce approximately $462,000 per year in additional State and local sales taxes and approximately $219,000 per year in additional State and local property taxes.

In both Arizona and New Mexico, the State receives approximately two-thirds of all gross receipts tax revenues, while approximately one-third of these revenues are distributed to local governments. Local governments in the two states (including school districts) receive about 95 percent of the property tax revenues and the States receive about 5 percent of these revenues. Based on these generalized proportions, local governments in the New Build Section could expect to receive about $150,000 per year in additional sales tax revenues and about $210,000 per year in additional property tax revenues during the 2-year construction period. Comparison of these estimated local government tax revenues with the baseline tax receipts shown in table 3.15-17 indicates construction-related sales and property taxes would

[4] Sales taxes are termed gross receipts taxes in New Mexico and Transaction Privilege taxes in Arizona.

represent an increase of about 0.1 percent in total sales and property tax revenues for local governments in the New Build Section.

Operation and Maintenance

Depending on the ultimate ownership of the proposed Project,[5] the transmission line and appurtenant facilities could produce more substantial property tax revenues for local governments once fully constructed. Based on an estimated taxable value of approximately $138 million for the New Build Section, the transmission line could initially produce about $4.2 million per year in property tax revenues for local governments. This total would represent a 1.5 percent increase in total local government property tax revenues in the New Build Section. Property tax revenues would decrease over time during the period of operations due to depreciation in the value of the facilities.

Population Effects

Construction

Construction of the proposed Project is expected to require approximately 246 non-local workers who would reside within the New Build Section during the 2-year construction period. Construction-related economic activity is also anticipated to support approximately 156 indirect jobs in the area. Although no more than 10 percent of the non-local construction workers are expected to be accompanied by their families, migrants to the area to fill the indirect jobs resulting from local construction-related expenditures might more closely resemble typical households within the area.

Table 4.15-4 depicts the potential short-term population effects associated with construction of the proposed Project. If all of the indirect jobs are filled by existing residents of the area, the proposed Project could result in a short-term increase in the population of the New Build Section of about 271 adults and 25 children. The maximum potential short-term population effect, if all of the indirect jobs were filled by individuals moving to the area, would be about 583 adults and 119 children.

Table 4.15-4. Potential Population Effects from Construction of New Build Section

		Family Members		Potential Population Increase	
Source	**Workers**	**Adults**	**Children**	**Adults**	**Children**
Direct jobs	325				
Local hires	79				
Imported workers	246	25	25	271	25
Indirect jobs	156	156	94	312	94
Maximum potential population increase				**583**	**119**

These projected population effects would represent an increase of between 0.07 percent and 0.16 percent in the total population of the New Build Section. However, the construction workforce would not be evenly distributed across the area throughout the construction period. Instead, much of that workforce is expected to move across the New Build Section as construction proceeds. In the sparsely populated western portion of the New Build Section, the relative magnitude of the population increase could be

[5] Under private ownership, the transmission line and appurtenant facilities would likely be subject to State and local property taxes. To the extent that Western owns parts or all of the facilities, they may not be subject to property taxes.

more substantial. In the most extreme example, if all of the non-local construction workers temporarily reside in Hidalgo County, this workforce would represent about 5 percent of the total county population. These localized effects, however, would occur for only a portion of the 2-year construction period.

Operation and Maintenance

As noted previously, ongoing operations and maintenance would require relatively few workers. The proposed Project would have minimal long-term effects on the population of the New Build Section.

Housing Effects

Construction

The non-local construction workers, any family members they bring with them, and any workers and families who migrate to the area to fill indirect jobs resulting from construction would place additional demands on rental housing and short-term accommodations in the analysis area. Based on the population effects analysis described previously, between 246 and 402 rental or short-term housing units could be required during construction in the New Build Section.

Although this projected housing requirement represents a small portion of the approximately 5,700 rental housing units available in the New Build Section (see table 3.15-3), the available rental housing stock is dominated by the large number of units available in the Las Cruces area (at the extreme eastern end of the New Build Section) and in the southern portion of Cochise County—a considerable distance from the proposed alignment. The biggest challenge in housing the temporary workforce within the New Build Section is likely to occur when construction proceeds to the western portions of the New Build Section, including Hidalgo County and northeastern Cochise County.

Table 3.15-3 shows that Hidalgo County has approximately 80 available rental housing units. The number of rental units in northeastern Cochise County is not known, but is likely to also be small, based on the sparse population in that area. As noted in chapter 3, there are approximately 400 to 500 hotel/motel units in Lordsburg (in Hidalgo County). Although hotel/motel accommodations in northeastern Cochise County are much more limited, that area has a relatively large number of RV/mobile home parks.

Overall, while it should be possible to accommodate the temporary construction workforce, the proposed Project could lead to short-term shortages of housing and temporary accommodations in the western portions of the New Build Section. It is possible that at least a portion of the construction workforce could be housed in temporary “man camps.” Such camps can create issues and concerns for local governments and residents if they are not carefully managed and monitored.

Operation and Maintenance

The proposed Project would have minimal long-term effects on housing within the New Build Section.

Effects on Public Services

Construction

In addition to the temporary increase in demand for housing just described, the non-local construction workforce and any non-local workers and families who migrate to the area to fill indirect employment opportunities, would also create additional short-term demands for public services such as police and fire protection, education, and medical services. Much like the housing situation, these added demands are unlikely to create substantial challenges in the eastern portion of the New Build Section, but could create

short-term challenges in the western portion of the proposed Project, where existing services are much more limited.

Operation and Maintenance

The proposed Project would have minimal long-term effects on most public services within the New Build Section. However, to the extent the proposed Project improves reliability of the electrical grid in southern New Mexico and southern Arizona, and increases the ability of the grid to meet demand growth in the region, it could provide long-term improvements for the area in terms of electric utility service.

Effects on Property Values

Construction

To construct the New Build Section of the proposed Project, a 200-foot-wide ROW along the 240-mile-long route would be acquired. The new ROW would be obtained through a combination of grants and easements negotiated with government and private landowners (see appendix N). Landowners along the ROW would be compensated for the disruption and the encumbrance of the required easement based on market land and easement values. Note that private landowners would lease the use of their land for the ROW, but would retain their ownership of the lands along the ROW.

Operation and Maintenance

The concern that transmission lines may cause long-term decreases in property values has led to extensive research on the subject. Studies have used both quantitative analyses of market data and survey methods to investigate how land values are impacted. However, despite the large volume of available literature, the conclusions are not clear or consistent. Instead the research indicates that the effects of transmission lines on property values appear to differ depending on the situation.

Prior to the 1990s, research generally concluded that there were no negative impacts of transmission lines on property values. However, more recent studies have indicated there may be property value effects, though in most studies the decreases in land values are relatively small and seldom exceed 15 percent. The impacts also generally decrease dramatically with distance from the transmission line (Colwell 1990; Delaney and Timmons 1992; Hamilton and Schwann 1995). The properties most likely to be affected are those that are directly adjacent to the transmission lines. One empirical study found that while the adjacent properties experienced a 6.3 percent decrease in value, the properties that were in close proximity but were not directly adjacent experienced only a 1 percent decrease in value (Hamilton and Schwann 1995). One study, conducted in the Montreal area, found that properties located one or two lots away from transmission lines actually increased in value due to the benefit of the open space created by the transmission line ROW (Des Rosiers 2002). Negative impacts have also been found to diminish over time as well as distance (Colwell 1990).

Other studies have found that it is primarily the visibility of the transmission lines that impacts property values. A survey of experienced appraisers found that on average, transmission lines decreased property values by 10.2 percent. Impacts attributed to the visibility of the infrastructure, particularly of the permanent towers, did not noticeably dissipate over time (Delaney and Timmons 1992). Other studies have found that the major cause of diminished property values was the encumbrance of the transmission line easement placed on the land (Chalmers and Voorvaasrt 2009; Colwell 1990).

The majority of the existing literature has focused on urban residential properties in densely populated northern regions. This, in conjunction with the inconsistent results, makes it difficult to directly apply the findings to the largely rural setting for both the New Build and Upgrade Sections. However, there is

evidence that property values in less densely populated areas are less sensitive to transmission lines (Chalmers 2012; Delaney and Timmons 1992). For agricultural lands in Montana, there was no evidence of market impacts from transmission lines. When interviewed, property owners did express that the lines were a nuisance, but did not impact their decision to purchase the property or how much they paid for it. However, rural lands with recreation attributes may experience slightly diminished property values, particularly when the recreation is related to the rural scenery. Rural residential properties also have the propensity to be impacted by transmission lines. In tight housing markets there have not been noticeable effects. However, when there are many suitable substitutes for housing, those closer to transmission lines have taken longer to sell and have sold for comparatively less. The size of the rural property, both for residential and non-residential uses, evidently plays a large role in determining the magnitude of the impacts from transmission projects. Larger properties diffuse the impacts of the transmission line and therefore minimize the effects compared to those on smaller properties (Chalmers 2012).

In summary, prior research suggests that properties immediately adjacent to transmission lines may suffer a reduction in value due to the encumbrance the line places on the use of the land, the visual impact of the line, or both. In more densely developed areas, reductions in immediately adjacent property values of between 5 and 15 percent would be consistent with findings from previous studies. Homes located farther away from the transmission line are unlikely to experience significant impacts to their values. The values of larger properties in more sparsely populated rural areas are likely to be affected less than properties in more densely populated areas. Impacts on property values may diminish over time.

As noted previously, property owners allowing the use of a portion of their property for the transmission line ROW would be compensated by Southline for the encumbrance the line creates upon their land and potential negative changes in their property values.

Effects on Tourism and Recreation-related Economy

Construction

Based on the recreation impact analysis provided earlier in this chapter, existing recreation opportunities and activities would not be permanently affected by construction of the action alternatives, though some impacts to access could occur on a localized and short-term basis. Dispersed recreation activities, such as hiking and equestrian activities, might also be temporarily affected in some locations for short periods of time. These short-term, localized impacts are unlikely to result in a discernible impact to the tourism- and recreation-related economy in the New Build Section.

As noted earlier in the housing discussion, a relatively large number of non-local construction workers may use hotels/motels and RV/mobile home parks for temporary accommodations during the construction period. In the western portions of the New Build Section, where such accommodations are in relatively short supply, this workforce could occupy many of the available short-term accommodations during the period of time that construction is focused in this area. Shortages of available hotel/motel rooms and RV spaces could have an impact on the local tourism-related economy during this period.

Operation and Maintenance

Ongoing operations and maintenance should have little or no long-term effect on the tourism- and recreation-related economy in the New Build Section.

Social Effects

Construction

As discussed earlier in this section, the presence of large, transient populations of short-term construction workers can have impacts on social conditions in rural communities. Whether these effects occur, and the magnitude of the effects, appears to partly depend on the size of the non-local construction workforce relative to the size of the existing communities.

Overall, the projected non-local workforce is relatively small compared to the existing population in the eastern portions of the New Build Section. As the workforce migrates to the western portions of the area, there is the possibility of some short-term social impacts on communities such as Lordsburg, New Mexico; Willcox, Arizona; and Benson, Arizona. Given the relatively short duration of the proposed construction period, and the even shorter period of time in which activity could be concentrated in these areas, any adverse social impacts would be relatively brief in duration.

Operation and Maintenance

Ongoing operations and maintenance would have little or no effect on social conditions in the New Build Section.

UPGRADE SECTION

Economic Effects

Construction

Based on information provided by Southline, an average of 175 workers would be required to complete the Upgrade Section at a projected cost of $15.3 million per year over the 2-year construction period. Forty-three of these workers are expected to be hired from the local workforce at an annual cost of $3.1 million. Southline would spend a projected average of $67.8 million during each of the 2 years for materials and supplies, with approximately 5 percent ($3.4 million per year) of these expenditures accruing to local suppliers (CH2M Hill 2013p).

This information was incorporated into a regional IMPLAN economic model that included Cochise County, Pima County, and Pinal County in Arizona. As shown in table 4.15-5, construction of the proposed Project is projected to support approximately 138 short-term jobs in the Upgrade Section. This total includes the projected 43 direct jobs (local hires) associated with construction, as well as 95 indirect jobs that would be supported by local purchases of supplies and materials for construction, household expenditures by the locally hired workers, and local expenditures by non-local workers during the construction period. This employment total does not count the estimated 132 non-local workers anticipated to be hired for construction.

Table 4.15-5. Projected Annual Employment Impact from Construction of Upgrade Section

Construction Expenditures	Direct Employment	Indirect Employment	Total Employment
Local materials	0	38	38
Local labor	43	19	62
Non-local labor	0	38	38
Total	**43**	**95**	**138**

In addition to the $3.1 million in annual compensation anticipated to be paid to locally hired construction workers, construction of the Upgrade Section is projected to indirectly produce an additional $3.8 million in annual labor earnings during the 2-year construction period. This information is summarized in table 4.15-6. The projected total labor earnings impact in the Upgrade Section of approximately $6.9 million per year does not include the projected $12.2 million per year expected to be paid to non-local construction workers.

Table 4.15-6. Projected Annual Labor Earnings Impact from Construction of Upgrade Section

Construction Expenditures	Direct Labor Earnings	Indirect Labor Earnings	Total Labor Earnings
Local materials	$0	$1.7	$1.7
Local labor	$3.1	$0.7	$3.7
Non-local labor	$0	$1.4	$1.4
Total	**$3.1**	**$3.8**	**$6.8**

Note: Labor earnings reflect total compensation, including worker benefits, in millions of 2013 U.S. dollars.

Overall, construction of the Upgrade Section is projected to produce a short-term, annual increase in regional output of $15.4 million during the 2-year construction period. This total includes the projected $3.4 million increase in direct output due to the purchase of locally sourced construction goods and materials, along with $12.0 million in additional regional output due to recirculation of the wages paid to local and non-local construction workers (table 4.15-7). As noted previously, non-local workers were assumed to spend 50 percent of their disposable income within the analysis area during the construction period.

Table 4.15-7. Projected Annual Impact on Regional Output from Construction of Upgrade Section

Construction Expenditures	Direct Output	Indirect Output	Total Output
Local materials	$3.4	$5.5	$8.9
Local labor	$0	$2.2	$2.2
Non-local labor	$0	$4.3	$4.3
Total	**$3.4**	**$12.0**	**$15.4**

Note: Output is in millions of 2013 U.S. dollars.

Operation and Maintenance

As discussed previously for the New Build Section, ongoing operations and maintenance would require few workers and have relatively little direct economic impact in the Upgrade Section. By meeting the purpose and need for the proposed Project in improving reliability of the electrical grid in southern New Mexico and southern Arizona, increasing the ability of the grid to meet demand growth in the region, or facilitating potential renewable generation development in the region, each of the alternatives would offer longer-term economic benefits to the region. The economic impacts from these improvements have not been estimated, but could be significant.

Tax Revenue Effects

Construction

Construction-related economic activity would also generate additional tax revenues for local governments in the Upgrade Section. The largest sources of new State and local revenues would be sales taxes[6] and property taxes. Based on the IMPLAN analysis of regional economic effects, construction of the proposed Project would produce approximately $309,000 per year in additional State and local sales taxes, and approximately $214,000 per year in additional State and local property taxes.

In Arizona, the State receives approximately two-thirds of all gross receipts tax revenues, while approximately one-third of these revenues are distributed to local governments. Local governments (including school districts) receive about 95 percent of the property tax revenues and the State receives about 5 percent of these revenues. Based on these generalized proportions, local governments in the Upgrade Section could expect to receive about $206,000 per year in additional sales tax revenues and about $200,000 per year in additional property tax revenues during the 2-year construction period. Comparison of these estimated local government tax revenues with the baseline tax receipts shown in table 3.15-17 indicates construction-related sales and property taxes would represent an increase of about 0.1 percent in total sales tax revenues, and less than 0.01 percent in property tax revenues for local governments in the Upgrade Section.

Operation and Maintenance

As noted previously in the discussion regarding the New Build Section, the transmission line and appurtenant facilities could produce more substantial property tax revenues for local governments once fully constructed. Based on an estimated increase in the taxable value of the transmission line in the Upgrade Section of approximately $52 million, the transmission line could initially produce about $4.3 million per year in property tax revenues for local governments. This total would represent a 0.3 percent increase in total local government property tax revenues in the Upgrade Section. Property tax revenues would decrease over time during the period of operations due to depreciation in the value of the facilities.

Population Effects

Construction

Construction of the proposed Project is expected to require approximately 132 non-local workers who would reside within the Upgrade Section during the 2-year construction period. Construction-related economic activity is also anticipated to support approximately 95 indirect jobs in the area. Although no more than 10 percent of the non-local construction workers are expected to be accompanied by their families, migrants to the area who fill the indirect jobs resulting from local construction-related expenditures might more closely resemble typical households within the area.

Table 4.15-8 depicts the potential short-term population effects associated with construction of the proposed Project. If all of the indirect jobs are filled by existing residents of the area, the proposed Project could result in a short-term increase in the population of the Upgrade Section of about 145 adults and 13 children. The maximum potential short-term population effect, if all of the indirect jobs were filled by individuals moving to the area, would be about 335 adults and 70 children.

[6] Sales taxes are termed Transaction Privilege taxes in Arizona.

Table 4.15-8. Potential Population Effects from Construction of Upgrade Section

Source	Workers	Family Members		Potential Population Increase	
		Adults	Children	Adults	Children
Direct jobs	175				
Local hires	43				
Imported workers	132	13	13	145	13
Indirect jobs	95	95	57	190	57
Maximum potential population increase				**335**	**70**

These projected population effects would represent an increase of between 0.01 percent and 0.04 percent in the total population of the Upgrade Section. As the construction workforce moves across the Upgrade Section during construction, the relative magnitude of the population increase in the more sparsely populated eastern portion of the Upgrade Section (northern Cochise County) could be more substantial. These localized effects, however, would occur for only a portion of the 2-year construction period.

Operation and Maintenance

As noted previously, ongoing operations and maintenance would require relatively few workers. The proposed Project would have minimal long-term effects on the population of the Upgrade Section.

Housing Effects

Construction

Non-local construction workers, any workers who migrate to the area to fill indirect jobs resulting from construction, and family members would place additional demands on rental housing and short-term accommodations in the analysis area. Based on the population effects analysis described previously, between 132 and 227 rental or short-term housing units could be required during construction in the Upgrade Section.

This projected housing requirement represents a small portion of the approximately 24,500 rental housing units available in the Upgrade Section (see table 3.15-4), the available rental housing stock is dominated by the large number of units available in Pima County and Pinal County (at the western end of the Upgrade Section). Most of the potentially available rental units in Cochise County would be located in the southern portion of the county (in the larger communities such as Sierra Vista)—a considerable distance from the proposed alignment. The biggest challenge in housing the temporary workforce within the Upgrade Section is likely to occur when construction is focused in the eastern portions of the Upgrade Section, in northeastern Cochise County.

The number of rental units in northeastern Cochise County is not known, but is likely to be small based on the sparse population in that area. As noted in chapter 3, hotel/motel accommodations in northeastern Cochise County are also very limited, but the area has a relatively large number of RV/mobile home parks.

Overall, while it should be possible to accommodate the temporary construction workforce, the proposed Project could lead to housing challenges in the eastern portion of the Upgrade Section. It is possible that at least a portion of the construction workforce could be housed in temporary “man camps.” Such camps

can create issues and concerns for local governments and residents if they are not carefully managed and monitored.

Operation and Maintenance

The proposed Project would have minimal long-term effects on housing within the Upgrade Section.

Effects on Public Services

Construction

In addition to the temporary increase in demand for housing just described, the non-local construction workforce and any non-local workers and families who migrate to the area to fill indirect employment opportunities, would also create additional short-term demands for public services such as police and fire protection, education, and medical services. Much like the housing situation, these added demands are unlikely to create substantial challenges in the western portion of the Upgrade Section, but could create short-term challenges in the eastern portion of the proposed Project where existing services are much more limited.

Operation and Maintenance

The proposed Project would have minimal long-term effects on most public services within the Upgrade Section. However, to the extent the proposed Project improves reliability of the electrical grid in southern Arizona, and increases the ability of the grid to meet demand growth in the region, it could provide long-term improvements for the area in terms of electric utility service.

Effects on Property Values

Construction

Western already has a 100-foot-wide easement under its existing transmission line. Where room permits, Western or Southline would obtain a new 150-foot easement 50 feet to one side of the centerline of the existing easement, so as to have room to operate the existing line while constructing the new one. Once completed, the old line would be removed. In the end, 75 feet of the existing ROW would be reoccupied, 75 feet of new ROW would be obtained, and 25 feet of old ROW would be abandoned. The additional ROW required to construct and maintain the upgraded transmission line would be obtained through a combination of grants and easements negotiated with government and private landowners (see appendix N). Landowners along the ROW would be compensated for the disruption and the encumbrance of the required easement based on market land and easement values.

From the Del Bac Substation located on the north side of Valencia Road and west of I-19 in Tucson, to the Rattlesnake Substation located approximately 9 miles southeast of Marana, and across the Bar V Ranch, there would be no widening of the existing ROW for the proposed Project. This would reduce potential impacts in portions of Tucson, including the Tumamoc Hill area.

Operation and Maintenance

As discussed earlier for the New Build Section, there has been considerable research into the concern that transmission lines may cause long-term decreases in property values. Recent studies have generally concluded that immediately adjacent property values may be reduced by between 5 and 15 percent, though effects on large landholdings in rural areas appear to be less than in more urbanized areas. Impacts decrease quickly with distance and appear to diminish over time.

Compared to the New Build Section, portions of the Upgrade Section are located in more densely developed urban areas, particularly in and near the City of Tucson. The upgraded transmission line would largely follow alignments used by existing transmission lines, which would reduce the potential for impact on property values. Nonetheless, property owners along the ROW would be affected by the expanded easement required for the upgraded line (excluding the area described previously where the existing ROW would not be widened) and the increased size of the structures required for the 230-kV line. The new, double-circuit line would be supported by tubular steel structures, 100 to 140 feet in height. Between 5 and 8 support structures (towers) will be required per mile, depending on the terrain (see appendix N).

Effects on Tourism and Recreation-related Economy

Construction

Existing recreation opportunities and activities would not be permanently affected by construction of the action alternatives, though some impacts to access could occur on a localized and short-term basis. Dispersed recreation activities might also be temporarily affected in some locations for short periods of time. These short-term, localized impacts are unlikely to result in a discernible impact to the tourism- and recreation-related economy in the Upgrade Section.

A relatively large number of non-local construction workers may use hotels/motels and RV/mobile home parks for temporary accommodations during the construction period. In the eastern portion of the Upgrade Section, where such accommodations are in relatively short supply, this workforce could occupy many of the available short-term accommodations during the period of time that construction is focused in this area. Shortages of available hotel/motel rooms and RV spaces could have an impact on the local tourism-related economy during this period.

Operation and Maintenance

Ongoing operations and maintenance should have little or no long-term effect on the tourism- and recreation-related economy in the Upgrade Section.

Social Effects

Construction

The presence of large, transient populations of short-term construction workers can have impacts on social conditions in rural communities. Whether these effects occur, and the magnitude of the effects, appears to partly depend on the size of the non-local construction workforce relative to the size of the existing communities.

Overall, the projected non-local workforce is relatively small compared to the existing population in the western portions of the Upgrade Section. During the period of time that work is concentrated in the eastern portions of the area, there is the possibility of some short-term social impacts on communities such as Willcox and Benson, in northeastern Cochise County. Given the relatively short duration of the proposed construction period, and the even shorter period of time in which activity could be concentrated in these areas, any adverse social impacts would be relatively brief in duration.

Operation and Maintenance

Ongoing operations and maintenance would have little or no effect on social conditions in the Upgrade Section.

Alternative Impacts in New Build Section

There are two major transmission route alternatives in the New Build Section, and several local alternatives for portions of each of the major route alternatives.

SUBROUTES 1.1 AND 2.1 – PROPONENT PREFERRED

The Proponent Preferred alternative (subroutes 1.1 and 2.1) would follow the more northern, 242-mile-long-route across the New Build Section. The route would proceed west-northwest from the Afton Substation south of Las Cruces, New Mexico, reaching I-10 east of Deming in eastern Luna County. The route would include a 31-mile-long spur, at this point, that would proceed directly south to a substation in southern Luna County, just north of the international border with Mexico. The main route would continue west, paralleling I-10, head north around Deming, and then diverge from the route followed by the interstate to head more directly west to the Lordsburg area in Hidalgo County. The route would then bypass Lordsburg to the north and west, and continue in a westerly direction to the Willcox area in northeastern Cochise County, Arizona. The route would bypass Willcox to the south and head south and southeast to the Apache Substation, located south of I-10 between Willcox and Benson.

Economic Effects

Construction

The estimated effects of construction on the regional economy in the New Build Section would be as described previously under the impacts common to all action alternatives. Over the anticipated 2-year construction period, construction-related expenditures would support an estimated 235 direct and indirect jobs in the New Build Section, not counting the projected 246 non-local workers that would be hired for the Project. Construction activity would produce an estimated $11.4 million in annual labor earnings over the 2-year period, again excluding the earnings of non-local workers. Annual regional economic output is projected to increase by approximately $24.8 million over the 2-year construction period due to the construction activity. All of these estimates represent between a 0.1 percent and 0.2 percent increase relative to current economic activity in the New Build Section. While these effects would not be considered significant from a regional perspective, they could be significant for some communities in the New Build Section during the construction period.

Operation and Maintenance

As discussed under the impacts common to all action alternatives, ongoing operations and maintenance activity for the proposed Project would include modest labor and expenditure requirements that would not have a discernible effect on the regional economy. The additional electrical transmission capacity and reliability that the proposed Project would provide could have a significant longer-term effect on the economy relative to the no action alternative.

Tax Revenue Effects

Construction

Effects of construction on local tax revenues would again be as described under the impacts common to all action alternatives. Construction-related economic activity would produce an estimated $462,000 per year in State and local sales tax revenues and about $219,000 in State and local property tax revenues. The local shares of these tax revenues are estimated at approximately $150,000 and $210,000, respectively. These additional tax revenues would not be considered significant from a regional

perspective, but could be significant for some communities in the New Build Section during the construction period.

Operation and Maintenance

If the proposed transmission line is fully subject to State and local property taxes, completion of the proposed Project could initially produce about $4.2 million per year in new property tax revenues for local governments in the New Build Section. This would represent about a 1.5 percent increase in local property tax revenues relative to current conditions and would be a significant, positive socioeconomic effect based on the impact indicators and criteria for significant effects described at the beginning of this section. The property tax revenues would decline over time as the transmission line depreciates.

Population Effects

Construction

As described under the impacts common to all action alternatives, construction of the proposed Project could lead to a short-term increase in population in the New Build Section of between 296 and 702 people, including 25 to 119 children. While this potential population increase would be insignificant from a regional perspective, construction could lead to a significant population increase in the western portion of the New Build Section during the time when activity is focused in areas such as Hidalgo County.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a measurable impact on local or regional populations.

Housing Effects

Construction

The estimated housing requirements for proposed Project construction workers, indirect workers, and families in the New Build Section, described under the impacts common to all action alternatives, would not be a significant concern from the standpoint of the region as a whole. Given the very limited numbers of rental housing units available in the western portions of the New Build Section, non-local construction workers (and any other indirect workers who migrate to the area) would likely have to rely on hotel/motel accommodations and mobile/home RV parks in this area. The proposed Project could lead to significant, temporary shortages of accommodations in the western portion of the New Build Section.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a measurable impact on housing in the New Build Section.

Effects on Public Services

Construction

Effects on public services from construction of the proposed Project would essentially mirror the effects and potential concerns for housing described above. From a regional standpoint, these effects would not be significant. However, construction in the western portions of the New Build Section could tax available police, fire, and medical services in that area during the time period when activity is focused in those locations.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a discernible impact on public services in the New Build Section.

Effects on Property Values

Construction

As noted under the impacts common to all action alternatives, ROW needed would be acquired for the proposed Project from public and private landowners. Approximately 68 miles of the 242-mile-long route in the New Build Section (28 percent) would be located on private lands. Landowners along the ROW would be compensated for the disruption and the encumbrance of the required easement based on market land and easement values.

Operation and Maintenance

Once constructed, the transmission line and substations included in the proposed Project could have ongoing effects on property values in very close proximity to these features. Existing research, described under the impacts common to all action alternatives, is somewhat inconsistent regarding these effects, but does indicate that larger parcels in rural areas (like most private landholdings along the proposed Project in the New Build Section) are likely to experience modest impacts, if any.

Effects on Tourism and Recreation-related Economy

Construction

The anticipated demand for hotel/motel rooms and RV park spaces in the Lordsburg area during construction of western portions of the New Build Section under the Proponent Preferred alternative, could create temporary shortages of available accommodations for tourists and other travelers in that area. This could impact tourism-related businesses in that area, though many of those businesses (such as motels and restaurants) would also benefit from expenditures by the construction workers.

Operation and Maintenance

Ongoing operations and maintenance of the proposed Project should have little or no long-term effect on the tourism- and recreation-related economy in the New Build Section.

Social Effects

Construction

As discussed in the impacts common to all action alternatives, the presence of large, transient populations of short-term construction workers can have impacts on social conditions in rural communities. Whether these effects occur, and the magnitude of the effects, appears to partly depend on the size of the non-local construction workforce relative to the size of the existing communities.

During the period of time that proposed Project construction work would be concentrated in the western portions of the New Build Section, there is the possibility of some short-term social impacts on communities such as Lordsburg. Given the relatively short duration of the proposed construction period, and the even shorter period of time in which activity could be concentrated in this area, any adverse social impacts would be relatively brief in duration.

Operation and Maintenance

Ongoing operations and maintenance of the proposed Project would have little or no effect on social conditions in the New Build Section.

SUBROUTES 1.2 AND 2.2 – PROPONENT ALTERNATIVE

The Proponent Alternative would follow a more southern, 237 mile-long-route across the New Build Section. The route would proceed south-southwest from the Afton Substation to a point near the international border in southwestern Doña Ana County. The route would then proceed west, along a corridor about 5 to 10 miles north of the border, through southern Luna County before heading northwest through southern Grant County to the Lordsburg area in Hidalgo County. Unlike the Proponent Preferred alternative, the Proponent Alternative would bypass Lordsburg to the south. The Proponent Alternative would then head west, along a route proximate to that used for the Proponent Preferred alternative, into northeastern Cochise County in Arizona. The Proponent Alternative would bypass Willcox on the north side. Like the Proponent Preferred alternative, the New Build Section of the Proponent Alternative would terminate at the Apache Substation between Willcox and Benson.

Economic Effects

Construction

The regional economic effects from constructing the Proponent Alternative would be similar to the effects from construction of the proposed Project, described under impacts common to all action alternatives. At a more detailed geographic level, construction of the Proponent Alternative might provide localized economic benefits to the Village of Columbus, in the southern part of Luna County, and fewer economic benefits to the City of Deming on I-10 between Las Cruces and Lordsburg.

Operation and Maintenance

Ongoing operations and maintenance activity for the Proponent Alternative would include modest labor and expenditure requirements that would not have a discernible effect on the regional economy. The additional electrical transmission capacity and reliability that the Proponent Alternative would provide could have a significant longer-term effect on the economy, relative to the no action alternative.

Tax Revenue Effects

Construction

Construction of the Proponent Alternative would provide the same type and magnitude of new tax revenues for local governments in the New Build Section as construction of proposed Project.

Operation and Maintenance

The completed transmission line under the Proponent Alternative would also provide similar longer-term property tax revenues to the proposed Project. The distribution of these revenues among the counties and cities in the New Build Section would likely differ somewhat based on the different route.

Population Effects

Construction

Construction of the Proponent Alternative would have similar short-term effects on the regional population to the proposed Project—as more fully described under the impacts common to all action alternatives. The more southern alignment under the Proponent Alternative could shift some of these short-term population effects away from the City of Deming and onto the much smaller Village of Columbus in the southern portion of Luna County.

Operation and Maintenance

Ongoing operations and maintenance activities for the Proponent Alternative would not have a measurable impact on local or regional populations.

Housing Effects

Construction

Housing requirements for Proponent Alternative construction workers, indirect workers, and families in the New Build Section would not be a significant concern for the region as a whole. Like the Proponent Preferred alternative, the western portions of the New Build Section in Hidalgo County could be an area of concern from a housing standpoint. The more southern alignment could also shift housing pressure away from the relatively large community of Deming to the much smaller Village of Columbus. The Proponent Alternative could lead to significant, temporary shortages of accommodations in both the western portion of the New Build Section and in southern Luna County.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a measurable impact on housing in the New Build Section.

Effects on Public Services

Construction

From a regional standpoint, the Proponent Alternative would not have significant impacts on public services effects in the New Build Section. However, construction in the western portions of the New Build Section and in southern Luna County could tax available police, fire, and medical services during the time period when activity is focused in those locations.

Operation and Maintenance

Ongoing operations and maintenance activities for the Proponent Alternative would not have a discernible impact on public services in the New Build Section.

Effects on Property Values

Construction

Approximately 69 miles of the 237-mile-long-route of the Proponent Alternative in the New Build Section (29 percent) would be located on private lands. Landowners along the ROW would be

compensated for the disruption and the encumbrance of the required easement based on market land and easement values.

Operation and Maintenance

Like the proposed Project, the transmission line and substations included in the Proponent Alternative could have ongoing effects on property values in very close proximity to these features. Given that most of the private lands would consist of large-parcel, rural landholdings, any such impacts are likely to be modest.

Effects on Tourism and Recreation-related Economy

Construction

Similar to the Proponent Preferred alternative, the anticipated demand for hotel/motel rooms and RV park spaces in the Lordsburg area during construction of western portions of the New Build Section under the Proponent Alternative could create significant, temporary shortages of available accommodations for tourists and other travelers. This could impact tourism-related businesses in that area, though many of those businesses (such as motels and restaurants) would also benefit from expenditures by the construction workers.

Operation and Maintenance

Ongoing operations and maintenance of the Proponent Alternative should have little or no long-term effect on the tourism- and recreation-related economy in the New Build Section.

Social Effects

Construction

During the period of time that Proponent Alternative construction work would be concentrated in the western portions of the New Build Section and in southern Luna County, there is the possibility of some short-term social impacts on communities such as Lordsburg and Columbus. Given the relatively short duration of the proposed construction period, and the even shorter period of time in which activity could be concentrated in these areas, any adverse social impacts would be relatively brief in duration.

Operation and Maintenance

Ongoing operations and maintenance of the Proponent Alternative would have little or no effect on social conditions in the New Build Section.

LOCAL ALTERNATIVES AND ROUTE VARIATIONS

There are 12 local alternatives available for route group 1 and route group 2, which together comprise the New Build Section. Local alternatives between the eastern end of the transmission line at the Afton Substation and the Lordsburg area include DN1 (for the Proponent Preferred alternative) and A, B, C, and D (for the Proponent Alternative). Between the Lordsburg area and the western end of the New Build Section between Willcox and Benson, local alternatives include LD1 (for the Proponent Alternative) and LD2, LD3a, LD3b, LD4, LD4-Option 4, LD4-Option 5, and WC1 (for the Proponent Preferred alternative).

The selection of any or all of the local alternatives in the New Build Section would not result in economic, tax revenue, population, housing, public service, tourism, or social impacts that would

appreciably differ from the effects described under the impacts common to all action alternatives at the regional level. At the local level, these local alternatives would affect different properties and individuals than the corresponding route segments included in the Proponent Preferred alternative and the Proponent Alternative.

Potential, localized socioeconomic differences associated with the local alternatives could include the following:

- Alternative DN1 would co-locate a 43-mile-long section of the Proponent Preferred alternative transmission line in Luna County (west of Deming) with the proposed SunZia Project. While co-location means that fewer private property owners might be affected, it would also result in a minimum combined 800-foot-wide ROW. This could result in greater disruption for the properties along this section of the line, though only 6 of the 42 miles in this segment are privately owned.
- Alternative LD4 would also co-locate a portion of the line with the proposed SunZia Project. In this case, the affected area would be in southern Greenlee County and Graham County, Arizona. LD4 would replace a section of the Proponent Preferred alternative located in northeastern Cochise County, east of Willcox. Like DN1, LD4 would require a very wide ROW for the two transmission lines, though none of the 52-mile length of this segment is privately owned.
- Local alternatives LD1, LD2, LD3a, and LD3b were developed to avoid crossing the Lordsburg Playa. Adoption of these alternatives could result in less impact on recreation and tourism than the corresponding route segments under the Proponent Preferred alternative.
- Due to concerns about impacts to Willcox Playa identified during review of the Draft EIS, four route variations are included in the analysis (P7a, P7b, P7c, and P7d). As discussed in the section 3.15.9, the Willcox Playa is not only an important wildlife resource, but contributes to the local economy by attracting visitors for bird-watching and events such as Wings over Willcox. Adoption of these route variations could result in less impact on recreation and tourism than the segment P7 under the Proponent Preferred alternative.
- However, as also discussed in section 3.15.9, the Willcox area also has a growing wine-related tourism industry. Several of the vineyards in the Willcox area are located on the Willcox Bench, in relative proximity to the P7a, P7b, P7c, and P7d route variations. Vineyard owners have expressed concerns about potential impacts of these route alternatives on tourist visits to their vineyards (see chapter 8). Visitation is particularly important for these businesses because they are considered “domestic farm wineries” under Arizona Department of Liquor Licenses and Control statutes, which allows them to rely primarily on direct sales to visitors and other consumers. The 2011 study of the Arizona Wine Tourism Industry noted from visitor surveys that the “entire experience” (including scenery) was more important than the quality of the wine in the decision-making criteria for winery visits (Northern Arizona University 2011c). There are no known studies that have identified or quantified effects of electric transmission lines on wine tourism. The vineyard owners are concerned that visual impacts from proximity to the proposed transmission line could reduce visitation and correspondingly reduce sales and income. Likely any effect would be more intense during construction, and would diminish over time following completion of the transmission line.

Alternative Impacts in Upgrade Section

There is one major transmission route alternative in the New Build Section (the Proponent Preferred), and several local alternatives for portions of that alternative.

SUBROUTES 3.1 AND 4.1 – PROPONENT PREFERRED

The Proponent Preferred alternative (subroutes 3.1 and 4.1) would use the ROW of the existing Western 115-kV line across the Upgrade Section. The route would proceed west-southwest across western Cochise County, Arizona, into Pima County. The route would then turn more to the northwest, roughly paralleling I-10 and intersect with I-19 south of Tucson. The route would cross I-19, then proceed north through the southwestern portions of Tucson to intersect I-10 just northwest of downtown Tucson. The route would finish by roughly paralleling I-10 to the northwest until it reaches the Saguaro Substation endpoint in southern Pinal County, Arizona.

Due to concerns identified during review of the Draft EIS, a variation of the Proponent Preferred alternative is included in the EIS (U3aPC); this route variation would move away from the existing Western line and ROW for a stretch of 6.2 miles, and would no longer cross lands that have been identified by Pima County as critical for future economic development in T15S, R14E, Section 31 and parts of Section 32. Among other important economic development considerations, this area has been targeted for expansion of Aerospace, Defense, and Technology employment and is a critical component for an industrial corridor from Nogales Highway to I-10.

Economic Effects

Construction

The estimated effects of the proposed Project construction on the regional economy in the Upgrade Section would be as described previously under the impacts common to all action alternatives. Over the anticipated 2-year construction period, construction-related expenditures would support an estimated 138 direct and indirect jobs in the Upgrade Section, not counting the projected 132 non-local workers that would be hired for the Project. Construction activity would produce an estimated $6.8 million in annual labor earnings over the 2-year period, again excluding the earnings of non-local workers. Annual regional economic output is projected to increase by approximately $15.4 million over the 2-year construction period due to the construction activity. All of these estimates represent less than a 0.1 percent increase relative to current economic activity in the Upgrade Section and would not be significant from a regional perspective. These short-term economic benefits could, however, be significant for some communities in the Upgrade Section during the construction period.

Operation and Maintenance

As discussed under the impacts common to all action alternatives, ongoing operations and maintenance activity for the proposed Project would include modest labor and expenditure requirements that would not have a discernible effect on the regional economy. The additional electrical transmission capacity and reliability that the proposed Project would provide could have a significant longer-term effect on the economy relative to the no action alternative.

Tax Revenue Effects

Construction

Effects of the proposed Project construction on local tax revenues in the Upgrade Section would also be as described under the impacts common to all action alternatives. Construction-related economic activity would produce an estimated $309,000 per year in State and local sales tax revenues and about $214,000 in State and local property tax revenues. The local shares of these tax revenues are estimated at approximately $206,000 and $200,000, respectively. These additional tax revenues would not be

considered significant from a regional perspective, but could be significant for some communities in the Upgrade Section during the construction period.

Operation and Maintenance

If the upgraded transmission line is fully subject to State and local property taxes, completion of the proposed Project could initially produce about $4.3 million per year in new property tax revenues for local governments in the Upgrade Section. This would represent about a 0.3 percent increase in local property tax revenues relative to current conditions, which would not be significant from a regional perspective. The property tax revenues would decline over time as the transmission line is depreciated.

Population Effects

Construction

As described under the impacts common to all action alternatives, construction of the proposed Project could lead to a short-term increase in population in the Upgrade Section of between 158 and 405 people, including 13 to 57 children. While this potential population increase would be insignificant from a regional perspective, construction could lead to a significant temporary population increase in the eastern portion of the Upgrade Section (northeastern Cochise County) during the time when activity is focused in that area—particularly if construction on the Upgrade Section in this area occurs at the same time as construction of the New Build Section.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a measurable impact on local or regional populations in the Upgrade Section.

Housing Effects

Construction

The estimated housing requirements for proposed Project construction workers, indirect workers, and families in the Upgrade Section, described under the impacts common to all action alternatives, would not be a significant concern from the standpoint of the region as a whole. Given the very limited numbers of rental housing units and motel rooms available in northeastern Cochise County, non-local construction workers (and any other indirect workers who migrate to the area) would likely have to rely on RV parks in this area. The proposed Project could lead to significant, temporary shortages of accommodations in northeastern Cochise County which could be exacerbated if construction is also occurring at the same time on the New Build Section in this area.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a measurable impact on housing in the Upgrade Section.

Effects on Public Services

Construction

Effects on public services from construction of the proposed Project would essentially mirror the effects and potential concerns for housing described above. From a regional standpoint, these effects would not

be significant. However, construction in northeastern Cochise County could tax available police, fire, and medical services during the time period when activity is focused in this area.

Operation and Maintenance

Ongoing operations and maintenance activities for the proposed Project would not have a discernible impact on public services in the Upgrade Section.

Effects on Property Values

Construction

The ROW needed for the proposed Project would be acquired from public and private landowners. Approximately 60 miles of the 119-mile-long route in the Upgrade Section (51 percent) would be located on private lands. As noted under the impacts common to all action alternatives, Western already has a 100-foot-wide easement under its existing transmission line. Where room permits, Western or Southline would obtain a new 50-foot easement, 50 feet to one side of the centerline of the existing easement, so as to have room to operate the existing line while constructing the new one. Once completed, the old line would be removed. In the end, 75 feet of the existing ROW would be reoccupied, 75 feet of new ROW would be obtained, and 25 feet of old ROW would be abandoned. The additional 50 feet of ROW required to construct and maintain the upgraded transmission line would be obtained through a combination of grants and easements negotiated with government and private landowners (see appendix N). Landowners along the ROW would be compensated for the disruption and the encumbrance of the required easement based on market land and easement values.

In some places, such as through congested suburban areas (including the portions of the route from the Del Bac Substation to the Rattlesnake Substation, or across Bar V Ranch, described previously), it may not be physically possible or necessary to acquire an additional 50 feet of ROW and construct the upgrade line in this manner. In these cases, a tear down and rebuild in place method would need to be used. The old line would need to be taken out of service and torn out and the new line constructed in the original 100-foot, or somewhat expanded, ROW. This work would likely be subject to seasonal restrictions to minimize the outage impacts on system reliability.

Operation and Maintenance

Once constructed, the transmission line and substations included in the proposed Project could have ongoing effects on property values in very close proximity to these features. Existing research, described under the impacts common to all action alternatives, is somewhat inconsistent regarding these effects, but appears to indicate that effects on values may be greater in denser, more urbanized areas than in rural areas with larger parcels.

Impacts to property values are most likely to be of potential concern for the portions of the Proponent Preferred route that cross through Tucson. However, because the Proponent Preferred alternative involves upgrading an existing transmission line, any property value effects are likely to be less than could be associated with development of a new transmission line in a new ROW in the same area. Nonetheless, property owners along the ROW would be affected by the expanded easement required for the upgraded line and the increased size of the structures required for the 230-kV line. The new, double-circuit line would be supported by tubular steel structures, 100 to 140 feet in height. Between 5 and 8 support structures (towers) will be required per mile, depending on the terrain (see appendix N).

Effects on Tourism and Recreation-related Economy

Construction

The anticipated demand for RV park spaces in northeastern Cochise County during construction of eastern portions of the Upgrade Section under the Proponent Preferred alternative could temporarily limit available accommodations for tourists and other travelers in that area. This could impact tourism-related businesses in that area, though many of those businesses (such as motels and restaurants) would also benefit from expenditures by the construction workers.

Operation and Maintenance

Ongoing operations and maintenance of the proposed Project should have little or no long-term effect on the tourism and recreation-related economy in the Upgrade Section.

Social Effects

Construction

As discussed in the impacts common to all action alternatives, the presence of large, transient populations of short-term construction workers can have impacts on social conditions in rural communities. Whether these effects occur, and the magnitude of the effects, appears to partly depend on the size of the non-local construction workforce relative to the size of the existing communities.

During the period of time that proposed Project construction work would be concentrated in the eastern portion of the Upgrade Section (northeastern Cochise County), there is the possibility of some short-term social impacts on communities such as Benson and Willcox. Given the relatively short duration of the proposed construction period, and the even shorter period of time in which activity could be concentrated in this area, any adverse social impacts would be relatively brief in duration.

Operation and Maintenance

Ongoing operations and maintenance of the proposed Project would have little or no effect on social conditions in the Upgrade Section.

LOCAL ALTERNATIVES

Eleven local alternatives have been developed for the Upgrade Section. In the eastern portion of the Upgrade Section, there is one local alternative (H), whereas 9 of the other 10 local alternatives (TH1a, TH1b, TH1c, TH1-Option, TH3-Option A, TH3-Option B, TH3-Option C, TH3a, and TH3b) would be located in the Tucson area. Local alternative MA1 is near Marana, northwest of Tucson.

The selection of any or all of the local alternatives in the Upgrade Section would not result in economic, tax revenue, population, housing, public service, tourism, or social impacts that would appreciably differ from the effects described under the impacts common to all action alternatives at the regional level. At the local level, these local alternatives would affect different properties and individuals than the corresponding route segments included in the Proponent Preferred or Alternative routes.

Potential, localized socioeconomic differences associated with the local alternatives could include the following:

- Alternative H would replace a 15- to 20-mile-long section of the Proponent Preferred alternative through the Benson area in Cochise County. This local alternative was designed to avoid conflicts

with potential future residential development north of Benson and with the Benson Airport. Relative to the Proponent Preferred alternative, this alternative could offer fewer land use conflicts in the future and improved economic development opportunities in that area.

- The nine local alternatives in the Tucson area were all designed, at least in part, to replace the portion of the existing Western line that crosses Tumamoc Hill in Tucson. Tumamoc Hill is a prominent feature west of downtown Tucson, a popular area for hiking and other outdoor activities, and an area with considerable cultural history. Tumamoc Hill is an important biological corridor from an environmental and wildlife perspective and is the home of the University of Arizona's Desert Laboratory. It is also a National Historic Landmark, listed on the NRHP, a National Environmental Study Site, and an Arizona State Scientific and Educational Study Site. It is reportedly also a sacred site for the Tohono O'odham Nation and is believed to encompass archeological sites that have not been fully recorded. By replacing the existing line, these alternatives would likely offer recreational, cultural and other benefits for Tucson area residents and visitors (though relocating the line would then affect other landowners that do not currently have a transmission line proximate to their properties).
- Alternative MA1 was designed to avoid an area of potential future expansion for the Marana Regional Airport. This alternative could offer fewer conflicts with future land uses and improved economic development opportunities in that area.

Environmental Justice

The following discussion provides an assessment of the potential for disproportionately high and adverse effects on low income or minority populations.

ENVIRONMENTAL JUSTICE IMPACTS IN THE NEW BUILD SECTION

As discussed in chapter 3, section 3.15, nearly all of the Census tracts in the New Build Section that could be crossed by any of the action alternatives can be defined as environmental justice communities because they either have a proportion of minority residents that is greater than average for the state in which they are located, they have a greater proportion of individuals or families that are living below the poverty level, or both. Most of the potential adverse effects associated with construction and operation and maintenance of the proposed transmission line and associated facilities would be localized in nature, including noise and other types of disruption during construction, and visual and property value effects during ongoing operation and maintenance. Potential adverse effects on local housing conditions and the demand for public services during construction, discussed earlier in this section, would be somewhat more dispersed.

Given these characteristics of the area and the proposed Project, low-income and minority populations in the New Build Section would be disproportionately affected by the proposed Project, regardless of which action alternative is selected. This would likely be true, however, regardless of where the transmission line was located in the New Build Section given the prevalence of low-income and minority populations throughout the area. Tables 4.15-9 and 4.15-10 depict the Census tracts that fall within a 200-foot ROW centered on the potential transmission routes in the New Build Section. The shading in these tables also indicate whether or not each Census tract contains an environmental justice population (as defined in section 3.15). The columns in the right-hand side of the table show the number of acres potentially affected by each alternative (based on the 200-foot-wide ROW).

The Agency Preferred Alternative includes segments that were formerly part of the Proponent Preferred, Proponent Alternative, Local Alternative, or Route Variations. To avoid unnecessary duplication, acres

are only shown for these other alternatives and route variations in cases where their segments differ from the Agency Preferred Alternative.

Table 4.15-9. New Build Section—Route Group 1 (Buffer Zone Acres by Tract and Alternative)*

County (State) 2010 Census Tract	% Total Minority	% Individuals Below Poverty Level	% Families Below Poverty Level	Agency Preferred	Proponent Preferred	Proponent Alternative	Local Alternative	Route Variation
Doña Ana (NM)	68.8%	25.6%	20.6%					
15	42.2%	11.5%	9.7%	612				
16	82.6%	25.4%	22.5%	59		2		
17.01	76.8%	20.5%	16.8%			1,396		
17.02	80.9%	29.6%	21.8%	121		155		
Grant (NM)	50.1%	16.6%	12.5%					
9648	54.4%	12.1%	7.1%	470		1,038	158	
Hidalgo (NM)	57.8%	23.7%	20.6%					
9700	32.0%	28.1%	21.0%	189		515		
Luna (NM)	63.2%	30.8%	23.6%					
4	56.7%	29.7%	21.5%	843		1,183		
5	55.7%	30.1%	20.6%	1,272		615	872	

Source: Census Bureau (2011).

Note: Shaded cells indicate Census tracts that meet the criteria for an environmental justice population.

*Based on a 200-foot-wide ROW centered on the potential route.

Table 4.15-10. New Build Section—Route Group 2 (Buffer Zone Acres by Tract and Alternative)*

County (State) 2010 Census Tract	% Total Minority	% Individuals Below Poverty Level	% Families Below Poverty Level	Agency Preferred	Proponent Preferred	Proponent Alternative	Local Alternative	Route Variation
Cochise (AZ)	39.0%	16.2%	11.6%					
100	26.4%	22.9%	17.3%	1,139		1,101	548	527
2.01	44.4%	6.0%	3.1%			624	311	
2.02	51.0%	27.3%	23.7%	162		39	398	
2.03	13.8%	16.9%	15.2%	288		207	34	553
Graham (AZ)	46.4%	21.6%	16.2%					
9615	36.2%	22.0%	15.3%				692	
9616	57.3%	35.5%	31.0%				186	
Greenlee (AZ)	51.1%	17.2%	12.9%					
9603	30.6%	22.2%	17.6%				237	
Hidalgo (NM)	57.8%	23.7%	20.6%					
9700	32.0%	28.1%	21.0%	697	719	346	776	

Source: Census Bureau (2011).

Note: Shaded cells indicate Census tracts that meet the criteria for an environmental justice population.

*Based on a 200-foot-wide ROW centered on the potential route.

The analysis of effects by resource area provided in this chapter indicates that few, if any, of these effects would be "high." High impacts from development of a transmission line could occur if the potential route would require the condemnation of multiple residential properties or result in new visual impacts in close proximity to residential properties in previously undisturbed corridors. As the condemnation of multiple residential properties and/or new visual impacts in close proximity to residential properties in previously undisturbed corridors are not expected, these impacts are not anticipated to be "high."

In the case of the alternatives considered in this EIS, construction effects would occur over a relatively short duration. Visual effects are expected to be low to moderate and effects on property values, would be localized and primarily or entirely affect landowners who would also receive compensation for easements on their properties. The proposed transmission routes in the New Build Section were selected to parallel existing linear facilities in disturbed corridors. The 200-foot ROW analyzed for land use and environmental justice impacts allows for adjustments in the final design and layout to acknowledge potential incompatible land uses along the potential routes,

Low-income and minority populations 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 would receive disproportionate benefits from the proposed Project.

ENVIRONMENTAL JUSTICE IMPACTS IN THE UPGRADE SECTION

In the Upgrade Section, 26 of the 38 Census tracts that could be crossed by any of the action alternatives can be defined as potential environmental justice communities. Given these characteristics of the area and the proposed Project, low-income and minority populations in the Upgrade Section would likely be disproportionately affected by the proposed Project. Tables 4.15-11 and 4.15-12 depict the Census tracts that fall within a 100- to 150-foot-wide representative ROW centered on the potential transmission routes in the Upgrade Section. These tables also indicate whether or not each Census tract contains an environmental justice population (as defined in section 3.15) and the number of acres potentially affected by each alternative (based on the representative ROW).

Table 4.15-11. Update Section—Route Group 3 (Buffer Zone Acres by Tract and Alternative)*

County (State) 2010 Census Tract	% Total Minority	% Individuals Below Poverty Level	% Families Below Poverty Level	Agency Preferred	Proponent Preferred	Proponent Alternative	Local Alternative	Route Variation
Cochise (AZ)	39.0%	16.2%	11.6%					
2.03	13.8%	16.9%	15.2%	128				
3.02	12.5%	8.1%	6.3%	156				
3.03	14.3%	8.1%	6.6%	318		301		
4	18.2%	23.4%	18.3%	10				
Pima (AZ)	42.8%	17.4%	12.0%					
40.61	17.9%	4.5%	1.9%	5		43		
41.09	22.1%	10.4%	6.7%	451		6		
41.14	81.5%	30.9%	27.4%	20				

Source: Census Bureau (2011).

Note: Shaded cells indicate Census tracts that meet the criteria for an environmental justice population.

*Based on a 100- to 150-foot-wide ROW centered on the potential route.

Table 4.15-12. Update Section—Route Group 4 (Buffer Zone Acres by Tract and Alternative)*

County (State) 2010 Census Tract	% Total Minority	% Individuals Below Poverty Level	% Families Below Poverty Level	Agency Preferred	Proponent Preferred	Proponent Alternative	Local Alternative	Route Variation
Pima (AZ)	42.8%	17.4%	12.0%					
2	76.7%	25.4%	19.2%				8	
10	31.5%	42.5%	29.8%				0	
11	91.0%	26.7%	22.5%	1			5	
12	86.4%	32.4%	25.9%	17			15	
25.01	80.2%	15.7%	12.9%				53	
25.03	76.6%	31.2%	26.7%				8	
25.04	79.0%	29.3%	25.4%	4			18	
25.05	85.3%	27.8%	30.0%	11			4	
39.01	93.9%	37.8%	30.3%	8			17	
39.02	90.8%	25.5%	20.1%	14				
39.03	91.1%	9.1%	9.7%	19				
41.09	22.1%	10.4%	6.7%	35				
41.13	55.4%	NA	NA	20				
41.14	81.5%	30.9%	27.4%	23	68			
43.1	68.3%	15.8%	13.3%	13				
44.14	66.5%	10.7%	6.2%				6	
44.15	61.3%	33.5%	31.9%	37	19		15	
44.18	23.9%	6.6%	3.9%	67				
44.19	26.6%	16.2%	14.4%	42				
44.22	55.0%	9.7%	2.9%	25				
44.23	15.8%	9.4%	7.7%	19				
44.25	21.5%	13.1%	10.9%	79	15			
44.27	24.0%	3.6%	4.5%	12				
44.29	32.6%	0.9%	0.0%	36				
44.3	44.3%	26.2%	24.1%	93				
44.31	33.4%	16.7%	8.6%	42				
45.04	57.9%	38.2%	37.2%	46				
4105.02	60.7%	9.3%	6.5%	94	1			
9409.00	87.2%	41.5%	32.1%	52				
Pinal (AZ)	39.4%	14.3%	10.5%					
8.02	23.6%	8.7%	10.3%	28				
21.03	38.4%	9.7%	8.0%	125				

Source: Census Bureau (2011).

Note: Shaded cells indicate Census tracts that meet the criteria for an environmental justice population.

*Based on a 100- to 150-foot-wide ROW centered on the potential route.

The much smaller buffer used in the analysis for the Upgrade Section (compared to the New Build Section) recognizes that the routes in the Upgrade Section are limited to the existing Western transmission line and ROW. While the existing 100 foot ROW would generally be expanded to 150 feet (25 additional feet on each side), Western recognizes that in some more densely developed areas, development and constraints may not allow for the expansion of the existing 100-foot ROW to 150 feet. In these areas, the tear-down and rebuild in place method of construction would be necessary to remain within the existing 100-foot ROW (section 2.4.1) and avoid the need to acquire or condemn adjoining properties.

As in the New Build Section, potential adverse effects associated with construction and operation/ maintenance would be largely localized in nature. Few, if any, of these adverse effects would be "high," particularly given that the proposed route and ROW are already occupied by Western's existing transmission line. As noted above for the New Build Section, low-income and minority populations may also receive positive effects from the proposed Project. In one specific instance, the Agency Preferred Alternative would re-route the existing line that currently travels through the Census Designated Place of Summit, near Tucson, to a ROW along Old Vail Road. This would likely provide a benefit to the residents of Summit that currently are in close proximity to the existing line. In Summit, 38 percent of families and 44 percent of individuals live below the poverty level and 84 percent of the population is of Hispanic or Latino heritage, so Summit is clearly a disadvantaged community from an environmental justice standpoint (Census Bureau 2013c).

Agency Preferred Alternative

The socioeconomic impacts of the Agency Preferred Alternative are generally similar to those resulting from the other action alternatives, including the Proponent Preferred alternative. Most socioeconomic impacts, including temporary and permanent employment, changes in tax revenues and requirements for housing and public services to meet demands of the construction workforce are not sensitive to the precise line locations.

Localized impacts on properties and property owners in closest proximity to the proposed transmission line would be similar, regardless of the specific line location, though different individual property owners would be affected. Likewise, the environmental justice assessment is essentially the same for the preferred alternative as for the other action alternatives.

However, the Agency Preferred Alternative does incorporate several specific modifications to minimize or avoid site-specific effects on socioeconomics and other resources. In the New Build Section, the Agency Preferred Alternative would include segment P7 based on comments to avoid or minimize impacts to vineyards southeast of the Willcox Playa. In the Upgrade Section, the Agency Preferred Alternative would include the route variation identified from Draft EIS comments to avoid impacts to a critical area in Pima County from an economic development standpoint (U3aPC).

Residual Impacts

Development of the proposed new transmission line in the New Build Section and improvements to the existing line in the Upgrade Section that involve larger towers and facilities may have some residual impacts on property values in close proximity to the line. While property owners directly affected by the ROW would be compensated, closely proximate neighbors would not. Any impacts would be expected to be modest, based on the existing literature, due to the predominantly low-density rural setting in the New Build Section and the presence of an existing transmission line in the Upgrade Section.

Unavoidable Adverse Impacts

Construction of the proposed Project would have unavoidable adverse short-term impacts on the availability and cost of housing and the demand for some types of public services in the least populated portions of the analysis area (e.g., law enforcement, fire, and emergency response). However, the additional demand for public services would be offset by increases in local government revenues during the construction period.

Low-income or minority populations (environmental justice populations) would likely experience disproportionate adverse effects on a localized basis from construction and operation and maintenance of the proposed Project. As discussed previously, these adverse effects are all expected to be low to moderate, at most. Since all of the Census tracts in the New Build Section and approximately two-thirds of the Census tracts in the Upgrade Section that could be crossed by any of the alternatives comprise environmental justice populations, this appears to be an unavoidable adverse impact.

Short-term Uses versus Long-term Productivity

The proposed Project does not involve trade-offs between short-term uses and long-term productivity from a socioeconomic standpoint.

Irreversible and Irretrievable Commitments of Resources

The Project would not result in irreversible or irretrievable commitments of socioeconomic resources.

4.16 PUBLIC HEALTH AND SAFETY

4.16.1 Introduction

This section describes the impacts to public health and safety that could be caused by the construction and operation and maintenance of the proposed transmission line, substations, and ancillary facilities, such as electrocution risks and EMFs. This section also describes the impacts that the proposed Project could have in connection with existing environmental hazards such as severe weather and fire hazards. For analysis of impacts from flood and floodplain hazards, hazardous materials, transportation conflicts, noise hazards, and potential sabotage and terrorism hazards, see the “Water Resources,” “Hazardous Materials and Hazardous and Solid Waste,” “Transportation,” “Noise and Vibration,” and “Intentional Acts of Destruction” sections of this EIS, respectively.

4.16.2 Methodology and Assumptions

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

Occupational Safety

The types of data and information collected include national statistics on injury rates for utility and construction workers from the BLS (2012b). Data collected were evaluated to identify whether the proposed Project could directly or indirectly affect national injury rates for utility and construction workers and subsequently cause associated health and safety impacts.

Wind, Earthquake, Fire, and Other Severe Weather Hazards

The types of data and information collected include national statistics on large blackouts and transmission generation failures due to extreme weather events, from published studies and extreme weather data from the National Oceanic and Atmospheric Association. Data collected were evaluated to identify whether the proposed Project could directly or indirectly be affected by extreme weather and subsequently cause associated health and safety impacts.

Electromagnetic Hazards

The ENVIRO program was used to model the EMFs that the New Build and Upgrade sections would create (CH2M Hill 2013q). The model produced lateral profiles of the EMF out to 1,000 feet on each side of the centerline. These profiles were then plotted to produce the data and figures that are presented below. The analysis results are compared to the recommended limits for EMF based on the ICNIRP guidelines, published in 1998. No EMF limit levels are established in Arizona or New Mexico.

Analysis Area

NEW BUILD SECTION

The analysis area for impacts regarding public health and safety within the proposed New Build Section is based on a representative ROW, which includes a 200-foot-wide ROW, proposed substation expansion areas, and staging area. The actual construction ROW would likely be configured to avoid certain environmental impacts, or for other logistical reasons. The representative ROW is used to identify natural and manmade hazards that could be directly impacted by construction, operations, and maintenance of the proposed Project and the action alternatives.

UPGRADE SECTION

The analysis area for impacts in the Upgrade Section is based on a 150-foot representative ROW, located along the centerline of the 500-foot-wide analysis area.

ELECTROMAGNETIC FIELDS

The accuracy of the modeling is dependent on the accuracy of the input data (i.e., if the average phase current is higher than what was modeled, then the resulting magnetic fields would also be higher).
The resulting EMF plots are within a few percent of the true value for the conditions modeled.
The electrical power flows entered into the ENVIRO program for this modeling are based on peak ratings from load flow models and common ampacity rating methodology for that size of conductor. These electrical power flows are likely much higher than the electrical power flows that would flow in the line during most of the year; therefore, typical magnetic fields are expected to be much lower than those modeled here.

Impact Indicators

The following indicators were considered when analyzing potential impacts to public health and safety:

- Amounts and types of hazardous materials; number of workers and sensitive receptors within analysis area.
- Number of predicted severe occupational accidents/deaths annually and over life of the proposed Project from transmission line accidents, including electrocution. Number of predicted non-

occupational electrocutions annually from contact with transmission lines per mile of transmission line (if possible).

- Severe weather, fire, and lightning strike statistics; transmission line failure rate per mile.
- Amounts and types of potentially fire-causing activities or equipment.

Significant Impacts

For the purposes of this analysis, a significant impact on public health and safety could result if any of the following were to occur from construction or operation and maintenance of the proposed Project:

- Construction, operation, and maintenance of the proposed transmission lines, substations, and ancillary facilities would create an unsafe working environment that cannot be mitigated through the use of PCEMs and other required safety measures. Injuries or fatalities during construction would be expected to be above the industry averages.
- Construction, operation, and maintenance of the proposed transmission lines, substations, and ancillary facilities would increase the risk of fire.
- Severe weather events would cause frequent transmission failures.
- EMF generated by the proposed transmission lines, substations, and ancillary facilities would expose the public to EMFs that are greater than guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.

4.16.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the proposed New Build Section would not be constructed; therefore, there would not be an increased risk to occupational safety from the construction and operation/maintenance of the proposed transmission line, nor would there be an increased risk of fire from potential fire-causing activities

In regards to the Upgrade Section, even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). Severe weather events would continue to potentially impact the existing transmission infrastructure. The public would not benefit from an increase in reliability in electric service that the proposed infrastructure would provide should a severe weather or other disruptive event occur that causes a disruption in service from damage to the existing infrastructure. There would be an increased risk to occupational safety during operation/maintenance of the existing deteriorating transmission lines in the Upgrade Section that would be increasingly prone to structure failure and associated risk of fire danger.

Impacts Common to All Action Alternatives

CONSTRUCTION

Occupational Safety

The New Build Section of the proposed Project would require construction of the transmission line and associated facilities. Potential risks associated with construction activities include, but are not limited to, electrocution, exposure to extreme weather, falling, exposure to hazardous materials, and injury from

equipment and materials. Site-specific risks such as difficult or remote terrain or highway crossings would exist throughout the New Build Section. Construction requirements, including workers and types of equipment and materials, are included in the POD for the proposed Project (see appendix N). Specific mitigation measures and safety procedures are also included in the POD. The construction of the proposed Project is temporary and would be confined to the footprint of the facilities, access roads, and staging areas. Implementation of the proposed Project mitigation would help to limit the frequency and magnitude of potential health and safety risks to construction workers. Construction safety requirements and mitigation measures would meet the OSHA standards and site specific occupational safety measures (such as a smoking ban in fire prone areas) would be developed as appropriate. Construction of the proposed transmission line and associated facilities would not be expected to generate injury or fatality rates that are higher than industry averages. The implementation of Western's PSSM and OSHA safety requirements through the use of PCEMs, mitigation measures, and other safety requirements would minimize the chance that an accident could occur. Therefore, short-term impacts to occupational safety would be considered negligible.

As discussed in section 3.16 of this EIS, construction workers could have an increased risk of contracting Valley Fever as a result of ground-disturbing construction activities and/or working in areas with windy conditions. The risk of construction workers contracting Valley Fever would be reduced by raising awareness of the disease and prevention methods to construction workers prior to construction activities, using appropriate dust control measures such as wetting soils prior to disturbance, using personal protective gear such as respirators during activities that generate high levels of dust, and suspending construction activities during periods of high winds and dust storms.

Severe Weather Hazards

A severe weather event during construction such as high wind, excessive heat, or excessive cold could pose a danger to construction workers during construction of the proposed transmission line and associated facilities; however, this risk could be minimized by appropriate PCEMs to stop, limit, or delay construction until it is safe to continue with construction. Should a severe weather event occur during construction, the impact would be temporary and limited to the construction site. The general public would not be affected by this impact because they would not have access to the construction site.

Potentially fire-causing activities (such as welding or the use of combustion engines) would occur during construction of the proposed transmission line and associated facilities in areas known for extreme fire danger during the dry season. The implementation of PPMs and mitigation measures would reduce the potential for health and safety impacts that could result from fires associated with construction and/or operation and maintenance of the proposed Project. Therefore, impacts from severe weather hazards and potential fire-causing activities during construction would be considered negligible.

Electromagnetic Fields

EMFs during construction would not occur in the New Build Section because the proposed transmission line and associated facilities that would be constructed would not be transmitting electricity. The existing transmission infrastructure in the Upgrade Section does not pose a risk to the public for EMFs because the EMFs are below proposed cautionary levels outside of the ROW. EMFs would potentially impact workers constructing the proposed transmission line and associated facilities in the Upgrade Section, specifically in areas within the existing ROW where EMF levels are above exposure guidelines. However, this would not be likely to occur for two reasons: (1) to the extent possible, the proposed new transmission facilities in the Upgrade Section would be constructed parallel to the existing transmission facilities and out of the range of proposed cautionary levels of EMFs, and (2) in highly congested areas, such as metropolitan Tucson, where it is impossible to construct parallel facilities within the ROW, the existing transmission

facilities would be turned off prior to deconstructing the existing facilities and reconstructing the upgraded facilities. Therefore, impacts from electromagnetic fields would be considered negligible.

OPERATION AND MAINTENANCE

Occupational Safety

The number of workers that would be required for operation and maintenance of the proposed Project would be much smaller than would be required for construction. All operations and maintenance staff would be required to be fully trained to safely perform their duties in full compliance with OSHA and all other safety requirements; as appropriate, and if Western performs the operation and maintenance on the proposed Project, adherence to Western's PSSM would also be required. Although more workers would be required to operate and maintain the transmission lines, substations, and ancillary facilities, there would not be an increased risk to occupational safety as a result of the construction of any of the action alternatives. Therefore, impacts to occupational safety during operation and maintenance would be considered negligible.

Severe Weather Hazards

A severe weather event would have the potential to increase the risk to public health and safety by causing downed transmission lines and increased potential for lightning strikes to occur at transmission towers. In the New Build Section, the risk of downed transmission lines and increased lightning strikes would be greater than in the Upgrade Section because these would be new risks in the New Build Section, though the proposed steel structures pose a negligible risk. It is not anticipated that severe weather events would cause more frequent transmission failures than currently occur, or increase the risk of more frequent transmission failures than currently exists. Further, because the existing wooden poles in the Upgrade Section are more susceptible to failure from high winds and fire than the proposed new steel poles would be, the potential for weather-caused safety risks from downed transmission lines would be considerably reduced. The proposed transmission facilities would expand and improve transmission infrastructure in southern New Mexico and Arizona, therefore improving distribution reliability during severe weather events should such a disruptive event occur. Therefore, the proposed transmission line would have a long-term beneficial impact by improving reliability of electricity transmission.

Potentially fire-causing activities would typically not occur during maintenance and operation of the proposed transmission line and associated facilities. However, the introduction of new transmission structures would increase the chance of lightning strikes because the structures would most likely be the tallest features throughout the representative ROW. Lightning strikes are among the most common causes of fire in the arid Southwest and can also cause power outages. The construction of any of the action alternatives would include the industry standard of lightning mitigation on the structures and other facilities, in order to minimize the effects that a lightning strike could have. This includes grounding wires on the transmission lines that divert the lightning charge to grounding rods that safely discharges the current to the ground. The grounding system protects the transmission line from damage and reduces the chance of fire ignition. Further, lightning strikes to the existing wooden poles in the Upgrade Section could cause the structures themselves to catch fire, a risk that would be greatly reduced with the proposed steel structures even if they are taller. It is not anticipated that the action alternatives would increase the risk of a fire occurring as a result of a lightning strike to a transmission facility over levels that currently exist. Therefore, the potential impact from lightning strikes would be considered negligible.

Electromagnetic Fields

New EMFs in the New Build Section would be introduced in sparsely populated areas where no other transmission lines are currently located. As identified in tables 2-10 and 2-11 in chapter 2, 13 of the proposed segments in the New Build Section would parallel existing transmission lines (three segments in subroute 1.1, one segment in subroute 1.2, one segment in subroute 2.1, three segments in subroute 2.2, and five local alternatives or route variations). Therefore, along any of the remaining proposed segments that do not parallel existing transmission lines new EMFs would be introduced. As discussed below, EMFs produced by the proposed transmission line are not expected to exceed safety guidelines, therefore any increased risk of public exposure to electromagnetic fields in the New Build Section would be considered negligible.

As stated in chapter 3, the EMFs currently created by the existing transmission infrastructure in the Upgrade Section do not exceed EMF exposure guidelines within the existing ROW. Consequently, the existing transmission infrastructure is not impacting public health and safety. The upgraded lines would generate higher EMF levels within the ROW. However, EMF levels outside of the ROW are expected to be comparable to existing EMF levels created by the existing transmission infrastructure as a result of the double-circuit configuration's phase cancellation effect. Therefore, any increased risk of public exposure to electromagnetic fields in the Upgrade Section would be considered negligible.

The ENVIRO program was used to model the EMFs that would occur as a result of implementation of any of the action alternatives under various design and alignment scenarios that could occur from the action alternatives. The ENVIRO model's findings predict that proposed public safety guidelines for exposure to EMFs would be met at the ROW of the proposed transmission lines for all design and alignment scenarios. The following figures are samples of the ENVIRO findings for scenarios applicable to the New Build and Upgrade sections.

Figures 4.16-1 and 4.16-2 show the electric field and magnetic field, respectively, that would be produced by the proposed transmission lines in the New Build Section, should the transmission line be constructed by itself (not parallel to other transmission infrastructure). The dotted lines in the figure represent the ROW and demonstrate that EMFs emitted by this design would not exceed safety guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.

Figures 4.16-3 and 4.16-4 show the electric field and magnetic field, respectively, that would be produced by the proposed transmission lines in the Upgrade Section compared to the existing transmission infrastructure. The ROW in this section is 100 feet wide. EMFs emitted by this design would not exceed exposure guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.

Agency Preferred Alternative

Impacts to public health and safety (occupational safety, severe weather hazards, and electromagnetic fields) under the Preferred Alternative for both the New Build and Upgrade sections would be similar to the other action alternatives as described under "Impacts Common to All Action Alternatives." Impacts to occupational safety would be more likely to occur during the construction phase than during the maintenance and operation phase. Potential risks associated with construction activities include, but are not limited to, electrocution, exposure to extreme weather, falling, exposure to hazardous materials, and injury from equipment and materials. The implementation of Western's PSSM (where applicable) and OSHA safety requirements through the use of PCEMs, mitigation measures, and other safety requirements would minimize the chance that an accident could occur.

Figure 4.16-1. Electric field of New Build Section 345-kV double-circuit tubular steel pole.

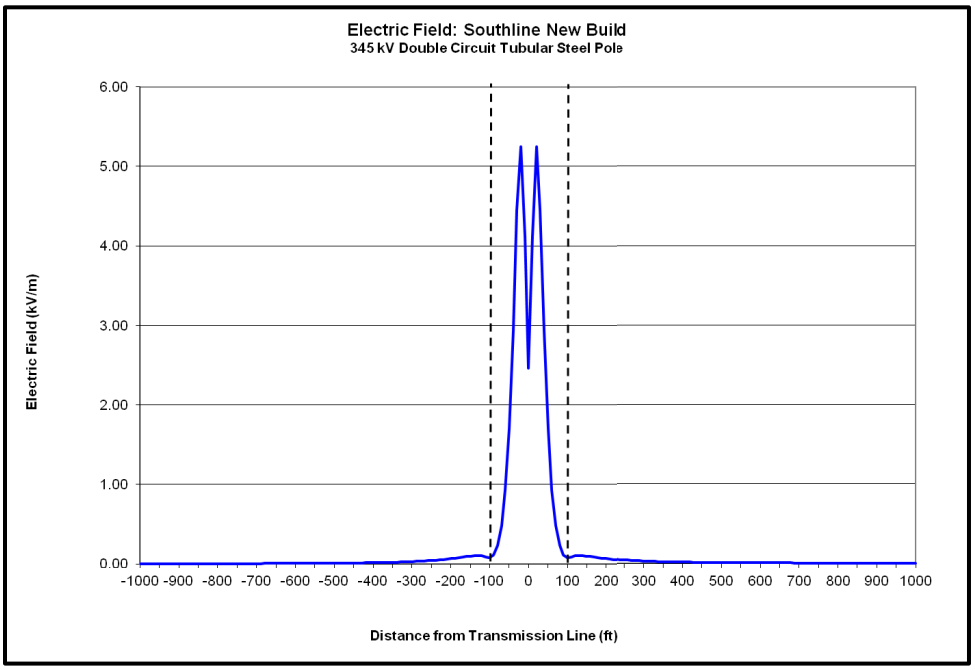


Figure 4.16-2. Magnetic field of New Build Section 345-kV double-circuit tubular steel pole.

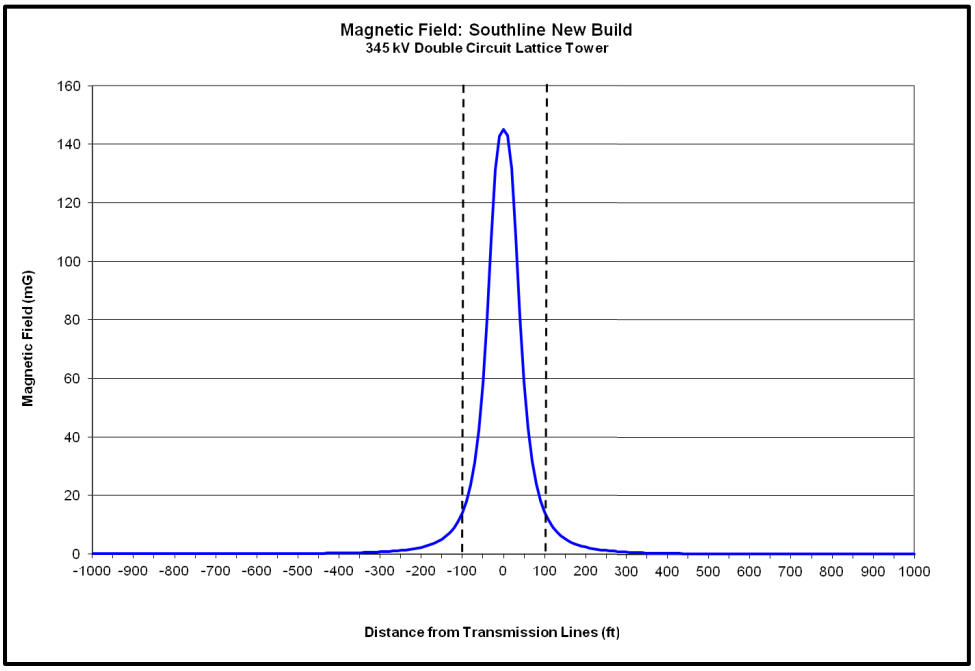


Figure 4.16-3. Electric field of Upgrade Section replacement of existing 115-kV line with 230-kV line.

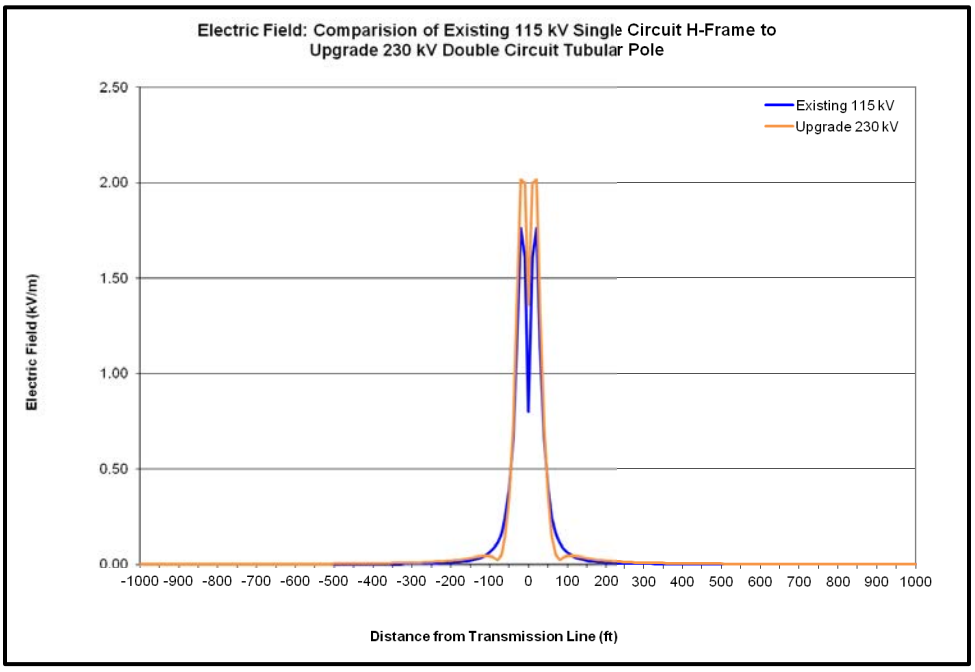
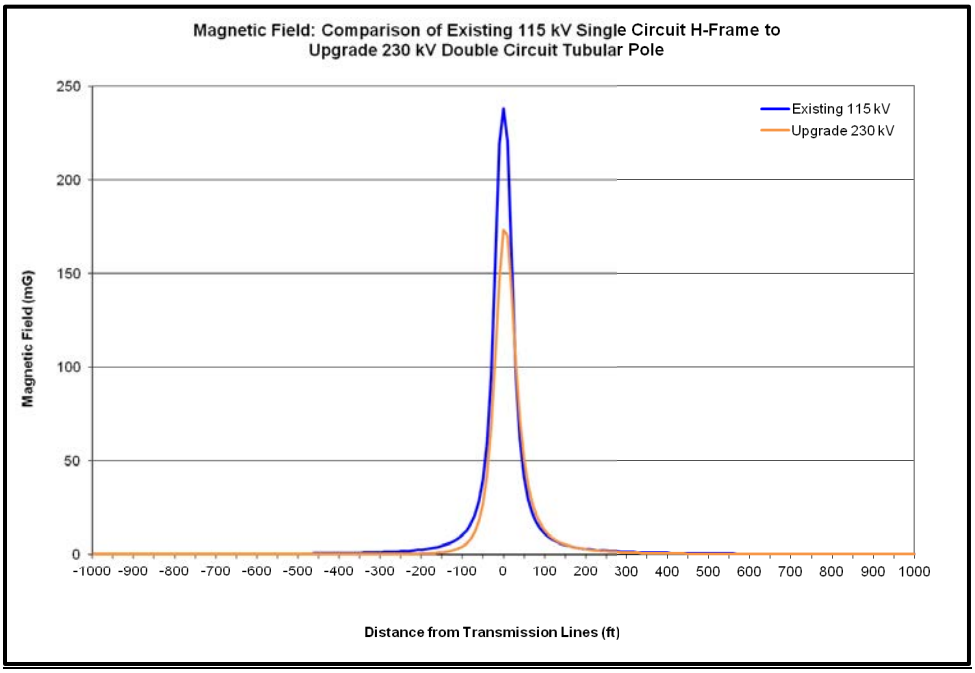


Figure 4.16-4. Magnetic field of Upgrade Section replacement of existing 115-kV line with 230-kV line.



Additionally, the existing wood poles in the Upgrade Section have required a great deal of maintenance and structure replacement because of their age; with the proposed new steel structures relatively little maintenance would be needed and the occupational safety risk would decrease substantially. Therefore, the Agency Preferred Alternative for both the New Build and Upgrade sections would have short-term, negligible impacts on occupational safety.

Impacts from severe weather hazards, including lightning, and potential fire-causing activities during construction of the Agency Preferred Alternative, would also be considered negligible after the application of mitigation measures. Long-term beneficial impacts would occur after the Preferred Alternative is constructed because (1) fire risk would be reduced where existing wooden structures in the Upgrade Section would be replace with fireproof, stronger steel structures, and (2) because the transmission facilities would expand transmission infrastructure in southern New Mexico and Arizona and would improve reliability during severe weather events, should a disruptive event occur.

The potential for increased public exposure to EMFs would occur under the preferred alternative for both of the New Build and Upgrade sections. In the New Build Section, transmission lines would be built in areas where no current transmission lines exist and therefore create the potential for public exposure to EMFs where they did not previously occur. However, the transmission lines in the New Build Section would be built in sparsely populated areas and not adjacent to residential areas or areas where the public would experience long-term exposure. Therefore, the potential increase of public exposure to EMFs from transmission lines in the New Build Section would be negligible. In the Upgrade Section, the EMFs currently created by the existing transmission infrastructure do not exceed EMF exposure guidelines within the existing ROW. Consequently, the existing transmission infrastructure is not impacting public health and safety. The upgraded lines would generate higher EMF levels within the ROW. However, EMF levels outside of the ROW are expected to be comparable to existing EMF levels created by the existing transmission infrastructure as a result of the double-circuit configuration’s phase cancellation effect. Therefore, any increased risk of public exposure to EMFs in the Upgrade Section would also be considered negligible. To summarize, EMF exposure guidelines would be met within the ROW for both the New Build Section and Upgrade Section of the Agency Preferred Alternative. Therefore, the risk of increased public exposure to EMFs would be considered negligible for the Agency Preferred Alternative and similar to the impacts of the other action alternatives.

Residual Impacts

The proposed Project would have both negative and beneficial long-term impacts to public health and safety. Potential long-term negative impacts would occur as a result of increase of EMFs in areas where they do not currently occur. The impacts would be negligible because the newly introduced EMFs would occur in areas that are sparsely populated, would not be adjacent to residential areas or areas where long-term public exposure would occur, and would be further reduced by the implementation of the mitigation measures, PCEMs, and PPMs. Implementation of the proposed transmission infrastructure would also have a long-term beneficial impact to public health and safety by improving the reliability of electricity transmission to areas that would be served by the proposed infrastructure. In the Upgrade Section, the new facilities would be constructed to modern design standards, including modern hardware and grounding systems. These new facilities would require less frequent and less intensive maintenance work than the older facilities resulting in decreased potential for occupational accidents to occur. Lastly, the new facilities would contribute to a decrease in fire risks when compared to the continuously deteriorating existing transmission infrastructure in the Upgrade Section that would be more prone to structure failure.

Unavoidable Adverse Impacts

Unavoidable adverse impacts caused by the proposed Project include:

- Increased potential for occupational risks to occur.
- Increased potential for public exposure to EMFs.

As discussed above, the increased potential for these risks to occur would be minimal after the application of all mitigation measures, PCEMs, and PPMs.

Short-term Uses versus Long-term Productivity

There would be no short-term uses versus long-term productivity conflicts to public health and safety as a result of the implementation of the proposed Project or action alternatives.

Irreversible and Irretrievable Commitments of Resources

All impacts described above would not be considered irreversible or irretrievable commitments of resources because the impacts to public health and safety no longer exist should the proposed transmission infrastructure be removed.

4.17 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

4.17.1 Introduction

Certain chemicals and materials that would be used during the construction, operation, and maintenance of the proposed Project are characterized as hazardous materials. Hazardous materials, wastes, and regulated, nonhazardous solid wastes are governed by the laws, regulations, and policies discussed in chapter 3. This section describes the potential impacts to human health and the environment from preexisting hazardous materials that may be present along the proposed Project analysis area and from hazardous materials generated during construction or operation and maintenance of the proposed Project. For the purposes of this chapter, the term hazardous materials includes designated hazardous materials, regulated materials, petroleum products, and other contaminants. Because the primary impact from the use of hazardous materials during construction would be from potential leaks and spills and potential contamination of surrounding soils, surface waters, and groundwater, potential impacts are discussed in terms of which hazardous materials are or would be present, whether their presence creates dangerous conditions, and how potential dangers would be mitigated. The extent to which the proposed Project could result in adverse conditions related to hazardous materials is addressed, and the potential effects are evaluated.

4.17.2 Methodology and Assumptions

This section describes the analysis area for determining the presence and effects of hazardous materials, how effects are measured, the assumptions used when evaluating the effects, and what criteria must be met for an impact to be considered significant.

Analysis Area

The analysis area for hazardous materials and solid waste for the New Build Section is a 2-mile corridor, 1 mile on either side of the centerline of alternatives carried forward, and any substations or access roads outside that corridor. As described in chapter 3, this satisfies the search distances specified in ASTM Standard E 1527-13 (ASTM 2013). The ASTM has determined that these search distances are appropriate distances in which to search for potential sources of contamination that could affect the analysis area. Search results were then compared to the representative ROW, which for the New Build Section includes a 200-foot wide ROW, substations, and staging areas.

The analysis area for the Upgrade Section is a 500-foot corridor, which is 200 feet on either side of the centerline of the existing 100-foot corridor. The analysis area described here is sufficient to identify hazardous materials sites that could impact, or be directly impacted by, construction, or operation and maintenance of the proposed Project. Search results were then compared to the representative ROW, which includes a 150-foot-wide ROW, substations, and staging areas.

Analysis Assumptions

The analysis assumes that all the appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

The following factors were assumed when identifying hazardous materials sites that could impact or be directly impacted by the proposed Project, hazardous materials potentially used or stored during construction and operation/maintenance of the proposed Project, and the effects of those elements on human health and the environment. It should be noted that many of these elements are required by law, and the plans merely collect the requirements into a plan structure. The distinction is important, as legal requirements are mandatory and enforceable by regulatory agencies. They are also not mitigation, as they are legal requirements.

- A Project-specific HMMP would be developed prior to construction. As discussed in chapter 2, the HMMP would outline proper hazardous materials use, storage, and transport requirements, as well as applicable handling procedures. The HMMP would identify the types of hazardous materials to be used during the proposed Project and the types of hazardous wastes that are expected to be generated. All debris generated during Project-related demolition of structures, buildings, asphalt, or concrete-paved surface areas would be managed in a manner that would minimize risks to workers, the public, and the environment. Waste materials determined to be regulated material or hazardous waste would be recycled or disposed of at a permitted hazardous waste management facility. Used oil would be sent offsite for recycling, reuse, or proper disposal. Containers used to store hazardous would be properly labeled and maintained in good condition. Construction and operations and maintenance personnel would be provided with project-specific training to safely manage hazardous materials and hazardous wastes. In addition to training, each work crew would have basic hazmat cleanup materials onsite for immediate use.
- 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 would be screened for environmental liabilities to determine the probability of contaminants of concern or other environmental impairment. An ASTM Standard E 1527-13 (or equivalent) Phase I Environmental Site Assessment would be conducted if necessary. Additional actions may include further assessment, characterization, remediation, or selection of alternative property.

- A soil management plan would be prepared to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. If backfill material to be used is derived from a site that is suspected to have contamination, it would be sampled and determined to be free of regulated contaminants before it is used to fill excavations.
- An SPCC Plan would be developed and implemented prior to construction of the proposed Project, to ensure safe handling, storage, and use of hazardous materials and to minimize, avoid, and/or clean up unforeseen spills during construction and operation/maintenance.
- Service and refueling procedures would not be conducted within 500 feet of a seep, wash, or other water body. All vehicles and equipment used would be maintained in good working order and maintained to avoid fluid leaks.
- A SWPPP would also address such aspects as proper storage and spill containment for hazardous materials, fuels, and lubricants used during construction.
- A number of PCEMs are recommended to prevent hazardous materials from coming in contact with the environment. PCEMs would be detailed in the SWPPP and SPCC Plan. These plans would detail PCEMs such as retaining sediments on the construction site via soil erosion and sediment control practices, and proper refueling and maintenance procedures for equipment.
- Applicants, contractors, and operators will adhere to the hazardous materials–related laws, ordinances, regulations, and standards described in chapter 3.
- Existing hazardous waste sites and other locations pertinent to this analysis have been accurately mapped.

Impact Indicators

The following indicators were considered when analyzing the potential effects of hazardous materials:

- The presence of known hazardous materials sites within the analysis area and the type, nature, status, and proximity to the Project of those sites.
- The presence, transportation, storage, use, and disposal of hazardous materials during construction and operation/maintenance of the Project.

Although these indicators are by nature more qualitative than quantitative, they will be considered with regard to the risk they would pose to human health or the environment during construction and operation/maintenance of the Project.

Significant Impacts

For the purposes of this analysis, a significant impact related to hazardous materials could result if any of the following were to occur during construction or operation/maintenance of proposed Project:

- An activity regarding handling, transport, use, containment, or disposal of hazardous materials that would violate any local, State, or Federal regulations or create a long-term risk to human health or the environment.
- Improper storage or disposal of hazardous materials generated by the proposed Project that would pose a threat to human health or the environment in the Project vicinity.
- Spills or releases of hazardous materials at or above reportable quantities within the analysis area that would pose a threat to public health and the environment in the proposed Project vicinity.

- Impaired implementation of, or physical interference with, an adopted emergency hazardous materials spills response plan or emergency evacuation plan.
- The presence of preexisting unmitigated hazardous materials within the analysis area that would pose a threat to human health or the environment with respect to the proposed Project.

4.17.3 Impacts Analysis Results

No Action Alternative

Under the no action alternative, the BLM would not issue a ROW and impacts form hazardous materials from construction and operation/maintenance of the proposed Project would not occur. Much of the New Build Section is vacant land, and land in the immediate vicinity of the proposed Project and alternatives would remain primarily undeveloped desert land under the no action alternative. Current activities in the area, such as livestock grazing, agriculture, and dispersed recreational use, would continue and would not result in the generation, use, or disposal of large quantities of hazardous materials and hazardous and solid waste within the proposed Project footprint.

For the Upgrade Section, even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a). While new hazardous materials sites in addition to those described in chapter 3 could be discovered or created, or existing sites could be cleaned up, the status of existing hazardous materials sites described in chapter 3 would likely remain unchanged. SF_6 and transformer oil would continue to be used at existing substations, and quantities of those would likely increase for any future upgrade of existing lines.

Impacts Common to All Action Alternatives

Many of the potential impacts discussed in chapter 3 would universally apply to all action alternatives. Potential impacts common to all alternatives are discussed below as they each relate to construction, operation, and maintenance of the proposed Project.

The implementation of any of the action alternatives would result in the use of regulated and hazardous materials and creation of solid waste during construction. The specific chemicals and materials, and their quantities, have not yet been determined. Potential regulated or hazardous materials associated with construction activity could include solvents, metals, petroleum products (fuels and lubricants, oils, gasoline, degreaser, etc.), plated products, hazardous substances, paint, wood-treated products, detergents, sanitary waste, and other products typically associated with construction sites. Hazardous materials may also include pesticides (insecticides, fungicides, herbicides, rodenticides, etc.) and other construction chemicals such as concrete products, sealants, and wash water associated with these products. Solid wastes may include paper, wood, metal, and general trash. With adherence to laws, ordinances, regulations, and standards and the implementation of the proponent-committed environmental protection measures described in chapter 2 and in "Analysis Assumptions" above, there would be no impacts from construction-related hazardous materials.

Transformers are filled with insulating mineral oil. PCBs are no longer used in transformers. Containment structures are required to prevent equipment oil from getting into the ground or water bodies in the event of a rupture or leak. An SPCC and an oil spill prevention preparedness plan would be developed for the proposed Project in conjunction with the operating utility as required. With adherence to laws, ordinances, regulations, and standards and the implementation of the proponent-committed environmental protection measures described in chapter 2 and in "Analysis Assumptions" above, there would be no impacts from the use of oil-filled transformers.

SF_6 under pressure is used as an insulator in gas-insulated switches. Though it is nontoxic and largely inert, it is considered to be an extremely potent greenhouse gas. Small amounts of SF_6 could leak over time, resulting in emissions of this gas. Southline would follow PCEMs to reduce the potential for greenhouse gas emissions, including (1) ensuring that only knowledgeable personnel handle SF_6, and (2) implementing SF_6 recovery and recycling. Because the gas is nontoxic and inert, and because PCEMs would be implemented, the potentially small amount of gas leaked over time would have no measurable impact on human health or the environment.

A number of permitted facilities exist in the vicinity of the proposed Project. However, a permitted facility does not imply contamination. None of the facilities listed as permitted were listed in databases indicating contamination, and none are located within the representative ROW. The most likely areas for encountering existing contamination would be in substation expansion areas. Before the purchase of property or any construction activity, due diligence would be exercised in screening and evaluating these properties for existing environmental conditions. Therefore, permitted facilities would not have an effect on construction or operation and maintenance of any of the proposed Project alternatives.

A number of USTs exist in the vicinity of the proposed Project, some of which are leaking or have leaked in the past. However, none of these are located within the representative ROW, and because groundwater is generally deep along the proposed Project (see sections 3.7 and 4.7, “Water Resources”), the relatively shallow excavations for tower footings are unlikely to intersect with any potential groundwater plumes. Therefore, USTs would not have an effect on construction or operation and maintenance of any of the proposed Project alternatives.

The proposed Project would not impair or impede implementation of, or physically interfere with, an adopted emergency hazardous materials spill response plan or emergency evacuation plan. Towers would not be located in roadways or block transportation routes. Therefore, no impacts to adopted emergency hazardous materials spill response plans or emergency evacuation plans are anticipated.

With adherence to the laws, ordinances, regulations, and standards described in chapter 3, implementation of the PCEMs described in chapter 2, and implementation of safety-related plans and programs to ensure safe handling, storage, and use of hazardous materials, none of the significant impacts described above would occur during construction and operation/maintenance of the proposed Project. No violations of local, State, or Federal regulations or long-term risks to human health or the environment are anticipated from handling, transport, use, containment, or disposal of hazardous materials during construction and operation/maintenance of the proposed Project. The mitigation measures described above would be implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur.

Route Group 1 – Afton Substation to Hidalgo Substation

As described in chapter 3, publicly available databases were searched to gather information regarding known sites of potential environmental concern within the analysis area. Sites of potential environmental concern include permitted facilities and UST/LUST sites (both are discussed above in “Impacts Common to All Action Alternatives”), and CERCLIS (or “Superfund”) sites. Segment P2 of the Proponent Preferred alternative passes within 1 mile of the Peru Hill Mill (Site ID NMD097119986) and American Smelting and Refining Deming Mill and Tailings (Site ID NMD980749220) CERCLIS sites. Segment D of the route group 1 local alternatives passes within 1 mile of the Shakespeare Mining District (Site ID NMD986684256) CERCLIS site. The Peru Hill Mill site is listed as fully remediated. The American Smelting and Refining Deming Mill and Tailings site and the Shakespeare Mining District site have been archived. This means the EPA has determined that the assessment has been completed and that no further remedial action is planned at this time. Because neither of these sites overlaps the representative ROW

and because of their current status, no impacts to construction or operation and maintenance of the Project from these sites would occur.

The Hachita Landfill is located near the town of Hachita, New Mexico, within the analysis area of segment S7 of the New Build Section of the Proponent Alternative. However, the landfill is located outside the representative ROW. Limited information is available for this site. According to NMED, the landfill is currently closed. No facility containing the term Hachita or located in Hachita is listed in the CERCLIS database; therefore, it is unlikely that this is an actual CERCLIS site. It is also not mapped on the NMED eGIS Mapper database. Because it is located outside the representative ROW and is not thought to be a CERCLIS site, no impacts to construction or operation/maintenance of the proposed Project are expected from this facility.

Route Group 2 – Hidalgo Substation to Apache Substation

It initially appeared that Segment P4b of the Proponent Preferred alternative passed within 1 mile of the Fannie Hill Mine and Mill (Site ID NMD981147192) CERCLIS site. This site is listed as archived. However, the coordinates of this site appear to be incorrect, and available information from the NMED database states that this facility is located in Catron County, well north of the proposed Project. Based on this additional information, this facility is not located within the analysis area or the representative ROW. Because this site does not overlap the representative ROW, because of its current status, and because it is not thought to be located within the analysis area, no impacts to construction or operation/maintenance of the Project are expected from this facility.

Route Group 3 – Apache Substation to Pantano Substation

A search of the publicly available data did not identify any hazardous materials sites, LUSTs, or any other potential concerns related to hazardous materials in this route group. Therefore, no impacts are anticipated from preexisting hazardous materials or the use of hazardous materials under any of the route group 3 action alternatives.

Route Group 4 – Pantano Substation to Saguaro Substation

A search of the publicly available data did not identify any hazardous materials sites, LUSTs, or any other potential concerns related to hazardous materials in this route group, except for the Silverbell Landfill Water Quality Assurance Revolving Fund site (also known as the Silverbell Jail Annex Landfill). The ADEQ Water Quality Assurance Revolving Fund program is also known as State Superfund. The proposed ROW of Segment U3i of the Proponent Preferred alternative overlaps the contamination plume of this site.

Groundwater at the Silverbell Landfill site is contaminated with tetrachloroethene (PCE) and trichloroethene (TCE), which exceed regulatory limits. Depth to groundwater at the site is approximately 145 feet bgs. The Arizona Department of Health Services completed a “Draft Baseline Human Health Risk Assessment” for the site in November 1993. Even though no significant health risks were identified, the risk assessment expressed concern for possible exposure routes for PCE and TCE through privately owned wells (ADEQ 2012a, 2012b). Although the proposed Project ROW crosses over the underground plume of the Silverbell Landfill site, the groundwater is approximately 145 feet bgs, and the plume is deep enough that transmission line foundations would not be affected. Therefore, no effects on the proposed Project are anticipated from the Silverbell Landfill site.

Agency Preferred Alternative

With regards to hazardous materials and hazardous and solid waste, impacts under the Agency Preferred Alternative would be as described under "Impacts Common to All Action Alternatives." No impacts are anticipated from preexisting hazardous materials or the use of hazardous materials under any of the alternatives previously described. Therefore, no impacts are anticipated from preexisting hazardous materials or the use of hazardous materials under the Agency Preferred Alternative.

Residual Impacts

With adherence to laws, ordinances, regulations, and standards, implementation of the PCEMs described in chapter 2, and implementation of safety-related plans and programs to ensure safe handling, storage, and use of hazardous materials, no residual impacts are anticipated from preexisting hazardous materials or the use of hazardous materials under any of the action alternatives. None of the significant impacts described above would occur during construction and operation/maintenance of the proposed Project. The mitigation measures described above are implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur.

Unavoidable Adverse Impacts

With adherence to laws, ordinances, regulations, and standards and the implementation of the proponent-committed environmental protection measures described in chapter 2 and in "Analysis Assumptions" above, no unavoidable adverse impacts are anticipated from preexisting hazardous materials or the use of hazardous materials under any of the action alternatives. None of the significant impacts described above would occur during construction and operation/maintenance of the proposed Project. The mitigation measures described above are implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur.

Short-term Uses versus Long-term Productivity

With adherence to laws, ordinances, regulations, and standards and the implementation of the PCEMs described in chapter 2 and in "Analysis Assumptions" above, the productivity of the ROW would not be affected by the use of hazardous materials. The mitigation measures described above are implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur.

Irreversible and Irretrievable Commitments of Resources

With adherence to laws, ordinances, regulations, and standards and the implementation of the proponent-committed environmental protection measures described in chapter 2 and in "Analysis Assumptions" above, there would be no irreversible commitment of resources caused by the use of hazardous materials. The mitigation measures described above are implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur.

4.18 TRANSPORTATION

4.18.1 Introduction

This section describes the impacts to transportation associated with the construction and operation and maintenance of the transmission line, substations, and ancillary facilities. Impacts to transportation are discussed in terms of changes in vehicular traffic on primary roads, changes in traffic and access to BLM roads and lands, consistency with Federal, State, and local transportation plans, and changes in air traffic patterns at airports.

4.18.2 Methodology and Assumptions

Traffic Impacts on Primary Roads

As defined in chapter 3, interstates, U.S. highways, and State highways are considered primary roads. Impact analysis of traffic generated by the construction and operation and maintenance of the proposed Project and action alternatives uses the v/c ratio analysis to determine whether the primary roads level of service would change.

Impacts to BLM Roads and Access to BLM Roadless Areas

BLM Roadless Areas are a land designation not shared by State, or private land. Because "BLM Roadless Areas" are a BLM official land designation, this designation is analyzed in this EIS. Analysis of access impacts to roadless state or private lands is not included in the analysis.

BLM road and lands information was collected from data provided by the BLM Safford and Las Cruces Field Offices. A GIS overlay of the collected BLM lands data with the proposed Project components was prepared to evaluate geographic location in relation to the proposed Project and alternatives.

To estimate the impacts on BLM lands by the proposed Project and alternatives, the proposed location of each segment relative to BLM lands was first designated as (1) through (the proposed Project would be located on BLM lands), (2) adjacent (the proposed Project would be located next to BLM lands) or (3) none (the proposed Project would not be on or adjacent to BLM lands). If two or more of these designations are applicable to one segment, the most invasive designation was assumed. Next, the percentage of new access roads that would be required for each segment was noted from the Terrain and Access table prepared by the Southline Engineering Team (Southline 2012b), and then compared with the invasiveness of the proposed transmission line location within each segment.

Consistency with Federal, State, and Local Transportation Plans

A review of Federal, State, and local transportation plans was conducted to identify potential inconsistencies between corridor planning and road widening projects and the proposed Project and the action alternatives.

Impacts to Airports, Flight Patterns, and Airport Plans

The airport analysis methodology compares the proximity of the proposed Project and alternatives to existing and planned airport facilities. These comparisons provide insight into the potential for impacts that could dictate the requirement for an airspace obstruction analysis by the FAA.

Analysis Area

NEW BUILD SECTION

The analysis area for transportation infrastructure resources within the proposed New Build Section is a 10-mile-wide corridor; that is, 5 miles to either side of the centerline of the alternatives carried forward. The analysis area is used to identify existing and proposed transportation infrastructure that could be directly impacted by ground disturbance during construction, delivery of construction equipment, construction worker access, maintenance access, and potential conflicts with flight paths at airports. A 10-mile-wide corridor is necessary in order to allow for some flexibility of proposed Project routing and design, and also to allow for errors or ambiguities in the recorded locations and boundaries of some resources.

UPGRADE SECTION

The analysis area for transportation infrastructure within the proposed Upgrade Section is the same as identified above for the New Build Section.

Analysis Assumptions

The analysis assumes that all appropriate design features and agency mitigation (PCEMs) would be implemented (see table 2-8 in chapter 2 of this EIS).

TRAFFIC IMPACTS TO PRIMARY ROADS

The methodology for traffic analysis assumes that high volume-to-capacity ratios at peak hours suggest that the segment is experiencing a low level of service. For example, a higher v/c ratio on a particular segment of a primary roadway suggests higher levels of traffic demand on the segment and a lower level of service. Levels of service ratings run from a rating of A, for the highest or best level of service, to F, the lowest or worst level of service. A v/c ratio above 0.90 indicates the demand nearly equals the design capacity of the roadway, and a level of service rating of E or F can be assumed. In general, intermittent temporary delays during peak traffic hours would be assumed to not increase the v/c ratio of a primary roadway. Consistent long-term delays during peak traffic hours would be assumed to increase the v/c ratio of a primary roadway.

IMPACTS TO BLM ROADS AND ACCESS TO BLM ROADLESS AREAS

The methodology for identifying impacts to BLM lands assumes that if the transmission line were to cross through BLM lands and new access roads were required for construction, operation, and maintenance in the same area, the potential would exist for the proposed Project and alternatives to open access to lands previously inaccessible by roads. It is assumed that where a higher percentage of new access roads would be required, an increase in access would occur on BLM lands previously inaccessible by roads.

CONSISTENCY WITH FEDERAL, STATE, AND LOCAL TRANSPORTATION PLANS

No assumptions are necessary for analyzing consistency with Federal, State, and local transportation plans.

IMPACTS TO AIRPORTS, FLIGHT PATTERNS, AND AIRPORT PLANS

No assumptions are necessary for analyzing impacts to airports, flight patterns, and airport plans.

Impact Indicators

TRAFFIC IMPACTS TO PRIMARY ROADS

Traffic from construction, operation, and maintenance of the proposed Project and action alternatives would increase the primary roads' v/c ratio, and subsequently lower the roads' level of service.

IMPACTS TO BLM ROADS AND ACCESS TO BLM ROADLESS AREAS

Indicators for this impact would be the number of new access roads that would be required by the proposed Project and action alternatives, and acres of BLM lands that are currently inaccessible by road that would become accessible from the construction of new access roads.

CONSISTENCY WITH FEDERAL, STATE, AND LOCAL TRANSPORTATION PLANS

Indicators for this impact would be the number of transportation plans that are inconsistent with the proposed Project and action alternatives. These plans are identified in section 3.18.

IMPACTS TO AIRPORTS, FLIGHT PATTERNS, AND AIRPORT PLANS

Indicators for this impact would be the number of existing and planned airports that are within the analysis areas for the proposed Project and action alternatives.

Significant Impacts

For the purposes of this analysis, a significant impact on transportation could result if any of the following were to occur from construction or operation and maintenance of the proposed Project (see below).

TRAFFIC IMPACTS TO PRIMARY ROADS

- The proposed Project and alternatives were to increase traffic that exceeds levels of service established by a State Department of Transportation or a county transportation agency or city/town transportation department.
- The proposed Project and alternatives were to cause traffic delays on a primary transportation corridor.
- The proposed Project and alternatives were to create road dust and/or severe road damage at levels that create hazardous situations for motorists and pedestrians.
- The proposed Project and alternatives were to increase dust, noise, light, and litter pollution due to construction activities (see Section 3.2, "Air Quality," and Section 3.3, "Noise and Vibration").

CONSISTENCY WITH FEDERAL, STATE, AND LOCAL TRANSPORTATION PLANS

- The proposed Project and alternatives would be inconsistent with regional, State, and local transportation plans such as corridor planning, and road widening.

IMPACTS TO BLM ROADS AND ACCESS TO BLM ROADLESS AREAS

- The proposed Project and alternatives would increase opportunities for illegal access to roads/areas currently closed to public access.

- The proposed Project and alternatives were to have impacts to the BLM roadway system, including improved access by the general public into remote or designated roadless or wilderness areas.

IMPACTS TO AIRPORTS, FLIGHT PATTERNS, AND AIRPORT PLANS

- Change in air traffic patterns as a result of new transmission lines near airports. The unit to measure change for airports includes alterations of flight paths and operations.
- Potential inconsistencies with Federal, regional, State, and local airport plans. The unit to measure change is consistency with future airport plans.

4.18.3 Impacts Analysis Results

No Action Alternative

There would be no impact to transportation under the no action alternative for the New Build Section. Traffic volumes on primary roadways and BLM roads would continue to increase due to population growth. Demand for access to BLM lands and other lands would be expected to increase due to population growth as well. In regards to the Upgrade Section, even under the no action alternative, Western would still plan to upgrade the existing lines between the Apache and Saguaro substations within the next 10 years, per Western's 10-year capital improvement plan (Western 2012a).

Impacts Common to All Action Alternatives

The only measurable difference that the action alternatives would have on the impact indicators would be the number of access roads that would be required for each alternative. The action alternatives would all have common impacts on the other impact indicators: primary roads, Federal, State, and local transportation plans, and impacts to airports and air traffic patterns. Although each alternative would differ in the amount of new access roads that would be required, increasing access to BLM roadless areas would also be the same for all action alternatives. These impacts are disclosed in this section, followed by an analysis of alternative-specific impacts to BLM roads.

TRAFFIC IMPACTS TO PRIMARY ROADS

Construction

During the construction phase, traffic would be generated by the following activities: surveying, geotech investigation, access road construction, foundation installation, laydown yard/receiving, structure hauling, structure assembly, structure erection, wire stringing, restoration, and clean-up. Some types of traffic would include large trucks and potentially oversized loads delivery construction equipment and steel structure components. There are seven to eight primary roads within the New Build Section and seven primary roads within the Upgrade Section. Under a maximum-case trip scenario (one crew shift each day, every worker drives alone on the same access route, and all crew types work simultaneously), an estimated total of 192 additional personal vehicles would be added to the primary roadway network before and after each shift. Deliveries would be spread throughout the day and would not contribute to a noticeable volume increase on the roadway networks. The cumulative additional volume would represent a volume increase of 1 percent or less on various segments of I-10 in the New Build and Upgrade Sections. On other primary roads within the analysis area, the addition of up to a maximum of 192 vehicles per shift change and intermittent deliveries would not increase the v/c ratio for the primary roads, including the two primary roads in the Tucson metropolitan area already experiencing a high v/c ratio. Construction traffic would not create consistent long-term delays on the primary roadways. Large

construction vehicles and potential oversized load deliveries would move slower than normal traffic. Therefore a temporary decrease in level of service for the primary roads would not occur as a result of the construction activities.

Temporary, short-term traffic delays during construction could occur at locations where transmission lines cross roads or where improvements might be needed at local roads, intersections, and bridges to accommodate overweight or oversize delivery vehicles. Because traffic generated by construction would be short-term, deterioration of primary roads would not be anticipated. However, the design capacity of the construction routes would need to be verified with the proper agencies prior to construction, to determine if they would accommodate oversized vehicles and not deteriorate by bearing the weight of oversize/overweight vehicles. Additionally, as identified in table 2-8, if any existing roads were to be damaged by construction activities and/or truck traffic they would be repaired.

Operation and Maintenance

After construction of any of the action alternatives, traffic generated by operation and maintenance activities would be intermittent, only require a small number of vehicles, and deliveries would not regularly occur. Operation and maintenance traffic would not increase v/c ratio on primary roads, and, subsequently, would not decrease the level of service for any primary roads.

IMPACTS TO BLM ROADLESS LANDS

The proposed alignments within the New Build Section would cross the most amount of BLM land. GIS roadway data indicate that there is an extensive network of existing rural roads and trails (that may or may not be on BLM land) throughout the New Build Section. The alignments for each action alternative appear to have roads or trails through them. Thus, with minimal potential to open access to land areas where access is not currently available, no large expanses of land that are currently inaccessible would become available if any of the action alternatives were to be built.

The BLM land area in the vicinity of the action alternatives would be minimal in the Upgrade Section compared with the BLM land area in the more rural New Build Section. Two segments in the Upgrade Section (U1a and U3a along the proposed route) run through BLM lands. However, there is no potential to open new access points to BLM lands in these segments, because they would not require new access roads.

CONSISTENCY WITH FEDERAL, STATE, AND LOCAL TRANSPORTATION PLANS

Federal, State, and local transportation plans are identified in Section 3.18, “Transportation.” The planned roadway improvements by the ADOT and the NMDOT in the New Build and Upgrade sections analysis areas primarily involve widening and reconstructing existing roads and structures. The planned improvements would not involve construction of new roads or relocation of existing roads (a northerly extension of SR 90 has been discussed for some time, but is not currently a planned improvement documented in the Statewide Transportation Improvement Program). Known road projects in the New Build Section would not be a factor in deciding on the location of the transmission line or access routes. The Upgrade Section would have two road projects that would require consideration during the design process and coordination with ADOT: widening I-19 between SR 86 and San Xavier Road and reconstructing North Silverbell Road to add travel lanes with curbs and a raised landscaped median.

IMPACTS TO AIRPORTS, FLIGHT PATTERNS, AND AIRPORT PLANS

The analysis areas for the action alternatives are within the influence area for some of the airports identified in Section 3.18, “Transportation.” Given the location of the proposed Project, it appears likely

that the height of the proposed transmission structures (approximately 134 feet) would be below the runway approach surface elevations for all airports in both the New Build and Upgrade sections. This height is below the 200-foot criterion and would meet or exceed the 100:1 or 50:1 slope criteria, which are among the criteria that require submission of a proposal to the FAA for an evaluation. Therefore, a change in flight patterns at airports within the analysis areas would not be required as a result of implementation of any of the action alternatives. Furthermore, the alternatives would not impact the airspace used by the NMSU UAS FTC, as noted by the NMSU UAS FTC's review of the Southline Draft EIS (NMSU 2014b).

A review of Federal, regional, State, and local airport plans identified two airport improvement plans within the New Build Section and four airport improvement plans within the Upgrade Section. Given the distances of the alternative alignments to these airports, the proponent would be required to work with airport staff during the permitting phase to ensure compliance with applicable zoning and airspace plan regulations during the preliminary design process to avoid, minimize, and/or mitigate conflicts.

Alternative Specific Impacts to BLM Roads

The proposed Project and alternatives would include new roads to accommodate construction and operations- and maintenance-related activities in some of the segments. In other segments, existing public and private roads would be used to access the construction and representative staging areas. The five types of new access roads that would be required are defined as follows:

- **Access Type A** – Access from adequate private roads. This type of access would be used when there is no existing road adjacent and parallel to the alignment, but where there is a patchwork of existing roads in the area that could be used to get close to the structure locations. Grading between the existing roads and each structure location would only be conducted where necessary and depending upon site conditions. Grading and other improvements may not be necessary depending on site conditions.
- **Access Type B** – Parallel to maintained public roads. This type of access would be used when the alignment roughly parallels a nearby public road that is either paved or has gravel surfacing. Except in rare cases, the existing roads would not be upgraded. Spur roads would be used between the existing roads and each structure location as described below under access type E.
- **Access Type C** – Parallel to existing utility roads. This type of access would be used when the alignment roughly parallels an existing utility that already has an existing access road. Spur roads would be used between the existing utility roads and each structure location as described below under access type E. Generally, the existing utility roads would be improved. At a minimum, it is anticipated a road grader would be used to ensure a smooth surface for construction activities. Roads with a travel surface width less than 12 feet would be widened to approximately 12 feet. Typically, the overall disturbance would be limited to 16 feet (approximately 2 feet on either side of the road surface).
- **Access Type D** – Needs new down-line primary access. This type of access would only be used when access types A–C are not feasible. It would 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 would be entirely within the ROW. Typically, new down-line access would be used if any parallel roads are more than 700 feet from the alignment. This access type would 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 facilities that do not allow for the addition of spur roads.
- **Access Type E –** Spur Roads–improved and unimproved access. Spur roads would be used at select access points for permanent access to the proposed ROW where existing or new roads are not adequate. Spur roads would 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. Only where necessary, spur roads would be improved, the roads would be graded to 10 to 12 feet wide. Spur roads would not be improved in areas with flat terrain and within grassland, desertscrub, sand scrub, and sand dune vegetation communities. Unimproved spur (two-track) roads would be used to crush vegetation by driving, but not crop or blade. This would avoid removal of root mass and organics in the soil (no surface soil is removed). The purpose of unimproved spur roads would be to preserve the maximum amount of native vegetation and minimize overall disturbance.

The mileage proposed for each of the four primary types of access roads is identified in table 4.18-1.

Table 4.18-1. Miles of Proposed New Access Roads on BLM Lands by Type of Access Road

	Access Road Type on BLM lands (miles)				
Subroute	**A**	**B**	**C**	**D**	**E**
New Build Route Group 1: Afton Substation to Hidalgo Substation					
Subroute 1.1					
P1	0.0	0.0	0.0	5.1	0.0
P2	4.9	11.8	98.1	0.0	29.3
P3	0.0	0.0	0.0	31.1	0.0
P4a	0.0	0.0	8.8	0.0	1.9
Total	**4.9**	**11.8**	**106.9**	**36.2**	**31.2**
Subroute 1.2					
S1	0.0	0.0	4.3	9.0	0.6
S2	0.0	0.0	0.0	11.0	0.0
S3	0.0	12.9	0.0	0.0	4.9
S4	0.0	0.0	0.0	10.5	0.0
S5	3.7	13.9	5.3	7.4	5.9
S6	1.0	0.0	0.0	6.4	0.3
S7	0.0	21.0	1.0	19.4	6.6
S8	0.0	0.0	0.0	14.5	0.0
Total	**4.7**	**47.8**	**10.6**	**78.2**	**18.2**
Route Group 1 Local Alternatives					
DN1	0.0	0.0	0.0	42.5	4.3
A	0.0	8.1	8.4	1.2	6.3
B	0.0	12.0	0.0	0.0	4.1
C	0.3	7.7	0.0	1.2	2.0
D	0.0	0.0	13.1	9.6	0.6

Table 4.18-1. Miles of Proposed New Access Roads on BLM Lands by Type of Access Road (Continued)

Subroute	Access Road Type on BLM lands (miles)				
	A	**B**	**C**	**D**	**E**
New Build Route Group 2: Hidalgo Substation to Apache Substation					
Subroute 2.1					
P4b	0.0	0.0	0.0	13.8	0.0
P4c	0.0	0.0	0.0	1.9	0.0
P5a	0.0	0.0	9.6	0.0	1.6
P5b	0.0	0.0	21.2	0.0	2.7
P6a	0.0	0.0	0.7	0.0	0.1
P6b	0.0	0.0	20.8	2.3	2.7
P6c	0.0	0.0	2.8	0.0	0.4
P7	0.0	0.5	22.1	0.0	3.8
P8	0.5	0.0	0.0	0.0	0.0
Total	**0.5**	**0.5**	**77.2**	**18.0**	**11.3**
Subroute 2.2					
E	2.5	0.0	0.0	29.2	0.9
F	6.8	0.0	7.6	12.0	2.4
Ga	5.2	0.9	8.6	11.4	2.5
Gb	0.2	0.0	0.0	0.8	0.0
Gc	1.2	3.8	2.4	0.0	1.3
I	0.0	0.0	0.0	2.3	0.0
J	0.0	0.0	2.3	0.0	0.4
Total	**15.9**	**4.7**	**20.9**	**55.8**	**7.5**
Route Group 2 Route Variations					
P7a	0.4	9.1	15.9	5.3	5.4
P7b	0.0	3.1	4.6	2.7	1.0
P7c	0.0	0.0	1.0	0.0	0.1
P7d	0.0	0.0	2.0	0.0	0.3
Route Group 2 Local Alternatives					
LD1	6.1	0.0	10.8	19.0	5.7
LD2	0.0	0.0	0.0	8.9	0.0
LD3a	0.0	0.4	17.3	11.4	3.0
LD3b	0.0	0.0	0.0	2.2	0.0
LD4	0.0	0.0	0.0	51.5	5.4
LD4-Option 4	0.0	0.0	0.0	6.5	0.6

Table 4.18-1. Miles of Proposed New Access Roads on BLM Lands by Type of Access Road (Continued)

Subroute	Access Road Type on BLM lands (miles)				
	A	**B**	**C**	**D**	**E**
Route Group 2 Local Alternatives, cont'd.					
LD4-Option 5	0.0	0.0	9.9	0.0	1.2
WC1	0.0	0.0	2.4	12.5	0.4
Upgrade Group 3: Apache Substation to Pantano Substation					
Subroute 3.1					
U1a	4.9	0.0	11.9	0.0	7.0
U1b	0.0	0.0	2.7	0.0	0.1
U2	1.5	0.0	21.0	0.0	7.0
U3a	0.8	0.0	36.2	0.0	3.9
Total	**7.2**	**0.0**	**71.8**	**0.0**	**18.1**
Route Group 3 Local Alternative					
H	0.0	0.0	20.8	0.0	6.5
Upgrade Route Group 4: Pantano Substation to Saguaro Substation					
Subroute Group 4.1					
U3b	0.2	0.0	0.2	0.0	0.1
U3c	0.7	0.0	0.0	0.0	0.1
U3d	3.1	0.0	1.7	0.0	1.0
U3e	0.0	0.0	0.9	0.0	0.0
U3f	0.0	0.0	0.7	0.0	0.0
U3g	0.9	0.0	0.3	0.0	0.1
U3h	0.9	0.0	0.0	0.0	0.1
U3i	7.4	0.0	12.8	0.0	2.1
U3j	1.6	0.0	0.0	0.0	0.5
U3k	3.3	0.0	15.1	0.0	5.7
U3l	0.6	0.0	0.4	0.2	0.3
U3m	0.4	0.0	0.0	0.0	0.1
U4	0.0	0.0	1.8	0.0	0.5
Total	**19.1**	**0.0**	**34.0**	**0.2**	**10.7**

Table 4.18-1. Miles of Proposed New Access Roads on BLM Lands by Type of Access Road (Continued)

Subroute	Access Road Type on BLM lands (miles)				
	A	B	C	D	E
Route Group 4 Route Variation					
U3aPC	0.0	4.7	1.5	0.0	1.3
Route Group 4 Local Alternatives					
MA1	1.0	0.0	0.0	0.0	0.2
TH1a	0.0	1.5	0.0	0.0	0.2
TH1b	0.2	1.7	0.0	0.0	0.8
TH1c	0.4	0.0	0.0	0.0	0.1
TH1-Option	0.0	0.4	0.0	0.0	0.1
TH3-Option A	1.8	0.0	0.0	0.0	0.6
TH3-Option B	0.4	0.0	0.4	0.0	0.2
TH3-Option C	0.0	0.0	1.0	0.0	0.3
TH3a	3.0	0.0	1.1	0.0	1.2
TH3b	2.7	0.6	1.6	0.0	1.3

The construction of access road types A, B, and C would not increase access to other roads or adjacent lands because these types of access roads would only improve existing roads or consist of short spur roads that dead-end at the transmission line. Where possible, spur roads would be constructed as unbladed two-track roads that would be less conducive to driving on by low clearance vehicles. The construction of access road types D and E would have the potential to increase accessibility to other roads and adjacent lands, including BLM roads and lands, because this type of access road would be a new road, connect to other existing roads, and would be an addition to the existing network of roads.

In the New Build Section route group 1, subroute 1.2 (96.4 miles of access road types D and E) would have the highest potential to increase access to other BLM roads and adjacent BLM lands when compared to Subroute 1.1 (67.4 miles of access road types D and E). Of the New Build Section route group 1 local alternatives, the DN1 would have the highest potential to increase access to other BLM roads and adjacent BLM lands by constructing 46.8 miles of new roads (access road types D and E).

In the New Build Section route group 2, subroute 2.2 (63.3 miles of access road types D and E) would have the highest potential to increase access to other BLM roads and adjacent BLM lands when compared to Subroute 2.1 (29.3 miles of access road types D and E). Of the New Build Section route group 2 local alternatives, the LD4 would have the highest potential to increase access to other BLM roads and adjacent BLM lands by constructing 56.9 miles of new roads.

Because the alternatives in the Upgrade Section would use existing transmission line alignments, only a minimal number of miles of access road types D and E would be constructed. In Upgrade Section route group 3, 18.1 miles of access road type E would be constructed for subroute 3.1, and 6.5 miles of access road type E would be constructed under local alternative H. In Upgrade Section route group 4, 10.9 miles of access road types D and E would be constructed for subroute 4.1. Local alternatives in the Upgrade Section route group 4 would include the construction of up to 1.3 miles of access road type E under route variation U3aPC and alternative TH3b.

As stated above, the construction of the new roads would increase the potential for the public to access existing BLM roads and adjacent BLM lands, including roads and lands that are not currently accessible by the public. However, GIS data and local maps show that the analysis areas for the New Build Section have an extensive network of existing rural roads and trails (that may or may not be on BLM land) throughout the New Build Section. Thus, with minimal potential to open access to land areas where it is not currently available, no large expanses of land that are currently inaccessible would become available if any of the action alternatives were to be built. In addition, the construction of unbladed two-track spur roads instead of bladed improved spur roads for type E roads, where feasible, would reduce unauthorized access by limiting the types of vehicles that would be able to use the spur road. The impact of increasing access to BLM roadless areas would be considered minor.

Agency Preferred Alternative

NEW BUILD SECTION

Under the Agency Preferred Alternative for the New Build Section, impacts to traffic on primary access roads, consistency with Federal, State, and local transportation plans, and impacts to airports, flight patterns, and airport plans would be the same as described under "Impacts Common to All Action Alternatives." In general, the Agency Preferred Alternative for the New Build Section would cross a sparsely populated rural area. Traffic would be generated primarily during the construction, but also minimally during the maintenance and operation phases. However, given the existing low level of traffic on primary roadways within the New Build Section and the low level of anticipated traffic during construction, only short-term minor impacts to traffic on primary roads would be anticipated. Continued coordination with Federal, State, and local transportation agencies would ensure the preferred alternative would not impact transportation plans. Continued coordination with airports would ensure that the preferred alternative would not interfere with flight paths or airport plans.

The Agency Preferred Alternative for the New Build Section would have impacts to BLM roads and roadless areas by increasing opportunities for illegal access to roads/areas currently closed to public access. This impact would most likely occur from the construction of new access roads, type D and type E. Under the Agency Preferred Alternative, 52.3 miles of new access roads type D would be constructed and 43.9 miles of new access roads type E would be constructed in the New Build Section. However, GIS data and local maps show that the analysis areas for the Agency Preferred Alternative have an extensive network of existing rural roads and trails (that may or may not be on BLM land) throughout the New Build Section. Thus, with minimal potential to open access to land areas where it is not currently available, no large expanses of land that are currently inaccessible would become available if any of the action alternatives were to be built. In addition, the construction of unbladed two-track spur roads instead of bladed improved spur roads for type E roads, where feasible, would reduce unauthorized access by limiting the types of vehicles that would be able to use the spur road. The impact of increasing access to BLM roads and BLM roadless areas would be considered minor and similar to the impacts of the other action alternatives.

UPGRADE SECTION

Under the Agency Preferred Alternative for the Upgrade Section, impacts to traffic on primary access roads, consistency with Federal, State, and local transportation plans, and impacts to airports, flight patterns, and airport plans would be the same as described under "Impacts Common to All Action Alternatives." In general, the Agency Preferred Alternative for the Upgrade Section is in a sparsely populated rural and natural setting, with the exception of the Tucson metropolitan area. Traffic would be generated during the construction, maintenance, and operation phases, of which the relatively greatest level of traffic from the preferred alternative would occur during the construction phase. Traffic impacts

from construction traffic, especially large trucks and potential oversized load deliveries, would be expected to be higher in the Tucson metropolitan area where there are higher levels of existing traffic. However, given the low level of anticipated traffic generated by the Agency Preferred Alternative during construction and the mitigation measures proposed to minimize impacts during peak traffic hours, only minor, short-term impacts to traffic on primary roads would be anticipated. Continued coordination with Federal, State, and local transportation agencies would ensure the Agency Preferred Alternative would not impact transportation plans. Continued coordination with airports, including the filing of Form 7460-1 with the FAA prior to construction, would ensure that the Agency Preferred Alternative would not interfere with flight paths or airport plans.

The Agency Preferred Alternative for the Upgrade Section would have impacts to BLM roads and roadless areas by increasing opportunities for illegal access to roads/areas currently closed to public access. This impact would most likely occur from the construction of new access roads, type D and type E. Because the alternatives in the Upgrade Section would use existing transmission line alignments, only a minimal number of miles of access road types D and E would be constructed. Under the Agency Preferred Alternative 0.2 mile of new access roads type D would be constructed and 30 miles of new access roads type E would be constructed. However, GIS data and local maps show that the analysis areas for the Agency Preferred Alternative have an extensive network of existing rural and urban roads and trails (that may or may not be on BLM land) throughout the Upgrade Section. Thus, with minimal potential to open access to land areas where it is not currently available, no large expanses of land that are currently inaccessible would become available if any of the action alternatives were to be built. In addition, the construction of unbladed two-track spur roads instead of bladed improved spur roads for type E roads, where feasible, would reduce unauthorized access by limiting the types of vehicles that would be able to use the spur road. The impact of increasing access to BLM roads and BLM roadless areas would be considered minor and similar to the impacts of the other action alternatives.

Unavoidable Adverse Impacts

Implementation of the proposed Project would create minor, temporary, short-term impacts to traffic on primary roads during construction, as a result of construction traffic and oversize and overweight vehicle deliveries.

Although mitigation measures would minimize the potential for the public to be able to access BLM roads and lands that are currently inaccessible by the public, the construction of new access roads would increase the potential for this to occur. Therefore, the increase in access to BLM roads and lands that are currently inaccessible by the public would be considered minor.

Short-term Uses versus Long-term Productivity

The proposed Project would generate short-term uses of existing transportation facilities by increasing traffic on primary roads and causing temporary traffic disruptions during construction. However, these short-term uses would not affect the long-term productivity of the primary roads.

Irreversible and Irretrievable Commitments of Resources

The proposed Project would constitute a small irretrievable impact to traffic on primary roads during construction; however, construction-related impacts to traffic on primary roads would cease following construction.

The potential for the public to access BLM roads and lands that are currently not accessible to the public by the construction of new access roads would constitute an irreversible impact to BLM roads and BLM roadless areas.

4.19 INTENTIONAL ACTS OF DESTRUCTION

4.19.1 Introduction

This section describes the potential impacts that intentional acts of destruction on the proposed transmission line, substations, and ancillary facilities could have on public health and safety. Intentional destructive acts include acts of sabotage, terrorism, vandalism, and theft, which sometimes occur during construction and operation and maintenance of power facilities. Vandalism and thefts are the most common intentional destructive act, especially theft of metal and other materials that can be sold when the price of construction materials is high on the salvage market. It is important to note that acts of sabotage or terrorism on electrical facilities are rare.

4.19.2 Methodology and Assumptions

It is not possible to predict with certainty whether the transmission line, substations, and ancillary facilities would be the target of an intentional act of destruction and what type of intentional act of destruction would occur. Whereas individual acts of vandalism and theft (i.e., metal theft from a substation) could most likely cause a localized temporary impact to the proponent, acts of sabotage and terrorism could most likely cause a larger and longer-term impact to the general public. This section analyzes the potential effects that an act of sabotage or terrorism would have on the adjacent areas of the proposed electrical facilities and the potentially impaired critical services that would receive electricity from the action alternatives. Therefore, this analysis assumes that an intentional act of sabotage or terrorism would result in potential damage to adjacent areas and disruption of service to the public.

Analysis Area

NEW BUILD SECTION

Based on the height of the proposed transmission line support structures, the analysis area for intentional acts of destruction on the transmission lines and substations is 200 feet from the edge of the ROW corridor for the transmission lines. Critical facilities (e.g., hospitals, emergency response services) that would receive power from the proposed transmission lines are also analyzed.

UPGRADE SECTION

The analysis area for intentional acts of destruction within the Upgrade Section is the same as identified above for the New Build Section.

Analysis Assumptions

This analysis assumes that an intentional act of destruction from vandalism and theft would not pose a threat to public health and safety, and is therefore not analyzed. Acts of sabotage or terrorism could potentially damage areas adjacent to the transmission line, substations, and ancillary facilities and could potentially disrupt service to the public, including critical services such as emergency response, hospitals, communications, and water supply.

Impact Indicators

It is not possible to predict whether an intentional act of destruction would occur, what kind of intentional act of destruction would occur, or the magnitude of damage that an intentional act of destruction on the existing and proposed electrical infrastructure could have. Therefore, no impact indicators are appropriate for the analysis of intentional acts of destruction. Instead, the following analysis describes the potentially affected areas and critical services that could be directly and indirectly impacted by an act of sabotage or terrorism on the electrical facilities, should one occur.

Significant Impacts

For the purposes of this analysis, a significant impact from an act of sabotage or terrorism could result if any of the following were to occur during the construction or operation and maintenance of the proposed Project:

- Indirect damage to areas immediately adjacent to the proposed transmission line, substations, and/or ancillary facilities where an act of sabotage or terrorism has occurred; and
- Disruption of service to the general public and critical services.

4.19.3 Impacts Analysis Results

No Action Alternative

As described in chapter 3, acts of sabotage and terrorism on electrical facilities have been rare; however, threats to the existing electricity infrastructure from sabotage and terrorism would continue to be a possibility under the no action alternative. Because of the generally rural setting of the majority of the analysis area for the New Build and Upgrade sections, an act of sabotage or terrorism on existing electricity infrastructure would have a negligible impact to adjacent land. However, urban areas adjacent to electrical infrastructure in the Upgrade Section (i.e., Tucson) would continue to have a threat of being impacted by an act of sabotage or terrorism.

With regard to the disruption of service to the general public and critical services, an act of sabotage or terrorism on the existing electricity infrastructure could potentially have a greater chance of disrupting power to the general public and critical services because the proposed Project would not be in place to potentially provide an alternative source of electricity.

Impacts Common to All Action Alternatives

An intentional act of destruction from sabotage or terrorism on the electrical infrastructure of all action alternatives would have the same direct and indirect impacts on public health and safety. In general, the electricity infrastructure proposed by all of the action alternatives could potentially be targets of an act of sabotage or terrorism. However, 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 would be available to continue the delivery of electricity.

Lands immediately adjacent to the proposed transmission line, substations, and ancillary facilities could be indirectly impacted by an act of sabotage or terrorism, should the unlikely event occur. In the rural areas of the New Build Section and Upgrade Section analysis areas, the indirect effect on adjacent land would be negligible because of the lack of development adjacent to the proposed routes. In urban areas

within the Upgrade Section of the analysis area, the indirect effect of an act of sabotage or terrorism would be the same as the existing condition, because the proposed lines would follow existing alignments. If an act of sabotage or terrorism occurred at facilities adjacent to urban areas, there would be a greater chance that public health and safety would be indirectly impacted.

Should an act of sabotage or terrorism occur on the proposed transmission line, substations, and ancillary facilities, public health and safety could be affected by a disruption of service. The general public and the critical services identified in chapter 3 could be potentially directly impacted. However, the risk of this happening is low, considering that acts of sabotage and terrorism on electricity infrastructure are rare. Existing lines not affected by the act of sabotage or terrorism would be able to continue to deliver electricity to the affected areas, and most critical services are required to have backup generators to provide electricity when service through transmission lines is interrupted. Therefore, the unlikely impacts of acts of sabotage or terrorism would be minor and would not be considered significant, as defined above.

Agency Preferred Alternative

Under the Agency Preferred Alternative, impacts from intentional acts of destruction would be considered similar to the other action alternatives as described under “Impacts Common to All Action Alternatives.” 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 would 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 and 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 would be available to continue the delivery of electricity. Therefore, the potential impacts from the unlikely event of an act of terrorism or sabotage from the Agency Preferred Alternative would be considered minor and similar to the other action alternatives.

Residual Impacts

It is not possible to determine where an intentional act of destruction could occur along the proposed transmission line or infrastructure. The alignment would traverse undeveloped and developed areas that have unique qualities of minimizing residual impacts. On one hand, aligning the transmission lines in undeveloped areas would reduce the potential indirect impact that an act of sabotage or terrorism would have public health and safety by buffering the distance between the lines and developed areas. On the other hand, the segments of the transmission lines that would be in close proximity to developed areas would have the advantage of being near people who might detect individuals with the intention of attacking the infrastructure and prevent the act from occurring by informing authorities. Industry standard security measures would deter unauthorized personnel from accessing substations and ancillary facilities and carrying out an act of sabotage or terrorism. However, no mitigation measure could wholly prevent an act of sabotage or terrorism. Therefore, the risk of a potential act of sabotage or terrorism directly and/or indirectly impacting land adjacent to the proposed Project facilities and disrupting electrical service to the general public and critical services would not be fully mitigated.

Unavoidable Adverse Impacts

Unavoidable adverse impacts could occur as a result of an intentional act of destruction to the proposed electricity infrastructure in the form of power outages and disruptions of service. However, given the

redundancies built into the power system, outages and disruptions of service would most likely be of a brief duration.

Short-term Uses versus Long-term Productivity

"Short-term uses versus long-term productivity" is not applicable to the analysis of impacts from intentional acts of destruction, because intentional acts of destruction are not a natural or socioeconomic resource.

Irreversible and Irretrievable Commitments of Resources

Analysis of irreversible and irretrievable commitments of resources is not applicable because intentional acts of destruction are not a natural or socioeconomic resource.

4.20 IMPACTS OF DRAFT RESOURCE MANAGEMENT PLAN AMENDMENTS

4.20.1 Introduction

Direct and indirect effects of the proposed Project have been described in the preceding sections. This section describes the potential environmental impacts of potential land use plan amendments. The proposed Project would cross Federal lands managed by the BLM. Actions that occur on these lands, including the granting of ROWs under Title V of FLPMA, are guided by decisions recorded in the applicable RMP. The BLM has determined that the six Project segments in New Mexico would not conform to certain aspects of the Mimbres RMP. Approval of a Project-specific proposal that is inconsistent with the existing land use plan requires that a land use plan amendment be completed (BLM "Land Use Planning Handbook H-1601-1" (BLM 2005b)).

The planning action is to consider amending one BLM land use management plan as a part of this EIS. This action is being considered under the BLM 1600 manual guidance (BLM Land Use Planning Handbook H-1601-1), New Mexico and Arizona State BLM instruction memoranda, and the planning regulations published as Title 43 CFR (including 1610.5-5, Amendments).

A report ("Southline Transmission Proposal: Mimbres RMP Conformance Review" (BLM 2013q)) was compiled by the BLM Las Cruces District Office to document compliance with the Mimbres RMP (BLM 1991). From this analysis, needs for potential amendments were identified and analyzed based on planning issues and criteria. As discussed in chapter 2, a plan amendment for the Mimbres RMP would be required for the portion of the alternative route segment (local alternative LD2 near the Lordsburg Playa) that parallels an avoidance area designated for the Butterfield Trail. A plan amendment would also be required for the Mimbres RMP that would change the VRM Class II to VRM Class III or IV for six Project segments within the New Build Section that intersect VRM Class II lands (table 4.20-1, figures 4.20-1 and 4.20-2).

Table 4.20-1. Draft RMP Amendment Areas

Segments/ Local Alternatives	Miles of Segments Crossing VRM Class II	Miles of Segments Crossing ROW Avoidance Area– Butterfield Trail
S5	1.2	0
S6	4.4	0
S7	13.7	0
C	3.7	0
D	1.8	0
LD2	3.1	9.1

Four plan amendment alternatives have been identified for the Mimbres RMP. These options include (1) the no action, (2) modifying VRM Class II to Class III, (3) modifying VRM Class II to Class IV, and (4) allowing a ROW to parallel the Butterfield Trail in a ROW avoidance area.

- **No Action:** If no action is taken, then the ROW for the proposed Project would not be granted and no amendment to the Mimbres RMP would be necessary.
- **Modify VRM Class II to Class III:** Under this plan amendment option, where the proposed 200-foot Project ROW crosses VRM Class II lands, the VRM class would be modified and reclassified to VRM Class III.
- **Modify VRM Class II to Class IV:** Under this plan amendment option, where the proposed 200-foot Project ROW crosses VRM Class II lands, the VRM class would be modified and reclassified to VRM Class IV.
- **Modify ROW Avoidance Area Stipulation:** Under this plan amendment option, where the proposed 200-foot Project ROW would parallel the Butterfield Trail along local alternative LD2, the ROW avoidance area would be modified. The special stipulations for ROWs in the Mimbres RMP would be modified from "Facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail" to "facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail, except for a 9.1-mile-long linear transmission ROW at the Lordsburg Playa."

Amending Mimbres RMP to change a ROW avoidance area stipulation or change the VRM classification would not involve any ground-disturbing activities, but would allow for ground-disturbing activities to occur. Because the plan amendment modifications would be limited to the proposed Southline ROW, direct and indirect impacts are therefore expected to be limited to those that would result from the construction, operation, and maintenance activities from the proposed Southline Project. Thus, impacts that may result from amending the plan would be limited to land use, special designations, and visual resources. These impacts are discussed under the corresponding sections below.

Because amending the Mimbres RMP as described would not immediately involve ground disturbance or development, this action would not directly or indirectly impact the remaining resources beyond the direct and indirect impacts described in sections 4.2 through 4.19 (air quality; noise and vibration; geology and mineral resources; soil resources; paleontological resources; water resources; biological resources, including vegetation and wildlife; cultural resources; visual resources; farm and range resources; military operations; special designations; wilderness characteristics; recreation; socioeconomics and environmental justice; public health and safety; hazardous materials and hazardous and solid waste; transportation; or intentional acts of destruction).

The Agency Preferred Alternative would not require an amendment to the Mimbres RMP.

4.20.2 Land Use

No Action

Under the no action alternative, the BLM would not grant the ROW for the proposed Project and no plan amendment would be required. Therefore there would be no impacts to land use from the no action alternative for RMP amendments. Under the no action alternative, the BLM may update its RMP as part of the normal land use planning process, which may include changes to current ROW avoidance areas.

Modify Right-of-Way Avoidance Area Stipulation

As noted previously, avoidance areas are to be avoided by major ROWs, but may be available for location of major ROWs with the application of plan amendments, special stipulations, design features, and/or mitigation measures.

Under this plan amendment alternative, where the proposed 200-foot Project ROW would parallel the Butterfield Trail along local alternative LD2 for 9.1 miles, the stipulation for the ROW avoidance area would be modified. The special stipulations for ROWs in the Mimbres RMP would be modified from "Facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail" to "Facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail, except for a 9.1-mile-long linear transmission ROW at the Lordsburg Playa."

This would allow a 200-foot-wide by 9.1-mile-long segment (approximately 220 acres) of the proposed Southline Project (local alternative LD2) to parallel the Butterfield Trail in the ROW avoidance area near Lordsburg Playa. In terms of land use, this would have minor, long-term impact by amending the RMP. The impact would be minor since land uses surrounding the 220 acres would not change, but would be long-term since the change would persist throughout the life of the planning document and the proposed Project.

4.20.3 Special Designations

No Action

Under the no action alternative, the BLM would not grant the ROW for the proposed Project and no plan amendment would be required. Therefore there would be no impacts to special designations from the no action alternative for RMP amendments. Under the no action alternative, the BLM may update its RMP as part of the normal land use planning process, which may include changes to current special designations classifications in the area.

Modify Right-of-Way Avoidance Area Stipulation

The Butterfield Trail is managed by the BLM as a special designation under the Mimbres RMP. Under this plan amendment option, where the proposed 200-foot Project ROW would parallel the Butterfield Trail along local alternative LD2 for 9.1 miles, the ROW avoidance area would be modified. The special stipulations for ROWs in the Mimbres RMP would be modified from "Facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail" to "Facilities will not be located parallel to the Continental Divide National Scenic Trail or Butterfield Trail, except for a 9.1-mile-long linear transmission ROW at the Lordsburg Playa."

As noted above in land use, implementation of this plan amendment alternative would allow a 200-foot wide by 9.1-mile-long segment (approximately 220 acres) of the proposed Southline Project to parallel the Butterfield Trail in the ROW avoidance area near Lordsburg Playa. Appendix F of this EIS analyzes the impacts of the proposed Project on trails, including the Butterfield Trail. The goals in the Mimbres RMP outlined for the Butterfield Trail are to manage to protect and interpret historical values.
An amendment of the Mimbres RMP to modify the ROW stipulation as described above, would have a long-term, moderate impact on special designations, specifically the Butterfield Trail. The impact would be moderate since the recreational setting for approximately 220 acres of the Butterfield Trail corridor would change, and the impact would be long-term since the change would persist throughout the life of the planning document and the proposed Project.

4.20.4 Visual Resources

No Action

Under the no action alternative, the BLM would not grant the ROW for the proposed Project and no plan amendment would be required. Therefore there would be no impacts to visual resources from the no action alternative for RMP amendments. Under the no action alternative, the BLM may update its RMP as part of the normal land use planning process, which may include changes to current VRM classifications in the area.

Modify Visual Resource Management Class II to Class III

VRM Class III objectives are established in areas where the level of change to the existing character of the landscape should be moderate. Plan amendments to address conformance issues with VRM classification would only occur in association with the following segments. The remaining segments have been determined to be in conformance with applicable BLM land use plans or do not cross BLM-managed lands.

SUBROUTE 1.2 PROPONENT ALTERNATIVE

Under this alternative, segments S5, S6, and S7 cross VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 468.5 acres of VRM Class II lands to VRM Class III lands. Impacts to scenic quality and viewer sensitivity from the selection of segments S5, S6, and S7 were determined to be moderate, and so would be in compliance with a VRM III classification. Because this amendment would only include the 200-foot-wide Project ROW along segments S5, S6, and S7, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for segments S5, S6, and S7.

SUBROUTE 1.2 LOCAL ALTERNATIVES

Under this plan amendment alternative, local alternatives C and D cross VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 130.6 acres of VRM Class II lands to VRM Class III lands. Impacts to scenic quality and viewer sensitivity from local alternatives C and D would be moderate, and so would be in compliance with a VRM III classification. Because this amendment would only include the 200-foot-wide Project ROW along local alternatives C and D, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for local alternatives C and D.

ROUTE GROUP 2 LOCAL ALTERNATIVES

Under this plan amendment alternative, local alternative LD2 crosses VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 75.2 acres of VRM Class II lands to VRM Class III lands. These VRM Class II lands were designated to follow the route of the Butterfield Trail historic trail where it crosses BLM land. Impacts to scenic quality and viewer sensitivity from LD2 were determined to be low, and so would be in compliance with a VRM III classification. Because this amendment would only include the 200-foot-wide Project ROW along this local alternative, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for local alternative LD2 (see section 4.10). Similarly, the effect of the plan amendment to change VRM classes would not change the overall land use management of the Mimbres RMP, as described under the direct and indirect effects of land use resources.

Modify Visual Resource Management Class II to Class IV

VRM Class IV objectives are set for landscapes that BLM manages for uses that will result in substantial landscape changes. Plan amendments to address conformance issues with VRM classification would only occur in association with the following segments. The remaining segments have been determined to be in conformance with applicable BLM land use plans, or do not cross BLM-managed lands.

SUBROUTE 1.2 PROPONENT ALTERNATIVE

Under this plan amendment alternative, segments S5, S6, and S7 cross VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 468.5 acres of VRM Class II lands to VRM Class IV lands. Because this amendment would only include the 200-foot-wide Project ROW along route segments S5, S6, and S7, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for segments S5, S6, and S7.

SUBROUTE 1.2 LOCAL ALTERNATIVES

Under this plan amendment alternative, local alternatives C and D cross VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 130.6 acres of VRM Class II lands to VRM Class IV lands. Because this amendment would only include the 200-foot-wide Project ROW along local alternatives C and D, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for local alternatives C and D.

ROUTE GROUP 2 LOCAL ALTERNATIVES

Under this alternative, local alternative LD2 crosses VRM Class II BLM-managed lands. The proposed plan amendment would result in the reclassification of 75.2 acres of VRM Class II lands to VRM Class IV lands. Because this amendment would only include the 200-foot-wide Project ROW along this local alternative, the effects of the plan amendment on visual resources are expected to be the same as those described under the direct and indirect effects for local alternative LD2 (see section 4.10).

4.21 CUMULATIVE IMPACTS

4.21.1 Introduction

This section addresses the cumulative effects of the proposed Project that would result when combined with other past, present, and reasonably foreseeable actions. CEQ regulations for implementing NEPA define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). Further, BLM's NEPA Handbook states that the purpose of the cumulative effects analysis is to ensure the decision makers consider the full range of the consequences of the proposed Project and alternatives, including the no action alternative (BLM 2008a).

The following sections discuss the analysis parameters, including the geographic cumulative effects analysis area (CEAA) and the timeframe for the analysis, the methodology and then the effects by resource. The analysis of cumulative effects by resource considers the proposed Project's contribution to the environmental impacts of other past, present and future actions and whether the cumulative effects are significant.

4.21.2 Analysis Parameters

The geographic CEAA may vary by resource (see section 4.21.4); however, the following CEAA was used to identify past, present, and reasonably foreseeable future projects that may have a cumulative impact when considered with the proposed Southline Project. For the New Build Section of the proposed Project, the CEAA encompasses the geographic area between the Afton Substation near Las Cruces, New Mexico, and the existing Apache Substation near Willcox, Arizona. The New Build Section CEAA generally measures 40 miles north-south, all within the boundaries of New Mexico and Arizona (does not extend outside the United States). The Upgrade Section CEAA extends between the Apache Substation near Willcox to the existing Saguaro Substation north of Tucson, Arizona. The Upgrade Section CEAA is not as wide as the New Build Section CEAA because the cumulative effects of upgrading the existing line are generally expected to be more localized.

Table 4.21-1 summarizes the past, present, and future actions and uses considered in this assessment; see also figures 4.21-1a through 4.21-1d for a depiction of actions considered in this analysis. In general, projects that could result in similar cumulative effects include linear projects such as railroads, transmission lines, and pipelines. Fifty-six projects or actions have been identified that when combined with the proposed Project may result in cumulative impacts. These projects span the entire extent of the proposed Project and nearby region, and they range in proximity.

In terms of timeframe, the cumulative effects analysis is considered over a 50-year time period—the estimated lifespan of the proposed Project. Although the cumulative effects analysis is considered over a 50-year period, only those projects which are "reasonably foreseeable" are considered in the analysis. For the purpose of this analysis, "reasonably foreseeable" actions are considered where there is an existing decision (i.e., record of decision or issued permit), a commitment of resources or funding, a formal proposal (i.e., a permit request). Actions that are highly probable based on known opportunities or trends (i.e., residential development in urban areas) are also considered. Speculative future developments (i.e., enabling access to unknown renewable energy projects) are not considered.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
New Build Section, Past and Present Projects				
Existing distribution lines less than 230-kV*	381 miles	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico	Existing transmission distribution lines below 230 kV (69 and 115 kV): 381 miles	Existing distribution lines less than 230 kV are anticipated to continue their current operation.
Existing transmission lines 230-kV and greater*	303 miles	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico	Between 231 and 344 kV: 38 miles Between 345 and 499 kV: 265 miles Above 500 kV: none	Existing distribution lines greater than 230kV are anticipated to continue their current operation.
Existing gas pipelines*	1,245 miles	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico	El Paso Natural Gas: 1,190 miles Las Cruces Municipal Gas: 16 miles Public Service Company of New Mexico: 14 miles Southwest Gas Corporation: 15 miles Unknown: 10 miles	All existing pipelines are anticipated to continue their current operation.
Existing railroads*	428 miles	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico	Atchison Topeka Santa Fe:11 miles Freeport McMoRan Industrial Railroad: 26 miles Southern Pacific Company Railroad: 13 miles Southern Pacific Railroad: 97 miles Unidentified: 148 miles Abandoned Railroads: 134 miles	Unknown
Arizona Game and Fish Department Catchment 368*, +7	1 acre	Graham County, Arizona	Complete redevelopment of AGFD Catchment #368 located on the 10 Ranch east of Dyl Canyon to supply water as a year round source to wildlife.	Two-thousand gallon catchment and concrete apron was replaced in May 2009 with an 18-foot fiberglass tank and a sheet metal apron.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
New Build Section, Reasonably Foreseeable Future Projects				
Potential network upgrades	5 acres per substation	El Paso County, Texas and Doña Ana County, New Mexico	Upgrades within existing substations at Newman Substation southeast of Afton Substation and in Doña Ana Substation located on the northwest side of Las Cruces, New Mexico. Potential Network Upgrades would occur completely within existing substations fence lines. Existing access to the substations would be used for construction, operation, and maintenance of the Potential Network Upgrade project. Upgrades at Newman Substation would include converting the existing 345kV ring bus to a breaker-and-a-half arrangement and expanding to accommodate an additional 345/115kV transformer bank. Upgrades at Doña Ana Substation would include modifying the existing 115kV line in from Picacho Substation to include the addition of series line reactors.	Timing unknown
SunZia Southwest Transmission Line (“SunZia Project”)*	515 miles	Within Lincoln, Socorro, Sierra, Luna, Grant, Hidalgo, and/or Torrance counties in New Mexico, and Graham, Greenlee, Cochise, Pinal, and/or Pima counties in Arizona	Planned transmission project with up to 4,500 MW of new capacity with multiple substations, and two 500-kV transmission lines Southline Local Alternatives DN1, LD4 were developed to collocate with the SunZia Project agency preferred alternative. Southline DN1 would parallel SunZia Project for 42.5 miles, and LD4 would parallel SunZia Project for 51.7 miles. DN1 and LD4 are not part of the Southline Agency Preferred Alternative.	BLM signed the Record of Decision in January 2015, selecting the agency preferred alternative as identified in the Final EIS (June 2013), except for approximately five miles of the line that will be buried in and near the White Sands Missile Range (outside the CEAA). Construction is estimated for 2018–2020, with the project anticipated to be in service by 2021 (SunZia 2015).
Akela Flats Casino Project*,+++	30 acres	Luna County, New Mexico	The Fort Sill Apache Tribe is proposing to utilize an existing 30,000 square foot building for a casino on their reservation land at Akela Flats in Luna County. The project could include 650 slot machines, full-service restaurant, and a cultural center.	Timing unknown.
New Solar Ventures/Solar Torx*#	Unknown	Luna County, New Mexico	Planned 300-MW photovoltaic solar power plant and/or manufacturing facility. Project would be less than 1 mile from subroute 1.1 in the New Build Section in Luna County, New Mexico.	Schedule not identified. In 2006, Solar Torx signed a lease with the State of New Mexico to hold land for use as the project site. No other information available.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
New Build Section, Reasonably Foreseeable Future Projects, cont'd.				
Sapphire Energy Algae Facility*#	300 acres	Luna County, New Mexico	Partial 300-acre "green crude" demonstration farm with the capacity for 1.5 million gallons of biofuel. Located within the CEAA in the New Build Section of subroute 1.2 near the town of Columbus.	The first 100-acre segment was finished. The second phase will begin in the future – the project schedule is unknown.
Solar Reserve, LLC-1*#	5,296 acres Federal land	Hidalgo County, New Mexico	Planned 100-MW solar power plant.	The project schedule is unknown.
Lordsburg Mesa, Iberdrola Renewables*#	24,320 acres Federal land	Doña Ana County, New Mexico	Planned 1,500-MW solar power plant, within 10.94 miles of the route group 2 local alternatives in the New Build Section.	An application was received by the BLM on March 25, 2008, for the use of 24,320 acres of Federal land for the project. The project does not appear to be under active development. The project schedule is unknown.
Lightning Dock Geothermal Power Plant Project*#	Unknown	Lordsburg, Hidalgo County, New Mexico	Planned 10-MW geothermal project within 11 miles of the route group 2 local alternatives in the New Build Section.	Lightning Dock No. 1 completed in 2013 – Lighting Dock No. 2 expansion underway.
Planned Residential Development Projects New Mexico	Unknown	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico	Both the City of Deming and City of Lordsburg plan for amendments to their municipal zoning and planned-unit development ordinances are anticipated to expand their municipal boundaries to private and State lands in order to facilitate planned residential development.	Construction for new apartment complexes and detached single-family homes is underway, some to be completed in 20154. Planned residential development projects are anticipated to continue throughout the life of the project, as communities require extending boundaries through annexation.
Safford Solar Energy*#	22,891 acres	San Simon, Graham County, Arizona	Planned 250-MW solar project adjacent to subroute 2.2 in the New Build Section.	Identified as pending on list of BLM solar projects for Arizona. However, currently at a standstill due to the lack of a power transmission connection agreement.
Bowie Power Station*#	Unknown	Cochise County, Arizona	Planned 1,000-MW natural gas-fired power station within 0.89 mile of subroute 2.2 in the New Build Section.	To be constructed in two phases of up to 500 MW each. Each project phase is expected to require approximately 3-4 years to completion. Commercial operation is anticipated in 2016. Permits have been granted, including zoning and air permits and a CEC.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
New Build Section, Reasonably Foreseeable Future Projects, cont'd.				
Bowie Power 345-kV Transmission Line#	Unknown	Cochise and Graham counties, Arizona	Planned 345-kV generation tie-in between the proposed Bowie Power Plant and the proposed 345-kV Willow substation within 0.65 mile of route group 2 local alternatives.	Currently expected to begin commercial operation in 2016. An Interconnection Request with TEP, the Initial System Impact Study, and a System Impact Study Re-Study are all complete.
Willow 345-kV Substation*#	Unknown	Graham County, Arizona	Planned 345-kV substation with up to two 500/345-kV transformers to be located in Graham County, Arizona, approximately 7 miles from the route group 2 local alternatives.	The project schedule is unknown.
BrightSource Energy#	14,100 acres	Hidalgo and Luna counties, New Mexico	Planned solar project Proximity to Project: unavailable	In 2008, BrightSource signed two 5-year option agreements to secure lands for the proposed solar facility, including 6,574 acres in Hidalgo County and 7,520 acres in Luna County. An option agreement was signed in 2011 that allows BrightSource 2 years to conduct studies and negotiate power purchase and interconnect agreements.
NextLight Renewable Power#	7,301 acres	Luna, Hidalgo, and Valencia counties, New Mexico	Planned solar project Proximity to Project: unavailable	In 2008, NextLight signed three 5-year option agreements to secure 2,722 acres in Luna County, 3,714 acres in Hidalgo County, and 865 acres in Valencia County for the proposed solar facility. An option agreement was signed in 2011 that allows NextLight 2 years to conduct studies and negotiate power purchase and interconnect agreements. The project schedule is unknown.
High Plains Express Transmission Project#	1,300 miles	Wyoming, Colorado, New Mexico, and Arizona	Planned 1,300-mile, four-state, 500-kV AC transmission line. Proximity to Project: not yet determined	The feasibility study is complete, with evaluation corridor engineering design and permitting currently ongoing. Commissioning is proposed between 2020 and 2025.
AGFD Willcox Playa Wildlife Area Habitat Enhancement*	Unknown	Cochise County, Arizona	Planned enhancement of several wetlands and ponds within the Willcox Playa Wildlife Area within 1 mile of segment P7.	The project schedule is unknown.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
New Build Section, Reasonably Foreseeable Future Projects, cont'd.				
Relocation of Crane Lake	Unknown	Vicinity of Willcox Playa in Cochise County, Arizona	Relocation of Crane Lake and abandonment of the old lake. This is a PCEM of the proposed Southline Project, details of which are under development.	The project schedule is unknown but would coincide closely with the proposed Southline Project.
Listing of Willcox Bench as an American Viticultural Area (AVA)	Unknown	Cochise and Graham counties, Arizona	Planned designation of Willcox Bench as an AVA.	The project schedule is unknown.
Afton SEZ *, +++++	29,964 acres	Southern New Mexico	BLM identified priority areas for utility-scale production of solar energy.	Approved Resource Management Plan Amendments and ROD were issued October 2012. As of April 2015, there were no pending solar project applications within the Afton SEZ.
Upgrade Section, Past and Present Projects				
Existing distribution lines less than 230-kV*	394 miles	Cochise, Pima, and Pinal counties, Arizona	Existing transmission distribution lines below 230 kV (69 and 115kV): 394 miles	Existing distribution lines less than 230kV are anticipated to continue their current operation.
Existing transmission lines (230-kV and greater)*	200 miles	Cochise, Pima, and Pinal counties, Arizona	Between 230 and 344 kV: 105 miles Between 345 and 499 kV: 90 miles Above 500 kV: 5 miles	Existing distribution lines greater than 230kV are anticipated to continue their current operation.
Existing gas pipelines*	222 miles	Cochise, Pima, and Pinal counties, Arizona	El Paso Natural Gas: 209 miles Southwest Gas Corporation: 13 miles	Existing pipelines are anticipated to continue their current operation.
Existing railroads*	93 miles	Cochise, Pima, and Pinal counties, Arizona	P Railroad: 4 miles Southern Pacific Company Railroad: 32 miles Southern Pacific Railroad: 25 miles SP Railroad : 29 miles Unidentified : 2 miles	Unknown

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
Upgrade Section, Past and Present Projects, cont'd.				
Buffalo Soldier Electronic Testing Range (BSETR)*	1.6 million acres	Cochise, Pima, and Santa Cruz counties, Arizona	A Fort Huachuca facility that is the principal Army Test Center for testing of command, control, communications, computer, and intelligence equipment and systems in real, virtual, and constructive environments. The facility spans several counties in southern Arizona and includes the Willcox Dry Lake (Playa). Portions of the proposed Southline Project (subroute 3.1–segments U1a, U1b, and U2 requiring upgrade or local alternative H) cross the BSETR. Lengths of the crossings range from 2.9 miles to 10.3 miles.	Existing facility
Upgrade Section, Reasonably Foreseeable Future Projects				
Whetstone Ranch Solar Project*#	1,600 acres	Cochise County, Arizona	Planned 80-MW solar farm, four stages of 20 MW each, located approximately 6.5 miles south of segment U2 of subroute 3.1.	The Benson Planning and Zoning Commission approved a conditional use permit in March 2012 for the proposed solar project. The project schedule is unknown.
Red Horse 2 Wind Farm	2,765 acres	Cochise County, Arizona	Proposed 30-MW wind farm located approximately 21 miles west of Willcox, Arizona. Project would be located within the BSETR.	The Cochise County Planning and Zoning Commission approved a conditional use permit in 2013 for the proposed wind project. Construction began in January 2015.
Red Horse Solar	686 acres	Cochise County, Arizona	Located on private and ASLD land approximately 2.5 miles west of the Red Horse 2 Wind Farm.	Construction began in January of 2015. Facility is expected to operate for at least 20 years.
Rosemont Copper Mine*#	4,285 acres	Pima County, Arizona	New open-pit copper mine and copper recovery facilities located more than 10 miles south of segment U3a of subroute 3.1.	Rosemont Copper Company submitted a proposal to extract locatable minerals such as copper, molybdenum, and silver from an approximate 955-acre open-pit mine. It is currently in the permitting process.
University of Arizona Tech Park Thermal Storage/Bell Independent Power Corporation*#	200 acres	Pima County, Arizona	Planned 5-MW CSP project utilizing parabolic trough technology located approximately 1 mile from segment U4 of subroute 4.1 within the Upgrade Section.	Construction and operation schedule for the project is unclear at this time.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.				
Excelsior Mine*, +	6,415 acres	Cochise County, Arizona	Exploration and evaluation of an in-situ recovery copper mine located between Benson and Willcox, Arizona north of I-10.	Exploration is currently taking place. Feasibility Study was published January 2014 and currently there is ongoing data collection for permitting. Anticipated date of mine start-up is unknown.
Fort Huachuca Solar Array Park ++	68 acres	Cochise County, Arizona	Solar array being constructed on Fort Huachuca next to the Thunder Mountain Activity Centre. Array will consist of 70,000 4-foot by 6-foot solar panels. The 18-MW system will be owned and maintained by TEP.	Construction of the first of three phases began in April 2014. First phase of project completed in 2015. Phase one expected to operate for 20 years. Schedule unknown for the second and third phase.
Sasabe/Sierrita Lateral Project*#	60 miles	Pima County, Arizona	Approximately 60 miles of 36-inch-diameter, high-pressure pipeline and associated measurement facilities to be located approximately 8.8 miles west of segment U3d of subroute 4.1.	Project completed in 2014; currently operating.
Silverbell Road Improvements*#	8 miles	Pinal County, Arizona	Planned road improvement project by the City of Tucson to widen and install a median to the existing road that would be intersected by segment U3i of subroute 4.1 within the Upgrade Section.	First segment – construction between 2012 and 2016. Second segment – construction between 2022 and 2026.
Sonoran Corridor* +6		Pima County, Arizona	Planned County highway between I-19 and I-10 south of the Tucson International Airport.	Pima County Board of Supervisors recommended proceeding with the Sonoran Corridor on September 16, 2014. Hughes Access Road Relocation completed in 2015.
Tucson International Airport +8 Parallel Runway Expansion Project		Pima County, Arizona	Construction of the Future Far Parallel Runway.	The Airport's 5 year master plan update has been approved by the FAA and monies have been appropriated to begin an EIS to initiate the project.
Tucson International Airport Runway Land Swap +9	52 acres	Pima County, Arizona	Land exchange and relocation of munitions storage bunkers on U.S. Air Force (USAF) Plant 44 (Raytheon). Parcel F (52 acres) exchanged for Parcel g (127.5 acres). Parcel F is required to accommodate expansion of the second parallel main runway. Parcel G is required by USAF Plant 44 as a buffer for existing operations.	The FAA will initiate the (EIS in April 2015.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.				
USAF Plant 44 Buffer +9	223 acres	Pima County, Arizona	Additional buffer space for relocation of munitions storage buffers at the Tucson International Airport will be acquired from the TAA by Pima County (Parcel H). This is required in order to rectify some safety arc issues as well as possible expansion.	The FAA will initiate the EIS in April 2015.
162nd Fighter Wing Munitions Storage Area		Pima County, Arizona	To rectify limited Munitions Storage Area issues on the 162nd Fighter Wing base on the northern, more populated end of the airport, the east end of Parcel H will be set aside for a new Munitions Storage Area. The lead Federal agency for the buffer and munitions storage portion of the EIS will be the USAF in conjunction with the National Guard Bureau and Pima County.	The FAA will initiate the EIS in April 2015.
Fotowatio Renewable Ventures*#	305 acres	Pima County, Arizona	Planned 25-MW solar photovoltaic energy facility located approximately 2 miles west of the proposed route in the Upgrade Section.	The facility was originally scheduled to be completed by April 2012, but is currently pending. A current completion date has not yet been identified.
Avra Valley Solar Project/NRG Solar*#	300 acres	Pima County, Arizona	Planned 25-MW solar photovoltaic energy facility to be located approximately 3.6 miles west of segment U3j of subroute 4.1 within the Upgrade Section.	NRG and First Solar have agreed to construct the project in 2012. Permitting appears to be complete. Project schedule unknown.
Pinal Central to Tortolita 500-kV Transmission Line #	40 miles	Pinal County, Arizona	Planned single-circuit 500-kV transmission line; 40 miles of new line between Pinal Central substation and Tortolita substation. The Southline Project (subroute 4.1) interconnects at Tortolita Substation	TEP filed a CEC application with ACC in April 2012 and public hearings were conducted in May 2012. Anticipated start of construction in 2012; in service in 2014.
Pinal Central Substation #	200 acres	Pinal County, Arizona	Planned 500-kV substation to be located approximately 26.2 miles northwest of segment U3l of subroute 4.1.	Permitting of the Pinal Central Substation may be complete at this time; it will be developed as determined by resource need.
Electrical District 5 – Palo Verde Hub Project #	109 miles	Maricopa and Pinal counties, Arizona	Planned 109-mile transmission line and the expansion of three existing substations to be located approximately 26.2 miles northwest of segment U3l of subroute 4.1.	Project approval was issued in August 2011; the project is planned to be constructed over a period of 24 to 30 months beginning in 2012, with a scheduled completion in 2015.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.				
Electrical District 2 – Saguaro #2 Transmission Line Rebuild Project *,++++	35.6	Pinal County, Arizona	Planned replacement of existing wood H-frame (3.1 miles) and wood single-pole (32.5 miles) structures with steel monopoles. Existing structures are 60 to 70 feet tall, proposed replacement structures are 60 to 75 feet tall. Conductors and overhead protection ground wire will be replaced; existing access roads will be used or improved as needed. The project is located on the east side of I-10 extending from the Saguaro Substation north for 35.6 miles. The Southline Project (subroute 4.1) interconnects at Saguaro Substation.	Project is planned to start in spring 2016 and to be completed by spring 2018. Work will occur in stages.
Vail-to-Valencia 115-kV to 137-kV Upgrade Transmission Line #	45 miles	Pima and Santa Cruz counties, Arizona	138-kV link between TEP's Vail substation and UES' Valencia substation in Nogales. The Proponent Preferred (subroute 4.1) would interconnect to the Vail substation and run west and south to the Nogales substation, ranging from less than 200 feet near the Vail substation to approximately 45 miles at the Valencia substation in Nogales.	The project is planned to be constructed over a period of 24 months beginning in 2012, with a scheduled completion in 2015.
Southline Upgrade Pantano Connection Option	X	Pima County, Arizona	Second option to the Pantano Substation expansion to include a 230-/115-kV transformer position and transformer to feed SWTC's existing 115-kV line at the Kartchner Substation.	Concurrent with the completion of the proposed Southline Project.
Tucson-Apache Pole Replacement Project*	80 miles	Pima and Cochise counties, Arizona	Western is proposing to conduct pole replacement, access road improvements, and vegetation management along portions of their Tucson to Apache 115-kV transmission line. 149 wood H-frame structures have been selected for in-kind replacement and vegetation management is proposed near the San Pedro River in Benson, Arizona. All project-related access will be along existing access roads; however, about 20 non-contiguous miles of access road will require improvement. The entire length of the Tucson-Apache Pole Replacement Project would be upgraded by the proposed Southline Project, if approved.	Work was proposed to begin in 2013 and would be completed in phases over a period of 2 years.

Table 4.21-1. List of Projects (Past, Present, and Reasonably Foreseeable Future) Considered in the Cumulative Impacts Analysis (Continued)

Project/Action Name	Project Size in the CEAA	Project/Action Location	Project/Action Description	Anticipated Project/Action Schedule
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.				
Abandonment and Removal of existing Western Line Saguaro-Tucson and Tucson-Apache*	120 miles	Cochise, Pima, and Pinal counties, Arizona	If the proposed Southline Project were to be approved the existing transmission line in the Western ROW would be abandoned and removed once the new Southline transmission line is complete.	Upon completion of the proposed Southline Project.
Planned Residential Development Projects, Arizona	Unknown	Cochise and Pima counties	The Cities of Willcox, Benson, Vail, Tucson, and Marana plan for amendments to their municipal zoning and planned-unit development ordinances are anticipated to expand their municipal boundaries to private and State lands in order to facilitate planned residential development.	Construction for new apartment complexes and detached single-family homes are ongoing, mostly on State and private lands. Planned residential development projects are anticipated to continue throughout the life of the project, as communities require extending their boundaries through annexation in order to facilitate planned residential development.
High Plains Express Transmission Project#	1,300 miles	Wyoming, Colorado, New Mexico, and Arizona	Planned 1,300-mile, four-state, 500-kV AC transmission line. Proximity to Project: unavailable	The feasibility study is complete, with evaluation corridor engineering design and permitting currently ongoing. Commissioning is proposed between 2020 and 2025.

Sources:
CH2MHill Southline Transmission Project Resource Report 20: Cumulative. April 10, 2013 (CH2M Hill 2013t).

+ http://www.excelsiormining.com/index.php/projects accessed August 1, 2014

++ http://www.army.mil/article/124812/Fort_Huachuca__partners__break_ground_for_Solar_Array_Park/ accessed August 1, 2014

+++ http://www.fortsillapachenewmexico.com/uploads/files/1_%20Official%20Scoping%20Meeting%20Report%20Submitted%20to%20BIA%20on%20050712.pdf and http://www.fortsillapachenewmexico.com/uploads/files/112312%20-%20Las%20Cruces%20Bulletin%20-%20Reservation%20Anniversary%20Story.pdf accessed August 8, 2014.

++++ http://www.wapa.gov/dsw/environment/ED2DOEEA1972.htm accessed August 14, 2014

+++++ http://blmsolar.anl.gov/sez/nm/afton/ accessed August 14, 2014.

+6 Pima County Board of Supervisors Memoranda

+7 AGFD Catchment 368 http://www.azgfd.gov/pdfs/w_c/hpc/proposals/Mule20Deer/07-513.pdf accessed October 21, 2014.

+8 Tucson International Airport Master Plan Update March 2013 available at http://www.flytucson.com/general-aviation/ryan-airfield/master-plan/

+9 Pima County Board of Supervisors Memorandum dated December 18, 2013 available at http://webcms.pima.gov/UserFiles/Servers/Server_6/File/Government/Administration/CHHmemosFor%20Web/December%202013/December%2018,%202013%20-%20Land%20Acquisition%20and%20Exchange%20Negotiations.pdf

* Indicates the action is illustrated on figures 4.21-1a through 4.21-1d.

4.21.3 Methodology

The following analyses consider (1) the CEAA for each resource, (2) a description of those past, present, and reasonably foreseeable actions that are similar in kind and effect as the proposed Project, or would have considerable impact to the environmental resources to which the proposed Project's effects would cumulatively contribute, and (3) evaluate the potential effects of those actions and consider the significance of those cumulative effects.

Where data were available to do so, cumulative effects are quantified. Where reliable quantitative data could not be found, qualitative data were used to best assess the cumulative effects of the proposed Project.

Land uses described as "past" or "present" are considered in the baseline conditions in chapter 3 (see Section 3.11, "Land Use"). Past and present activities include existing linear transportation and utility corridors and facilities, agriculture, viticulture, grazing, mining, residential, commercial and industrial development, parks and open space, and military installations.

As noted in chapter 2, the routing philosophy for the proposed Project has been to find opportunities to parallel existing linear features (transmission lines, gas lines, highways, roads, etc.), maximize existing access, and route the proposed Project through already disturbed areas. See tables 2-10 through 2-13 in chapter 2 for a description of the portions of the proposed Project (including subroutes, segments, local alternatives, and route variations) that parallel existing infrastructure. In particular, an estimated 85 percent of the Agency Preferred Alternative in the New Build Section, and 98 percent of the Agency Preferred Alternative in the Upgrade Section, would be parallel to existing or proposed linear infrastructure such as transmission lines, gas line, and roadways.

Because of the routing philosophy, the baseline conditions as described in chapter 3 include these existing linear and other facilities; they are further considered in the analysis of the direct and indirect effects (chapter 4) of the proposed Project and alternatives. As a result, the incremental impact of the proposed Project or action alternatives is expected to be less when added to other past, present, and reasonably foreseeable future actions. A discussion of the potential cumulative effects by resource is provided in section 4.21.4.

Like the direct and indirect effects described in sections 4.1 through 4.19, the cumulative effects of the proposed Project in combination with other past, present, and reasonably foreseeable future actions are also considered in the context of magnitude and significance. As described in section 4.1, use of the term *significant* when referring to resource impacts indicates that some threshold was exceeded for a particular impact indicator. The following categories of magnitude and duration are presented to define relative levels of effects and to provide a common language when describing effects (table 4.21-2).

Table 4.21-2. Standard Resource Impact Descriptions for Magnitude and Duration

	Description Relative to Resource
Magnitude	
No Impact	Would not produce obvious changes in baseline condition of the resource.
Minor/ Negligible	Impacts would occur, but resource would retain existing character and overall baseline conditions.
Moderate	Impacts would occur, but resource would partially retain existing character. Some baseline conditions would remain unchanged.
Major	Impacts would occur that would create a high degree of change within the existing resource character and overall condition of resource.

Table 4.21-2. Standard Resource Impact Descriptions for Magnitude and Duration (Continued)

	Description Relative to Resource
Duration	
Short term	During construction and up to 5 years (from when ground-disturbing activities begin, through reclamation when vegetation has been reestablished in construction areas).
Long term	More than 5 years, life of the Project.

4.21.4 Cumulative Effects by Resource

Air Quality and Climate Change

The CEAA for the air quality and climate change effects is consistent with the 31-mile radius used to analyze proposed Project impacts and includes portions of Doña Ana, Grant, Hidalgo, and Luna counties in New Mexico, and Cochise, Greenlee, Graham, Pima, and Pinal counties in Arizona. This CEAA for analyzing potential cumulative impacts to air quality and climate change represents a reasonable region in which existing air quality, when assessed in combination with other cumulative actions, would be impacted if the proposed Project or action alternatives were implemented. The temporal scope of the cumulative effects analysis is for the life of the Project, which is 50 years. Cumulative actions discussed herein are based on the existing conditions of the air quality resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

CONSTRUCTION

As discussed in chapters 3 and 4, current and past air emission sources have impacted air quality in the analysis area to varying degrees. Current and past impacts to air quality are captured by the network of ambient air quality monitoring stations and emissions of pollutants are quantified annually state-wide in emission inventories. As discussed in chapter 3, the proposed Project would cross the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area, both located in Pima County, Arizona. Several other nonattainment and maintenance areas are potentially located within the analysis area; however, with the exception of the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area, the boundaries of the proposed Project and/or alternatives would not be within any of the other nonattainment or maintenance areas identified in chapters 3 and 4.

As discussed in section 4.2, the Project would emit criteria pollutants, HAPs, and GHG emissions during construction. During transmission line and substation construction activities, air pollutant emissions would be generated from earthmoving, vehicle/equipment exhaust, vehicle travel on paved and unpaved surfaces, and the construction and operation of concrete batch plants. As noted above, the proposed Project and alternatives have been routed to consider proximity to existing roadways to minimize construction activity and access needs (see access road types A, B, and C in chapter 2). Air quality impacts associated with these activities are not expected to exceed any general conformity threshold levels or Federal, State, or local ambient air quality standards, and would be temporary and localized in nature.

Several new major and PSD sources of air pollutants have been proposed within the air quality CEAA, such as new or expanded power generation facilities (e.g., the 1,000-MW, natural gas–fired Bowie Power Station), roadways, manufacturing facilities, and mines (e.g., Rosemont Copper Mine, Excelsior Copper Mine). These reasonably foreseeable actions could cumulatively impact air quality, potentially resulting in further increases to pollutant concentrations in non-attainment areas, further increases to concentrations of other air pollutants, and/or exceedances of the NAAQS within the Project air quality analysis area.

However, due to the short-term, intermittent nature of Project construction activities, there would be little overlap between Project construction activities and the activities of other proposed projects located within the air quality CEAA. Additionally, all proposed projects would be regulated by the appropriate regulatory authority (local, State, and/or Federal), with emissions minimized thereby. Therefore, any cumulative effects on air quality from construction activities for the proposed Project and construction emissions of other proposed sources of air pollutants within the air quality CEAA would be expected to be minor and short-term in nature.

OPERATION AND MAINTENANCE

During operation and maintenance of the transmission lines and substations, impacts would be qualitatively similar to those described above for construction. However, impacts would be much lower than construction-phase emissions and impacts. In particular, maintenance activities associated with the Upgrade Section would be expected to be less than current maintenance activities for the existing lines; impacts to air quality from the maintenance of the Upgrade Section would be reduced from current levels. In contrast to proposed Project construction emissions, emissions from the operation and maintenance of the proposed Project would likely overlap with future development of air pollutant sources. Since the proposed Project potentially crosses two areas that have been or are not in compliance with the NAAQS for PM_{10} and CO (the Rillito PM_{10} nonattainment area and the Tucson CO maintenance area), the cumulative impact from past, present, and reasonably foreseeable future air pollution emission sources could result in further degradation of these non-attainment/maintenance areas.

Therefore, the incremental contribution of the effects of the proposed Project and action alternatives when added to the effect of other past, present, and reasonably foreseeable future actions would result in a moderate and long-term cumulative effect. However, based on the small amount of proposed Project operational emissions, the contribution of the Project to the cumulative air quality in the CEAA would be negligible.

GLOBAL CLIMATE CHANGE

The climate system varies naturally over a wide range of time scales. In general, climate changes prior to the Industrial Revolution can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, however, cannot be explained by natural causes alone; research indicates that natural causes are very unlikely to explain most observed warming, especially warming since the mid-twentieth century. Rather, anthropomorphic activities can very likely explain most of that warming (EPA 2014).

Global temperatures are projected to continue to rise over this century; by how much and for how long depends on a number of factors, including the amount of heat-trapping gas emissions and how sensitive the climate is to those emissions. In the United States, average temperature has risen more than 2 ºF over the past 50 years and is projected to rise more in the future (U.S. Global Change Research Program 2009).

For the Southwest particularly, there has been and will likely continue to be an increase in mean annual temperature. This will result in a more frequent drought cycle due to increased evapotranspiration. The number of extremely hot days is also projected to rise during the first 100 years of the 21st century. By the end of the century, parts of the Southwest are projected to face summer heat waves lasting 2 weeks longer than those occurring in recent decades (IPCC 2007).

Projections of future precipitation generally indicate that northern areas will become wetter, and southern areas, particularly in the West, will become drier. Precipitation is projected to drop by 5 percent by 2100 for much of Arizona and New Mexico. A 10 percent decline could be in store for the southern half of Arizona based on these estimates (Forest Service 2010).

In the Southwest, winter precipitation has been reduced in the past two decades and the prediction is that this trend will continue. This decrease in winter precipitation will likely result in reduced snowpack and earlier snowmelt. There is less confidence in the potential changes to summer monsoonal rainfall patterns. There is evidence that monsoonal rains have been occurring earlier in the season, although there is considerable uncertainty in predicting this will continue.

The occurrence of abrupt changes in climate becomes increasingly likely as the human disturbance of the climate system grows. Globally, many types of extreme weather events, such as heat waves and regional droughts, have become more frequent and intense during the past 40 to 50 years (U.S. Global Change Research Program 2009). Ancient climate records suggest that in the United States, the Southwest may be at greatest risk for this kind of change. This would include increased frequency of drought, as well as increased frequency of heavy rains and flooding.

Construction (and, to a lesser extent, operation and maintenance) activities would result in GHG emissions, as discussed and quantified in section 4.2, well below the CEQ threshold of 25,000 metric tons of GHGs requiring a GHG emissions analysis of alternatives. As also described in section 4.2, a small amount of SF_6 could potentially be emitted from circuit breakers during substation operations. On a CO_2e basis the estimated amount of SF_6 emitted from all Project substations would be approximately 7,124 tonnes per year. This amount would be approximately the same under all action alternatives, and represents approximately 0.004 percent of annual energy-related emissions in New Mexico and Arizona combined (CCS 2005, 2006).

Therefore, the cumulative effect of climate change in the air quality CEAA would be major and long-term; however, the contribution of the proposed Project and alternatives to this change would be negligible, and, to the extent the proposed Project allows displacement of fossil fuel generation with renewable energy sources, the proposed Project would have a beneficial contribution to anthropogenic climate change.

Noise

In general, noise impacts would typically be localized, with noise levels associated with the construction and especially operations of transmission lines returning to ambient conditions within a relatively short distance. For this reason, cumulative impacts for noise would be limited to other projects in close proximity to the proposed Project. The geographic analysis area for cumulative impacts to noise is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years.

Existing noise conditions in and around the proposed Project and alternatives are discussed in section 3.3. The majority of the area surrounding the proposed Project in the New Build Section is desert open space, which typically sees ambient noise levels in the range of 8 to 45 dBA. The Project would pass by one major city (Tucson) in the Upgrade Section and several small and medium-sized towns in both the New Build and Upgrade Sections that would provide elevated noise levels. The proposed Project would also pass or cross several highways, including two interstates, as well as various large and small airports, all of which typically have noise levels elevated above what might typically be seen in the surrounding area.

As discussed in section 4.3, noise impacts from the construction of the proposed Project and alternatives could be major, but short-term, temporary, and intermittent in nature. Maintenance activities associated with substations and transmission lines would be similar in noise level to construction-related activities, but would be anticipated to occur less frequently, include fewer individual noise point sources such as pieces of equipment and vehicles, and would be of shorter duration. Corona noise from transmission line and substation operation would be expected to be below regulatory thresholds. Therefore, impacts to noise for operation and maintenance activities would be minor and long-term.

Construction noise from reasonably foreseeable actions in the analysis area that, when combined with the proposed Project construction and operation and maintenance, may cumulatively impact noise include the approved, but not yet constructed SunZia Project, small (<100 MW) and large-scale (>100 MW) solar projects, substation expansions, maintenance and upgrades to existing distribution and transmission lines (ranging from less than 230 kV to greater than 500 kV lines), and the future expansion of the communities and roadways (i.e., planned residential development) within the analysis area (e.g., Tucson) (see table 4.21-1).

The potential for effects of the proposed Project and alternatives to combine with the effects of reasonably foreseeable actions within the CEAA is minimal. Several planned projects have potentially overlapping construction schedules with the proposed Project and alternatives, which may cause localized noise increases if both projects are under construction at the same time. However, cumulative noise impacts from overlapping construction projects should be minimal and temporary.

Geology and Minerals

The geographic analysis area for cumulative impacts to geology and mineral resources is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to geology and mineral resources represents a reasonable region in which existing geological and mineral resources, when assessed in combination with other cumulative actions, would be impacted if the proposed Project or action alternatives were implemented. Cumulative actions discussed herein are based on the existing conditions of the geological and mineral resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1).

A number of proposed projects have been previously identified, which, when combined with the proposed Project, may potentially result in cumulative impacts. Notwithstanding the proposed Rosemont Copper Mine, any of these projects, if they overlap with mining districts, would further reduce the area available for mining in those districts. However, because only some mining districts are active, because active mining encompasses only a small fraction of those mining districts, and because the projects are likely to cover only a fraction of the mining districts they cross (and assuming that active mines are avoided in a similar fashion as this Project), there would be no obvious changes in the baseline conditions of local geology or access to mineral resources. Additionally, transmission lines typically have little impact to mining operations. Span lengths are such that access to minerals can be accomplished between spans. New lines are often routed along existing linear features. Should open pit mining be planned, structures can be left on ‘islands,’ or the mining interests can have the transmission line locally re-routed. While lines can and are routinely moved to accommodate development, the cost for moving lines is borne by those wishing to relocate them. Therefore, there would be no cumulative impacts to geology and mineral resources.

Soils

The geographic analysis area for cumulative impacts to soil resources is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. Cumulative actions discussed herein are based on the existing conditions of the soil resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

CONSTRUCTION

The past uses in the CEAA have had a direct effect on the soils, as described in chapters 3 and 4. The historic use of land through such activities such as mining and ranching and the associated roads,

solar projects, transmission lines, oil and gas development, and OHV use have all shaped the current state of the soil resources. The impacts of present actions in the CEAA would be very similar to the past actions. In general, construction activities from the proposed Project would contribute to the modification of the soil resource. However, since the proposed Project is largely routed to follow existing ROWs and disturbed areas, the construction activities are only anticipated to have minor, short-term impacts which would be a result of the surface disturbance activities.

Reasonably foreseeable actions in the CEAA that, when combined with the proposed Project construction, may have cumulative impacts to the soil resources, including increased wind and water erosion rates in areas where ground surface disturbance occurs. The foreseeable actions within the CEAA include the approved but not yet constructed SunZia Project, small (<100 MW) and large-scale (>100 MW) solar projects, substation construction and expansions, maintenance and upgrades to existing distribution and transmission lines (ranging from less than 230 kV to greater than 500 kV lines), and the future expansion of the communities and roadways (i.e., planned residential development) within the CEAA (e.g., Tucson) (see table 4.21-1).

OPERATION AND MAINTENANCE

During operation and maintenance, the interaction of the actions within the CEAA and the proposed Project, or action alternatives, would be a beneficial, minor, and short-term cumulative effect for the soil resources. During this phase roads would be maintained resulting in less wind and water erosion of soils. However, when the operation and maintenance for the proposed Project is combined with future development, a minor cumulative effect would occur. Since the majority of the proposed Project utilizes existing ROWs and disturbed areas, this would result in a minor impact that would be long-term and for the life of the proposed Project, which includes the loss of soil resources due to sites occupied by facilities or unauthorized off-road vehicle use from construction on any of the cumulative projects identified with inadequate access control. Further, operation and maintenance activities of the proposed Project would result in minor cumulative effects, since the Project would already be constructed and standard operation and maintenance activities would be so periodic as to not affect soil resources after they have recovered from construction restoration. Reclamation can recover some of the soil productivity, but is not 100 percent effective. The implementation of PCEMs and reclamation on any of these projects would minimize soil impacts; therefore, both the short- and long-term cumulative impacts of the proposed Project would be negligible.

Paleontological Resources

The geographic analysis area for cumulative impacts to paleontological resources is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to paleontological resources represents a reasonable region in which the same or similar geological formations as those within the Project right-of-way, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the paleontological resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

Types of reasonably foreseeable future projects include transmission lines, alternative energy generation facilities, natural gas power plants, a natural gas pipeline, substations, copper mines, and road development and improvements. Cumulative impacts to paleontological resources are only expected for projects or phases of projects with ground disturbance where fossils are present. If no ground disturbance is expected or fossils are present, there would be no direct cumulative effects. PCEMs appropriate to each

Project would reduce or minimize impacts to paleontological resources and therefore would also minimize cumulative effects.

CONSTRUCTION

The past uses of the CEAA have had no direct or indirect impacts on paleontological resources. Construction activities associated with the past uses of the CEAA have not encountered any important fossils and no known fossils localities have been recorded within the CEAA. This past construction includes existing roads, pipelines, and transmission line which are parallel or adjacent to the proposed Project.

For the proposed Project, no cumulative impacts on paleontological resources due to construction are expected in the Upgrade Section because almost no formations with the potential to be fossiliferous are to be impacted by the proposed Project. As discussed in chapter 3, the majority of geological formations in the CEAA are of low or very low potential for paleontological resources (PFYC 1 or 2). In the CEAA for the New Build Section, most of the geological formations are classified as very low to low potential (PFYC 1 or 2) with some moderate or unknown (PFYC 3) and high (PFYC 4) potential. Moderate to major direct impacts and minor indirect impacts to paleontological resources may occur during construction of the proposed Project in the New Build Section if fossils are present in those geological formations with the potential to be fossiliferous which are crossed by the proposed Project. Direct impacts may be negative, such as the loss of important fossils, or positive, such as the inadvertent discovery of scientifically important fossils; indirect negative impacts would be due to loss of access to scientifically important fossils if present during construction. However, negative impacts will be mitigated according to applicable regulations and the POD, so no cumulative impacts are anticipated from construction of the proposed Project.

Future development in Arizona within the CEAA is not expected to impact paleontological resources because of the lack of potentially fossiliferous geological formations in the CEAA. In New Mexico, all but two reasonably foreseeable projects (the approved, but not yet constructed SunZia Project and Akela Flats Casino) with a known location is planned for areas with very low potential for paleontological resources (PFYC 1). The New Ventures/Solar Torx solar power plant, Solar Reserve, LLC, Sapphire Energy Algae Facility, Lordsburg Mesa Iberdrola Renewables project, and the Lightning Dock Geothermal Power Plant project are all located in areas with a PFYC of 1 and are not expected to contribute to cumulative impacts. If any projects developed in the BLM's Afton SEZ priority areas that are within moderate or high PFYC areas (PFYC 3 or 4) some impacts to paleontological resources may occur if those resources are present in the project area which would contribute to cumulative impacts. The potential network upgrades and New Mexico residential projects are also not expected to contribute to cumulative impacts.

The approved but not yet constructed SunZia project would consist of two new 500-kV transmission lines running from central New Mexico to central Arizona. In New Mexico, the proposed SunZia project would cross some areas with high potential for paleontological resources (PFYC 4) and therefore could contribute to cumulative impacts if those geological formations are fossiliferous. Like the proposed Project, if project construction results in adverse impacts to paleontological resources, the adverse impacts would be mitigated and would not contribute to cumulative impacts.

The Akela Flats Casino will be located in an area with high potential for paleontological resources (PFYC 4) and therefore could contribute to cumulative impacts if those geological formations are fossiliferous; however, the casino would use an existing building on 30 acres, so its contribution to cumulative impacts would be minor.

OPERATION AND MAINTENANCE

Operation and maintenance associated with past and present uses of the CEAA have had no direct or indirect impacts on paleontological resources because no known fossils localities have been recorded in the CEAA. No direct or indirect impacts are expected from the operation and maintenance of the proposed Project, as little ground disturbance is anticipated and areas with the potential for importance fossils can be avoided. However, if maintenance could result in adverse impacts to paleontological resources, adverse effects would be mitigated, so no contribution to cumulative impacts is expected. As with construction, future projects in Arizona are not expected to contribute to cumulative impacts to paleontological resources because geological formations in the Arizona portion of the CEAA generally have a very low or low potential for paleontological resources (PFYC 1 or 2). In New Mexico, only the proposed SunZia project has the potential to impact paleontological resources but the operation and maintenance of the line is not expected to contribute to cumulative impacts for the same reasons the proposed Project is not expected to contribute.

Water Resources

The geographic analysis area for cumulative impacts to water resources is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. With respect to water resources, impacts can be cumulative if they occur nearby in the same watershed or on the same water body, and there is a project-related significant impact in that same watershed or water body. This CEAA for analyzing potential cumulative impacts to water resources includes the immediate drainage area associated with water bodies and floodplains that are also crossed by the proposed Project. Project impacts to water resources are minor or negligible with three exceptions that were determined to be significant. Those project-related impacts on water resources that are negligible would result in negligible cumulative impacts when considered in conjunction with other activities in those watersheds. Significant impacts to water resources include local alternative LD1 that parallels Stein's Creek and would unavoidably impact that water of the U.S., segment P7 (in subroute 2.1) that crosses Willcox Playa (which has a wetland designation) and would unavoidably impact that wetland, and local alternative TH3b which would parallel the Santa Cruz River and would unavoidably impact that water of the U.S. Drainage areas with significant project-related impacts include the San Simon and Willcox Playa subbasins in the New Build Section of the CEAA and the Upper Santa Cruz subbasin in the Upgrade Section of the CEAA.

Cumulative actions are based on the existing conditions of the water resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1. Future actions that could contribute to cumulative effects to water resources include two proposed transmission lines (SunZia and High Plains Express), two transportation projects (Silverbell Road, Sonoran Corridor), four aviation projects associated with Tucson International Airport and Davis-Monthan Air Force Base, the proposed University of Arizona Tech Park Thermal Storage, the proposed Excelsior Mine, two proposed generation facilities (Bowie Power, Safford Solar), operation of the BSETR, planned residential developments, and a variety of local transmission upgrade, expansion, or repair projects. Most of these projects would not have significant impacts within the same watersheds as project-related significant impacts. Either the projects are of limited size and potential surface water quality impacts would be controlled by implementation of best management practices, would include operations with little surface disturbance, or are in areas where surface water runoff would likely be handled by a municipal stormwater system, which would limit impacts from both runoff quantity and quality.

Five reasonably foreseeable actions could have significant impacts to drainage areas that would, in combination with impacts from the proposed Project, result in minor to moderate cumulative impacts. Safford Solar and Bowie Power Station are both within the San Simon watershed, as are the potentially

significant impacts to Stein's Creek from the proposed Project (local alternative LD1). There could be a minor to moderate cumulative effect on downstream waters in the San Simon watershed. Excelsior Mine and the relocation of Crane Lake both lie within the Willcox Playa watershed, as are the potentially significant impacts from the proposed Project (local alternative P7) to wetland areas associated with Willcox Playa. There could be minor cumulative effects on downstream waters in the Willcox Playa watershed. The University of Arizona Tech Park Thermal Storage project lies within the Upper Santa Cruz watershed, as are the potentially significant impacts to the Santa Cruz River from the proposed Project (local alternative TH3b). There could be minor to moderate impacts to downstream waters in the Upper Santa Cruz watershed.

Biological Resources

VEGETATION

The geographic analysis area for cumulative impacts (CEAA) to vegetation coincides with the study corridor for the affected environment; for the New Build Section of the Project this includes 1 mile on either side of the centerline of alternatives carried forward and any substation or access roads outside that corridor; for the Upgrade Section of the Project this includes a 500-foot corridor (200 feet off of existing 100-foot corridor) of each alternative. In addition to this analysis area, projects that are adjacent to the Southline CEAA and have the potential to cumulatively impact vegetation are also assessed (table 4.21-3). This analysis area is more restricted than the larger CEAA discussed in section 4.21.2 because vegetation is relatively non-mobile (minus seed dispersal) and vegetation resources are more sensitive to local impacts in the immediate proximity of vegetation rather than broader regional impacts. Broader-scale potential impacts such as noxious weed dispersal and wildfire spread are addressed on a per-project basis below, relative to the affected environment study corridors. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to vegetation represents a reasonable region in which existing vegetation, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the vegetation resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

Of the 56 projects identified within the Southline CEAA, five proposed projects are identified that will have portions located inside the analysis area selected for vegetation resources: the proposed SunZia project, Sapphire Energy Algae Facility, AGFD Willcox Playa Habitat Enhancement Plan, relocation of Crane Lake, and the Bowie Power 345 kV Transmission Line. Potential direct cumulative impacts from these three projects are discussed below. In addition, the other projects within approximately 10 miles of the vegetation CEAA are listed in table 4.21-3, including some existing transmission lines that parallel routing for the proposed Southline Project and might generate indirect cumulative impacts such as reductions in acreages of particular native plant communities in the region, shared watershed impacts, and point sources for exotic invasive weeds and wildfire that might spread via wind across greater landscapes to the CEAA. Potential cumulative impacts from those projects are presented below.

Discrete portions of the proposed SunZia project are located within portions of the CEAA. The approved but not yet constructed BLM preferred alternative in the SunZia Final EIS is parallel and adjacent to portions of the proposed Southline New Build Section from a point northeast of Deming, New Mexico, to a point west of Willcox, Arizona. Local alternatives DN1 and LD4 were developed to collocate or parallel the proposed SunZia project approved alternative. Local alternative DN1 would parallel the proposed SunZia project for 42.5 miles, and LD4 would parallel SunZia for 50 miles. The proposed SunZia route diverges far away from the Upgrade Section. The proposed SunZia project would likely result in similar linear disturbance to native vegetation as the proposed Southline Project and therefore contribute to cumulative loss of native vegetation in the region of the New Build Section routes. Associated

infrastructure for the proposed SunZia project would also add to cumulative fragmentation of native plant communities, but also along the same corridor as the proposed Southline project. In areas where the proposed SunZia project would be parallel, overall new disturbance to vegetation would be reduced since construction activities for both projects would occur in the same areas. Seventeen SWReGAP vegetation community types along with developed agricultural lands would be impacted by the proposed SunZia project, but the primary vegetation types that would be cumulatively impacted are the widespread Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe, Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub, and Chihuahuan Sandy Plains Semi-Desert Grassland, Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub vegetation types. No rare or sensitive vegetation types would be cumulatively impacted by the proposed Southline and SunZia projects and given that the vegetation types that would be impacted are common and widespread, cumulative impacts to vegetation communities would be minor. Special status plant species that may be cumulatively impacted include dune pricklypear, Gregg night-blooming cereus, Parish's alkali grass, Chihuahuan scurfpea, devilthorn hedgehog cactus, San Carlos wild-buckwheat, slender needle corycactus, Wilcox pincushion cactus, varied fishhook cactus, button cactus, playa spider plant, needle-spined pineapple cactus, and Pima pineapple cactus. Noxious and other invasive exotic weeds are already present along this route, including African rue, starthistle, tamarisk, hoary cress, Russian thistle, filaree, and mustards. Cumulative impacts from increased introduction and spread of noxious weeds and increased potential for wildfire are likely to be minor because of the shared route corridors through the greater landscapes.

The Sapphire Energy Algae Facility is a "green crude" demonstration farm and production project consisting of a 300-acre algae farm with the capacity to produce 1.5 million gallons of biofuel annually. The proposed algae facility is located inside the CEAA near the Proponent Alternative (New Build Section, subroute 1.2), near the town of Columbus. The project footprint for the algae farm would result in direct permanent disturbance to vegetation and therefore contribute to cumulative loss of native vegetation in the region. The farm and pond segments would also add to cumulative fragmentation of native plant communities. The Sapphire Energy Algae Facility is located along an abandoned railroad line, in an area of existing agricultural disturbance. Much of the area to the west and north of the algae facility is already developed as agricultural fields. Existing SWReGAP vegetation communities in that area include about equal amounts of Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub, and Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe, with smaller amounts of Apacherian-Chihuahuan Mesquite Upland Scrub. Those three vegetation community types are common and geographically widespread, and any specific cumulative impacts from the algae facility and proposed Southline Project will be minor to those widespread vegetation types. Special status species that may be present in the area include: dune pricklypear, Gregg night-blooming cereus, Parish's alkali grass, and the Chihuahua scurfpea. Since there already is considerable disturbance in the immediate area from agricultural fields to the west, noxious and other exotic invasive weeds are likely present in the area, so further increases in the spread of noxious weeds from the cumulative impacts of the algae facility and the proposed Southline Project would be minor. Possible noxious weeds in the area include African rue and starthistles, along with other exotic invasive weeds that are not classified as noxious, such as Russian thistle, kochia, filaree, and mustards.

The AGFD has planned enhancement of several wetlands and ponds within the Willcox Playa Wildlife Area and the relocation of Crane Lake. The project schedule for these actions is unknown. Habitat enhancement projects would improve and increase wetland and riparian habitat in the area and would remove non-native species.

The Bowie Power 345-kV Transmission Line would connect the proposed Bowie Power Plant, a natural gas–fired power plant planned for southeastern Arizona near the community of Bowie in Cochise County, and the proposed 345-kV Willow Substation located within 0.65 mile of route group 2 local alternatives, especially LD4. The primary SWReGAP vegetation community types that occur in the area are

Apacherian-Chihuahuan Mesquite Upland Scrub, Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub, Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe. These are widespread vegetation types in the region. No rare or sensitive vegetation communities would be cumulatively impacted by the proposed Southline Project and the Bowie Transmission Line and given that the vegetation types that would be impacted are common and widespread, cumulative impacts to vegetation communities would be minor. Agricultural development is considerable just east of this area in the northwestern portion of the San Simon Valley. Special status plant species that may be affected include Gregg night-blooming cereus, devilthorn hedgehog cactus, San Carlos wild-buckwheat, slender needle corycactus, Wilcox pincushion cactus, varied fishhook cactus, button cactus, playa spider plant, and needle-spined pineapple cactus. Cumulative impacts on special status species would be potentially greater from both projects in the region. Noxious and other invasive exotic weeds, including tamarisk, hoary cress, Russian thistle, filaree, and mustards occur in the area. Cumulative impacts from the potential introduction and spread of noxious weeds and increased potential for wildfire would be increased slightly in the area due to the additive disturbances from both transmission lines, and such cumulative impacts would be minor to moderate given the relatively small footprint of this proposed Project.

A network of existing transmission lines, natural gas pipelines, and railroads occurs throughout the Southline CEAA that will contribute to cumulative impacts to vegetation. However, most of those are located outside of the vegetation analysis area corridors, and as existing features will contribute minor impacts, or are located far enough away from the proposed Southline Project as to be negligible. Various other past, present, and future projects are located adjacent to the analysis area and may potentially impact vegetation within the Southline CEAA. These projects and their potential cumulative impacts are described in table 4.21-3.

In addition to identified projects, dispersed recreation, non-Project-related vehicle traffic, and other uses also impact vegetation throughout the ROW and adjacent areas. Domestic livestock grazing, for example, is a land use throughout the Project region, especially on BLM lands, that has historically impacted vegetation communities, and is presently and for the foreseeable future, an ongoing land use that would continue to affect vegetation. OHV activity often increases along ROW roads throughout a project region, especially closed and restored or unimproved access roads. OHV activity may further impact vegetation directly by crushing plants, and indirectly be creating soil disturbance and erosion, producing environments favorable for the colonization of noxious weeds and other invasive exotic plant species. OHV use may also cause increased wildfire threats. Any additional impacts are expected to be minimal if activities are restricted to existing road surfaces. Private landowners also have wide latitude to conduct activities on their properties that would impact vegetation communities. These activities are, however, difficult to predict in time or space and their impacts are therefore not quantifiable.

Table 4.21-3 lists the projects that fall outside of the CEAA for vegetation resources but due to their location adjacent to the proposed Southline Project have the potential to cumulatively impact vegetation. See text above for the five projects that fall within the analysis area.

Cumulative effects as a result of past, present, and reasonably foreseeable future actions (including the proposed Project) would be long-term removal and degradation of natural vegetative communities.

Direct cumulative effects to vegetation resources would be additive and proportional to the amount of ground disturbance for each individual project, determined by the width of the construction zone for the linear projects vs. the width of the permanent ROW, the vegetative associations and special status species present, and the extent of permanent facilities associated with each project. In addition, the quality of the vegetation resource in neighboring areas would be indirectly impacted by surface disturbance, dust, wind dispersal of exotic invasive weed seeds and wildfire, and other off-site intrusions. A distinction can be made between the cumulative temporary loss of vegetation that is removed over the active life of project

activities but can be reclaimed after project activities have been completed, and permanent loss of vegetation that remains indefinitely at the end of project activities and after the project sites are closed. Both direct and indirect, and temporary and permanent, cumulative impacts result from the existing and reasonably foreseeable projects identified. Projects that impact large acreages of landscape not already disturbed, such as solar array projects that will result in thousands of acres of new impacts, are likely to contribute to cumulative impacts more so than linear transmission or pipeline projects that may share already disturbed acreages or other indirect impacts with the proposed Southline Project.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
New Build Section, Past and Present Projects			
Existing Distribution Lines (less than 230 kV)	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico. 381 miles of disturbance Variable distance from Southline ROW Existing distribution lines less than 230-kV are anticipated to continue their current operation for the life of the project.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual transmission lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
Existing Transmission Lines (230 kV and greater)	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico. 303 miles of disturbance Variable distance from Southline ROW Existing distribution lines greater than 230-kV are anticipated to continue their current operation for the life of the project.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual transmission lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
Existing Gas Pipelines	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico. 1,245 miles of disturbance Variable distance from Southline ROW All existing pipelines are anticipated to continue their current operation for the life of the project.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual pipelines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
New Build Section, Past and Present Projects, cont'd.			
Existing Railroads	Doña Ana, Hidalgo, Luna, and Grant counties, New Mexico. 428 miles of disturbance Variable distance from Southline ROW.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual rail lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
AGFD Catchment 368	Complete redevelopment of AGFD Catchment #368 located on the 10 Ranch east of Dyl Canyon to supply water as a year round source to wildlife.	Variety of desert grassland and scrub communities	This project contributes 1 acre to cumulative disturbance. This would be an insignificant impact due to its size.
New Build Section, Reasonably Foreseeable Future Projects			
Potential Network Upgrades	El Paso County, Texas and Doña Ana County, New Mexico Variable distance from Southline ROW. Upgrades within existing substations at Newman Substation southeast of Afton Substation and in Doña Ana Substation located on the northwest side of Las Cruces, New Mexico. Potential Network Upgrades would occur completely within existing substations fence lines. Existing access to the substations would be used for construction, operation, and maintenance of the Potential Network Upgrade project.	Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub Apacherian-Chihuahuan Mesquite Upland Scrub	Not likely to contribute to cumulative disturbance because activities will be limited to existing footprints and access routes.
New Solar Ventures/Solar Torx	Planned 300-MW photovoltaic solar power plant. Project would be less than a mile from subroute 1.1 in the New Build Section in Luna County, New Mexico. No schedule identified. Not currently under active development.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	If developed could potentially directly impact vegetation under project footprint. Disturbance acreage unknown. Is in an area with minimal existing disturbance; however, vegetation community types are common and geographically widespread. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Significance of impacts unknown due to undetermined acreage.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
New Build Section, Reasonably Foreseeable Future Projects cont'd.			
Solar Reserve, LLC-1	Planned 100-MW solar power plant. Project schedule unknown. Within 5 miles of Proponent Preferred Alternative and Proponent Alternative.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 5,296 acres of vegetation. Project is close to Lordsburg and within a mile of scattered residences so would impact an area of already preexisting disturbance. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread, and the project is located in an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Lordsburg Mesa, Iberdrola Renewables	Planned 1,500-MW solar power plant, within 10.94 miles of the route group 2 Local Alternatives in the New Build Section. Project schedule unknown.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub North American Warm Desert Wash Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 24,320 acres of vegetation. Project is in an undisturbed area but less than a half mile from a road. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread, and the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Planned Residential Development Projects, New Mexico	Both the City of Deming and City of Lordsburg plan for amendments to their municipal zoning and planned-unit development ordinances are anticipated to expand their municipal boundaries to private and State lands in order to facilitate planned residential development. Variable distance from Southline ROW.	Locations unknown. Impacts likely to various desert grassland scrub communities	Additional expansion of residential and commercial development into undisturbed land would further directly impact vegetation communities and contribute to cumulative loss of native species and impacts to special status species and noxious weeds. Since the location and extent of development is unknown, exact impacts cannot be assessed at this time.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
New Build Section, Reasonably Foreseeable Future Projects cont'd.			
Safford Solar Energy	Planned 250-MW solar project adjacent to subroute 2.2 in the New Build Section. Project currently at a standstill due to lack of power transmission connection agreement.	Apacherian-Chihuahuan Mesquite Upland Scrub Chihuahuan Mixed Salt Desert Scrub Developed, Medium - High Intensity	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 22,891 acres of vegetation. Is on the edge of a residential area of San Simon and within an area of existing disturbance. Is close to existing pipeline, transmission line routes and other rural development. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread, and the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Bowie Power Station	Planned 1,000-MW natural gas-fired power station within 0.89 mile of subroute 2.2 in the New Build Section.	Agriculture Apacherian-Chihuahuan Mesquite Upland Scrub Chihuahuan Mixed Salt Desert Scrub	If developed could potentially directly impact vegetation under project footprint. Actual disturbance acreage is unknown. Is close to existing pipeline, transmission line routes and other urban development. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Significance of impacts unknown due to undetermined acreage.
Akela Flats Casino Project	Planned casino on 30 acres by the Fort Sill Apache Tribe at Akela Flats in Luna County, New Mexico.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	If developed this could directly impact vegetation on 30 acres. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to the disturbed nature of the area impacts would be minimal.
Afton SEZ	BLM identified priority areas (29,964 acres) for utility-scale production of solar energy. Approved Resource Management Plan Amendments and ROD were issued October 2012. As of June 2014, there were no pending solar project applications within the Afton SEZ.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	If developed could potentially directly impact vegetation where development would occur. Actual disturbance acreage unknown, but is planned for 29,964 acres. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
New Build Section, Future Projects			
BrightSource Energy	Planned solar project, including 6,574 acres in Hidalgo County and 7,520 acres in Luna County. Exact location unknown.	Variety of desert grassland and scrub communities	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 14,100 acres of vegetation. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Exact location of disturbance is unknown therefore significance of impacts to vegetation cannot be assessed at this time.
NextLight Renewable Power	Planned solar project, including 2,722 acres in Luna County and 3,714 acres in Hidalgo County. Exact location unknown.	Variety of desert grassland and scrub communities	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 7,301 acres of vegetation. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Exact location of disturbance is unknown therefore significance of impacts to vegetation cannot be assessed at this time.
Upgrade Section, Past and Present Projects			
Existing Distribution Lines (less than 230 kV)	Cochise, Pima, and Pinal counties, Arizona 394 miles of disturbance Existing distribution lines less than 230 kV are anticipated to continue their current operation for the life of the project. Variable distance from Southline ROW.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual transmission lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
Existing Transmission Lines (230 kV and greater)	Cochise, Pima, and Pinal counties, Arizona 200 miles of disturbance Existing distribution lines greater than 230 kV are anticipated to continue their current operation for the life of the project. Variable distance from Southline ROW.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual transmission lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Past and Present Projects, cont'd.			
Existing Gas Pipelines	Cochise, Pima, and Pinal counties, Arizona 222 miles of disturbance. Existing pipelines are anticipated to continue their current operation for the life of the project. Variable distance from Southline ROW.	Variety of desert grassland and scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual pipelines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
Existing Railroads	Cochise, Pima, and Pinal counties, Arizona 93 miles of disturbance. Variable distance from Southline ROW.	Variety of desert grassland scrub communities	In collocated areas this project contributes to cumulative linear disturbance. Additional existing loss of vegetation, community fragmentation, introduction and spread of noxious species and potential loss of special status species. Significance of cumulative impacts varies depending on proximity of Southline to individual rail lines and potential for shared corridor impacts versus new additional impact acreages imposed by Southline. Generally, these cumulative impacts will be relatively insignificant given that Southline does not impact any particularly sensitive or small localized plant communities in this region.
BSETR	A Fort Huachuca facility that is the principal Army Test Center for testing of command, control, communications, computer, and intelligence equipment and systems in real, virtual, and constructive environments. 1.6 million acres of disturbance. Portions of the proposed Southline Project (subroute 3.1–segments U1a, U1b, and U2 requiring upgrade or local alternative H) cross the BSETR. Variable distance from Southline ROW.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Apacherian-Chihuahuan Mesquite Upland Scrub Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub Agriculture Developed, Medium - High Intensity Madrean Encinal Madrean Pine-Oak Forest and Woodland	The exact locations of vegetation disturbance related to BSETR operations are unknown so impact analysis cannot be completed at this time. Cumulative impacts of the Southline project within the BSETR, however, would contribute linear disturbance impacts to vegetation communities, increased fragmentation of native species, and impacts to special status species and noxious species. The dominant vegetation communities within the BSETR area and the Southline segments are common and geographically widespread therefore any cumulative impacts to vegetation communities resulting from construction and operation of the Southline project are expected to be negligible/minimal and short-term.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Reasonably Foreseeable Future Projects			
University of Arizona Tech Park Thermal Storage/Bell Independent Power Corporation	Planned 5-MW CSP project utilizing parabolic trough technology located approximately 1 mile from segment U4 of subroute 4.1 within the Upgrade Section.	Sonoran Paloverde-Mixed Cacti Desert Scrub Developed, Open Space - Low Intensity Developed, Medium - High Intensity Sonora-Mojave Creosotebush-White Bursage Desert Scrub Sonoran Mid-Elevation Desert Scrub	If developed could potentially directly impact 200 acres of vegetation. The project is located in an area of heavy commercial/industrial disturbance. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Impacts to vegetation communities and potential special status species could be long-term (over the life of the project); however, the community types are common and geographically widespread, and the disturbance acreage relatively small; furthermore the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Silverbell Road Improvements	Planned road improvement project by the City of Tucson to widen and install a median to the existing road that would be intersected by segment U3i of subroute 4.1 within the Upgrade Section.	Sonoran Paloverde-Mixed Cacti Desert Scrub Developed, Open Space - Low Intensity	Would create 8 miles of linear disturbance in an already disturbed area of existing roadway and residential and industrial urban development. Would result in negligible cumulative loss of vegetation communities and special status species in the region Impacts to vegetation communities and potential special status species could be long-term (over the life of the project); however, the community types are common and geographically widespread, and the disturbance acreage relatively small; furthermore the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Fotowatio Renewable Ventures	Planned 25-MW solar photovoltaic energy facility located approximately 2 miles west of the proposed route in the Upgrade Section.	Sonoran Paloverde-Mixed Cacti Desert Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 305 acres of vegetation. Project is in an area close to existing disturbance, residential industrial, and agricultural lands. Would result in negligible cumulative loss of vegetation communities and special status species in the region. Impacts to vegetation communities and potential special status species could be long-term (over the life of the project); however, the community types are common and geographically widespread, and the disturbance acreage relatively small; furthermore the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.			
Avra Valley Solar Project/NRG Solar	Planned 25-MW solar photovoltaic energy facility to be located approximately 3.6 miles west of segment U3j of subroute 4.1 within the Upgrade Section.	Sonoran Paloverde-Mixed Cacti Desert Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If developed could potentially directly impact vegetation under project footprint. Disturbance could remove 300 acres of vegetation. Project is in an area close to existing disturbance, residential, industrial, and agricultural lands. Would result in negligible cumulative loss of vegetation communities and special status species in the region. Impacts to vegetation communities and potential special status species could be long-term (over the life of the project); however, the community types are common and geographically widespread, and the disturbance acreage relatively small; furthermore the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Pinal Central to Tortolita 500-kV Transmission Line	Planned single-circuit 500-kV transmission line; 40 miles of new line between Pinal Central substation and Tortolita substation. The Proponent Preferred (subroute 4.1) interconnects at Tortolita substation.	Sonoran Paloverde-Mixed Cacti Desert Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If developed could potentially result in 40 linear miles of disturbance. Project is collocated with existing transmission lines along some of its length. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. The vegetation communities impacted, however, are common and geographically widespread, and the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Vail-to-Valencia 115-kV to 137-kV Upgrade Transmission Line	38-kV link between Tucson Electric Power's Vail substation and UES' Valencia substation in Nogales. The Proponent Preferred (subroute 4.1) would interconnect to the Vail substation and run west and south to the Nogales substation, ranging from less than 200 feet near the Vail substation to approximately 45 miles at the Valencia substation in Nogales.	Sonoran Paloverde-Mixed Cacti Desert Scrub Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If developed could potentially result in 45 linear miles of disturbance. Project is collocated with existing transmission lines along some of its length. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. The vegetation communities impacted, however, are common and geographically widespread, and the project is located close to an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Whetstone Ranch Solar Project	Planned 80-MW solar farm, four stages of 20 MW each, located approximately 6.5 miles south of segment U2 of subroute 3.1.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	If implemented would result in removal of approximately 1,600 acres of vegetation loss. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Reasonably Foreseeable Future Projects, cont'd.			
Red Horse 2 Wind Farm	Proposed 30-MW wind farm located approximately 21 miles west of Willcox, Arizona. Project would be located within the BSETR.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	If implemented would result in removal of approximately 2,765 acres of vegetation loss. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Red Horse Solar	Located on private and ASLD land approximately 2.5 miles west of the Red Horse 2 Wind Farm.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	If implemented would result in removal of approximately 686 acres of vegetation loss. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Rosemont Copper Mine	New open-pit copper mine and copper recovery facilities located more than 10 miles south of segment U3a of subroute 3.1.	Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe Madrean Encinal Madrean Pine-Oak Forest and Woodland	If implemented would result in removal of approximately 4,285 acres of vegetation loss. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Upgrade Section, Future Projects			
Tucson-Apache Pole Replacement Project	Western is proposing to conduct pole replacement, access road improvements, and vegetation management along portions of their Tucson to Apache 115-kV transmission line. 149 wood H-frame structures have been selected for in-kind replacement and vegetation management is proposed near the San Pedro River in Benson, Arizona. All project-related access will be along existing access roads; however, about 20 non-contiguous miles of access road will require improvement.	Sonoran Paloverde-Mixed Cacti Desert Scrub Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If implemented could potentially result in 80 linear miles of disturbance within a preexisting ROW. The greatest impacts would be related to upgrade of 20 miles of access roads. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. The vegetation communities impacted, however, are common and geographically widespread, and the project is located within an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Future Projects, cont'd.			
Abandonment and Removal of existing Western Line Saguaro-Tucson and Tucson-Apache	If the proposed Southline Project were to be approved the existing transmission line in the Western ROW would be abandoned and removed once the new Southline transmission line is complete.	Sonoran Paloverde-Mixed Cacti Desert Scrub Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub Agriculture Sonora-Mojave Creosotebush-White Bursage Desert Scrub North American Warm Desert Riparian Mesquite Bosque Developed, Open Space - Low Intensity Barren Lands, Non-specific	If implemented could potentially result in 120 linear miles of disturbance within a preexisting ROW. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. The vegetation communities impacted, however, are common and geographically widespread, and the project is located within an area of existing disturbance and therefore cumulative impacts are unlikely to be significant.
Planned Residential Development Projects Arizona	The City of Willcox, Benson, Vail, Tucson, and Marana plan for amendments to their municipal zoning and planned-unit development ordinances are anticipated to expand their municipal boundaries to private and State lands in order to facilitate planned residential development.	Locations unknown. Impacts likely to various desert grassland scrub communities.	Additional expansion of residential and commercial development into undisturbed land would further directly impact vegetation communities and contribute to cumulative loss of native species and impacts to special status species and noxious weeds. Since the location and extent of development is unknown, exact impacts cannot be assessed at this time.
Excelsior Mine	Exploration and evaluation of an in-situ recovery copper mine located between Benson and Willcox, Arizona north of I-10.	Variety of desert grassland and scrub communities	If implemented would result in removal of approximately 6,415 acres of vegetation loss. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to acreage of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Fort Huachuca Solar Array Park	Solar array being constructed on Fort Huachuca next to the Thunder Mountain Activity Centre. Array will consist of 70,000 4-foot by 6-foot solar panels. The 18-MW system will be owned and maintained by TEP.	Variety of desert grassland and scrub communities	Would result in removal of approximately 68 acres of vegetation loss. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Due to limited acreage of disturbance, impacts to vegetation communities and potential special status species could be minimal and long-term (over the life of the project).

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Future Projects, cont'd.			
Sasabe Lateral Project	Approximately 60 miles of planned 36-inch-diameter, high-pressure pipeline and associated measurement facilities to be located approximately 8.8 miles west of segment U3d of subroute 4.1.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation loss for approximately 60 miles of the ROW. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to the approximately 60 miles of disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Silverbell Road Improvements	Planned road improvement project by the City of Tucson to widen and install a median to the existing road that would be intersected by segment U3i of subroute 4.1 within the Upgrade Section.	Variety of desert grassland and scrub communities	If implemented would result in impacts to vegetation along 8 miles of existing roadway. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Would contribute to cumulative loss of vegetation communities across the region and potential impacts to special status species and noxious weeds. Due to the existing roadway impacts would be minimal and short term.
Sonoran Corridor	Planned County highway between I-19 and I-10 south of the Tucson International Airport.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation along the corridor. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Due to potential disturbance, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Tucson International Airport Parallel Runway Expansion Project	Construction of the Future Far Parallel Runway.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation along the runway. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and short term, given the small size of the overall area to be impacted.
Tucson International Airport Runway Land Swap	Land exchange and relocation of munitions storage bunkers on USAF Plant 44 (Raytheon). Parcel F (52 acres) exchanged for Parcel g (127.5 acres). Parcel F is required to accommodate expansion of the second parallel main runway. Parcel G is required by USAF Plant 44 as a buffer for existing operations.	Variety of desert grassland and scrub communities	If implemented would result in removal vegetation an approximately 184 acres. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Future Projects, cont'd.			
USAF Plant 44 Buffer	Additional buffer space for relocation of munitions storage buffers at the Tucson International Airport will be acquired from the Tucson Airport Authority by Pima County (Parcel H). This is required in order to rectify some safety arc issues as well as possible expansion,	Variety of desert grassland and scrub communities	If implemented would result in removal vegetation. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.
162nd Fighter Wing Munitions Storage Area	To rectify limited Munitions Storage Area issues on the 162nd Fighter Wing base on the northern, more populated end of the airport, the east end of Parcel H will be set aside for a new Munitions Storage Area. The lead Federal agency for the buffer and munitions storage portion of the EIS will be the USAF in conjunction with the National Guard Bureau and Pima County.	Variety of desert grassland and scrub communities	If implemented would result in removal vegetation. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.
Fotowatio Renewable Ventures	Planned 25-MW solar photovoltaic energy facility located approximately 2 miles west of the proposed route in the Upgrade Section.	Variety of desert grassland and scrub communities	If implemented would result in removal of approximately 223 acres of vegetation loss. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.
Avra Valley Solar Project/NRG Solar	Planned 25-MW solar photovoltaic energy facility to be located approximately 3.6 miles west of segment U3j of subroute 4.1 within the Upgrade Section.	Variety of desert grassland and scrub communities	If implemented would result in removal of approximately 300 acres of vegetation loss. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.
Pinal Central to Tortolita 500-kV Transmission Line	Planned single-circuit 500-kV transmission line; 40 miles of new line between Pinal Central substation and Tortolita substation. The Southline Project (subroute 4.1) interconnects at Tortolita Substation.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation along approximately 40 miles of transmission line. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Due to potential disturbance, impacts to vegetation communities along 40 miles, and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Pinal Central Substation	Planned 500-kV substation to be located approximately 26.2 miles northwest of segment U3l of subroute 4.1.	Variety of desert grassland and scrub communities	If implemented would result in removal of approximately 200 acres of vegetation loss. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.

Table 4.21-3. Projects Outside the CEAA for Vegetation Resources (Continued)

Project Name	Project Description	SWReGAP Vegetation Community Type	Cumulative Impacts
Upgrade Section, Future Projects, cont'd.			
Electrical District 5 – Palo Verde Hub Project	Planned 109-mile transmission line and the expansion of three existing substations to be located approximately 26.2 miles northwest of segment U3l of subroute 4.1.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation along approximately 109 miles of transmission line. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Due to potential disturbance along 109 miles, impacts to vegetation communities and potential special status species could be moderate and long-term (over the life of the project); however, the community types are common and geographically widespread.
Electrical District 2 – Saguaro #2 Transmission Line Rebuild Project	Planned replacement of existing wood H-frame (3.1 miles) and wood single-pole (32.5 miles) structures with steel monopoles. Existing structures are 60 to 70 feet tall, proposed replacement structures are 60 to 75 feet tall. Conductors and overhead protection ground wire will be replaced; existing access roads will be used or improved as needed. The project is located on the east side of I-10 extending from the Saguaro Substation north for 35.6 miles. The Southline Project (subroute 4.1) interconnects at Saguaro Substation.	Variety of desert grassland and scrub communities	If implemented would result in removal of approximately 36 acres of vegetation loss. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.
Southline Upgrade Pantano Connection Option	Second option to the Pantano Substation expansion to include a 230-/115-kV transformer position and transformer to feed SWTC's existing 115-kV line at the Kartchner Substation.	Variety of desert grassland and scrub communities	If implemented would result in removal of vegetation. Would contribute to cumulative loss and fragmentation of vegetation communities across the region and impacts to special status species and noxious species. Impacts would be minimal and long term.

CONSTRUCTION

Construction impacts are those impacts associated with initial ground disturbance or upgrade activities and access for construction vehicles.

Vegetation Communities

Native vegetation communities predominate within the analysis area and the foreseeable future actions identified within the analysis area. Many areas are already disturbed by agriculture, grazing, transmission lines, pipelines, railroads, and a variety of roads. Domestic livestock grazing has historically changed the composition of most plant communities throughout the region, and the impacts of livestock grazing continue currently and for the foreseeable future. The impacts of domestic livestock grazing are particularly evident at the plant community level, where changes in species composition result. Historically, poorly managed

livestock grazing changed many desert grassland areas of southern New Mexico and southeastern Arizona to shrub-dominated areas with little and/or different perennial grass species.

The majority of the vegetation communities are composed of native shrub and grassland with variable recovery times after disturbance. Direct loss of vegetation cover through ground-disturbing construction activities is expected, and infrastructure, including transmission lines, substations, access roads, etc., associated with the proposed Project, as well as other foreseeable projects within the analysis area, is likely to cause fragmentation of the vegetation communities. Future developments in the region could also contribute to overall habitat loss and fragmentation of vegetation communities and habitats, although this is mitigated through locating actions within previously disturbed areas and habitat enhancement projects. Most projects usually avoid highly sensitive habitats in order to minimize impacts to vegetation communities that would take long periods to recover or that comprise rare or sensitive plant species.

Indirect cumulative effects associated with the proposed Project and foreseeable future actions include change in vegetation in disturbed areas from native to non-native (and potentially noxious) species. Each additional ground disturbance in the area provides increased opportunity for introduction and invasion by noxious weeds beyond the initial disturbance area.

Special Status Species

As discussed in Chapter 3, “Affected Environment,” multiple species of special status plants were observed or predicted to occur within the analysis area, including a large number of FWS special status species and BLM sensitive species. A cumulative, incremental loss of habitat would result for both sensitive plant species and common plants which occur in the areas disturbed by one or more of the identified projects in the cumulative effects analysis area. It is expected that both the proposed Project and identified cumulative effects projects within or adjacent to the Southline analysis area and/or ROW would obtain detailed information about the presence, if any, of special status species prior to construction, and would take appropriate measures to avoid or minimize adverse effects on those species. The BLM is likely to require that any foreseeable actions within or adjacent to the Southline analysis area and/or ROW carry out similar surveys for special status species. If identified, special status species would be, wherever possible, avoided on Federal lands that are subject to BLM ROW grant stipulations. Because of the high density of projects in the region, however, and in some cases the approval of more than one project within a single ROW, total avoidance of special status species may not be possible. As a result of overlap with the Project, some foreseeable actions (the proposed SunZia project, Sapphire Energy Algae Facility, Safford Solar Energy Center, and the Silverbell Road Improvements) might cumulatively impact some special status species, depending on the coordination of PCEMs across all projects. Ideally, all special status species impacts would be avoided or mitigated.

Individual projects are required to implement measures to mitigate impacts to special status species, which reduces the potential for both individual and cumulative impacts to vegetation. Because of the implementation of PCEMs and requirements for restoration and remediation on a Project-specific basis, cumulative effects associated with loss of vegetation are expected to be minimized. The cumulative effects of the identified cumulative projects and uses on vegetation resources would be short-term and minor, and therefore below the level of significance.

Other impacts to special status plant species, including the Pima pineapple cactus, would include the direct and indirect effects of domestic livestock grazing and OHV use. Livestock might directly trample or consume such plants, or indirectly alter the habitats by increasing noxious weeds and other invasive exotic plant species, increasing plant to plant competition for resources and increasing the potential for wildfire. OHVs also may crush individual plants and alter habitats to favor noxious weeds and other invasive exotic plant species, and increase the potential for wildfire.

Noxious Weeds

Ground disturbance–associated actions analyzed in the CEAA could also increase the potential for the introduction and spread of noxious weeds. It is assumed the potential for establishment of invasive plants would be a negative cumulative effect on reestablishment of native communities following construction. The extent one or more invasive plant species could negatively affect reestablishment of native vegetation is speculative; adherence of specific projects to control measures identified in the Noxious Weed Management Plan (see PCEM VEG-5) (or equivalent) and measures identified by the BLM would minimize the introduction and spread of noxious weeds during and following construction. Domestic livestock grazing, ongoing traffic on roads of all types, especially traffic from outside local areas, and OHV activities both create soil and vegetation disturbance that favor noxious weeds and other invasive exotic plant species as well as spread seeds from areas where the species are currently established. Adherence to PPMs for all cumulative actions in the analysis area that mitigate the introduction and spread of noxious species, would result in only short-term and minor cumulative impacts to noxious weeds.

Operation and Maintenance

Impacts associated with operation and maintenance include the continued existence of facilities on the landscape, the associated maintenance activities, and the presence of access roads. The location of multiple projects in the same ROW or analysis area minimizes impacts to vegetation, since multiple projects can be served by the same access routes and the direct and indirect effects of disturbance are contained within a smaller area.

Vegetation Communities

Direct impacts associated with operation and maintenance of the proposed Project and other foreseeable actions in and adjacent to the analysis area are primarily those that relate to fragmentation of plant communities. Since large portions of the proposed Project are collocated with existing projects or areas of planned disturbance (SunZia), the overall cumulative impact is expected to be lessened and would result in only short-term and minor impacts to vegetation communities.

Special Status Species

Direct impacts associated with operation and maintenance of the proposed Project and other foreseeable actions in and adjacent to the analysis area are primarily those that relate to fragmentation of vegetative communities that contain special status plant species.

Individual projects are required to implement measures to mitigate impacts to special status species, which reduces the potential for both individual and cumulative impacts to vegetation. Because of the implementation of PCEMs and requirements for restoration and remediation on a Project-specific basis, cumulative effects associated with loss of vegetation or fragmentation are expected to be minimized. The overall cumulative effects of the identified cumulative projects and uses on special status species would therefore be short-term and minor and below the level of significance.

Noxious Weeds

The operation/maintenance period would include maintenance activities that could contribute to the ongoing spread of noxious weeds from outside of the analysis area and between the disturbance areas of other foreseeable actions. Adherence of specific projects to control measures identified in the Noxious Weed Management Plan (see PCEM VEG-5) and measures identified by the BLM would minimize the introduction and spread of noxious weeds during Project operation and maintenance. The overall

cumulative effects of the identified cumulative projects and uses on noxious weed species would therefore be short-term and minor and below the level of significance.

Summary

Development of the proposed Project, in conjunction with other foreseeable future projects, would contribute to the ongoing fragmentation and loss of natural habitats in the Southwest. All Project subroute alternatives, including the proposed Project, would have similar cumulative impacts. Cumulative impacts would be reduced in most cases when linear utilities, including the proposed Project, are collocated. Other types of future developments, particularly urban expansion and large-scale solar or wind energy development which have significant disturbance footprints, are expected to contribute the greatest loss of natural habitat in the region. Overall the past, present, and reasonably foreseeable future actions in the proposed Southline Project footprint are expected to lead to short-term and only minor cumulative impacts.

Cumulative disturbance to special status plant populations from multiple projects within the Project footprint would be minimized through surveys and design and engineering to avoid individuals and populations. PCEMs, including limited surface travel, erosion controls, invasive species management, etc., would likely be required for all foreseeable transmission lines and other foreseeable projects in order to minimize and prevent indirect impacts to these species. For those areas where avoidance is difficult, loss of some sensitive plants is inevitable. The exact location and extent of this loss cannot be ascertained until ROW locations have been determined.

WILDLIFE CUMULATIVE IMPACTS

The geographic analysis area for cumulative impacts on wildlife resources could extend to the entire range of any wildlife species population that could be impacted by the proposed Project. The range of some of the migratory bird species occurs from North America to South America. As the area of potential cumulative impacts could cover such an enormous area, it is necessary to limit discussion of past, present, and reasonably foreseeable future actions to a smaller area. For wildlife resources the CEAA described in section 4.21.2 was utilized as the area of potential cumulative effects. The temporal scope is for the life of the proposed Project, which would be 50 years. This CEAA represents a reasonable area in which past, present, and reasonably foreseeable future projects when assessed in combination with the proposed Project would impact wildlife resources and allow for meaningful impact analysis. Cumulative actions discussed are based on the existing conditions of wildlife resources described in chapter 3 and the relevant projects presented in table 4.21-1.

Construction

Past actions in the CEAA have had direct and indirect effects on wildlife resources. Historic livestock grazing, proliferation of roadways and developments, electrical transmission lines, pipelines, energy generation projects, water impoundment projects, groundwater pumping, mining, degradation of water quality, conversion of land for agricultural uses, and the introduction and spread of non-native plant and wildlife species have affected wildlife resources. The effects of these past actions include habitat loss, fragmentation, and degradation; a decrease in the numbers and range of some species; increased mortality; decreased reproductive success; and decreased genetic interchange between isolated populations. Cumulative impacts vary depending on the species considered as some opportunistic species may have benefitted from the effects of past actions in the CEAA.

Historic grazing has in some areas led to habitat changes, including the introduction and spread of non-native plant species. The presence of non-native plant species has modified the historic fire regime,

especially in desert habitats. Fires in areas dominated by non-native species can be more frequent and more intense and lead to long-term and permanent changes to wildlife habitat. This is especially important in areas of desertscrub where the native vegetation is not adapted to fire and fires create a positive feedback loop where non-native plant species burn more often and at a higher intensity than the native plants. Post-fire, the non-native vegetation further increases in burned areas thereby leading to more frequent and intense fires. This process can lead to the conversion of native habitats to non-native grasslands and other vegetation types that do not support the same numbers or assemblages of wildlife species as the native vegetation.

Roadways, development, pipelines, electrical transmission lines, mining, energy generation projects, and conversion of land for agriculture have all contributed to wildlife habitat loss, fragmentation, and degradation and have created multiple barriers to species movement and genetic interchange for some species. The cumulative impact of multiple transmission lines and electrical distribution lines has increased the risk of bird collisions by increasing the number of times migratory birds, including sandhill cranes, cross transmission and distribution lines during migration and daily movements. In migratory flyways the impact would increase due to the larger numbers of birds.

Groundwater pumping and water impoundments have modified and degraded large portions of the aquatic and riparian habitats in the region. Water impoundment has changed the timing, frequency, and intensity of floods which decreases native vegetation recruitment and favors non-native species establishment and spread. Groundwater pumping has reduced or eliminated flows in many aquatic and riparian habitats which led to the loss, fragmentation, and degradation of these habitats.

Other past actions that have contributed to the protection of wildlife and special status species and their habitats have also occurred; these include the establishment of National Monuments, National Parks, Wilderness Areas, National Conservation Areas, designation of critical habitat, and other preserves, parks, and special management areas.

Impacts on wildlife and special status wildlife species from present actions would be similar to those described for past actions in the CEAA. Ongoing actions, including livestock grazing, roadways and developments, electrical transmission lines, energy generation projects, mining projects, water impoundments, groundwater pumping, and the introduction and spread of non-native plant and wildlife species, would contribute to impacts. Impacts from present actions would be similar to those described for past actions.

In general, impacts on wildlife and special status species from construction of the proposed Project would incrementally contribute to habitat loss, degradation, and fragmentation as well as increased mortality for some species. The scope of these impacts would be significantly reduced due to the collocation of the proposed Project with existing roads, railroads, pipelines, electrical transmission lines, and the permitted SunZia Transmission Line Project. Increased mortality to wildlife species during construction would be greatest for burrowing and non-mobile species. Surveys for some burrowing species such as the Sonoran desert tortoise and western burrowing owl would be conducted in suitable habitat prior to initiation of construction activities and individuals encountered would be moved to decrease the potential for project related mortality for those species to minor/negligible. As stated in Section 4.8.2 “Wildlife,” overall impacts from construction of the proposed Project would be minor/negligible for some species and moderate for others based on the amount of habitat available to these species in the CEAA and the limited amount of new disturbance associated with the proposed Project. Habitat disturbance would be a long-term impact with construction-related noise and potential for wildlife mortality from construction equipment would be short-term. Species that utilize riparian and aquatic habitats would experience minor/negligible short-term impacts from the proposed Project, since no ground disturbance would occur

in those areas. Species that utilize terrestrial habitats would experience incremental, minor, adverse impact levels from habitat loss and direct mortality associated with the proposed Project.

Depending on the wildlife species, the interaction of the combined effects (past, present, and reasonably foreseeable future actions) for construction of the proposed Project would generally result in incremental, minor, adverse cumulative impacts. Those species that are habitat generalists and are readily adaptable to human activities could see beneficial cumulative effects. Those species with limited ranges, specialized habitats, and especially species that utilize riparian and aquatic habitats could experience minor, adverse, long-term cumulative impacts.

During construction, the interaction of the past, present, and reasonably foreseeable future actions within the CEAA would be a major, long-term cumulative effect on wildlife resources and wildlife habitat. Construction of the proposed project would contribute incrementally a minor/negligible amount of impacts on wildlife resources.

Operation and Maintenance

The cumulative impacts on wildlife resources from construction would be greatly reduced during the operation and maintenance of the proposed Project. The cumulative effects of operation and maintenance would be minor/negligible and long-term.

Reasonably foreseeable and future projects in the CEAA when combined with the proposed Project construction would have incremental, cumulative impacts to wildlife resources. Projects that would contribute to cumulative impacts would include the proposed SunZia project; other electrical transmission projects; solar, wind, biofuel, and geothermal energy generation projects; pipelines; substation construction and expansions; planned residential developments; Willcox Playa Wildlife Area Habitat Enhancement Plan; relocation of Crane Lake; and Rosemont Copper Mine (see table 4.21-1).
The reasonably foreseeable and future projects would primarily adversely impact wildlife resources. The planned Willcox Playa Habitat Enhancement Plan and relocation of Crane Lake would improve habitat for some species, including sandhill cranes, and could reduce the potential for collisions with the existing SWTC transmission line and the proposed Project. Planned roadways, developments, pipelines, electrical transmission lines, mining, and energy generation projects will all continue to contribute to wildlife habitat loss, fragmentation, and degradation and create barriers to species movement and genetic interchange for some species.

Future projects, including the proposed SunZia project, would add an additional 789 miles of electrical transmission lines plus additional lines for the High Plains Express Transmission Project. An additional 220 acres for substation expansions would be disturbed. Overall cumulative impacts from transmission line projects would decrease from co-location of facilities; however, localized impacts would increase from the larger block of disturbance. The cumulative impact of multiple transmission lines would be to increase the number of times migratory birds cross transmission lines during migration and daily movements. As such, this would increase the potential for migratory birds to collide with transmission lines. While impacts to migratory birds would occur, PCEMs and routing the proposed Project away from areas of heavy use would decrease impact levels. Incremental impacts to migratory birds from the proposed Project would be minor. Limited increased mortality to individual sandhill cranes from collisions with transmission lines could occur but would be minimized through project routing and PCEMs. Potential cumulative impacts would be greatest along migratory flyways and would be minor/negligible.

Within the CEAA, an additional 60 miles of pipelines would occur in the future. Approximately 4,285 acres of habitat would be impacted by the Rosemont Copper Mine. Residential developments would impact an unknown number of acres.

Future energy generation projects for which approximate impacts were known total approximately 80,132 acres within the CEAA. Additional projects of unknown size would increase the number of acres impacted. Typical impacts from solar development would include wildlife habitat loss, degradation, and fragmentation and would create barriers to species movement and dispersal. These impacts would be most intensive if development were to occur in previously undeveloped areas, sensitive habitats, or along wildlife movement corridors.

The reasonably foreseeable and future projects above would contribute to impacts on wildlife resources. These impacts would include habitat loss, degradation, and fragmentation; increased mortality for some wildlife species; increased non-native plant introduction and spread; and increased noise/vibration levels during construction activities. The magnitude of areas to be impacted is estimated in table 4.21-1 and would be most intensive if the projects were to occur in previously undeveloped areas. As future development occurs the CEAA would have reduced quality and quantity of wildlife resources. Habitat would be lost to ground-disturbing activities and would be fragmented by additional linear features. Co-location of facilities, the Willcox Playa Wildlife Area Habitat Enhancement Plan, and relocation of Crane Lake could reduce the overall habitat impacts in the CEAA; however, localized impacts would increase from the larger block of disturbance.

Ongoing operation of existing and future projects would continue to impact wildlife resources. The presence of linear features such as roads and railways would continue to fragment habitat, provide barriers to movement and genetic interchange. Wildlife species attempting to cross these linear features would be subject to the potential for mortality from vehicle/train strikes. Migratory birds would continue to be impacted by existing transmission lines due to birds striking lines or towers/poles. The incremental operation and maintenance impacts of the proposed Project on wildlife resources would be minor/negligible.

Summary

Development of the proposed Project, in conjunction with other foreseeable future projects, would contribute incrementally to ongoing wildlife habitat loss, degradation, and fragmentation; increased mortality for some wildlife species; increased non-native plant introduction and spread; and increased noise/vibration levels during construction activities. Impacts from each of the Project alternatives would have similar cumulative impacts. PCEMs and collocation of the proposed Project with existing infrastructure, would avoid or minimize impacts to wildlife resources. Other future developments would add an estimated additional 789 miles of electrical transmission lines, 60 additional miles of pipelines, 220 acres of substation expansions, and 80,132 acres of disturbance for electrical generation projects.

Cumulative impacts on wildlife resources would be minimized through surveys, design, and engineering as well as PCEMs. These PCEMs would likely be required for most future projects. In areas where avoidance or mitigation is difficult the loss of some individuals of wildlife species as well as habitat would occur. Although PCEMs would minimize impacts on wildlife resources, the cumulative impact of the past, present, and reasonably foreseeable projects would be major and long term. The proposed project would contribute incrementally a minor/negligible amount of impacts on wildlife resources.

Cultural Resources

The geographic analysis area for cumulative impacts to cultural resources is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to cultural resources represents a reasonable region in which cultural resources with similar characteristics (as well as similar temporal and cultural affiliation) as those within the Project ROW and, when assessed in combination with other cumulative actions, would be

impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the cultural resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1. In addition, existing highways (i.e., I-10, U.S. 70, U.S. 191, and SR 80) are considered for the cumulative impacts analysis for cultural resources.

CONSTRUCTION

Past construction in the CEAA has occurred in areas with important cultural resources along the New Build and Upgrade Sections. The construction of existing pipelines, railroads, and highways would have had the greatest impact on cultural resources through ground disturbance; transmission lines are more flexible and can be designed to avoid resources, as well as have less ground disturbance. For example, I-10 follows a similar alignment to the proposed Project in places and has a large "footprint" overall for ground disturbance. However, for many of these past projects, including those which are adjacent or parallel to the proposed Project, adverse effects to cultural resources would have been mitigated under Section 106 of the NHPA, which would serve to reduce the adverse effects of construction. Mitigation for most cultural resources would have involved data recovery which would contribute to our knowledge of prehistoric and historic peoples. In the Tucson Basin especially, data recovery projects conducted in compliance with Section 106 have greatly expanded our understanding of early agriculture and other important developments.

Past construction of transmission lines has contributed to visual impacts to historic trails by altering the setting of the trails. Several existing transmission lines cross or run near the Anza NHT corridor and the Butterfield Trail which have impacted their setting. In the New Build Section, several locations where the proposed Project crosses the Butterfield Trail have existing transmission lines that parallel the route of the proposed Project; these transmission lines have already adversely impacted the setting of the trail. In addition, because the route followed by the Butterfield Trail through southwestern New Mexico and Arizona is a logical travel and routing corridor, several existing highways (e.g., I-10), pipelines, and railroads also run near or cross the trail and likely have impacted any physical signs of the trail. Some of these projected were constructed prior to the implementation of the NHPA, so adverse impacts may not have been mitigated, which contributes to cumulative impacts. The existing Western transmission line that forms part of the proposed Project in the Upgrade Section currently impacts the setting for the Butterfield and the Anza NHT.

Reasonable foreseeable actions, when combined with past actions and the proposed Project, that may contribute to cumulative effects include the SunZia project, the designation of solar development priority areas, proposed energy generation facilities, including several small (<100 MW) and large (>100 MW) solar facilities and other alternative energy facilities, a wildlife catchment, relocation of Crane Lake, proposed mines, residential developments, new road construction and road improvements, and upgrades and maintenance to existing transmission lines. Ground disturbance associated with these projects would contribute to cumulative impacts if cultural resources are present; however, these projects are subject to applicable State and Federal laws and regulations, and adverse impacts would be reduced through mitigation in accordance with those State and Federal laws and regulations. If data recovery is conducted as mitigation, these projects have the potential to contribute to our knowledge of the past and may result in a moderate, long-term positive effect.

The construction phase of the proposed Project may contribute to cumulative impacts to cultural resources, but most impacts would be avoided according to Southline's POD. Direct impacts to cultural resources from ground disturbance during construction range from minor to major through the route of the proposed Project. The New Build Section ranges from moderate to major impacts; the Upgrade Section ranges from minor to moderate. Although there is a potential for impacts from ground disturbance to cultural resources from construction, as stated in section 4.9, adverse impacts to cultural resources

would be mitigated in accordance with all applicable regulations, guidelines, and Southline's POD. As stated in the POD, avoidance of resources during the final design stage would be the preferred form of mitigation. Because avoidance would be the primary form of mitigation used, little to no direct cumulative impacts are expected from the proposed Project. Additionally, the proposed Project is primarily routed following existing ROWs and other disturbed areas, for which impacts to cultural resources may have already been mitigated.

Some cumulative visual impacts to trails and historic properties for which setting is an important characteristic are expected from the proposed Project. For example, in places where the proposed transmission line would cross or run near the Butterfield Trail, the setting would be altered by the presence of the structures and lines of the proposed Project.

OPERATION

The operation and maintenance of existing projects, the proposed Project, and reasonably foreseeable projects would have minor, long-term impacts; however, is not expected to contribute to cumulative effects to cultural resources. The operation of the proposed Project or other projects is not likely to result in any additional ground disturbance. As discussed above, the presence of the transmission line would impact the setting of some historic trails and historic properties, but the operation of the line would not involve any further alterations to setting after construction is complete. Maintenance activities may encounter unexpected cultural resources; however, maintenance activities would be subject to Western's Programmatic Agreement for maintenance activities, as well as applicable State and Federal laws and regulations and adverse impacts to those resources would be mitigated in accordance with those regulations.

Visual Resources

The geographic analysis area for cumulative impacts to visual resources is a 10-mile corridor centered on the project centerline, the same analysis area discussed in chapter 4. The temporal scope is for the life of the Project, which is 50 years. Cumulative visual effects would result from the incremental modification of scenic quality associated with the existing landscape as described in chapter 3 and disruptions to sensitive viewer viewsheds and KOPs as a result of the construction, operation, and maintenance of the Project in combination with other past, present, and reasonably foreseeable future actions presented in table 4.21-1.

NEW BUILD SECTION

Past and present uses in the CEAA for visual resources have had a direct effect on the landscape and sensitive viewers as described in chapters 3 and 4. Transmission lines and structures, gas pipelines, residential and industrial developments, dirt surface roads and paved roads have all contributed to changes to the existing scenic quality and landscape in the area. Reasonably foreseeable future developments in the proposed Project vicinity also have the potential to result in cumulative effects on visual resources. Reasonably foreseeable future actions that are likely to have direct cumulative effects to visual resources within the CEAA of route groups 1 and 2 of the New Build Section of the Project include development of new transmission lines and substations, development of renewable energy generation facilities, a natural gas energy generation facility, and new substation development. These developments, when added to the direct effects of the proposed Project, would incrementally convert the scenic quality of the natural landscapes into a more developed and industrialized landscape that would adversely affect scenery, and sensitive viewers over time. Specific identified cumulative projects (see table 4.21-1) that would alter landscape scenic quality and sensitive viewsheds within the analysis area include the proposed SunZia project, Bowie Power 345-kV Transmission Line and substation, Bowie Natural Gas

Power Plant, Safford Solar Energy 250-MW photovoltaic solar power plant, Solar Reserve, LLC-1 100-MW concentrating solar power/structure facility, Sapphire Energy Algae Facility, and development of the 30,000-acre Afton SEZ.

Because the proposed SunZia project would be potentially constructed along a similar alignment and timeline as the proposed Southline Project, they are likely to result in the greatest cumulative impact to visual resources—in the long term from the introduction of transmission line structures and substation expansions into the landscape; and in the short term from the removal of vegetation to construct and maintain the transmission lines, construction of temporary and permanent access roads, construction of temporary construction laydown yards, and any landform modifications necessary to prepare the ROW for construction. Modification to the natural landscape would occur within the CEAA of the New Build Section proposed routes. Where applicable, implementation of PCEMs included in the proposed Project and reasonably foreseeable projects would reduce or eliminate the potential for incremental effects resulting from the proposed Project. In addition, because local alternative DN1 parallels the approved SunZia project alignment, the same access and temporary construction laydown yards may be used for that local alternative, further reducing the cumulative construction impacts.

Solar energy projects typically require disturbance of large blocks of land, which would result in adverse effects to existing, undeveloped landscapes as a result of vegetation removal and the introduction of strong linear and geometrical shapes on the landscape. The impacts of the proposed Project when taken in context with these other reasonably foreseeable future renewable energy developments would have a cumulative effect on viewers from both recreation areas and travel routes in the analysis area. Development of the Afton SEZ would contribute to cumulative impact to visual resources from the introduction of solar facilities, additional transmission structures, and new buildings on up to 30,000 acres near segments P1 and P2 of subroute 1.1. Scenery in this area is considered Class C, and includes areas of low rolling landscape, minimal vegetation, and muted colors and cumulative impacts to scenic quality would be low to moderate. There would also be a cumulative impact to dispersed recreation sensitive viewers at the Aden Hills OHV area and Aden Lava Flow WSA where there would be the potential for views of the proposed Project in combination with solar energy development in the SEZ. Cumulative impacts to sensitive viewers would depend on the solar technology proposed for the SEZ.

The Tri-County RMP is a reasonably foreseeable future action and is expected to result in changes to the VRM classification of BLM lands in Doña Ana County that are currently managed under the Mimbres RMP. As a result of these potential changes, there are portions of the New Build Section that would not be in conformance with VRM objectives under the current BLM preferred alternative for the Tri-County RMP. It is assumed that these segments would not conform because viewers would have views of moderate contrasts in the newly identified VRM II administered lands. Because these segments largely follow NM 9, they would remain visible for extended periods of time as viewers travel both directions. Because of the relative size of the structures when compared with existing utility poles, and because of the close proximity to the structures to potential viewers, the application of recommended PCEM would not reduce impacts to a weak level. Under the subroute 1.2 (the Proponent Alternative); 0.6 mile of segment S2, 6.5 miles of segment S3, and 0.6 mile of segment S4 would cross VRM Class II lands and would not conform to the Tri-County RMP preferred alternative. Additionally, local alternative B would cross 0.7 mile of VRM class II and would not conform to the Tri-County RMP preferred alternative.

Other past, present, and reasonably foreseeable future projects in the analysis area are minimal and restricted primarily to incremental growth in residential and commercial areas associated with the cities of Deming and Lordsburg. The level of overall development in the region, especially for residential and commercial activities, has slowed significantly since about 2008. Residential, agricultural, and transportation development within the cumulative effects analysis area is generally low and is anticipated to remain so. Additionally, because the proposed Project and alternative alignments would be located

within new and existing transmission corridors, visual effects are likely to either be prominent enough or isolated enough so that they would not substantially contribute to cumulative effects in concert with these other developments.

UPGRADE SECTION

Reasonably foreseeable future developments in the vicinity of the Upgrade Section of the proposed Project have the potential to result in cumulative effects on visual resources. Reasonably foreseeable future actions that are likely have direct cumulative effects to visual resources within the CEAA of route groups 3 and 4 of the Upgrade Section of the proposed Project include development of new transmission lines, development of renewable energy generation facilities, a natural gas pipeline, and major road improvements. These developments, when added to the direct effects of the proposed Project, would incrementally convert the scenic quality of the existing landscape into a more developed and industrialized landscape that would adversely affect scenery, and sensitive viewers over time. Specific identified cumulative projects that would alter landscape scenic quality and sensitive viewsheds within the analysis area include the Pinal Central to Tortolita 500-kV Transmission Line, UniSource Energy Services 115 kV to 138 kV Uprate, Whetstone Ranch 80-MW Solar Project, University of Arizona Tech Park 5-MW Thermal Storage/Concentrating Solar Project, Fotowatio 25-MW Photovoltaic Solar Project, the Sasabe Lateral Project, and the Silverbell Road Improvements project.

Other past and present actions in the CEAA have converted larger portions of the Upgrade Section analysis area to residential, commercial, and industrial development associated largely with the city of Tucson and surrounding lands. Because the proposed Upgrade Section would be located along existing transmission corridors, visual effects are likely to blend in with existing development and associated visual impacts and not substantially contribute to cumulative effects in concert with these other developments.

Land Use, Including Farm and Range Resources, and Military Operations

LAND USE

The geographic scope for the land use CEAA is the RMP planning area (Mimbres RMP, Safford, RMP, and Phoenix RMP) that would be crossed by the proposed Project (i.e., the entire planning area, regardless of land ownership). For lands other than BLM-managed lands (e.g., County, municipal, or Forest Service land), the analysis area is the county, municipality, and Douglas Ranger District that would be crossed by the proposed Project and alternatives. Planning areas, or the level at which land use regulations, plans, or authorizations are in effect, is the rationale for designating the analysis area for land use. The temporal scope for the analysis area is the life of the Project (50 years). The CEAA for analyzing potential cumulative impacts to land use represents a reasonable region in which existing land uses, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented.

Construction

The past and present land uses in the CEAA have had a direct effect on the conversion of lands from one use to another (i.e., undeveloped land that is converted to residential subdivision, or vice versa, a former mining area that has been closed, rehabilitated and natural conditions reclaimed) and on the ability to access certain areas, as described in chapters 3 and 4. How an agency manages their land depends upon the purpose of the land (e.g., Federal land, State land, or private land). Land in the CEAA located outside designated ROWs is largely undeveloped and is characterized by vacant desert, agricultural lands, and by

areas used for grazing, transportation corridors, utilities, recreation, and widely dispersed, low-density residential development.

Reasonably foreseeable actions in the CEAA that, when combined with the proposed Project, may have cumulative land-use impacts include the designation of the Willcox bench as an American Viticultural Area, planned residential development in Cochise and Pima County, the Tri-County RMP, the proposed SunZia project, small (<100 MW) and large-scale (>100 MW) solar projects, relocation of Crane Lake, substation construction and expansions, and the future expansion of the communities and roadways within the analysis area (e.g., Tucson). The Tri-County RMP project could establish new utility corridors, which, when considered incrementally with the proposed Project construction, would result in additional conversions of land uses from their existing use to energy, water, or natural gas transmission as well as transportation uses. The planned residential developments, SunZia project, solar projects, and substation construction projects would enable future residential, commercial, or industrial development and would result in further changes to the current types of land uses when considered incrementally with the proposed Project construction. If the relocation of Crane Lake were to involve acquisition of private land, it would result in changes to the land ownership patterns and likely change the current types of land uses where Crane Lake would be relocated. These impacts would likely be individually minor since they are not anticipated to result in landscape-level changes to current land uses; however, these impacts could be collectively significant over a period of time since land use impacts tend to be more permanent versus temporary changes to the existing conditions. In addition, the overall cumulative impact of these developments is generally consistent with the long-term management planning tools such as the WWEC PEIS and numerous state, county, and municipal-level long-range planning documents.

The WWEC PEIS designates energy corridors (i.e., oil, gas, and hydrogen pipelines; electricity transmission; and electricity distribution) on Federal lands within 11 western states, including New Mexico and Arizona. One corridor identified in the WWEC PEIS is included in the analysis area, in New Mexico near Lordsburg proceeding west into Arizona (81-213). The incremental impact of this corridor designation, when combined with the construction of the proposed Project, would result in a minor cumulative impact, since the WWEC PEIS designation has been identified to maximize targeted areas suitable for ROW development.

Construction of the proposed Project would have moderate, short-term cumulative impacts to the management of lands and future or planned land uses since the proposed Project would preclude non-compatible future or planned land uses such as other transmission lines or pipelines from being located within the same footprint as the proposed Southline Project. This statement would also be true for other similar projects provided in table 4.21-1 since they would also preclude other projects from being located in the same footprint. Similarly, construction of the proposed Project may temporarily affect the management of lands (e.g., legal recreation users within the ROW may be forced to recreate outside the ROW during construction yet remain within the planning area, despite the local RMP permitting such uses), but would return to the existing management conditions following construction.

In general, an increase in reasonably foreseeable future developments in the CEAA would contribute to the modification of the character of land use in the analysis area. As development occurs, the rural environment would become increasingly more residential, commercial, and industrial. Linear ROW projects such as the proposed Southline Project are sited to avoid impacting sensitive resources to the greatest extent practicable; however, the incremental impact when considered with other linear ROW would still result in an overall modification of the existing land uses. Thus, as more reasonably foreseeable actions are constructed, the possible paths that can be taken to avoid sensitive resources can become limited. Construction of the proposed Project would preclude other future transmission lines from being located within the same ROW footprint. However, the collocation and collaborative planning of the Southline project with other linear ROW may also benefit land uses by consolidating their overall impact

to other land uses. Specifically, the U3aPC route variation would have a beneficial impact to future military, transportation, and industrial land use plans associated with the Sonoran Corridor project south of the Tucson International Airport when compared to segment U3a in subroute 3.1. Route variation U3aPC would be beneficial to future lands use because it would not cross parcels of land that are identified for development by Pima County and the TAA. With the transmission line not crossing these parcels, as would occur under the U3a route, the parcels would be more fully developable by not being bisected by the transmission line and not having transmission ROW restrictions within the parcels.

Avoidance areas proposed in the Tri-County RMP for aplomado falcon would be cumulatively impacted by the preferred alternative when combined with other reasonably foreseeable projects such as the proposed SunZia and solar projects. For the New Build Section, in areas where the construction of the proposed Project and other reasonably foreseeable linear ROWs such as roads, pipelines, and other transmission lines would not follow existing linear ROWs, they would convert the total ROW existing land use from predominantly undeveloped desert land into a utility corridor, resulting in a moderate to major, long-term cumulative impact. For the Upgrade Section, construction of the proposed Project would not convert the total ROW since the transmission line is already in place; future projects that would follow existing ROWs would not increase the minor impact since they would not convert existing land uses.

Opportunities for recreation land uses (recreation on public, county, or city land) may have access to increased opportunities available as a result of the proposed Project and new access roads in combination with other future planned ROWs that may include new access roads (e.g., the SunZia or Bowie Power projects). Other future developments (as described in the preceding 3 paragraphs) that involve access road construction may be closed to the public except where authorized, and when combined with this project would not affect land use since these roads would not affect land ownership, land management, land use authorizations, or ROWs for future or planned land uses.

Operation

During operation of the proposed Project, if populations of communities (particularly in urban areas) increase as a result of community developments, the recreational use of public land within the CEAA could increase. In addition, the quality of the recreational settings on public lands adjacent to urban areas could be degraded by the loss of undeveloped landscape character and visual intrusion on the landscape as a result of the proposed Project and other reasonably foreseeable linear ROW projects. However, existing land uses would only be precluded in site-specific areas where a transmission tower or ancillary facility physically occupies the land; the remaining land within the ROW would not preclude existing land uses. Therefore, the cumulative impacts of past, present, and reasonably foreseeable projects to land use would be individually minor in the rural portions of the analysis area, but would be collectively moderate in the more urbanized portions. Overall, the proposed Project would contribute minorly to this overall cumulative effect.

Long, linear ROW projects such as the proposed Southline project, as well as many of the other reasonably foreseeable projects within the CEAA (see table 4.21-1), typically would cross multiple land management types such as federal, state, and privately owned lands. There are currently conflicting sentiments regarding the placement of these types of projects upon publically owned or managed lands, such as BLM, Forest Service, or Pima County CLS lands. Related to land use (and Federal land use authorizations), certain people may feel that projects designed for the purposes of serving a public need (i.e., provide reliable electricity transmission) should be placed on public lands to the greatest extent practical, because they feel that this is consistent with the purpose of these lands. However, others may feel that public lands were designated to protect sensitive resources (e.g., Forest Service or Pima County CLS lands) and should be excluded from developments whenever practical (indicating that these projects

should be placed on private lands to the extent practical). The cumulative impact of the proposed Project, when considered with other long, linear ROW projects is collectively significant to this land use debate, and would be long-term.

FARMLANDS AND RANGELANDS

The geographic analysis area for cumulative impacts to public farmlands and rangelands is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to farmlands and rangelands represents a reasonable region in which acres of Farmland of Statewide or Local Importance and acres of grazing allotments when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Generally, the interaction of the combined effects of past, present, and reasonably foreseeable future actions with construction of the proposed Project and alternatives would result in either a beneficial contribution to (i.e., additive) or adverse and detracting (i.e., countervailing) cumulative effect to farming and grazing.

Past and present linear ROW actions and other residential, commercial and industrial developments have had adverse impacts on farmlands and rangelands. The proposed Project, along with other construction and operation of linear projects such as roads, railroads, transmission lines, and pipelines, and the expansion of other land uses (residential, commercial, and industrial) may occur throughout the analysis area. The proposed Project would have individually minor impacts to farmlands and rangelands (as specified in chapter 4, section 4.11.2); however, when considered with other past and present actions, would nonetheless result in conversion of some NRCS classified farmlands to non-agricultural uses and remove forage habitat on rangelands permitted for grazing with a collectively larger, countervailing and moderate impact.

Thus, the proposed Project and other reasonably foreseeable actions in the analysis area have the potential to result in cumulative impacts to farmlands and rangelands by converting NRCS classified farmlands to a non-farmable land use and removing forage habitat from lands permitted for grazing. These projects include the Tri-County RMP, the proposed SunZia project, small (<100 MW) and large-scale (>100 MW) solar projects, mining projects, natural gas pipeline projects, transportation/roadway projects, substation construction and expansions, and the future expansion of the communities and roadways within the analysis area (e.g., Tucson). Increasing the transmission line infrastructure may contribute to the likelihood of future solar development, and when considered cumulatively with the proposed Project, would further limit the availability of lands available for farming/agriculture resulting in an incremental impact to farms. Like the proposed Project and action alternatives, these projects would likely avoid directly impacting existing active farmlands by converting them to non-agricultural land uses. However, development of these projects, in combination with past and present actions, would result in the conversion of areas classified by the NRCS as farmland into non-farmable land, creating a long-term adverse cumulative impact by reducing the amount of available farmable land. The development of these projects would also remove areas from active grazing and create a long-term adverse cumulative impact on available rangeland, potentially resulting in a reduction in grazing leases. The cumulative impact on farmland and rangeland would be considered minor because of the vast amount of land currently available for farming and grazing and the relatively small portion of farmland and grazing habitat that existing development plus the proposed Project and reasonably foreseeable future actions would remove; however, the cumulative impact would be long-term since it could take years for the farmlands and rangelands to return to pre-developed conditions, even with extensive reclamation efforts.

MILITARY OPERATIONS

The geographic scope for analyzing cumulative effects to military operations is the Project footprint in addition to the MTRs, MOAs, and the BSETR that would be intersected by the Project. The temporal scope is for the life of the Project, which is 50 years. The CEAA for analyzing potential cumulative impacts to military represents a reasonable region in which existing military operations, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented.

Past and present actions considered for military operations include the establishment of DOD land, operations at Fort Huachuca, and the BSETR. In addition, community development (particularly those that offer large-scale airports) and transportation infrastructure also are considered as past and present cumulative actions that have impacted military operations, both in the establishment and the function of such operations.

Construction

Reasonably foreseeable and future projects that could affect military uses in the analysis area during construction include the proposed SunZia project, proposed Red Horse 2 Wind project, the Whetstone Ranch Solar Project, the Sasabe/Sierrita Lateral Project and the 5-MW solar power generation project. These projects could impact military uses by limiting existing and/or future military activities.

The proposed SunZia project would cross several MTRs, including VR-259, VR-260, VR-263, and VR-1233. The minimum training altitude for these MTRs ranges from 100 to 700 feet AGL. The construction of the SunZia project could alter use of the MTRs, since aircraft could be required to increase the minimum flight altitude for low-level training to avoid collisions with transmission line facilities.

The Sasabe/Sierrita Lateral Project, an approximately 60-mile-long, high-pressure natural gas pipeline, crosses the Tombstone MOA. Cumulative impacts during construction of the proposed Southline Project with the Sasabe/Sierrita project on the use of the MOA would be minimal as most project facilities would be located belowground and military use of this area is for aerial training and maneuvers.

Operations

The proposed Southline Project would intersect the BSETR, MTRs, and MOAs within the military operations cumulative effects analysis area, furthering the likelihood of requiring the military to acknowledge potential shifts in AGL of existing MTRs as well as the need to revise its radio frequency emitter inventories.

The proposed Southline Project includes upgrading the existing Western 115-kV line across the BSETR; the EMI from the existing Western line is already part of the baseline calculations for EMI. Further, no electronic testing is conducted in the area of the existing Western line currently because of the existing Western line, I-10 corridor, topography, and other interference disturbances. The proposed SunZia project would also cross the BSETR and two renewable energy projects (Red Horse Wind 2 and Whetstone Ranch Solar Project) would be located within the BSETR. Each time a new source of interference is introduced into the BSETR, it minimizes the test space because “mitigation” for the BSETR is basically to avoid the source of interference (i.e., transmission line, solar or wind farm, etc.). In other words, the BSETR test footprint shrinks. Additionally, the BSETR would have to revise its radio frequency emitter inventory for testing area to account for the new interferences. In 2012, the U.S. Army conducted a seven-month quantitative analysis of the impacts of transmission lines on the electromagnetic spectrum of 500-kV lines. This study found that it is reasonable to expect EMI to occur along a power line corridor for up to 1 km on either side of the transmission lines.

Therefore, while the existing Western line already introduces EMI that is accounted for in the baseline measurements, upgrading the line has the potential to produce slightly more EMI (higher voltage line). However, the proposed Southline Project would include EMI dampers on the conductors to minimize EMI. In addition, the proponents of the Southline Project are working closely with the DOD to develop measures that would further reduce EMI impacts to the BSETR and operations at Fort Huachuca.

EMI from the upgrade of the Western line in combination with the approved SunZia and renewable energy projects noted above, could have a cumulative impact to, and limit, the testing operations at BSETR. Southline has been consulting with Fort Huachuca in accordance with State Bill 1387. These consultations have resulted in identified PCEMs (e.g., EMI dampers) since the beginning of Project development. Thus, the incremental impact of the Southline Project when combined with SunZia and renewable energy projects in the BSETR is anticipated to result in minor cumulative impacts to the BSETR's military operations.

Some reasonably foreseeable future actions may not provide EMI mitigation. However, because Fort Huachuca is a vital military operation for national security and a vital asset to Cochise County, it is highly unlikely that any foreseeable future actions that would disrupt or limit the capabilities of the BSETR would be permitted and constructed. Future foreseeable actions like the SunZia project are actively working with the DOD regarding ways to minimize impacts to the BSETR and military operations at Fort Huachuca, much like the proponents of the Southline Project. Given the low possibility that a project that would disrupt or limit the capabilities of the BSETR and Fort Huachuca would be permitted and constructed, the overall cumulative effect of the Southline Project when combined with other future foreseeable actions would result in minor, long-term impacts to military operations.

Special Designations

The geographic analysis area for cumulative impacts to special designations is the CEAA described in section 4.21.2. The temporal scope is for the life of the proposed Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to special designations represents a reasonable region in which existing or proposed special designations, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the special designations affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

CONSTRUCTION

The past uses in the CEAA have had a direct effect on the establishment of special designations, as described in chapters 3 and 4. Recognition by various agencies of a landscape's unique and valuable resources led to protective measures enacted by Federal, Tribal, and local governments. FLPMA is the primary legislation used to protect special designations, although several other enabling legislative actions may also prescribe special designations, as stated in chapter 3. Construction of the proposed Project, when combined with the past and present actions, would not likely have a cumulative effect to special designations since most special designations preclude the types of uses included in the proposed Southline Project. For example, designated wilderness areas preclude "manmade structures;" or, national trails would preclude constructing a transmission tower upon the trail. Therefore, the cumulative impact of the past and present uses, when combined with the proposed Southline Project would be minor.

Since the proposed Project is largely routed to follow existing ROWs and disturbed areas, the likelihood that a special designation occurs within the Project footprint is very low; therefore no cumulative impacts are anticipated. Where the proposed Project would intersect a special designation (e.g., the SVAPD), the existing conditions already include a transmission line; therefore there would be no new changes.

Similarly, the likelihood that users of special designations (i.e., hiking, nature study, or photography) will be seeking special designations proximate to the other past, present, and reasonably foreseeable actions within the CEAA during construction is also unlikely, since the existence of these actions would likely already dictate whether or not the area has been specially designated. Some users of the special designations may experience indirect impacts (i.e., noise, visual intrusions); however, these would cease once construction is completed. Cumulative impacts during construction would be minor and short-term.

OPERATION AND MAINTENANCE

For the same reasons described under construction, special designations would be mostly avoided by the proposed Southline Project, national trails, trails recommended as suitable for national trail designation, the SVAPD, and city or county parks being the exceptions. Similarly, the reasonably foreseeable future actions described in table 4.21-1 also must avoid special designations. Therefore, in general, the cumulative impacts of the proposed Project, when combined with reasonably foreseeable future actions would be minor, but would be long-term and occur throughout the life of the Project. Reasonably foreseeable and future projects that could affect special designations in the analysis area are discussed below. Potential impacts from these projects could affect special designations by indirectly changing the natural, historic, cultural, or visual character of some special designations or by conflicting with management objectives.

The proposed SunZia project pass nearby (within 5 miles) of the Peloncillo Mountains Wilderness Area, in a similar layout as is proposed by Southline. If portions of the proposed Southline Project (local alternatives DN1, LD4) would potentially be constructed in the same corridor as the proposed SunZia project, it would contribute to the modification of special designations' scenic resources (setting) associated with the analysis area. Although construction of these projects would not occur at the same time, the introduction of these reasonably foreseeable actions (linear projects) would increase dominance along the Project analysis area and would affect scenic resources and recreation viewers. If these projects are consolidated, then construction disturbance would be focused within a specific area, rather than multiple projects occurring at intermittent locations. Cumulative effects would be greater where they are not consolidated because more trail-related resources, qualities, values, and associated settings may be affected by these actions. Where these projects may be consolidated, cumulative effects during construction could be further reduced if structure spans were matched (where feasible), potential ROW distance minimized, and restoration of temporary construction areas (i.e., access roads) occurred.

Cumulative impacts to trails would occur in areas where linear ROW proliferation may detract the trails recreational setting, particularly around the Hidalgo substation where the CDNST crosses the proposed Southline Project. These impacts would occur primarily on privately owned lands since the CDNST trail corridor would preclude many activities that would detract from the Trail Corridor's setting. The cumulative impact would be moderate and long-term. A detailed cumulative effects analysis on national trails and trails recommended as suitable for national trail designation is provided in Appendix F, "National Trails Assessment."

The incremental impact of this action when combined with the proposed Southline Project would nonetheless be minor since these projects would be located along an existing ROW among other existing linear features; however, the cumulative impact would be long-term.

Wilderness Characteristics

The geographic scope of the analysis area for assessing potential cumulative effects to wilderness characteristics is the Project footprint and all WIUs that intersect a 1-mile corridor on either side of the proposed Project and alternatives' centerlines. The total acreage for geographic analysis area is

approximately 585,000 acres. The temporal scope of the analysis area is the life of the Project (50 years). As shown on figure 3.13-1, the WIUs that are within the analysis area all occur in the New Build Section.

CONSTRUCTION

A number of areas with potential wilderness characteristics occur within the analysis area; as well as a number of WIUs that have been determined to not possess wilderness characteristics as described in section 3.13. Many of the cumulative actions listed in table 4.21-1 would have similar impacts to areas with wilderness characteristics as the proposed Southline Project. Construction of the proposed Project, when considered in combination with the actions listed in table 4.21-1 that are linear features (such as pipelines and transmission lines) may have the potential to impact areas with wilderness characteristics directly by reducing the size (5,000 acres or more of undeveloped and unroaded lands), the naturalness condition (reduction of vegetation, wildlife, recreation, or other natural resources), or any supplemental values identified for those lands. Construction of the proposed Southline Project and the cumulative action projects could also indirectly affect areas with wilderness characteristics by furthering the ability to find areas with opportunities for solitude and/or primitive recreation.

Of the eight WIUs included in Route Group 1, when the proposed project construction is considered cumulatively with construction of existing or future projects, none of those existing or future projects listed in table 4.21-1 would directly impact the 245,990 acres of eight WIUs since all of the future projects would be located in areas outside the WIUs. For instance, the 29,974-acre Afton SEZ would not directly affect the WIUs in the area (e.g., the 117,277-acre Apache-Hills WIU [NM-LC-015]) because it would not decrease the overall acreage of any one WIU in the area. Similarly, of the two WIUs in Route Group 2, none of the existing or future projects would directly impact the 28,313 acres of WIUs since all the projects would be located in areas outside the WIUs. For instance, the 5,296-acre Solar Reserve LLC future project would not cumulatively affect WIUs in the Lordsburg area because it would not decrease the overall acreage of any one WIU in that area.

Indirect cumulative impacts to other WIUs may occur where the construction of proposed transmission line towers, spans, and other facilities, when considered with other past and present projects such as roadways, mines, pipelines, may be visible from the WIUs.

OPERATION AND MAINTENANCE

The cumulative impacts from operation and maintenance of the proposed Project and placement of other linear features and human-made structures on the landscape would further decrease the amount of undeveloped landscapes (areas with wilderness characteristics) along the transmission line route. Areas with wilderness characteristics directly affected by the Project and any reasonably foreseeable present or future actions identified above could split areas with wilderness characteristics into separate parcels or reduce them in size below the 5,000-acre requirement by placement of human structures and roads.

The cumulative effects of operation and maintenance of the proposed Project with other reasonably foreseeable projects could also reduce naturalness in areas with wilderness characteristics by introducing unnatural or human-made objects to the landscape, and affecting or reducing the amount of soils, vegetation, or natural habitats in the region. Impacts to naturalness during operation and maintenance would result from the presence (e.g., in sight) of the transmission line, ancillary facilities, and vegetation clearing of the ROW in combination with other past and present actions such as roadways, mines, and pipelines.

Finally, the cumulative effects of operation and maintenance of the proposed Project with other reasonably foreseeable projects could alter the setting required to support opportunities for solitude and/or primitive recreation for visitors to areas with wilderness characteristics. It would be more difficult for

visitors to find opportunities for solitude and/or primitive recreation throughout the region because fewer parcels would be out of sight or sound of modern human devices. Therefore, the cumulative effect of operation and maintenance of the proposed Project with other reasonably foreseeable projects could further reduce the availability of undeveloped areas with wilderness characteristics within the New Build Section analysis area.

There would be no cumulative effects to wilderness characteristics within the Upgrade Section analysis area since no WIUs are present.

Recreation

The geographic analysis area for cumulative impacts to recreation is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to recreation represents a reasonable region in which existing recreation opportunities and activities, recreation settings, desired recreation experiences, and adjacent recreation areas, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the recreation resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

CONSTRUCTION

The past uses in the CEAA have had a direct effect on the recreation settings, as described in chapters 3 and 4. Historic proliferation of mining and ranching roads, the establishment of Federal, State, County and private lands, and community development have all shaped the recreation opportunities, settings, and desired experiences in the CEAA. Though land in the analysis area is largely undeveloped, it is characterized by both developed (i.e., utility ROWs) and undeveloped desert, agricultural lands, and by areas used for grazing, transportation corridors, utilities, recreation, and widely dispersed, low-density residential development. As described in chapter 3, past actions drive the locations and intensity for many of the current recreational opportunities of the CEAA (i.e., hunting in areas where existing road networks from past mining or ranching activities have created hunting access road networks). However, these same past activities may also detract the locations and intensity for other current recreational opportunities of the CEAA (i.e., outstanding opportunities for solitude and primitive or unconfined recreation).
The present actions in the CEAA would be very similar to the past actions. In general, construction activities from the proposed Project, when considered with other long, linear ROW projects (e.g., SunZia, Cochise Power, mining, and pipeline projects) would contribute to the modification of the character of the recreation setting, which would contribute to potentially detracting from desired recreation experiences. Construction activities of the proposed Project and other reasonably foreseeable actions may detract the recreational opportunities. These would be individually minor, but collectively significant, particularly in areas where the proposed Project and other reasonably foreseeable projects provided in table 4.21-1 are not spread out over large areas. However, if construction is staggered over long periods of time and not all conducted concurrently, as the proposed Southline project is planned (refer to chapter 2, PCEMs), the cumulative effect to recreation opportunities and experiences would be substantially decreased (i.e., recreational opportunity would continue in areas not being actively constructed). Therefore, recreational opportunities would not be lost permanently (i.e., construction activities may only take a few days) and no recreational opportunities would be completely precluded, even during construction at any time since all recreation opportunities identified within the CEAA are able to be pursued in adjacent and similar areas.

Reasonably foreseeable actions in the analysis area that, when combined with the proposed Project construction, may have cumulative impacts to recreation resources include the completion of the

Tri-County RMP, the proposed SunZia project, small (<100 MW) and large-scale (>100 MW) solar projects, substation construction and expansions, maintenance and upgrades to existing distribution and transmission lines (ranging from less than 230 kV to greater than 500 kV lines), mining and pipeline projects, and the future expansion of the communities and roadways (i.e., planned residential development) within the analysis area (e.g., Tucson) (see table 4.21-1).

Since the proposed Project is largely routed to follow existing ROWs and disturbed areas, the likelihood that primitive or unconfined recreational settings and desired are currently being pursued is low, therefore no cumulative impacts are anticipated; this would be true for other reasonably foreseeable projects that are expansions. However, the likelihood that users will be seeking primitive and unconfined recreational opportunities (i.e., backpacking, nature study) proximate to the other past, present, and reasonably foreseeable actions within the CEAA during construction may not be as likely, since the existence of these actions may not follow existing ROWs and may not dictate which recreational opportunities can be successfully pursued; they may be planned in areas that currently only support primitive recreation, and thus there would be less areas available to seek these opportunities.

OHV riders may have more opportunities available as a result of the proposed Project and other reasonably foreseeable projects provided in table 4.21-1, particularly projects that create new access roads such as solar, geothermal or algae development projects. These renewable energy development projects often encourage increased OHV use through “curiosity,” and users may use the access roads of the proposed Project and other reasonably foreseeable linear ROW projects’ access roads to view these renewable energy development sites. New access roads used for construction (as well as maintenance) provide additional avenues for riders to gain access to locations that were previously off limits or unavailable. Both increasing authorized and unauthorized OHV use is likely to result in increasing complaints from landowners and the public. As reasonably foreseeable projects increase road density at the same time OHV use increases, there will be a need for additional enforcement and physical barriers to protect some areas.

Depending upon the recreation opportunity, setting, or desired experience, the interaction of the combined effects (past, present, and reasonably foreseeable future actions) with construction of the proposed Project and alternatives would generally result either a beneficial contribution to (i.e., additive) or adverse and detracting (i.e., countervailing) cumulative effect to recreation. These two scenarios are dependent upon the type of recreational opportunity that is being pursued because certain recreation settings and experiences are maximized in developed settings such as ROWs with access roads, and certain recreation settings may be severely detracted by developed settings such as ROWs with access roads.

During construction, the interaction of the actions within the CEAA and the proposed Project would be a beneficial, minor and short-term cumulative effect for recreational settings and experiences that promote or utilize access roads, OHV activity, or even hunting. Recreational settings that include existing or new access roads that may comprise the cumulative actions or proposed Project are attractive to OHV users and hunting because users would be able to legally access areas of land (where lawful) that may be remote or isolated without having to hike or walk long distances. These types of activities tend to be concentrated around more urbanized areas. Conversely, the interaction of the actions within the CEAA and the proposed Project would be an adverse, moderate cumulative effect for recreational setting and experiences that require undeveloped, natural settings. These types of activities tend to be concentrated in rural, undeveloped areas. However, as stated previously, due to the current occupancy of facilities and previously-disturbed setting of the cumulative actions and the proposed Project, recreational opportunities in undeveloped, natural settings are not actively pursued currently, and would not likely be sought during construction since the existing conditions already dictate which recreational opportunities can be successfully pursued.

The quality of the recreational setting and desired experiences could be degraded by the loss of undeveloped landscape character and visual intrusion on the landscape as a result of the cumulative impact of the proposed Project construction and the past, present, and reasonably foreseeable actions described in table 4.21-1 above. However, as the proposed Southline Project would follow existing ROWs that have been previously developed, the level of degradation would not eliminate existing recreation opportunities, and would only temporarily alter the recreation setting and desired recreation experiences. The cumulative impact of other reasonably foreseeable actions would not be additive to the proposed Project, but would be countervailing since other linear ROW projects may not follow existing ROWs. The cumulative impact of this temporary alteration of the recreation setting would be minor since recreation settings would be available in adjacent settings, other cumulative actions would be far-removed and would not affect adjacent lands along the entire ROW, and would be returned to existing settings following construction. Therefore, the cumulative impacts of past and present projects to recreation, when combined with the proposed Project and alternatives construction, would be minor and short-term in both the rural portions of the CEAA and the more urbanized portions.

OPERATION AND MAINTENANCE

The cumulative impacts to recreation resources, from construction would largely dissipate during operation and maintenance of the proposed Project and other similar linear ROW projects provided in table 4.21-1, since recreation activities would not be precluded in the majority of the ROW and the short-term disturbances associated with construction would cease.

The cumulative effect to recreation during operation and maintenance would remain minor but shift to long-term since maintenance, emergency, or repair activities could occur at any time during operation.

As future development (renewable energy projects, proposed transmission lines, etc.) within the CEAA occurs, the rural environment may become increasingly more residential, commercial, and industrial; resulting in cumulative changes to the recreation setting and experiences, and certain recreation opportunities and activities to be pushed further from development, increasing visitation to areas that formerly received low levels of recreational use. Operation and maintenance for the proposed Project, when combined with future development would contribute only a minor cumulative effect since the majority of the proposed Project utilizes existing ROWs and disturbed areas. This minor impact would be long-term and for the life of the proposed Project. Further, operation and maintenance activities of the proposed Project would result in minor cumulative effects, since the proposed Project would already be constructed and standard operation and maintenance activities would be so periodic as to not affect recreation opportunities, experiences, or desired settings.

As more reasonably foreseeable actions are constructed such as additional transmission lines, solar energy development, and residential development, the possible alignments that future ROWs can be taken to avoid recreation resources can become limited. OHV use is on BLM lands within the CEAA is considered light. OHV users may have increased opportunities available as a result of the operation and maintenance included under proposed Project as well as other linear ROW projects provided in table 4.21-1 via new access roads constructed and/or maintained for the Project. The incremental contribution of the effects of the proposed Project when added to the effect of other past, present, and reasonably foreseeable future actions would result in a minor and long-term cumulative effect. Table 4.21-6 at the end of this section provides a summary of the direct, indirect, and cumulative effects to recreation resources.

Socioeconomics and Environmental Justice

SOCIOECONOMICS

The geographic analysis area for cumulative impacts to socioeconomics is the socioeconomic analysis area described in section 3.15.1, which consists of four counties in southern New Mexico and five counties in southern Arizona. This analysis area (which is larger than the CEAA used for most other resources) reflects the fact that socioeconomic effects such as changes in employment or the demand for local services are not confined to the land area immediately proximate to the transmission line right of way. The temporal scope is for the life of the Project, which is 50 years. Cumulative actions discussed herein are based on the existing conditions of the socioeconomic and environmental justice resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

Past and present projects and activities have largely defined the socioeconomic setting described in chapter 3. Historic and current activities, such as mining, ranching, trading and tourism led to the development of communities in the analysis area. Availability of private land and locations of key infrastructure such as railroads, highways and water systems have helped define where population and economic growth has occurred throughout the area. With the exceptions of the Tucson and Las Cruces metropolitan areas located on the western and eastern ends of the socioeconomic analysis area, and the Sierra Vista metropolitan area located south of the proposed transmission line right of way in Cochise County, low population density has also tended to limit the economic development opportunities in the area. Long distances to larger markets and relatively small labor forces, along with other factors, make it challenging to attract and support projects that would substantially increase employment, earnings and other economic activity in much of the analysis area.

As presented in table 4.21-1, RFFAs included solar energy projects, transmission line projects (including removal of portions of the existing Western transmission line in the Upgrade Section if the proposed Southline Project is developed), substation upgrade projects (including possible upgrades to the Pantano Substation used by Southline), non-solar renewable energy projects, conventional energy development projects, proposed copper mines, a proposed casino, major road and airport improvements in the Tucson area and general residential and commercial development in portions of both the Upgrade Section and the New Build Section.

A number of these projects have documented construction or operation and maintenance activities that may overlap with the anticipated schedule for the Project (see appendix N). Among that group, the following proposed projects could be especially relevant from the standpoint of cumulative socioeconomic impacts:

- The approved SunZia project would be proximate to the proposed Southline Project in parts of the New Build Section (along local alternatives DN1 and LD4). As noted earlier, some local alternatives for the proposed Southline Project might co-locate in the same ROW with portions of the proposed SunZia project line.
- The proposed High Plains Express Transmission Project is a proposed 1,300-mile transmission line in Wyoming, Colorado, New Mexico, and Arizona, and is anticipated to come on line between 2020 and 2025. No routing or siting information has been finalized.
- The Sapphire Energy Algae Facility may be expanded. This facility is located near Columbus, in Luna County, an area of potential concern in regard to possible housing and public service impacts if the Proponent Alternative (subroute 1.2) is selected for the proposed Southline Project.
- The proposed Lightning Dock Geothermal Power Plant Project would be located about 20 miles southwest of Lordsburg, in Hidalgo County. This is also an area of potential concern in regards to

housing and public services for the proposed Southline Project. Commercial startup is anticipated by late 2014, so construction may be complete prior to Southline construction.

- The planned Safford Solar Energy Project would construct a 250-MW power plant in northeastern Cochise County, another area of potential concern in regard to availability of short-term housing and public services.
- The proposed Bowie Power Station natural gas electrical generating facility and the proposed Bowie Power 345-kV Transmission Line would also be located in northeastern Cochise County, east of Willcox.
- The proposed Whetstone Ranch Solar Project would be located near Benson, in northeastern Cochise County (CH2M Hill 2013t).

Whether these proposed projects, or the other reasonably foreseeable activities identified in table 4.21-1 would proceed to actual development, and whether construction would occur during the same time period as construction of the proposed Southline Project, is uncertain. If construction of some or all of the projects identified above does overlap with the proposed Southline Project, these activities would likely place additional stress on the available housing options and public service providers in the western portions of the New Build Section and the eastern portions of the Upgrade Section. Depending on the overlapping activities and their location, simultaneous construction activity in the more sparsely populated western portion of the New Build Section or eastern portion of the Upgrade Section could result in significant, though short-term, impacts on housing and the demand for public services. The possibility for overlapping major construction projects in these areas emphasizes the need for advance planning and coordination with local authorities. Other reasonably foreseeable activities with defined construction timelines are located in Pima County, Arizona. Simultaneous construction of these projects and the proposed Southline Project could be more easily accommodated due to the greater housing and public services capacity available in the Tucson area.

As noted in section 4.15, the longer-term socioeconomic effects from operation of the proposed Southline Project would include improved capability of the electrical transmission system to meet long-term economic and population growth in the area, facilitation of the development of renewable energy projects and additional property tax revenues for local governments. The other reasonably foreseeable transmission and substation upgrade projects would further add to these benefits. The relatively large number of proposed renewable energy projects among the RFFAs could provide significant additional economic benefits in the region (in terms of employment, tax revenues and other metrics) and would be facilitated by development of the proposed Southline Project and/or the other proposed transmission lines in the area.

ENVIRONMENTAL JUSTICE

The geographic analysis area for cumulative impacts to environmental justice (CEAA) consists of the communities most proximate to the proposed Southline transmission line as defined in section 3.15.10. This analysis area is intended to capture the populations most likely to be disproportionately affected by construction, operations and maintenance of the proposed transmission line. The environmental justice analysis area was defined based on the Census tracts traversed by the Project alternatives and consists of 52 Census tracts, including 9 Census tracts in New Mexico and 43 Census tracts in Arizona (4 tracts include lands in both the New Build and Upgrade sections).

Like most proposed transmission lines, the proposed routes for the Southline Project, under the various alternatives, would use the corridors of existing linear features (such as transmission lines, roads, pipelines and railroads) as much as possible. Co-locating with existing linear infrastructure tends to minimize environmental and social impacts, and by avoiding relatively undisturbed areas.

Co-locating a new transmission line in an area that already has existing transmission facilities or other linear infrastructure would add to any existing impacts from that infrastructure on visual resources, quality of life, property values and other aspects of nearby properties. It is likely, however, that the incremental impact of adding an additional transmission line in areas that already have linear infrastructure in place would not be a significant adverse effect, and that co-location would result in less impact than adding a new transmission line in an area without existing linear facilities.

Table 4.21-4 shows the Census tracts in the New Build Section that would be traversed by the proposed Southline Project alternatives and identifies the basis(es) for classifying the population in each tract as an environmental justice community. As noted in section 3.15, nearly all of the Census tracts traversed by the proposed Project in the New Build Section are environmental justice communities. The table also indicates whether there is existing linear infrastructure (transmission lines or gas pipelines) located in each tract, and whether or not any of the reasonably foreseeable future linear infrastructure projects would be located in the tract. In some cases, the RFFA involves the removal/replacement or upgrading of existing transmission facilities (rather than the development of a new transmission line) – these instances are coded as "Remove/replace" in table 4.21-4. It is important to recognize that the RFFAs shown in table 4.21-4 do not include non-linear projects, such as proposed renewable energy facilities. These proposed projects do not have sufficient geographic specificity at this time to identify the Census tracts in which they would be located.

Table 4.21-4. Existing Infrastructure and RFFAs in Census Tracts Traversed by Proposed Southline Alternatives for the New Build Section

County/ Census Tract	Total Population	Environmental Justice Community?/Basis	Existing Linear Infrastructure*	RFFAs*
Arizona				
Cochise	131,346			
100	1,971	Poverty	No	No
2.01	3,747	Minority	Transmission/Gas	New Transmission
2.02	3,982	Minority/Poverty	Transmission/Gas	No
2.03	2,740	Poverty	Transmission/Gas	Remove/Replace
Graham	37,220			
9615	4,449	Poverty	Transmission/Gas	New Transmission
9616	3,161	Minority/Poverty	Transmission/Gas	New Transmission
Greenlee	8,437			
9603	2,588	Poverty	Transmission/Gas	New Transmission
New Mexico				
Doña Ana	209,233			
15	6,119	Minority	Transmission/Gas	No
16	2,910	Minority/Poverty	Transmission/Gas	No
17.01	5,842	Minority/Poverty	Transmission/Gas	No
17.02	1,692	Minority/Poverty	Transmission/Gas	No
Grant	29,514			
9648	1,764	Minority	Transmission/Gas	New Transmission

Table 4.21-4. Existing Infrastructure and RFFAs in Census Tracts Traversed by Proposed Southline Alternatives for the New Build Section (Continued)

County/ Census Tract	Total Population	Environmental Justice Community?/Basis	Existing Linear Infrastructure*	RFFAs*
Hidalgo	4,894			
9700	2,195	Poverty	Transmission/Gas	New Transmission
9702	2,699	Minority/Poverty	Transmission/Gas	No
Luna	25,095			
4	5,936	Minority/Poverty	Transmission/Gas	Remove/Replace
5	4,338	Minority	Transmission/Gas	New Transmission

Source: Census Bureau (2011).

*Geographic data for existing linear features included locations of transmission lines and gas pipelines. Geographic data for location of new projects only included linear features with known, proposed locations. Other projects, such as proposed renewable energy facilities, do not have sufficient information available at this time to precisely identify their future locations.

As shown in figures 4.21-1a and 4.21-1b, almost all of the Census tracts in the New Build Section that would be traversed by the proposed Southline alternatives already have existing transmission lines and gas pipelines. Seven of the 16 tracts that would be traversed by the proposed Southline alternatives are also anticipated to experience the development of another new transmission line—primarily as part of the proposed SunZia project.

Table 4.21-5 shows the Census tracts in the Upgrade Section that would be traversed by the proposed Southline Project alternatives and indicates whether the tract is an environmental justice community. Like the previous table for the New Build Section, table 4.21-5 also shows the presence of existing linear infrastructure and whether or not any of the reasonably foreseeable future linear infrastructure projects (would be located in the tract).

All but one of the Census tracts in the Upgrade Section that would be traversed by the proposed Southline alternatives already have existing transmission lines. Most also have gas pipelines in place. In most cases, linear RFFAs in these areas involve the removal or replacement of existing transmission lines (primarily the existing Western line in the Upgrade Section and/or the Tucson-Apache Pole Replacement Project). Five of the Census tracts, including two which are environmental justice communities, are anticipated to experience the development of another new transmission line (the proposed SunZia project).

Table 4.21-5. Existing Infrastructure and RFFAs in Census Tracts Traversed by Proposed Southline Alternatives for the Upgrade Section

2010 Census Tract	Total Population	Environmental Justice Community?/Basis	Existing Linear Infrastructure*	RFFAs*
Arizona				
Cochise	131,346			
2.01	3,747	Minority	Transmission/Gas	New Transmission
2.03	2,740	Poverty	Transmission/Gas	Remove/Replace
3.01	4,212	Poverty	Transmission/Gas	No
3.02	4,851	No	Transmission/Gas	Remove/Replace
3.03	3,457	No	Transmission/Gas	New Transmission
4	2,206	Poverty	Transmission/Gas	Remove/Replace

Table 4.21-5. Existing Infrastructure and RFFAs in Census Tracts Traversed by Proposed Southline Alternatives for the Upgrade Section (Continued)

2010 Census Tract	Total Population	Environmental Justice Community?/Basis	Existing Linear Infrastructure*	RFFAs*
Pinal	375,770			
8.02	4,154	No	Transmission/Gas	New Transmission
21.03	5,143	No	Transmission/Gas	Remove/Replace
Pima	980,263			
2	4,409	Minority/Poverty	Transmission/Gas	No
1	514	Poverty	Transmission/Gas	No
11	2,900	Minority/Poverty	Transmission/Gas	New Transmission
12	3,791	Minority/Poverty	Transmission/Gas	Remove/Replace
25.01	6,213	Minority	Transmission/Gas	No
25.03	4,153	Minority/Poverty	Transmission	No
25.04	5,825	Minority/Poverty	Transmission	Remove/Replace
25.05	6,534	Minority/Poverty	Transmission	Remove/Replace
39.01	2,095	Minority/Poverty	Transmission	Remove/Replace
39.02	2,701	Minority/Poverty	Transmission	Remove/Replace
39.03	3,232	Minority	Transmission/Gas	Remove/Replace
40.61	4,821	No	Transmission/Gas	New Transmission
41.09	5,304	No	Transmission/Gas	Remove/Replace
41.14	5,424	Minority/Poverty	Transmission	Remove/Replace
43.1	2,084	Minority	Transmission/Gas	Remove/Replace
44.11	7,085	Poverty	Transmission/Gas	No
44.14	3,194	Minority	Gas	No
44.15	1,622	Minority/Poverty	Transmission/Gas	Remove/Replace
44.18	3,348	No	Transmission/Gas	Remove/Replace
44.19	6,287	Poverty	Transmission/Gas	Remove/Replace
44.22	5,312	Minority	Transmission/Gas	Remove/Replace
44.23	4,324	No	Transmission/Gas	Remove/Replace
44.25	6,166	No	Transmission/Gas	Remove/Replace
44.27	8,138	No	Transmission/Gas	Remove/Replace
44.29	7,398	No	Transmission/Gas	Remove/Replace
44.3	2,454	Poverty	Transmission/Gas	Remove/Replace
44.31	3,903	No	Transmission/Gas	Remove/Replace
45.04	7,131	Minority/Poverty	Transmission/Gas	Remove/Replace
4105.02	6,243	Minority	Transmission/Gas	Remove/Replace
9409	1,885	Minority/Poverty	Transmission/Gas	Remove/Replace

Source: Census Bureau (2011).

*Geographic data for existing linear features included locations of transmission lines and gas pipelines. Geographic data for location of new projects only included linear features with known, proposed locations. Other projects, such as proposed renewable energy facilities, do not have sufficient information available at this time to precisely identify their future locations.

As the preceding tables indicate, almost all of the environmental justice communities that could be affected by construction and operation of the proposed Southline alternatives already have existing transmission lines in place. Development of a new transmission line in these areas would likely have a smaller cumulative impact than in areas without such existing linear features. In many cases, cumulative impacts would also be reduced by the anticipated future removal of an existing transmission line (primarily the existing Western line that would be replaced by the proposed Southline Project).

Table 4.21-6 summarizes direct, indirect, and cumulative effects of the proposed Southline Project on socioeconomics and environmental justice.

Public Health and Safety

The geographic analysis area for cumulative impacts to public health and safety is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to public health and safety represents a reasonable region in which occupational risks, severe weather and fire risks, and potential exposure to EMFs, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the recreation resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

Past and present actions have had a negligible impact on public health and safety. Construction of linear projects such as roads, railroads, transmission lines, and pipelines has occurred throughout the analysis area, with negligible impact on public health and safety. EMFs from the existing transmission lines are not impacting public health and safety.

Reasonably foreseeable actions are in the analysis area that have the potential to result in cumulative impacts to human health and safety by increasing the potential for occupational and fire risks, and generating EMFs where they previously did not exist. These projects include the proposed SunZia project, small (<100 MW) and large-scale (>100 MW) solar projects, substation construction and expansions, and the future expansion of the communities and roadways within the analysis area (e.g., Tucson). Construction of these projects would have a short-term minor impact to public health and safety by temporarily increasing occupational risks. However, because construction of these projects would be unlikely to occur at the same time and location as construction of the proposed Project, there would not be a cumulative impact. Future transmission projects that would occur within the analysis area would increase the potential for public exposure to EMFs; however, this impact would be considered negligible because they would not exceed EMF exposure guidelines outside of the transmission line ROW.

Hazardous Materials and Hazardous and Solid Waste

The geographic analysis area for cumulative impacts from hazardous materials and hazardous and solid waste is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts from hazardous materials and hazardous and solid waste represents a reasonable region in which existing conditions, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the hazardous materials and hazardous and solid waste affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

None of the actions identified in the list of cumulative actions, when combined with the proposed Project, would contribute to a cumulative effect on the generation of hazardous materials and solid waste in the analysis area. This proposed Project and the other actions identified would not produce any obvious

changes to the health and safety of humans or the environment as they relate to the use of hazardous materials. The potential projects would result in additional use of hazardous materials and increased quantities of waste generated during their construction and operation, within their respective project locations. However, it should be noted that like the proposed Southline Project, these other projects are also required to adhere to Federal, State, and local laws, ordinances, and regulations, and implement safety-related plans and programs to ensure safe handling, storage, and use of hazardous materials. Therefore, implementation of proper PCEMs and compliance with Federal, State, and local laws, ordinances, and regulations would provide sufficient mitigation to minimize or completely eliminate direct or indirect impacts from the use of hazardous materials by these activities.

Transportation

The geographic analysis area for cumulative impacts to transportation is the CEAA described in section 4.21.2. The temporal scope is for the life of the Project, which is 50 years. This CEAA for analyzing potential cumulative impacts to transportation represents a reasonable region in which traffic impacts on primary roads, impacts to BLM roads and roadless areas, consistency with transportation plans, and impacts to airports, when assessed in combination with other cumulative actions, would be impacted if the proposed Project were implemented. Cumulative actions discussed herein are based on the existing conditions of the recreation resources affected environment described in chapter 3 and the relevant projects presented in table 4.21-1.

Past and present actions have had negligible to beneficial impact on transportation. Construction of linear projects such as roads and transmission lines has occurred throughout the analysis area, with negligible impact on primary roadway traffic. Once constructed, new roads have had a beneficial impact on primary roadway traffic by improving the transportation network and conforming to long-term transportation plans. The construction of roads on or near BLM lands has increased public accessibility to BLM roads and roadless areas.

Reasonably foreseeable actions are in the analysis area that have the potential to result in cumulative impacts on the transportation system. These actions include various future transmission and generation projects, minor improvements to existing transportation facilities, the Sonoran Corridor project in Pima County, including the relocation of East Hughes Access Road, and the City of Tucson’s Silverbell Road Improvement project. The construction of these future projects would generate minor short-term traffic on primary roadways; however, it is unlikely that construction would occur at the same time and location as construction of the proposed Project. These projects would be expected to be in conformity with future transportation plans. Any project that is within the vicinity of an airport would be expected to consult with the airport to ensure conformity with airport operations and plans. Therefore, there would not be a cumulative impact to traffic on primary roadways, future transportation plans, and airports.

When combined with the new access roads that would be constructed for the proposed Project, the construction of new roads to facilitate access to other new transmission lines and generation projects would be expected to increase public access to BLM roads and roadless areas. However, there would be minimal potential to open access to land areas where it is not currently available and no large expanses of land that are currently inaccessible would become available because of the existing network of roads and trails, Therefore, the cumulative impact of new access roads constructed as part of the proposed Project and reasonably foreseeable actions would be considered a long-term, minor impact.

Intentional Acts of Destruction

In general, past acts of sabotage and terrorism on transmission lines have been rare and the resulting damage has been minimal. Future acts of sabotage and terrorism are impossible to predict and the magnitude of damage that these acts may have is impossible to calculate. Because predicting an act of sabotage or terrorism and the magnitude of the potential damage on the proposed Project and other transmission lines would be purely speculative, a cumulative effects analysis on intentional acts of destruction is not possible.

4.21.5 Summary

A summary of cumulative impacts by resource is presented in table 4.21-6.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Air Quality	Past and current emission sources include power plants, mines, and manufacturing facilities (see table 3.2-4 in section 3.2 for list of past and current major air pollutant emission sources). Pollutant PM_{10} non-attainment area (Rillito, AZ) and CO maintenance area (Tucson, AZ).	Air quality anticipated to remain the same as currently measured by existing ambient air quality monitors.	Minor, short-term construction emissions; minor, long-term operation and maintenance emissions	Potential construction of new air emissions sources (e.g., electric utilities, mines, manufacturing facilities) and potential expansion of existing ones.	Minor impact to air quality during construction and moderate impact to air quality during operations and maintenance; however, proposed Project contribution to any air quality degradation would be negligible.
Noise	Residential and commercial development, including one urban area (Tucson) and several small- and medium-sized towns; roadways, including where the proposed Project would pass near interstates; multiple airports.	Noise levels anticipated to remain the same as currently existing ambient noise levels.	Major but short-term, temporary, and intermittent increase in noise levels during construction activities. During operation and maintenance, noise levels would be anticipated to remain at current levels.	Potentially major, but short-term, temporary, and intermittent increases to noise levels from construction activities associated with future development. Minor impact to noise levels from on-going maintenance and operations of reasonably foreseeable future projects.	Minor cumulative effect from proposed Project and past, present, and reasonably foreseeable future activities.
Geology and Minerals	No Impact	No Impact	No Impact	No Impact	No Impact
Soils	Any ground-disturbing activities from existing pipelines, transmission lines, and railroads	Existing pipelines, transmission lines, and railroads would remain in operation through the life of the proposed Project. No additional ground disturbance or impacts to soil resources are likely from continued operations	Minor, temporary decrease in soil production during construction. Avoidance and implementation of PCEMs mitigates most potential impacts	Minor, temporary short-term impacts to soil resources and functioning due to construction activities and operation of facilities where collocated	Minor negligible cumulative effect during construction and operation.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Cultural Resources	The construction of existing transmission lines, gas pipelines, and railroads likely adversely affected cultural resources; however, adverse impacts would have been mitigated primarily through avoidance and data recovery. Many past linear projects following travel corridors where historic trails are found and alter the setting of these trails, as well as some historic properties.	Current operations of existing transmission lines, pipelines, and railroads have little impact on cultural resources. Some ground disturbance may occur during maintenance activities which may impact resources. Alterations to setting of historic trails and historic properties continue.	Impacts to cultural resources by the proposed Project would primarily come from construction. Direct impacts range from minor to major; however, adverse effects would be mitigated with the primary form of mitigation being avoidance. Some visual effects through alteration of setting are expected for historic trails and some historic properties.	Impacts to cultural resources would primarily come from construction phases of future projects; however, for the majority of those projects, adverse effects to cultural resources would be mitigated.	Adverse direct effects of past actions, the proposed Project, and future actions would be mitigated; therefore, there are no cumulative direct effects. Because many of the past linear projects, the proposed Project, and future linear projects follow historic travel corridors, cumulative visual impacts to historic trails are expected from alterations to their settings.
Water Resources (Mimbres Subbasin)	Ground disturbance within same watersheds from existing pipelines, transmission lines, and railroads. Any impacts to water quality and water quantity from these past actions are already reflected in the description of existing conditions.	Existing pipelines, transmission lines, and railroads would remain in operation through the life of the proposed Project. No additional ground disturbance or impacts to water quality or quantity are likely from continued operations.	Avoidance and implementation of PCEMs mitigates most potential impacts. Significant impacts exist for the proposed Midpoint North substation (permanent structures within floodplains).	Fifty-eight miles of proposed SunZia and High Plains Express route lie within same watershed as the proposed Midpoint North substation; placement of permanent pole structures in floodplains are unlikely to cause significant impacts. Impacts from residential development likely mitigated by municipal stormwater systems.	Proposed projects are unlikely to result in significant impacts to the same floodplains within which the proposed Midpoint North substation is located, and therefore are unlikely to result in cumulative impacts to floodplain resources. Energy projects have large footprints, and these projects could potentially result in cumulative impacts.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Water Resources (Willcox Playa Subbasin)	Same as above	Same as above	Avoidance and implementation of PCEMs mitigates most potential impacts. Significant impacts exist for Willcox Playa (unavoidable WUS or wetlands).	The Excelsior Mine and relocation of Crane Lake, as well as 21 miles of proposed SunZia and High Plains Express route, lie within same watershed as Willcox Playa; avoidance and implementation of PCEMs mitigates most potential impacts. In addition, proposed route is located over 10 miles north of Willcox Playa. Buffalo Soldier Range overlies this watershed but is unlikely to have surface disturbance. Impacts from projects on existing utility lines likely mitigated by avoidance and implementation of PCEMs.	Proposed transmission projects are unlikely to result in significant impacts and are not located near Willcox Playa, and therefore are unlikely to cause cumulative losses of WUS or wetlands associated with Willcox Playa. With the Excelsior Mine and relocation of Crane Lake, there could be minor cumulative effects on downstream waters in the Willcox Playa watershed.
Water Resources (San Simon Subbasin)	Same as above	Same as above	Avoidance and implementation of PCEMs mitigates most potential impacts. Significant impacts exist for Stein's Creek (unavoidable WUS or wetlands).	Thirty-six miles of proposed SunZia and High Plains Express route lie within same watershed as Stein's Creek; avoidance and implementation of PCEMs mitigates most potential impacts. An additional 22,891 acres of disturbance for proposed Safford Solar Energy project, and unspecified acreage for work between Bowie Power Station and Willow Substation also occur within same watershed. Impacts to WUS unlikely to be avoided from large footprint of project.	Both proposed Project and proposed ground-disturbing projects have likelihood of unavoidably impacting WUS and/or wetlands within the same watershed. Cumulative impacts to downstream waters on the main stem of the San Simon River could include incremental degradation of water quality and changes in water flow amount, frequency, or flooding severity.
Water Resources (Upper Santa Cruz Subbasin)	Same as above	Same as above	Avoidance and implementation of PCEMs mitigates most potential impacts. Significant impacts exist for Santa Cruz River (unavoidable WUS or wetlands).	Approximately 200 acres of ground disturbance from the University of Arizona Tech Park Thermal Storage project and 8 miles of Silverbell Road improvements lie within same watershed as the Santa Cruz River; avoidance and implementation of PCEMs mitigates most potential impacts. Impacts from projects on existing utility lines likely mitigated by avoidance and implementation of PCEMs. Impacts from residential development likely mitigated by municipal stormwater systems.	Proposed projects are unlikely to result in significant impacts, and are therefore unlikely to cause cumulative impacts on the main stem of the Santa Cruz River downstream from potential unavoidable impacts to WUS and/or wetlands from the proposed Project.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Water Resources (Lower Santa Cruz Subbasin)	Same as above	Same as above	Avoidance and implementation of PCEMs mitigates most potential impacts. Significant impacts exist for proposed Marana substation (permanent structures within floodplains).	Ten miles of proposed SunZia and High Plains Express route lie within same watershed as Proposed Marana substation; placement of permanent pole structures in floodplains are unlikely to cause significant impacts. Impacts from projects on existing utility lines unlikely to cause additional impacts to floodplains. Impacts from residential development unlikely to be located within floodplains.	Proposed projects are unlikely to result in significant impacts to the same floodplains within which the Proposed Marana substation is located, and therefore are unlikely to result in cumulative impacts to floodplain resources.
Vegetation	Many areas are already disturbed by agriculture, grazing, transmission lines, pipelines, and a variety of roads.	Current activities and impacts to vegetation communities are expected to remain at current levels; however, because the area is subject to existing disturbance and collocated facilities there is likely to be continued expansion particularly of linear transmission lines and pipeline facilities.	Minor short-term impacts to vegetation due to construction activities and operation of facilities.	Minor short-term impacts to vegetation due to construction activities and operation of facilities where collocated. Projects that impact large acreages of landscape not already disturbed, such as solar array projects that will result in thousands of acres of new impacts, are likely to contribute to Southline cumulative impacts more so than linear transmission or pipeline projects that may share already disturbed acreages or other indirect impacts with Southline.	Minor, negligible cumulative effect during construction and operation. Collocated facilities reduce overall impacts to vegetation communities and application of PPMs mitigate impacts. Most vegetation communities impacted by cumulative actions are common and widespread geographically. Cumulative impacts to vegetation communities would therefore result in only short-term, minor impacts to vegetation communities, special status species, and noxious weeds.
Wildlife	Major, long-term impacts from livestock grazing; roadways and developments; electrical transmission and generation; mining; water impoundment and groundwater pumping; conversion of land to agricultural uses; and introduction and spread of non-native species.	Moderate, long-term impacts from livestock grazing; roadways and developments; electrical transmission and generation; mining; water impoundment and groundwater pumping; conversion of land to agricultural uses; and introduction and spread of non-native species.	Minor/Negligible to Moderate habitat loss, disturbance and direct mortality from construction equipment during construction. Minor/negligible to Moderate operational/maintenance impacts to migratory bird species from collisions with transmission lines/towers.	Moderate, short-term to long-term habitat loss, degradation, fragmentation and species mortality during construction only. Increased non-native plant introduction and spread. Minor/negligible, long-term operational impacts, including impacts to migratory bird species from collisions with transmission lines and other man-made structures.	Major to moderate, long-term cumulative effect during construction and moderate, long-term effects from operation.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Paleontological	No fossil localities encountered as a result of past development such as transmission lines, pipelines, railroads, urban development, or agriculture.	Current operations of existing transmission lines, pipelines, railroads, and other facility have no impact to paleontological resources.	Potential major to moderate impacts to paleontological resources due to ground disturbance if fossils are present for the New Build Section. Minor/negligible or no impact for the Upgrade Section. Adverse impacts would be mitigated according to the appropriate regulation.	New Build: Proposed new National Monument would positivity effect paleontological resources through protection. Majority of projects near New Build Section are in areas of low PFYC, so no negative effects are anticipated. One project, the SunZia project has the potential to negatively impact paleontological resources; however, adverse impacts would be mitigated according to appropriate regulation. If any project developed in the Afton SEZ some impacts to paleontological resources may occur if those resources are present. The potential for the discovery of new important fossils during development may also be positive. Upgrade: No impacts anticipated for Upgrade Section.	No impacts from past or present projects and any negative impacts from the proposed Project or future projects would be mitigated; therefore, no cumulative impacts are anticipated.
Visual Resources	Transmission lines, structures, gas pipelines, residential and industrial developments, dirt surface roads and paved roads have all contributed to changes to the existing scenic quality and landscape in the area	Present actions in the CEAA are minimal and consist of incremental growth in residential and commercial development near Deming, Lordsburg, and throughout the city of Tucson. Impacts to landscape and scenic quality are similar to existing conditions.	The proposed Project would result in changes to the existing landscape and scenic quality.	Future actions, including additional transmission projects and renewable energy projects, would contribute to changes to the existing landscape. Development of the Afton SEZ would contribute to cumulative impacts to visual resources. Cumulative impacts to sensitive viewers would depend on the solar technology proposed for the SEZ.	Past, present, and reasonably foreseeable future actions when combined with impacts of the proposed Project would incrementally convert the scenic quality of the natural landscapes into a more developed and industrialized landscape that would adversely affect scenery, and sensitive viewers over time.
Land Use	Establishment of Federal, Tribal, State, and private lands; establishment of allowable land uses.	Land Ownership, management of lands (i.e., Comprehensive, General, Resource Management or Forest Plans), land use authorizations and future or planned land uses occur CEAA-wide.	No impacts to land ownership, moderate impacts to management of lands, minor impact to land use authorizations, moderate impact to future or planned land uses.	Minor impacts to land ownership; moderate but temporary impacts to management of lands during construction.	Moderate cumulative effects during construction and operation.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Farmlands and Rangelands	Establishment of Federal, State, and private lands; community and agricultural development, construction of linear projects such as roads and transmission lines.	Continued operations and maintenance of transportation and transmission infrastructure.	The proposed Project would avoid existing active farmlands, therefore it would only have short-term minor adverse impacts to farmland should a laydown area be required in farmland. A long-term minor adverse impact would occur to rangeland as a result of removing forage habitat on lands permitted for grazing.	Construction and operation of future transmission, generation, and transportation projects would potentially have short-term to long-term minor adverse impacts to farmland and rangeland as a result of converting farmland or removing forage habitat on lands permitted for grazing. Increasing transmission line infrastructure may contribute to the likelihood of future solar development.	Long-term, minor impacts on farmland would occur because proposed Project would result in the conversion of NRCS classified farmland into non-farmable land, reducing the amount of available farmable land. Long-term minor adverse impacts to rangeland would occur by removing forage habitat on lands permitted for grazing.
Military	Community settlement, transportation infrastructure, Fort Huachuca and BSETR established.	BSETR activities, DOD operations, transmission line operation, community development	Minor, short-term impacts to military operations, MTRs, and military installations	Major, long-term impacts to military operations, MTRs, and military installations if the BSETR becomes limited or certain activities are suspended.	Moderate cumulative effect to military installations (BSETR).
Special Designations	Prehistoric and Historic use of natural features or routes, Establishment of Federal, State, and tribal special designations; road, ranching, and mineral development	Use of special designations are anticipated to remain at current seasonal levels; there is a noticeable increase in activities during summer and hunting seasons.	Minor, temporary impact to special designations during construction only.	Moderate impact	Minor cumulative effect since the proposed Southline project and all future cumulative actions must conform to the prescriptions of special designations
Wilderness Characteristics	Development around roads, towns, and water sources. Lands far removed from these features tend to possess wilderness characteristics more than lands proximate to these features.	Establishment of lands managed to maintain wilderness characteristics via RMP amendment and in accordance with FLPMA.	Minor, long-term impacts since the presence of the transmission line may further the ability to access lands with outstanding opportunities for solitude and primitive, unconfined recreation.	Minor, long-term impacts if future actions reduce size, naturalness, outstanding opportunities for solitude or primitive and unconfined recreation, or supplemental values; however, none of the actions listed in table 4.21-1 are proposed within WIUs.	Minor, long-term effect

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Recreation	Proliferation of mining and ranching roads; establishment of Federal, State, and private lands; community development.	Recreation activity anticipated to remain at current seasonal levels; there is a noticeable increase in recreational activities during summer and hunting seasons.	Minor, temporary decrease in recreational setting and desired experiences during construction only. During operation and maintenance, recreational activity would be anticipated to remain at current levels.	Minor, temporary decrease in recreational activities during construction only. Some large-scale energy production projects would preclude all recreation during construction and operation.	Minor/negligible cumulative effect during construction and operation.
Socioeconomics	Historic economic activities (mining, ranching, tourism, trade, etc.) Availability of private land and locations of key infrastructure such as railroads, highways and water systems	Low density development in central portions of analysis area. Economic development constrained by distance to markets and modest labor force availability.	Short-term economic benefits from construction activity. Potential short-term adverse impacts on housing and local services in more remote areas during construction. Long-term negative impacts on immediately adjacent property values. Long-term significant benefits in tax revenues for some communities and improved electrical service quality and capacity to meet demand from new growth.	Other proposed transmission lines, renewable energy facilities, possible upgrades to the Pantano Substation, and other projects.	Southline could facilitate development of new renewable energy projects. Such projects could offer significant economic and fiscal benefits to local communities.
Environmental Justice	Numerous environmental justice communities located in analysis area.	Many of these communities already proximate to existing linear infrastructure such as transmission lines, gas pipelines, highways and railroads	Minor, incremental adverse effect son communities where linear infrastructure is already present.	Removal of some existing linear infrastructure (existing Western line). Other proposed transmission lines (primarily SunZia).	Removal of existing linear infrastructure would reduce impacts on environmental justice communities. Other proposed transmission lines (could add to incremental adverse effects for some environmental justice communities.

Table 4.21-6. Summary of Direct, Indirect, and Cumulative Effects (Continued)

	Past Actions	Present Actions	Proposed Project	Future Actions	Cumulative Effect
Public Health and Safety	Establishment of Federal, State, and private lands; community development, construction of transmission lines.	Continued operations and maintenance of existing transmission infrastructure.	Negligible increase potential for occupational risks to occur during construction; negligible increase of potential for fire risks to occur during construction; negligible increase in potential for public exposure to EMFs during operation.	Linear projects such as roads and transmission lines would be constructed in the vicinity of proposed transmission lines, temporarily increasing the potential for occupational risks and fire risks to occur during construction. Long-term increase in potential for public exposure to EMFs during operation of future transmission lines.	No cumulative impact to occupational risks, or fire risks. Negligible increased risk of public exposure to EMFs when combined with other future transmission projects
Hazardous Materials and Solid Waste	No Impact	No Impact	No Impact	No Impact	No Impact
Transportation	Establishment of Federal, State, and private lands; community development, construction and operation of roads.	Continued operations and maintenance of existing transportation infrastructure.	Temporary, short-term minor adverse impacts to traffic on primary roadways. Long-term, minor adverse impacts of increasing accessibility to areas currently not accessible by the public. No impact to future transportation plans and airports.	Future transmission, generation, and transportation projects would generate short-term minor adverse impacts to traffic on primary roadways, conform to transportation plans, not impact airports, and have the potential to increase access to BLM roads and roadless areas.	No cumulative impact to traffic on primary roadways because construction would not likely occur at the same time and location as future actions. No impact to future transportation plans and airports. Long-term minor adverse impact to increasing accessibility to BLM roads and roadless areas.
Intentional Acts of Destruction			Not applicable	Not applicable	Not applicable

Figure 4.9-1a. Regional archaeological sensitivity of southwestern New Mexico in relation to route group 1.

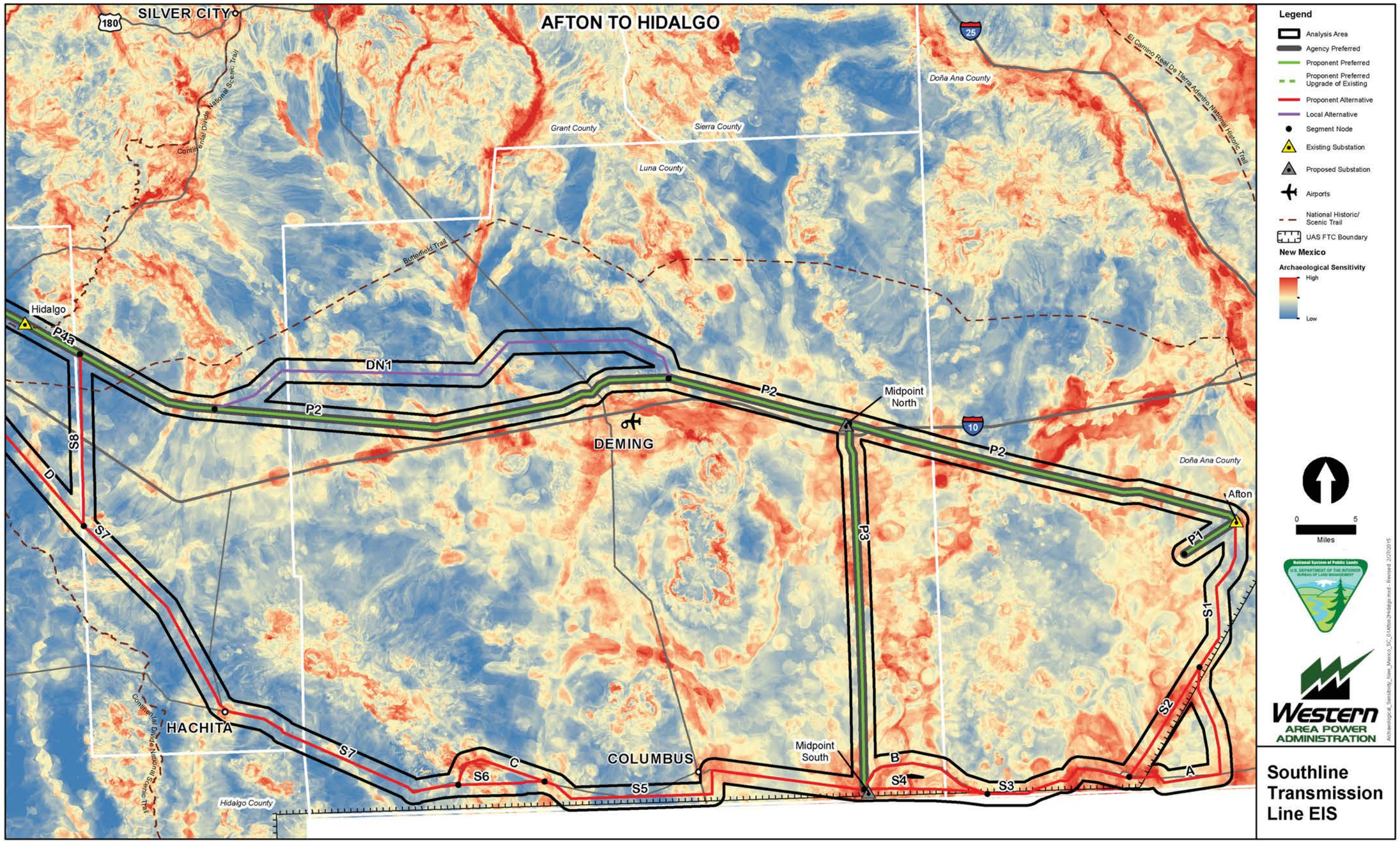


Figure 4.9-1b. Regional archaeological sensitivity of southwestern New Mexico in relation to route group 2.

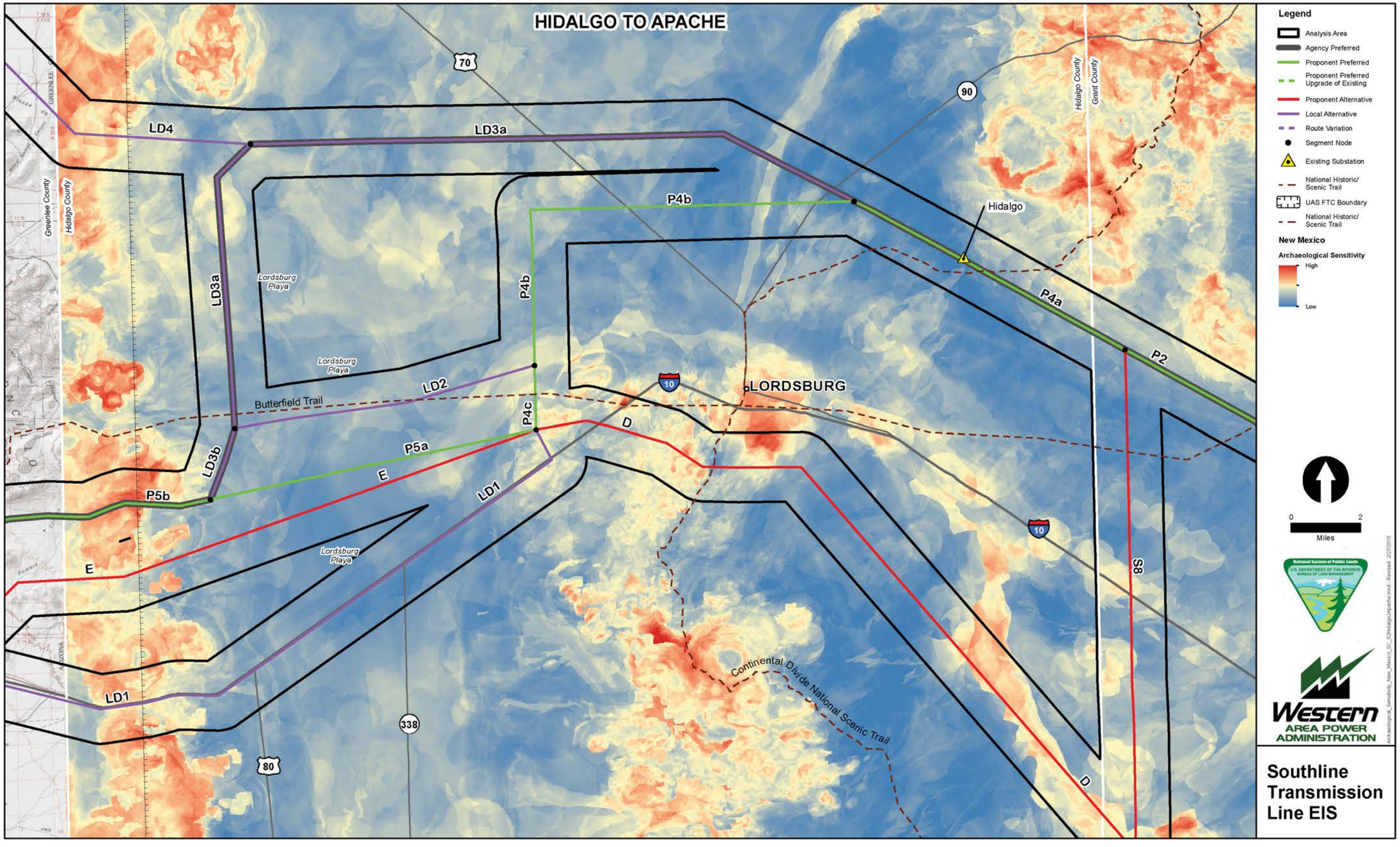


Figure 4.20-1. Areas of nonconformance in the Mimbres RMP, route group 1.

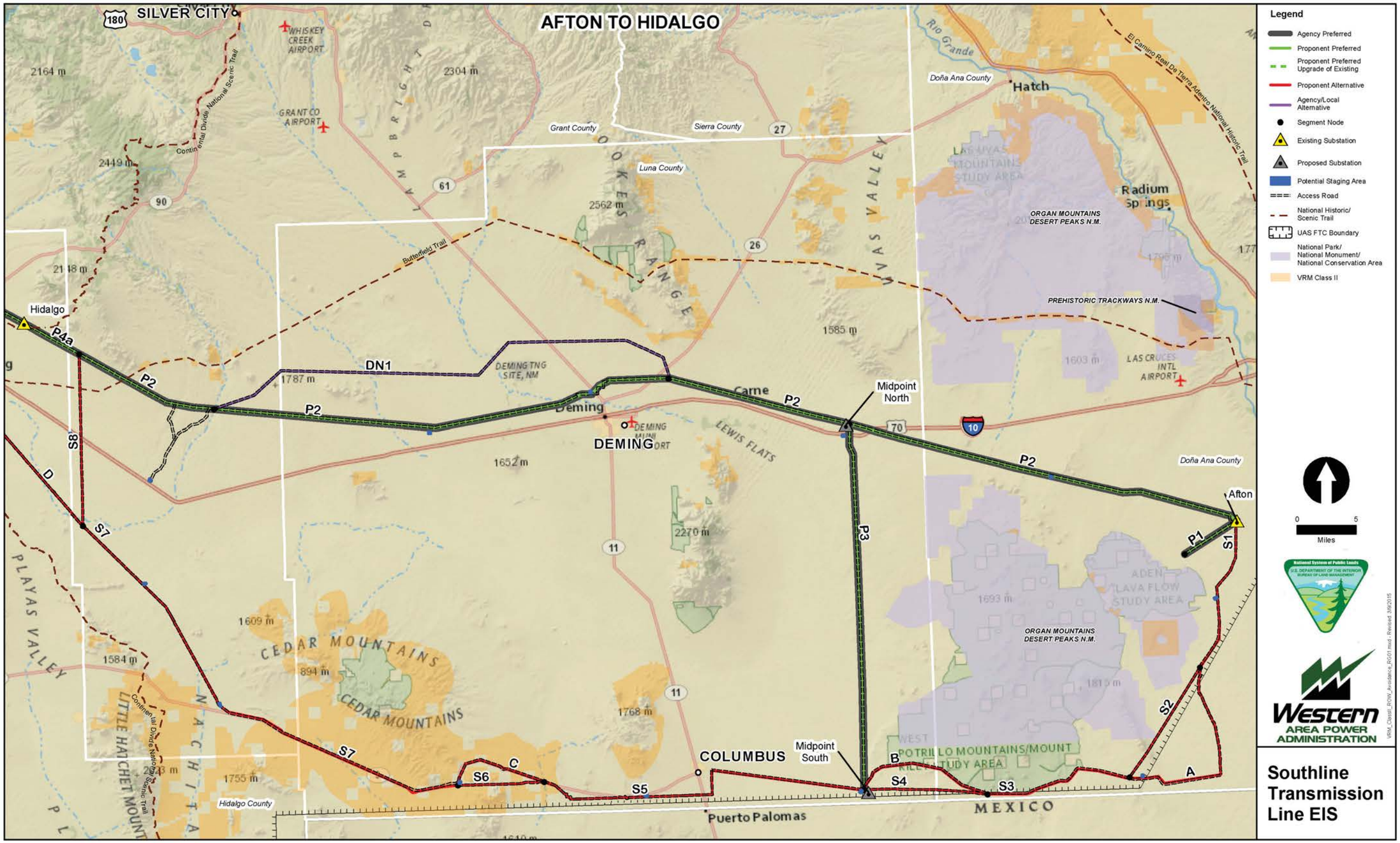


Figure 4.20-2. Areas of nonconformance in the Mimbres RMP, route group 2.

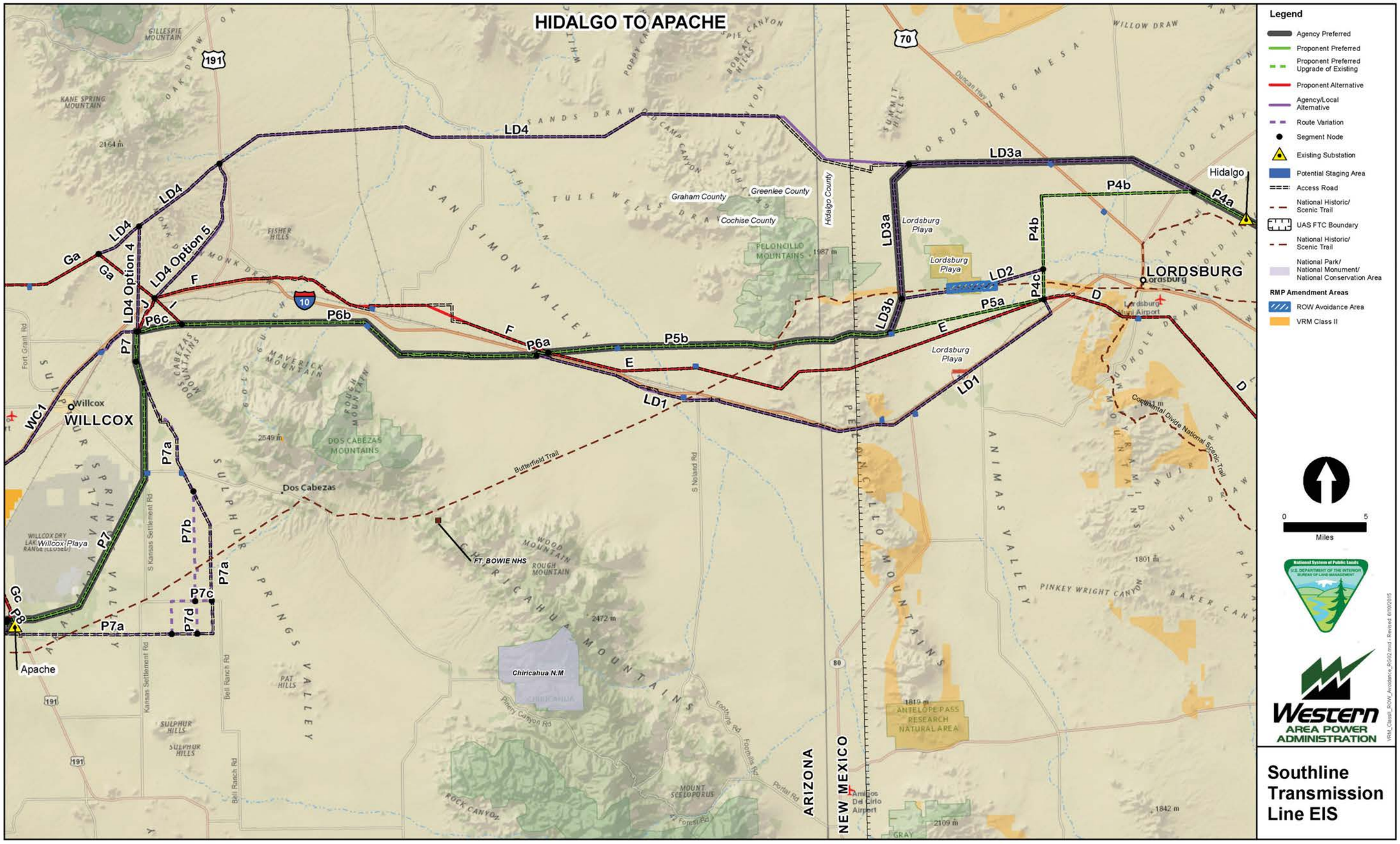


Figure 4.21-1a. Cumulative projects in route group 1.

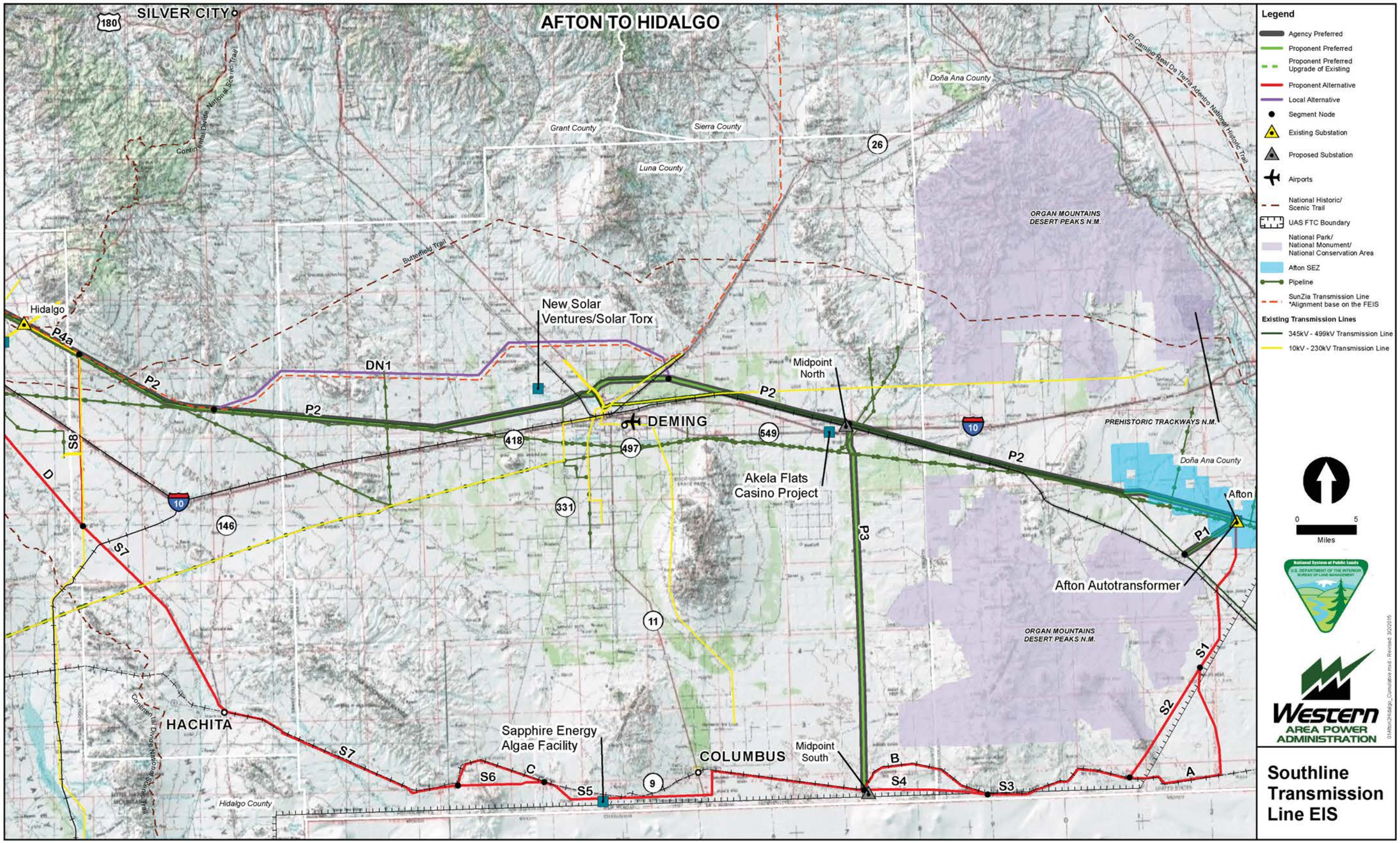


Figure 4.21-1b. Cumulative projects in route group 2.

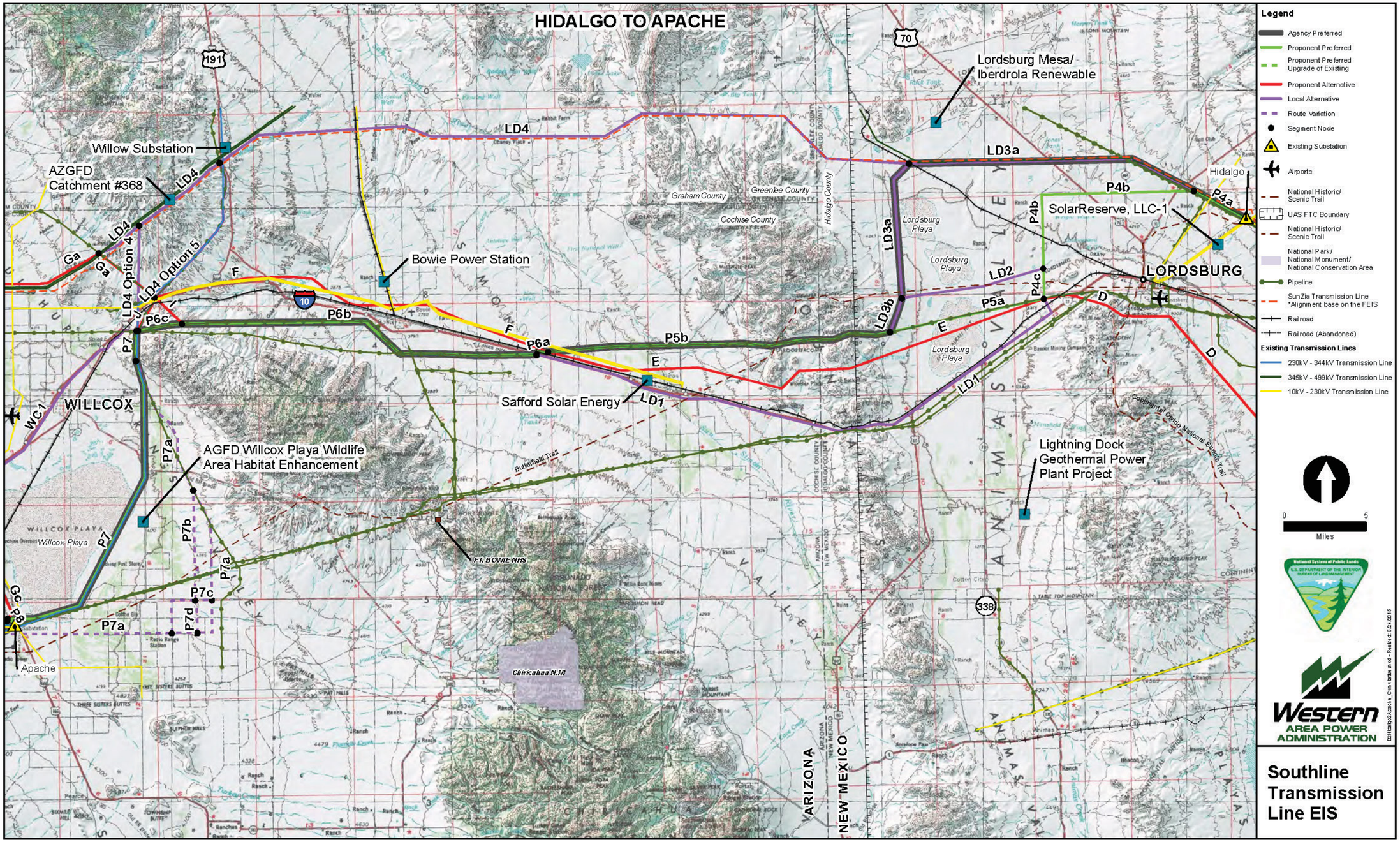


Figure 4.21-1c. Cumulative projects in route group 3.

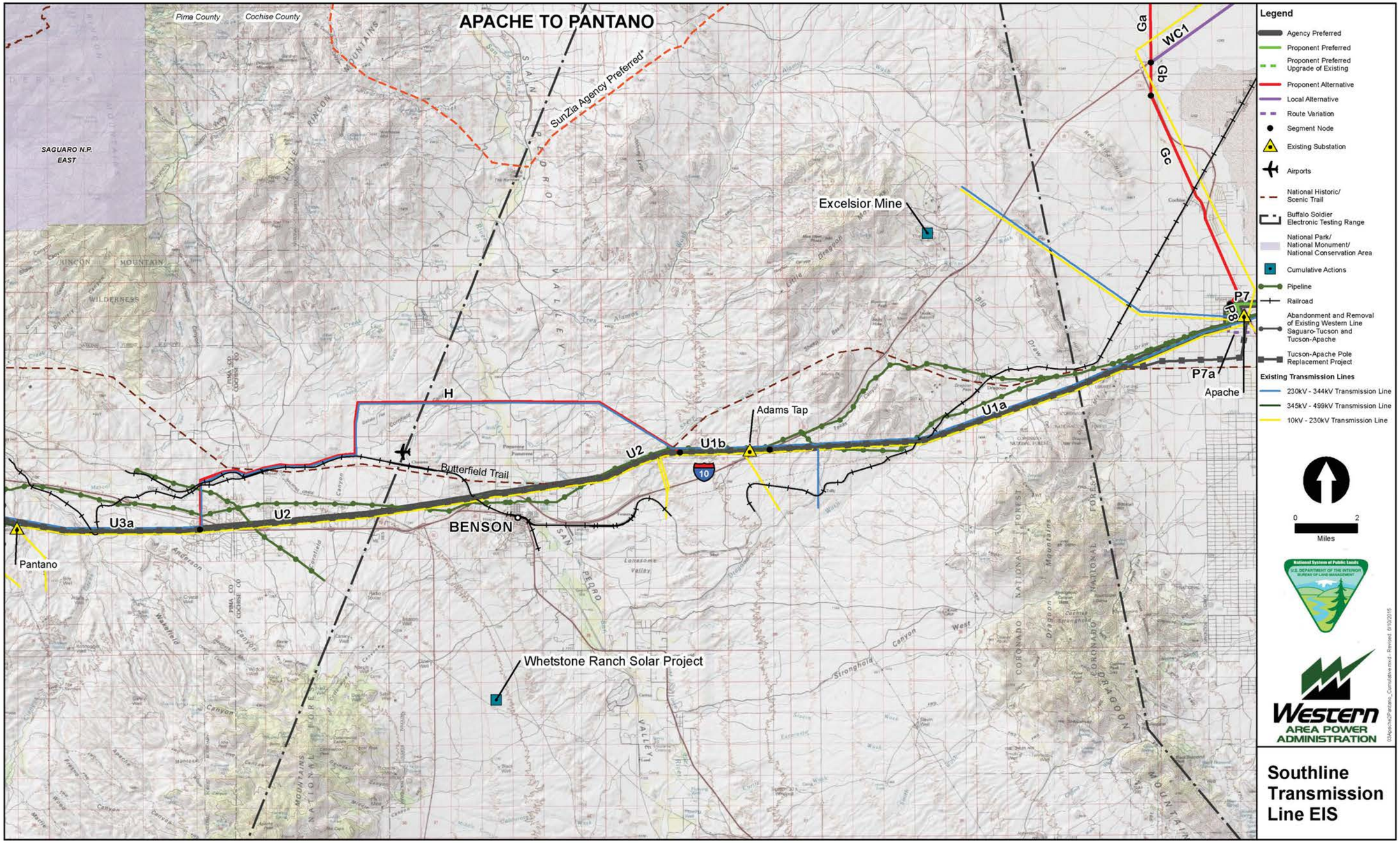
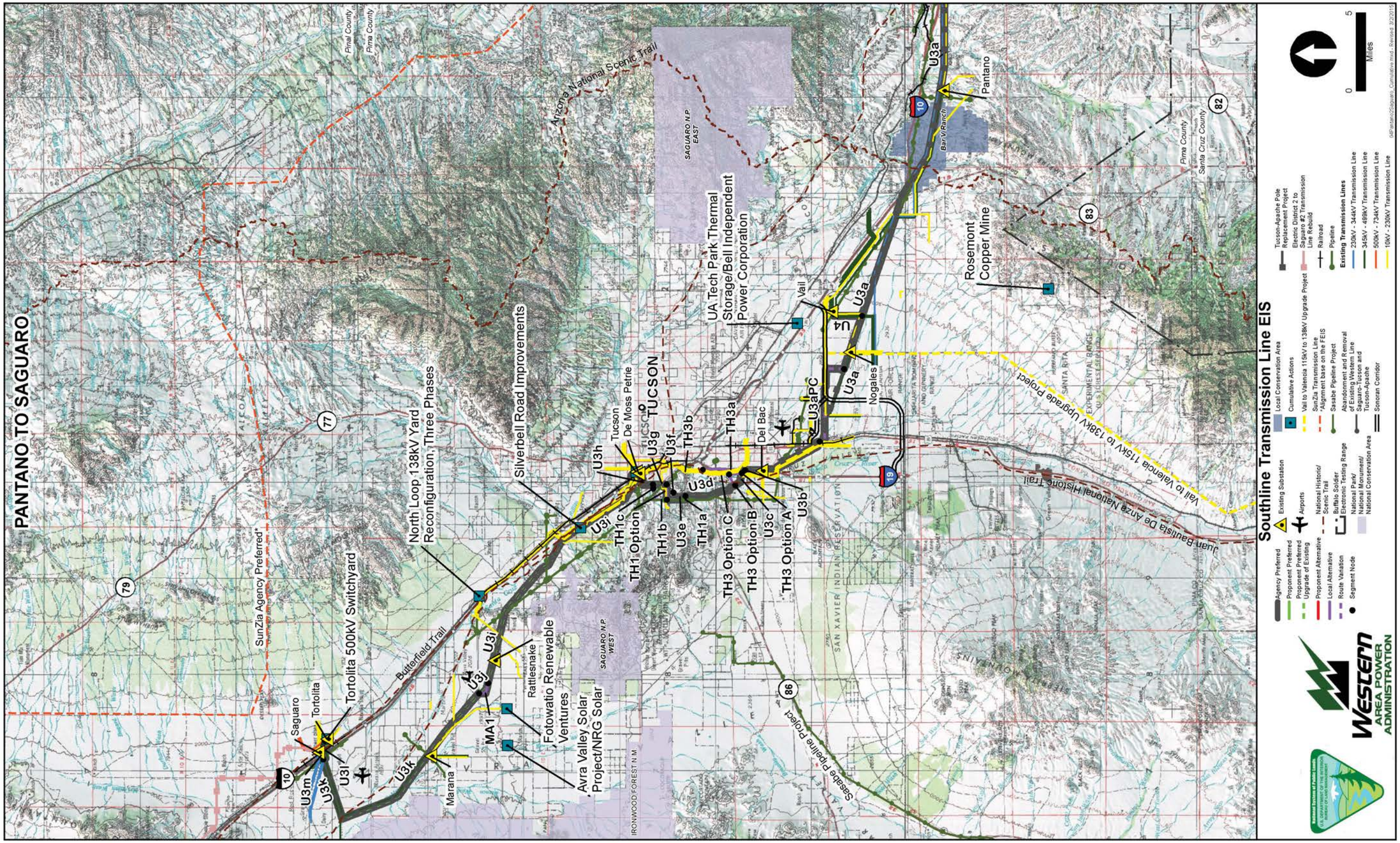


Figure 4.21-1d. Cumulative projects in route group 4.



Chapter 5

CONSULTATION AND COORDINATION

5.1 INTRODUCTION

BLM and Western conducted consultation and coordination activities as required by CEQ regulations (40 CFR 1500–1508) regarding NEPA and applicable Federal laws, such as requirements to afford Federal and intergovernmental agencies, States, tribes, stakeholders, organizations, and the public with meaningful opportunities to provide input and identify concerns regarding the EIS.

Section 1.2 of the EIS describes public outreach efforts to date, including scoping at the start of the proposed Project and public involvement during the Draft EIS availability period. Public involvement is a vital component of NEPA for vesting the public in the decision-making process and allowing for full environmental disclosure.

This chapter summarizes specific consultation and coordination efforts carried out by the BLM and Western throughout the development of the EIS. Though not a part of the NEPA process, this chapter also summarizes Southline's public involvement efforts conducted prior to their filing of the formal ROW application.

5.2 PUBLIC INVOLVEMENT

5.2.1 Southline's Pre-NEPA Public Coordination

Early in the process, and prior to filling out the ROW application, Southline embarked on a public engagement program that was designed to identify stakeholders and to work closely with these stakeholders. As discussed in chapter 1, Southline conducted a series of over 25 stakeholder meetings and workshops in New Mexico and Arizona throughout July, August, and September 2011 (see table 1-7). The goals of the meetings were to give the public early notification of the proposed Project and to begin work on Project routes with interested stakeholders, such as land management agencies, local jurisdictions, community organizations, and landowners.

Pre-NEPA public meetings were hosted in Deming and Lordsburg, New Mexico (September 21–22, 2011); in Willcox, Tucson, and Marana, Arizona (September 27–29, 2011); and in Benson, Arizona (November 10, 2011). Routing workshops were hosted in Deming (September 22, 2011) and Tucson (September 28, 2011). Southline also met with county commissioners and supervisors from Hidalgo and Luna counties in New Mexico, from Cochise and Pima counties in Arizona, and city administrators from Deming, Columbus, Willcox, and Tucson.

Because of Southline's early public outreach efforts, the public was informed about the proposed Project and was familiar with the goals of the proposed Project prior to the formal agency public scoping process. Stakeholders had participated in the preliminary routing process, leading to a better public understanding about Southline's approach to routing, Southline used the input generated from this early public involvement to develop Project routes as proposed in their ROW application, and to identify potentially unsuitable routes. This initial public outreach formed the foundation for the proposed Project's NEPA public process.

5.2.2 NEPA Public Scoping Period

The public was informed about the formal application for the Project and public scoping period by an NOI published in the Federal Register on April 4, 2012. This initiated the NEPA process for the Project and began a 60-day public scoping period, during which the public had the opportunity to provide input on potential issues to be addressed in the EIS.

As a result of public requests for an extension of the 60-day scoping comment period (ending on June 5, 2012), the scoping comment period was extended by 30 days (ending on July 5, 2012). Notification of the 30-day extension was disseminated via Internet news release and email. NEPA scoping was particularly effective since agencies and the public were already familiar with the proposed Project and had actively been engaged in formulating routing alternatives during Southline's pre-NEPA public outreach. The comments received became part of the administrative record and are included in the EIS analysis.

Members of the public had several methods for providing comments during the scoping period:

- Comments could be handwritten on comment forms at the scoping meetings. Comment forms were provided to all meeting attendees and were also available throughout the meeting room, where attendees could write and submit comments during the meeting.
- Emailed comments could be sent to a dedicated email address: BLM_NM_Southline@blm.gov.
- Individual letters and comment forms could be mailed via U.S. Postal Service to the BLM Las Cruces District Office.

All comments were given equal consideration, regardless of method of transmittal.

Scoping Meetings

BLM and Western held a total of six public and two agency scoping meetings for the proposed Project: one agency meeting and three public meetings in New Mexico, and one agency and three public meetings in Arizona. As much as possible, public scoping meeting were held in locations intended to provide more immediate and easier access for potential environmental justice communities. The scoping meetings were advertised in a variety of formats, beginning at least 2 weeks prior to their scheduled dates. Table 5-1 identifies the meeting notification methods and dates.

Table 5-1. Scoping Meeting Notification Methods and Dates

Publicity Item	Venue and Date
NOI	Federal Register – April 4, 2012
Newspaper ads	Las Cruces Sun-News – April 20 and May 4, 2012 The Deming Headlight – April 20 and 27, 2012 Hidalgo County Herald – April 19 and May 3, 2012 San Pedro Valley News-Sun – April 19 and May 3, 2012 Arizona Daily Star – April 20 and May 7, 2012 Arizona Range News – April 25 and May 2, 2012 The Eastern Arizona Courier – April 29 and May 9, 2012 The Explorer – May 9, 2012
Email distribution	Email to BLM Stakeholder List – April 27, 2012 – Agency and public scoping notification (653 recipients) June 4, 2012 – Notification of extended comment period (790 recipients) June 28, 2012 – Notification of scoping comment period end date (788 recipients)

Table 5-1. Scoping Meeting Notification Methods and Dates (Continued)

Publicity Item	Venue and Date
Postcard distribution	U.S. Postal Service (Public and agency recipients) – April 23, 2012 – Agency and public postcard notice (626 recipients) April 25, 2012 – Agency and public postcard notice (64 recipients) May 1, 2012 – Notification to permittees (206 recipients)
BLM website	http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html Posting of the meetings at least 15 days prior to the meetings

Table 5-2 gives the dates, times, and locations of the public and agency scoping meetings, as well as the number of attendees.

The meetings were conducted in an open-house format, with a PowerPoint presentation and question-and-answer period following the presentation. The open-house format and presentation were designed to allow attendees to view informational displays and hear a presentation of the proposed Project and summary of the NEPA process, as well as to allow members of the public to ask agency staff about the proposed Project and the EIS process and submit written or verbal comments onsite.

Table 5-2. Public and Agency Scoping Meetings (2012)

Date	Time	City/State	Address	No. of Attendees
Public Meetings				
May 8, 2012	5:30 p.m.	Las Cruces, New Mexico	Mesilla Valley Days Inn and Suites 901 Avenida de Mesilla	22
May 9, 2012	5:30 p.m.	Deming, New Mexico	Mimbres Valley Special Events Center 2300 East Pine Street	30
May 10, 2012	5:30 p.m.	Lordsburg, New Mexico	Dugan-Tarango Middle School 1352 Hardin	20
May 15, 2012	5:30 p.m.	Willcox, Arizona	Quality Inn 1100 West Rex Allen Drive	20
May 16, 2012	5:30 p.m.	Benson, Arizona	Benson Unified High School 360 South Patagonia Street	22
May 17, 2012	5:30 p.m.	Tucson, Arizona	Palo Verde High Magnet School 1302 South Avenida Vega	31
Agency Meetings				
May 8, 2012	10:00 a.m.	Las Cruces, New Mexico	Mesilla Valley Days Inn and Suites 901 Avenida de Mesilla	18
May 17, 2012	10:00 a.m.	Tucson, Arizona	National Advanced Fire and Resource Institute 3265 East Universal Way	31

Meeting attendees were asked to sign in upon entering, at which time they were provided with handouts and informed of the meeting format and how to comment at the meeting. The handouts (i.e., comment form, newsletter, and contact business card) and informational displays provided information about the following:

- NEPA and the EIS process;
- Agency purpose and need;
- Project background;

- Location maps;
- Similarities and differences between the Southline Project and the SunZia project;
- Potentially affected resources and issues to be analyzed in the EIS;
- Planning process and potential amendments to RMP(s); and
- How to provide comments to the BLM and Western.

Additionally, an interactive GIS mapping station was available for meeting attendees to view the proposed Project to aid them in providing comments about specific locations within the analysis area.

These meetings served to provide information on Project planning activities to date, and to give agency personnel and members of the public the opportunity to ask questions or make comments. Presentations were given at each meeting by the BLM National Project Manager and a representative of Southline. Western staff members were also available at the meetings for questions, as were staff members from BLM's Las Cruces, Safford, and Tucson Field Offices, and staff members from Southline. Meeting attendees were encouraged to ask questions and were allowed to provide oral comments after the presentation. However, BLM asked attendees to submit their comments in writing, as no court reporter was present and the meetings were not recorded.

Scoping Comments

Scoping comments were submitted in a variety of formats (i.e., U.S. Postal Service, email, and comment form). All comments and corresponding information (e.g., exhibits, photographs, and maps) were entered into the comment database. Comments were coded to reflect the subject matter of concern, sorted, and summarized for consideration in the development of the EIS. Table 5-3 gives the number of comments received by source.

Table 5-3. Number of Scoping Comments Received by Source

Source	Comments Received
U.S. Postal Service	39
Email	68
Comment Form	26
Total	**133**

Note: Scoping comments received May 8 through August 1, 2012.

During public and agency scoping, 109 non-duplicative comments were submitted, and 24 comments were received from the same person or organization, for a total of 133 comments received. Comments often addressed multiple issues and included input on several issue categories, which when broken out totaled 576 comments. Table 5-4 shows the comments categorized by issue.

A more detailed description of the scoping process, preliminary issues, and scoping comment analysis is contained in the "Scoping Summary Report" (SWCA 2012). The "Scoping Summary Report" is available at the BLM Project website: http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html.

Table 5-4. Summary of Scoping Comments Received by Issue

Issue Category	Comments Received	Percentage of Total
Air Quality	8	1.4%
Biological Resources	109	18.9%
Cultural Resources	29	5.0%
Hazardous Materials	1	0.2%
Intentional Destructive Acts	1	0.2%
Lands	23	4.0%
Noise	1	0.2%
Military	8	1.4%
Reclamation	1	0.2%
Public Health and Safety	7	1.2%
Recreation	13	2.3%
Request	47	8.2%
Socioeconomics	37	6.4%
Soils and Geology	5	0.9%
Transportation	14	2.4%
Visual Resources	27	4.7%
Water Resources	19	3.3%
Wilderness	4	0.7%
Miscellaneous	23	4.0%
NEPA/Process	199	34.5%
Total	**576**	

Note: All comments were received by August 1, 2012.
Comments received may have included input on several issue categories.

5.2.3 Draft EIS Comment Period

The public was informed about the availability of the Draft EIS/RMPA via publication of an NOA in the Federal Register on April 11, 2014. This initiated the 90-day comment period, during which the public had the opportunity to provide input on the proposed Project and the analysis in the Draft EIS/RMPA.

The BLM and Western each distributed press releases on April 11, 2014, and paid notices were published in newspapers of record. Both the press release and notices notified the public of the availability of the Draft EIS, the beginning of the 90-day comment period, and public meeting dates, times, and locations hosted by the BLM and Western. As during public scoping (see section 5.2.2), there were several methods for providing comments on the Draft EIS/RMPA during the comment period. These included:

- Comments could be handwritten on comment forms at the public meetings. Comment forms were provided to all meeting attendees and were also available throughout the meeting room, where attendees could write and submit comments during the meeting.
- Emailed comments could be sent to a dedicated email address: BLM_NM_Southline@blm.gov.
- Individual letters and comment forms could be mailed via U.S. Postal Service to the BLM Las Cruces District Office.

All comments were given equal consideration, regardless of method of transmittal.

A total of 87 comment submittals (letters, emails, commenters at hearings) were provided to the BLM and Western during the 90-day Draft EIS comment period; within the 87 letters, there were 797 individual comments. All comments that were received became a part of the administrative record, were entered into an interactive, searchable database and coded to reflect the subject matter of concern, sorted, and summarized. Chapter 8 of this EIS includes all Draft EIS comments and agency responses to these comments in tabular format. Section 1.1.2 in chapter 1 summarizes the changes to the EIS between the Draft and Final documents.

Draft EIS Open House Meetings/Hearings

BLM and Western hosted six public open house/hearings and two agency meetings: one agency meeting and three public open house/hearings in New Mexico, and one agency meeting and three public open house/hearings in Arizona. The meetings and open house/hearings were hosted to provide information on the proposed Project, answer questions about the analysis in the Draft EIS/RMPA, and encourage public comments on the Draft EIS. As much as possible, public open house/hearings were held in locations intended to provide more immediate and easier access for potential environmental justice communities.

The public open house/hearings were advertised in a variety of formats, beginning at least 2 weeks prior to their scheduled dates. Table 5-5 identifies the hearing notification methods and dates. Dates and locations of the public open house/hearings and agency meetings follow in table 5-6.

Table 5-5. Draft EIS/RMPA Open House/Hearing and Meeting Notification Methods and Dates (2014)

Publicity Item	Venue and Date
NOA	Federal Register – April 11, 20124
Newspaper ads	Las Cruces Sun-News – April 18 and May 2, 2014 The Deming Headlight – April 18 and May 2, 2014 Hidalgo County Herald – April 17 and May 1, 2014 El Paso Times – April 25 and May 2, 2014 San Pedro Valley News-Sun – May 7 and May 4, 2014 Arizona Daily Star – May 5 and May 16, 2014 Arizona Range News – May 7 and May 14, 2014 The Eastern Arizona Courier – May 4 and May 14, 2014 The Explorer – May 14, 2014
Legal ads	Las Cruces Sun-News – April 20 and April 27, 2014
Email distribution	Email to BLM Stakeholder List April 14, 2014 – Agency and public scoping notification (998 recipients) May 2, 2014 – Agency and public hearing reminder for New Mexico hearings (998 recipients) May 15, 2014 – Agency and public hearing reminder for Arizona hearings (997 recipients) June 26, 2014 – Reminder comment deadline ends in 2 weeks (1,049 recipients) July 3, 2014 – Reminder comment deadline ends in 1 week (1,061 recipients) July 9, 2014 – Reminder comment deadline ends tomorrow (1,059 recipients)
Postcard distribution	U.S. Postal Service (Public and agency recipients) April 16, 2014 – Agency and public postcard notice (990 recipients) April 16, 2014 – Notification to permittees (268 recipients) April 25, 2014 – Tucson property owners and residents along route (2,056 recipients)
BLM website	http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html Posting of the meetings at least 15 days prior to the meetings

Table 5-6. Locations of Public Open House/Hearings and Agency Meetings for Draft EIS (2014)

Date	Time	City/State	Address	No. of Attendees
Public Open House/Hearings				
May 6, 2014	5:30 p.m.	Las Cruces, New Mexico	Ramada Las Cruces Hotel and Conference Center, 201 East University Avenue	20
May 7, 2014	5:30 p.m.	Deming, New Mexico	Mimbres Valley Special Events Center 2300 East Pine Street	21
May 8, 2012	5:30 p.m.	Lordsburg, New Mexico	Lordsburg Special Events Center 502 West 2nd Street	11
May 20, 2014	5:30 p.m.	Benson, Arizona	Benson Community Center 705 West Union Street	27
May 21, 2014	5:30 p.m.	Willcox, Arizona	Willcox Community Center 312 West Stewart Street	13
May 22, 2014	5:30 p.m.	Tucson, Arizona	El Rio Neighborhood Center 1390 West Speedway Boulevard	31
Agency Meetings				
May 6, 2014	1:00 p.m.	Las Cruces, New Mexico	Ramada Las Cruces Hotel and Conference Center, 201 East University Avenue	20
May 22, 2014	1:00 p.m.	Tucson, Arizona	El Rio Neighborhood Center 1390 West Speedway Boulevard	30

The hearings were conducted in an open-house format, with a PowerPoint presentation and question-and-answer hearing period following the presentation. The open-house format and presentation were designed to allow attendees to view informational displays and hear a presentation of the proposed Project and summary of the NEPA process, as well as to allow members of the public to ask agency staff about the proposed Project and the analysis in the Draft EIS.

An interactive GIS mapping station was available for public open house/hearing attendees to view the proposed Project to aid them in providing comments about specific locations within the analysis area.

A court reporter recorded the BLM and Western presentation, questions and answers, and formal comment portion of each public open house/hearing; transcripts of the public open house/hearings can be found in the project record. Substantive questions and all formal hearing comments are coded and included in chapter 8 of the EIS.

Draft EIS Comments

Comments on the Draft EIS/RMPA were submitted in a variety of formats (i.e., hearing, U.S. Postal Service, email, and comment form). All comments and corresponding information (e.g., exhibits, photographs, and maps) were coded to reflect the subject matter of concern, and sorted for consideration in the development of the Final EIS.

A total of 87 comment submittals (letters, emails, commenters at hearings) was provided to the BLM and Western during the 90-day Draft EIS comment period; within the 87 letters, there were 797 individual comments. Table 5-7 provides a summary of the issues and resource topics commented on during the Draft EIS comment period. All comments that were received became a part of the project record, were coded to reflect the subject matter of concern, were sorted, and were responded to. Chapter 8 of the Final EIS includes all Draft EIS comments and agency responses to these comments in tabular format.

Table 5-7. Summary of Substantive Draft EIS Comments Received by Issue

Issue Category	Comments Received	Percentage of Total
Air Quality	37	4.7%
Biological Resources	73	9.2%
Cultural Resources	36	4.5%
Hazardous Materials	0	0.0%
Intentional Destructive Acts	0	0.0%
Land Use/Military/Farm and Range	114	14.3%
Noise	1	0.1%
Public Health and Safety	6	0.8%
Recreation	1	0.1%
Socioeconomics	27	3.4%
Soils and Geology	2	0.3%
Special Designations	10	1.3%
Transportation	3	0.4%
Trails	11	1.4%
Visual Resources	62	7.8%
Water Resources	22	2.8%
Wilderness	5	0.6%
Miscellaneous	31	3.9%
NEPA/Process	333	41.9%
Requests for information–not substantive	21	2.6%
Total	**795**	100%

5.2.4 Route Variation Outreach

In December 2014, BLM and Western sent outreach letters to property owners within one half-mile of the route variation alignments east of Willcox Playa in Cochise County and south of Tucson International Airport along Old Vail Connection Road in Pima County. The purpose of the outreach letters was to notify the property owners of the new route variations (see section 2.7) that were added to the EIS analysis. Comments and responses to those outreach letters are included in table 8-1 in chapter 8 and are considered in this EIS.

5.2.5 Project Status

The Project website as well as email was used to provide information regarding Project status to agencies, stakeholders, and other interested parties. There were no direct mailings; however, a copy of the Project newsletter with flyers advertising scoping meetings was sent to libraries, community centers, city and town halls, and senior centers, as well as to the BLM State, District, and Field Offices.

In addition, there is a toll-free information line (800-356-0805) that is provided on written Project material. The information line is maintained and updated by BLM with deadlines, important comment

dates, and publication notification information. Also included are meeting details when meetings are announced, and Project contacts.

5.2.6 Records of Decision

The BLM and Western will each issue separate decisions. The BLM would issue a ROD with all terms and conditions deemed appropriate by the BLM. The BLM decisions to be made are to:

- decide whether to grant, grant with modifications, or deny all or part of the ROW application for the transmission line, substation expansions, and associated access roads and facilities;
- decide whether one or more RMPs would be amended to allow for a ROW for the proposed transmission line and associated facilities;
- decide whether to approve potential RMPA(s) if the proposed Project is not approved;
- determine the most appropriate route across BLM-administered public lands for the transmission line, taking into consideration multiple-use objectives; and
- determine the terms and conditions (stipulations) that should be applied to the construction, operation and maintenance, and decommissioning of the transmission line on BLM-administered public lands.

Once a BLM ROD is issued, it will be distributed to cooperating agencies, tribes, interested organizations, and individuals. An NOA will be published in the Federal Register and advertised in the newspapers listed above in tables 5-1 and 5-5. The ROD will also be made available to everyone who requested a copy of the Final EIS and posted on the Project website.

Western's ROD will announce and explain Western's decision pursuant to Section 1222 of the EPAct of 2005 on whether and under what conditions to participate in the proposed Project and describe any conditions, such as mitigation commitments, that would need to be met. Western may issue a ROD no sooner than 30 days after EPA's Notice of Availability of the Final EIS is published in the Federal Register. If Western decides to allow Southline to upgrade its existing facilities and to use its existing transmission easements as part of the proposed Project, Western and Southline would enter into a joint Project agreement.

5.3 AGENCY CONSULTATION AND COORDINATION

As defined by CEQ regulations, a cooperating agency, or cooperator, is an agency (other than the lead agency) that has special expertise with respect to an environmental issue and/or has jurisdiction by law. Federal, State, and local agencies that have clear jurisdiction over portions of the proposed Project routes were invited via formal letter to become a cooperator in the preparation of the EIS. Tribal governments were also invited to participate in the Project as a cooperating agency and to provide special expertise with respect to environmental issues.

The role of a cooperator is to participate in the process and provide leadership, expertise, guidance, and review, as well as to offer information related to the agency's authority. Cooperators were asked to submit a signed memorandum of agreement that identifies the agreed-upon responsibilities for preparing and participating in the EIS, including activities outlined in 40 CFR 1501.6(b). A cooperator could be a Federal, State, tribal, or local agency with jurisdiction by law or special expertise with respect to an environmental issue. An invitation letter was sent to potential cooperators listed below.

Agencies invited included:

- Arizona Air National Guard
- ADOT
- AGFD
- ASLD
- City of Sierra Vista, AZ
- Cochise County, AZ
- Doña Ana County, NM
- Graham County, AZ
- Grant County, NM
- Greenlee County, AZ
- Hidalgo County, NM
- Luna County, NM
- NMDGF
- NMDOT
- NMSLO
- Pima County, AZ
- Pima County Department of Environmental Quality
- Pinal County, AZ
- U.S. Air Force Davis-Monthan Air Force Base
- USACE
- U.S. Army Fort Huachuca
- U.S. Border Patrol
- BIA
- Reclamation
- DOD
- EPA
- FAA
- FHWA
- FRA
- FWS
- Forest Service
- NPS
- Ak-Chin Indian Community
- Comanche Nation
- Fort Sill Apache Tribe of Oklahoma
- Gila River Indian Community
- Kiowa Tribe of Oklahoma
- Mescalero Apache Tribe
- Navajo Nation
- Pascua Yaqui Tribe
- Pueblo of Acoma
- Pueblo of Isleta
- Pueblo of Laguna
- Pueblo of Tesuque
- Pueblo of Zuni
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Tribe
- The Hopi Tribe
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Yavapai-Apache Nation
- Ysleta del Sur Pueblo

Sixteen agencies accepted invitations to participate; the following Federal, State, and local agencies have signed on and have been consulted as cooperating agencies during preparation of the EIS. The mission statement of each agency can be found on their respective websites. These 16 cooperating agencies are:

- USACE (Albuquerque District)
- Reclamation (Phoenix Area Office)
- DOD Clearinghouse
- EPA
- DOD Fort Huachuca
- NPS
- Forest Service (Coronado National Forest)
- FWS (Region 2)
- AGFD
- ASLD

- NMDGF
- NMSLO
- Cochise County, Arizona
- Greenlee County, Arizona
- Graham County, Arizona
- City of Sierra Vista, Arizona

On October 4, 2012 and December 12, 2012, BLM and Western conducted webinars for the cooperating agencies to participate in the alternatives development process for the proposed Project. The agency alternatives developed, as presented in section 2.7 of this EIS, were based in part on input from cooperating agency staff attending these webinars.

On August 24, 2012 and April 13, 2013, BLM and Western conducted Tumamoc Hill outreach meetings in Tucson, Arizona. A follow-up webinar was hosted by BLM and Western on November 7, 2013 to update workshop attendees on proposed Project alternatives and present visual simulations of the proposed Project alternatives around Tumamoc Hill. These meetings and webinars were stakeholder workshops designed to gain input on proposed Project alignments and resource sensitivities around the sensitive Tumamoc Hill area. Attendees at these workshops included agencies and local officials. Coordination with Tucson Ward 1 and their participation in these meetings specifically reached out to neighborhoods surrounding Tumamoc Hill.

Additionally, on June 13, 2013, BLM and Western met with representatives from DOD Fort Huachuca to discuss potential issues with potential alignment alternatives. Representatives from Fort Huachuca expressed concerns regarding impacts from the proposed Project on the BSETR. Meeting notes are included as a part of the administrative record.

The cooperating agencies reviewed the Administrative Draft EIS in October and November 2013, and the Administrative Final EIS in February 2015.

BLM and Western conducted a site visit to the Willcox Playa with the FWS and AGFD in January 2014. The goal of the site visit was to discuss routing options near the playa and to allow FWS and AGFD to discuss their concerns regarding potential impacts near the Willcox Playa. See chapter 2 of the EIS for route variations included as a result of FWS and AGFD outreach.

On December 16, 2014, BLM and Western conducted a webinar for the cooperating agencies to summarize feedback received on the Draft EIS, describe the new route variations, and notify the cooperating agencies that the Agency Preferred Alternative in the Final EIS had changed since the Draft EIS. The cooperating agencies reviewed the Administrative Final EIS in January 2015.

On May 6, 2015, BLM and Western met with representatives from AGFD and FWS to discuss their concerns regarding Project alternatives in the vicinity of the Willcox Playa Wildlife Area. A follow-up meeting was held with Jim DeVos (Assistant Director, Wildlife Management Division) of the AGFD on June 10, 2015. On June 24, 2015, the AGFD provided a letter outlining their mitigation requests to offset impacts to the Willcox Playa Wildlife Area; this mitigation has been incorporated into the PCEMs in chapter 2 (see table 2-8). Meeting notes and the AGFD letter are included as part of the administrative record.

5.4 TRIBAL CONSULTATION AND COORDINATION

In 2012, in compliance with the NEPA, the NHPA (as amended), and EO 13175, the BLM initiated government-to-government consultation with the 21 federally recognized tribes listed below (table 5-8).

- Ak-Chin Indian Community
- Comanche Nation
- Fort Sill Apache Tribe of Oklahoma
- Gila River Indian Community
- The Hopi Tribe
- Kiowa Tribe of Oklahoma
- The Navajo Nation
- Mescalero Apache Tribe
- Pascua Yaqui Tribe
- Pueblo of Acoma
- Pueblo of Isleta
- Pueblo of Laguna
- Pueblo of Tesuque
- Pueblo of Zuni
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Tribe
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Yavapai-Apache Nation
- Ysleta del Sur Pueblo

The initial notification letters provided information about the proposed project, initiated government-to-government consultation, invited the tribes to participate as a cooperating agency in the preparation of the EIS, and invited them to participate in NHPA Section 106 process.

This initial outreach and follow-up calls resulted in several face-to-face consultation meetings, which are listed below in table 5-8. Table 5-8 also includes letter and email correspondences with the tribes.

Table 5-8. Correspondence and Meetings with Tribes

Date	Native American Tribe/ Tribal Organization	Description
10/4/2011	San Carlos Apache Tribe	BLM Meeting with San Carlos Apache and White Mountain Apache, which included an overview of the Southline Project. Additional BLM staff present: Connie Stone, Dan McGrew, Amy Sobiech, Joan Galanis, Mike Johnson, Tom Dabbs, and Scott Cooke. Ms. Grant expressed concern about springs and plant resources near Lordsburg and wondered whether there were plans to establish a utility corridor in the area.
10/4/2011	White Mountain Apache Tribe	BLM Meeting with San Carlos Apache and White Mountain Apache, which included an overview of the Southline Project. Additional BLM staff present: Connie Stone, Dan McGrew, Amy Sobiech, Joan Galanis, Mike Johnson, Tom Dabbs, and Scott Cooke.
4/23/2012	Ak-Chin Indian Community	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Comanche Nation	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Fort Sill Apache Tribe of Oklahoma	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Gila River Indian Community	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Kiowa Tribe of Oklahoma	Tribal consultation initiation and cooperating agency invitation letter from BLM.

Table 5-8. Correspondence and Meetings with Tribes (Continued)

Date	Native American Tribe/ Tribal Organization	Description
4/23/2012	Mescalero Apache Tribe	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pascua Yaqui Tribe	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pueblo of Acoma	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pueblo of Isleta	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pueblo of Laguna	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pueblo of Tesuque	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Pueblo of Zuni	Tribal consultation initiation and cooperating agency invitation letter from BLM.
4/23/2012	Salt River Pima-Maricopa Indian Community	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	San Carlos Apache Tribe	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	The Hopi Tribe	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	The Navajo Nation	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	Tohono O'odham Nation	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	Tonto Apache	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	White Mountain Apache Tribe	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	Yavapai-Apache Nation	Tribal consultation initiation and project introduction letter from BLM.
4/23/2012	Ysleta del Sur Pueblo	Tribal consultation initiation and project introduction letter from BLM.
5/2/2012	The Hopi Tribe	Hopi response letter to BLM, interested in consulting on any proposal that has the potential to adversely affect NRHP-eligible properties.
5/4/2012	White Mountain Apache Tribe	Response letter thanking BLM for the April 23 letter regarding the Southline Project and stating that there is no need to send additional information unless project planning or implementation results in the discovery of sites and/or items having known or suspected Apache Cultural affiliation.
5/7/2012	Ysleta del Sur Pueblo	Ysleta del Sur Pueblo response to BLM consultation initiation letter. The Pueblo currently does not have any comments and believes the project will not adversely affect traditional, religious, or culturally significant sites of Pueblo and does not have any opposition to the Project. Request consultation if any remains or artifacts are found that fall under NAGPRA guidelines.
5/22/2012	Pascua Yaqui Tribe	Email from BLM (Jane Childress) with response to questions from the Pascua Yaqui Tribe.
7/3/2012	Tohono O'odham Nation	Email from BLM with copy of tribal consultation initiation and Project introduction letter.
7/18/2012	Tohono O'odham Nation	Meeting at San Xavier with BLM (Amy Sobiech and Karen Simms also present), Western (Mark Wieringa), San Xavier District Tohono O'odham, Galileo Project (Meredith Griffin). Project Overview and discussion with handouts of Project presentation, maps, and timeline. Tribal concerns with ROW across their lands.
7/20/2012	Four Southern Tribes	Meeting with BLM and 4 Southern Tribes. Sign-In sheet (21 attendees) attached to meeting notes. Southline Project update with PowerPoint presentation and handouts (newsletter and map).

Table 5-8. Correspondence and Meetings with Tribes (Continued)

Date	Native American Tribe/ Tribal Organization	Description
8/28/2012	Pueblo of Zuni	Introductory presentation on the Southline Project, including PowerPoint presentation.
10/15/2012	Ysleta del Sur Pueblo	Introductory presentation on the Southline Project, including PowerPoint presentation and handouts of project area map and PowerPoint presentation.
10/18/2012	San Carlos Apache Tribe	Introductory presentation on the Southline Project, including PowerPoint presentation and handouts of project area map and PowerPoint presentation.
11/9/2012	Pueblo of Isleta	Introductory presentation on the Southline Project, including PowerPoint presentation and handouts of project area map and PowerPoint presentation. Tribe had questions about whether Southline and SunZia would be in the same corridor. That has not yet been determined but is possible in some places.
4/23/2013	Tohono O'odham Nation	Meeting to discuss issues related to Tumamoc Hill. Tribal representatives expressed concerns regarding any routing of the proposed Project that includes Tumamoc Hill.
9/23/2013	The Hopi Tribe	Letter from the Hopi Tribe indicating that they have reviewed the materials sent to them on 9/23/2013 and would like to continue consultation on the project, including reviewing cultural resources survey information and proposed treatment plans.
1/15/2014	The Hopi Tribe	Southline presentation included reviewing maps and discussing cultural issues, including trails, crossing of San Xavier District land, and Tumamoc Hill.
3/27/2014	Ak-Chin Indian Community	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Comanche Nation	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Fort Sill Apache Tribe of Oklahoma	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Gila River Indian Community	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Kiowa Tribe of Oklahoma	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.

Table 5-8. Correspondence and Meetings with Tribes (Continued)

Date	Native American Tribe/ Tribal Organization	Description
3/27/2014	Mescalero Apache Tribe	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Pascua Yaqui Tribe	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Pueblo of Acoma	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Pueblo of Laguna	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Pueblo of Tesuque	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Pueblo of Zuni	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Salt River Pima-Maricopa Indian Community	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	San Carlos Apache Tribe	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	The Hopi Tribe	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.

Table 5-8. Correspondence and Meetings with Tribes (Continued)

Date	Native American Tribe/ Tribal Organization	Description
3/27/2014	The Navajo Nation	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Tohono O'odham Nation	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Tohono O'odham Nation	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Tonto Apache	Letter from BLM transmitting a CD copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
3/27/2014	Ysleta del Sur Pueblo	Letter from BLM transmitting a CD and hard copy of the Southline Draft EIS. The letter also summarizes the project, lists cooperating agencies, provides email and physical addresses for comments, outlines the length of the comment period, provides locations for public hearings, and extends the offer to arrange consultation meetings and provide additional information.
4/17/2014	Ak-Chin Indian Community	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Comanche Nation	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Fort Sill Apache Tribe of Oklahoma	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Gila River Indian Community	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Kiowa Tribe of Oklahoma	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Mescalero Apache Tribe	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Pascua Yaqui Tribe	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Pueblo of Acoma	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Pueblo of Laguna	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Pueblo of Tesuque	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Pueblo of Zuni	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Salt River Pima-Maricopa Indian Community	Invitation letter from BLM to agency only and public Draft EIS meetings.

Table 5-8. Correspondence and Meetings with Tribes (Continued)

Date	Native American Tribe/ Tribal Organization	Description
4/17/2014	San Carlos Apache Tribe	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	The Hopi Tribe	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	The Navajo Nation	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Tohono O'odham Nation	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Tohono O'odham Nation	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Tonto Apache	Invitation letter from BLM to agency only and public Draft EIS meetings.
4/17/2014	Ysleta del Sur Pueblo	Invitation letter from BLM to agency only and public Draft EIS meetings.
5/5/2014	The Hopi Tribe	Letter from the Hopi Cultural Preservation Office concurring that this proposal is likely to adversely affect numerous prehistoric cultural resources significant to the Hopi Tribe but that effects cannot be determined until the alignment is determined. They have reviewed the Draft EIS/RMPA and understand that only 7% of the analysis area has been previously surveyed. They also understand that BLM is attempting to develop a PA to address cultural resource identification for the areas still to be surveyed. They request continuing consultation on the proposal and to be provided with copies of the cultural resources survey and treatment plan for review and comment.
5/13/2014	San Carlos Apache Tribe	Tribal consultation response letter to BLM indicating concurrence with Draft EIS/RMPA report findings.
6/17/2014	Tohono O'odham Nation	Also present: BLM: Mark Mackiewicz, Western: Mark Wieringa, Galileo Project: Ellen Carr, Maria Martin. Meeting at San Xavier with San Xavier District Tohono O'odham to provide Project update and seek comments on the Draft EIS. Meeting included a PowerPoint presentation. Handouts included maps and the May 2014 Project newsletter. Tribal representatives expressed concerns regarding erosion of access roads.
7/25/2014	Fort Sill Apache Tribe of Oklahoma	Letter to BLM requesting detailed information on the footprint of the Southline Project and the Apache and proposed Midpoint substations. A meeting with BLM to review the footprint information is also requested.
7/31/2014	Fort Sill Apache Tribe of Oklahoma	Mr. Thompson called to request a meeting with BLM and also maps of the proposed Southline Project showing the location of the Akela Flats Reservation.
8/4/2014	Fort Sill Apache Tribe of Oklahoma	Email from BLM providing maps for Cochise County and the Akela Flats Reservation.
8/7/2014	Fort Sill Apache Tribe of Oklahoma	Response from BLM to July 25 letter informing Mr. Thompson that no decision has yet been made on the Southline Project and so there are no exact routes yet determined and asking for the locations of Fort Sill Apache trust/fee lands so that BLM can provide a map of the Midpoint and Apache substations in relation to tribal land. The letter also re-invites the Fort Sill Apache Tribe to be a cooperating agency on the Southline Project (original invitation letter from 4/23/12 enclosed) and mentions that Jane Childress will be contacting Chairman Haozous to arrange a meeting.
8/25/2014	Fort Sill Apache Tribe of Oklahoma	Ms. Childress contacted Mr. Haozous to follow up on the request for a meeting.
10/6/2014	Pueblo of Isleta	Meeting to provide update on Southline Project.
2/17/2015	Tohono O'odham Nation	Meeting to provide updates on Southline Project and to present the completed PA.

Government-to-government consultation is conducted in accordance with guidance provided in BLM Manual 8120 (BLM 2004d). Consultation efforts are coordinated by the Project lead for tribal and Section 106. All records of coordination and consultation efforts, including logistical support for meetings and preparation of materials, are part of the administrative record. Although the BLM and Western are responsible for government-to-government consultation with regard to the proposed Project, other cooperating Federal agencies may elect to engage in separate government-to-government consultation with regard to issuance of permits and/or impacts on cultural resources on lands within their jurisdiction.

In recognition of the tribes' special relationship with the U.S. government, the BLM will continue to consult with the appropriate tribal governments at an official executive level (government to government), in accordance with the NHPA, EO 13175, and the NEPA. The BLM has provided opportunities for government officials and members of federally recognized tribes to comment on and participate in the preparation of the EIS and will consider these comments, notify consulted tribes of final decisions, and inform them of how their comments were addressed in those decisions. At a minimum, officials of federally recognized tribal governments will be offered the same level of involvement as state and county officials. Coordination will address consistency with tribal plans, as appropriate; and the observance of specific planning coordination authorities, including Section 101(d)(6) of the NHPA, American Indian Religious Freedom Act, EO 13007 (Indian Sacred Sites), EO 12898 (Environmental Justice), and Secretarial Order 3206 (American Indian Rights, Federal Tribal Trust Responsibilities and the ESA). Although no tribes requested cooperating agency status for the preparation of this EIS, several tribes are participating in Section 106 consultation, which will continue during the post-EIS phases of Project implementation. The tribes that have been actively participating in government-to-government and Section 106 consultations include the Tohono O'odham Nation, the Gila River Indian Community, the Salt River Pima-Maricopa Indian Community, the Ak-Chin Indian Community, the San Carlos Apache Tribe, the Mescalero Apache Tribe, the Fort Sill Apache Tribe, the White Mountain Apache Tribe, the Hopi Tribe, the Pueblo of Isleta, the Pueblo of Ysleta del Sur, and the Pueblo of Zuni.

5.5 FORMAL CONSULTATION

5.5.1 Section 106 of the National Historic Preservation Act

The lead Federal agency, along with any other Federal agency that may be issuing permits or licenses for the Project, has a responsibility under Section 106 of the NHPA to consider the effects of its undertakings on "historic properties" (properties listed in or eligible for the NRHP). Eligible properties may include a diversity of archaeological, historical, and traditional cultural resources. Implementing regulations for Section 106, Protection of Historic Properties (36 CFR 800), define a process for Federal agencies to consult with the SHPOs, ACHP, and other interested parties as they assess the effects of their undertakings and devise methods to resolve those adverse effects.

The Section 106 process is initiated with the establishment of the undertaking (§800.3), which was done shortly after the BLM and Western published the NOI in the Federal Register in April 2012. While the BLM and Western are joint lead Federal agencies for the NEPA process, the BLM is the lead Federal agency for Section 106 compliance. The BLM is also using the NEPA scoping process to satisfy the public involvement process for Section 106 of the NHPA (16 U.S.C. 470f), as provided for in 36 CFR 800.2(d)(3). The Section 106 process was coordinated with the NEPA process, starting with public scoping. During this period, consulting parties were identified and notified of the Project. These parties include the tribes listed above, the Tohono O'odham THPO, SHPOs in Arizona and New Mexico (§800.3(c)), Forest Service (Coronado National Forest), USACE, BIA, Western, ASLD, NMSLO, Arizona State Museum, NPS, Pima County, City of Tucson, Town of Marana, University of Arizona

Desert Laboratory on Tumamoc Hill, National Trust, and Archaeology Southwest. Western is completing tribal consultation related to the Upgrade Section of the proposed Project.

Compliance with other pertinent laws such as the NAGPRA, ARPA, and AIRFA is also being coordinated under the NHPA and NEPA. Federal agencies are required to consult with the public and tribes on the identification of historic properties and the effects that the agencies' undertaking may have on these properties. Western participates as a Consulting Party during these consultations. BLM's consultation with the tribes is conducted on a government-to-government basis, as prescribed by EOs and legislation, including the AIRFA, ARPA, NEPA, and EO 13007.

The Section 106 process entails the identification of historic properties (§800.4) within a defined "area of potential effects" (APE). The APE for this undertaking was determined in consultation and forms the parameters for the identification effort. Identification of historic properties began with a Class I level inventory, which included the review of existing information such as previous inventories and previously recorded sites. In accordance with §800.4 (b)(2), for projects "where alternatives under consideration consist of corridors or large land areas," a phased approach can be followed to identify and evaluate historic properties. Further, "the agency official may also defer final identification and evaluation of historic properties if it is specifically provided for in a . . . programmatic agreement executed pursuant to §800.14(b)." The Final PA is included in appendix L. The PA must be executed before the BLM or Western issues a ROD.

For a project of this scale, an intensive Class III inventory would be conducted on the selected alternative prior to the start of construction. Right-of-entry, as appropriate, would be obtained prior to any fieldwork.

During the Class III inventory, the cultural resources identified would be evaluated for their significance and assessed for their eligibility for the NRHP. Determinations of eligibility would be made in consultation; sites determined eligible or listed in the NRHP are "historic properties." However, since the identification effort would take place in stages for this Project, the identification and evaluation process would be provided for in the PA and deferred until after the ROD and associated approvals.

The assessment of adverse effects on historic properties (§800.5) is typically the next step in the Section 106 process. An adverse effect is found "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association." Due to the scope and complexity of the proposed Project, and because the "effects on historic properties cannot be fully determined prior to the approval of an undertaking" (§800.14(b)(1)(ii)), the BLM determined early in the process that the undertaking would have an "adverse effect" on historic properties. In accordance with §800.6(a)(1), the ACHP was notified of the "adverse effect" determination, concurred with the determination, and agreed to participate in consultations to resolve the adverse effects.

To resolve the potential adverse effects of the undertaking on historic properties, a Project-specific PA was developed among the Section 106 Consulting Parties. The Final PA is provided in appendix L. The PA must be executed before the BLM or Western issues their decisions (RODs).

A list of consultation activities is given below in table 5-9.

Table 5-9. Section 106 Consultation Activities

Date	Agency	Contact Type	Description
4/23/2012	Arizona SHPO	Letter from BLM	Invitation to agency scoping meetings. Map attached.
4/23/2012	New Mexico SHPO	Letter from BLM	Invitation to agency scoping meetings. Map attached.

Table 5-9. Section 106 Consultation Activities (Continued)

Date	Agency	Contact Type	Description
5/14/2012	Arizona SHPO	Letter to BLM	Handwritten comment on copy of 4/23/2012 agency scoping meeting invitation indicating that Arizona SHPO looks forward to Section 106 consultation on the Project. SHPO also asked whether BLM or Western would be taking the lead on the Section 106 consultation.
11/14/2012	Arizona SHPO	Letter from BLM	Project notification letter to Arizona SHPO. Map and Project newsletter attached. Copy to Nancy Brown, ACHP.
11/14/2012	New Mexico SHPO	Letter from BLM	Project notification letter to Arizona SHPO. Map and Project newsletter attached. Copy to Nancy Brown, ACHP.
3/1/2013	ACHP	Letter from BLM	Notification letter to ACHP that the Southline Project would have an adverse effect on historic properties in New Mexico and Arizona and invitation to participate in the Project.
3/19/2013	ACHP	Letter to BLM	Letter advising BLM that ACHP has decided to participate in consultation for the Southline Project.
8/8/2013	Consulting parties	In-person meeting	Kick-off meeting hosted by BLM in Albuquerque, New Mexico. GoTo Meeting conference call was available for those who could not attend.
8/15/2013	Consulting parties	In-person meeting	Kick-off meeting hosted by BLM in Tucson, Arizona. GoTo Meeting conference call was available for those who could not attend.
12/4/2013	Consulting parties	Webinar	Webinar hosted by BLM for resource sensitivity and draft PA review.
4/17/2014	Consulting parties	Letter from BLM	Invitation to agency Draft EIS meetings. Flyer with map attached.
4/17/2014	Consulting parties	Letter from BLM	Invitation to agency Draft EIS meetings. Flyer with map attached.
6/18/2014	Consulting parties	In-person meeting	Meeting hosted by BLM at the San Xavier District Council Chambers to provide an update on Draft EIS, to review and discuss preferred alternatives, tribal concerns, cultural focus areas, and PA. GoTo Meeting conference call was available for those who could not attend.

5.5.2 Section 7 of the Endangered Species Act

Section 7 of the ESA requires Federal agencies to ensure that their actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction of their designated critical habitat. It also requires consultation with the FWS if the action agency determines that an action may affect listed species.

A letter from BLM inviting FWS to participate in the scoping of the proposed Project was sent on April 23, 2012. The FWS provided a written response on June 4, 2012 with comments and recommendations on specific species to evaluate for potential effects as well as suggested mitigation measures. FWS was also consulted on the development of species specific mitigation used in this EIS. FWS comments and recommendations are addressed in Sections 3.8 and 4.8, “Biological Resources.”

Formal consultation under Section 7 of the ESA with the FWS was initiated on March 4, 2014. On April 3, 2014, the FWS responded in a letter indicating that all required information was included in the March 4, 2014 submittal. On July 9, 2014, FWS sent a letter requesting a 60-day extension of the deadline to complete formal consultation. BLM responded on July 30, 2014, concurring with the request for an extension. The FWS issued a BO on December 30, 2014. The BO and amendment are included in

this EIS in appendix M; mitigation and conservation measures have been added to table 2-8 and are considered in the analysis in chapter 4. The Biological Assessment and correspondence with FWS are a part of the Project Record.

5.6 LIST OF PREPARERS AND REVIEWERS

This EIS was reviewed by a team from the BLM and Western. A team associated with SWCA Environmental Consultants assisted the BLM and Western in conducting research, gathering data, and preparing the EIS and supporting documents. Table 5-10 identifies BLM team members and their roles.

Table 5-10. BLM and Western Project Team

Name	Title	Involvement (Section(s) of EIS)	Office
Bill Childress	Las Cruces District Manager	Authorized Officer	Las Cruces District Office
Mark Mackiewicz	Senior National Project Manager	BLM Project Manager	Washington, DC
Mark Wieringa	NEPA Document Manager	Western Project Manager	Western Natural Resources Office
Eddie Arreola	RECO Manager	Military	Arizona State Office
Jane Childress	Cultural and Tribal Lead	BLM Project cultural and tribal Point of Contact	National Transmission Support Team
Mark Massar	Biological Lead	BLM Wildlife and Vegetation	National Transmission Support Team
Scott Whitesides	Planning and Environmental Coordinator	BLM NEPA	National Transmission Support Team
Matt Basham	Archaeologist	Cultural Resources	Arizona State Office, Renewable Energy Coordination Office (RECO)
Steve Blazek	NEPA Compliance Officer	Project initiation	DOE Golden Field Office
Donald Byron	Project Management Team Lead	Engineering Point of Contact	Western Desert Southwest Region
Jeff Conn	Natural Resource Specialist	Wildlife	Safford Field Office
Johnida Dockens	Environmental Protection Specialist	Local Office Point of Contact	Western Desert Southwest Region
Claire Douthit	Attorney/Advisor	Legal	Western Office of General Counsel
Kristen Duarte	Range Management Specialist	Vegetation Farmlands and Rangeland	Tucson Field Office
Vanessa Duncan	Safety & Occupational Health Specialist	Hazardous Materials	Las Cruces District Office
Linda Dunlavey	Realty Specialist	Lands	Tucson Field Office
R.J. Estes	Rangeland Management Specialist	Farmlands and Rangeland/Grazing Vegetation	Safford Field Office
Dennis Godfrey	Public Affairs Officer	Public Affairs	Arizona State Office, RECO
Oswaldo Gomez	Outdoor Recreation Planner	Visual	Las Cruces District Office

Table 5-10. BLM and Western Project Team (Continued)

Name	Title	Involvement (Section(s) of EIS)	Office
Stacey Harris	Public Utilities Specialist	TIP Office Point of Contact	Western Corporate Services Office
Rebecca Heick	Acting Deputy State Director, Lands & Minerals Division; Branch Chief, Minerals and Lands	Minerals	Arizona State Office
Ray Hewitt	Geographer/GIS	GIS Data	Las Cruces District Office
Christopher Horyza	Planning and Environmental Coordinator	Wilderness Characteristics	Arizona State Office
Michael Johnson	Sun Zone Social Scientist	Socioeconomics	Arizona State Office
Craig Knoell	TIP Office Manager	TIP Office Point of Contact (retired)	Western Corporate Services Office
Debby Lucero	Lead Realty Specialist	Land Use	New Mexico State Office
Frank Lupo	Attorney Advisor	Legal	Office of the Solicitor
Dan McGrew	Archaeologist	Cultural Resources (Arizona)	Safford Field Office
Kenneth Mahoney	Program Lead: National Monuments, National Conservation Areas, Wilderness, Wild & Scenic Rivers	Wilderness Characteristics	Arizona State Office
Linda Marianito	Environmental Division Manager	Local Office Point of Contact	Western Desert Southwest Region
Frances Martinez	Realty Specialist	Land Use Special Designations	Las Cruces District Office
Lisa Meiman	Public Affairs Team Lead	Public Affairs	Western Natural Resources Office
Francisco Mendoza	Outdoor Recreation Planner	Recreation Visual	Tucson Field Office
Lisa Meyer	Western Cultural Resources Lead	Western Cultural Point of Contact	Western Corporate Services Office
Jill Jensen	Archaeologist	Cultural Resources	Western Desert Southwest Region
Jennifer Montoya	Planning and Environmental Specialist	BLM NEPA Point of Contact	Las Cruces District Office
Daniel Moore	Geologist	Air Quality Minerals (in Geology) Paleontological Resources	Tucson Field Office
Patrick Moran	Geologist	Minerals (in Geology) Paleontological Resources	Las Cruces District Office
Mohammad Nash	Hydrologist	Air Quality Noise Soils Water Resources (Surface and Ground)	Las Cruces District Office
Jackie Neckels	Environmental Coordinator	Military	Arizona State Office, RECO
Ron Peru	Realty Specialist	Land Use Special Designations Visual	Safford Field Office

Table 5-10. BLM and Western Project Team (Continued)

Name	Title	Involvement (Section(s) of EIS)	Office
Tom Phillips	Acting State Recreation Lead-New Mexico State Office	Wilderness Characteristics	Working from Las Cruces District Office
Todd Rhoades	Project Manager	Engineering Point of Contact	Western Desert Southwest Region
Lynn Richardson	TIP Liaison	TIP Point of Contact	Western Consultant
Dana Robinson	GIS Specialist	GIS Data	Arizona State Office
Karla Rogers	Visual Resources Field Coordinator	Lead Visual Resources	National Operations Center
Jose Sanchez	Natural Resources Specialist	Recreation	Las Cruces District Office
Pam Shields		Project Initiation	Western Desert Southwest Region
Phil Smith	Range Specialist	Farmlands and Rangeland/Grazing Vegetation	Las Cruces District Office
Darrell Tersey	Natural Resource Specialist	Wildlife	Tucson Field Office
Larry Thrasher	Geologist	Minerals (in Geology) Paleontological Resources	Safford Field Office
Steven Torrez	Wildlife Biologist	Wildlife	Las Cruces District Office
Steve Tromly	Native American Liaison	Tribal, Cultural Point of Contact	Western Corporate Services Office
Melissa Warren	RECO Project Manager (former)	Military	Arizona State Office

5.7 THIRD-PARTY CONTRACTOR—SWCA ENVIRONMENTAL CONSULTANTS

5.7.1 Contract Disclosure Statement

SWCA Environmental Consultants (SWCA) is the contractor assisting the BLM and Western in preparing the Draft and Final EIS for the proposed Southline Transmission Line Project. BLM and Western are responsible for reviewing and evaluating the information and determining the appropriateness and adequacy of incorporating any data, analyses, or results in the EIS. BLM and Western determine the scope and content of the EIS and supporting documents and have furnished direction to SWCA, as appropriate, in preparing these documents.

The CEQ's regulations (40 CFR 1506.5(c)), require contractors who prepare an EIS to execute a disclosure statement specifying they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for the purposes of this disclosure is defined in the March 23, 1981, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 Federal Register 18026–18028 at Questions 17a and 17b. Financial or other interest in the outcome of the project includes "any financial benefit such as promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g. if the project would aid proposals sponsored by the firm's other clients)" (46 Federal Register 18026–18038 and 10831).

In accordance with these regulations, SWCA hereby certifies that it has no financial or other interest in the outcome of the Project.

Certified by:

Signature

Ken Houser
Name

Principal, Southwest Operations
Title

January 5, 2014
Date

5.7.2 SWCA Team

Table 5-11 identifies SWCA team members and their roles in preparing the EIS.

Table 5-11. SWCA Preparers and Contributors

Name	Involvement (Role or Section(s) of EIS)	Credentials	Years of Experience
Ken Houser Cara Bellavia DeAnne Rietz David Brown Charles Coyle	Project Management, NEPA Adequacy	M.A., PG M.U.E.P., B.A. M.S., CPESC M.L.A. M.A.	30 17 16 12 23
Brad Sohm Dan Whitley Daniel Sloat	Air Quality Climate Change Noise	PE M.A. B.S., QSTI	11 4 10
Matt Bandy Adrienne Tremblay	Cultural Resources Paleontological Resources	Ph.D. Ph.D.	23 9
Peter David Jenny Addy	Farmlands and Rangeland/Grazing	M.S. B.S.	27 3
Ryan Rausch Jeffery Johnson	Farmlands and Rangeland/Grazing Land Use Special Designations Military	M.E.L.P. M.S.	11 9
David Lightfoot Vicky Amato Jenny Addy	Farmlands and Rangeland/Grazing Vegetation	Ph.D. M.S. B.S.	28 10 3
Steve O'Brien Jerome Hess	Geology Minerals (in Geology) Wastes and Hazardous Materials	B.A. M.S.	17 18
DeAnne Rietz	Wastes and Hazardous Materials	M.S., CPESC	16
Jonathan Rigg	Electrical Characteristics (EMF) Transportation Human Health and Safety Intentional Destructive Acts	M.A.	12

Table 5-11. SWCA Preparers and Contributors (Continued)

Name	Involvement (Role or Section(s) of EIS)	Credentials	Years of Experience
Doug Jeavons (BBC Research)	Socioeconomics and Environmental Justice	M.A. (economics) B.A.	25
Cody Stropki	Soils	Ph.D.	13
Eleanor Gladding Russell Waldron Jeffery Johnson Lara Dickson	Noxious Weeds Wildlife	M.S. B.S. M.S. M.S.	24 21 9 17
Pam Cecere Steve Leslie	Visual	M.S. B.S.	13 17
Chris Garrett	Water Resources (Surface and Ground)	B.S., P.HGW.	21
Matt McMillan	Water Resources (Wetlands) Wildlife	M.S.	12
Jean-Luc Cartron	Migratory Birds	Ph.D., M.D.	24
Chris Query Glenn Dunno Allen Stutz	GIS Cartography	M.A. M.A. B.S.	17 19 19

5.8 FIRST-PARTY CONTRACTOR—CH2M HILL

The Southline Resource Reports referenced in chapters 1–4 of the EIS and in the literature cited in chapter 6 of the EIS, were prepared by a team from CH2M Hill and are available in the Project Record. The Southline Resource Reports are one of many valuable references used in the EIS, and it is important to note that CH2M Hill did not author the EIS. Additionally, considering guidance at 40 CFR 1506.5, the reports were subject to independent evaluation (see section 5.8.1 below). These reports were prepared in 2012 and 2013 and do not include all the data used in the Draft and Final EISs as additional alternatives, route variations, and data were included subsequent to these reports being finalized.

At the request of commenters on the Draft EIS, the CH2M Hill authors of the Southline Resource Reports, their credentials, and years of experience are included here (table 5-12).

Table 5-12. CH2M Hill Southline Resource Report Authors

Southline Resource Report	Author	Credentials	Years of Experience
Report 01: Air Quality and Climate Change	Sheila Rygwelski Robert Pearson	PE Ph.D., PE	12 36
Report 02: Cultural Resources	Fred Huntington Chris Dore Mary Prasciunas	B.A. Ph.D. Ph.D.	24 15 10
Report 03: Farmlands and Rangeland	Molly Cresto	B.S., M.A.	11
Report 04: Geology and Minerals	Greg Warren, PG	B.S., M.A.	19
Report 05: Hazardous Materials and Waste	Christopher Waller	B.S., EIT	5
Report 06: Health and Human Safety	Sheila Rygwelski	PE	12
Report 07: Land Use	Molly Cresto	B.S., M.A.	11
Report 08: Noise	Kevin Belanger Mark Bastasch	M.C.R.P., B.S. PE	4 16

Table 5-12. CH2M Hill Southline Resource Report Authors (Continued)

Southline Resource Report	Author	Credentials	Years of Experience
Report 09: Paleontology	Levi Pratt	B.A.	7
Report 10: Recreation	Cary Olson	B.S., M.S.	15
Report 11: Socioeconomics and Environmental Justice	Fatuma Yusuf	B.S., M.S., Ph.D.	18
Report 12: Soils	Steve Long	B.S., M.S.	25
Report 13: Special Designations	Molly Cresto	B.S., M.A.	11
Report 14: Transportation	Jacqueline Dowds-Bennett	PE, M.S.	21
Report 15: Vegetation	Kim Otero David Cerasale Tom Strong	B.A., M.S. Ph.D. Ph.D.	25 15 25
Report 16: Visual Resources	MariaElena Conserva Josh Hohn Mark Greenig Tom Priestley Angela Wolfe Michael Stephan	Ph.D. M.C.P, M.A. MUP, B.S. Ph.D., M.L.A. B.S. A.E.	16 11 25 30 8 33
Report 17: Water Resources	Matthew Franck	B.S., APA	25
Report 18: Wildlife	Kim Otero	B.S., M.A.	25
Report 19: Military Operations	Cary Olson	B.S., M.S.	15
Report 20: Cumulative	Molly Cresto	B.S., M.S.	11
Project Management and Senior Review	Jen Rouda	B.S.., M.S.	17

5.8.1 Independent Review Process

BLM and Western assisted Southline and its consultant CH2M Hill by outlining the types of information required for preparation of the EIS. In the fall of 2012, BLM and Western hosted a series of ID team calls with staff from the BLM, Western, SWCA, and CH2M Hill to provide guidance and data needs for resources to be analyzed in the EIS. BLM and Western, supported by SWCA, provided guidance worksheets to CH2M Hill to outline the types of data needed, as discussed on the fall 2012 ID team calls. The Southline Resource Reports were submitted in early 2013; the SWCA team (see table 5-11) first conducted an initial review of each report and associated data for content and completeness and to identify data gaps. Final review and concurrence was provided by the BLM/Western team (see table 5-10) prior to utilizing portions of the reports and referencing them in the EIS.

5.9 RECIPIENTS OF THE ENVIRONMENTAL IMPACT STATEMENT

BLM and Western will circulate copies of the EIS to any agencies that have jurisdiction and special expertise, those authorized to develop and/or enforce environmental standards, and any agencies or individuals requesting a copy of the document. Copies will also be made available at BLM State, District, and Field Offices, as well as at libraries and on the Project website.

Tribes and cooperating agencies listed in section 5.4 will receive copies of the EIS; cooperating agencies also participated in the finalization of the EIS. Everyone on the most current mailing list will receive notification of the release of the EIS via mailing with a detachable postcard that can be returned to request

a copy of the EIS on CD. Hard copies will be available for public viewing at BLM offices (New Mexico State Office, Las Cruces District Office, Arizona State Office, Safford Field Office, and Tucson Field Office). An electronic copy of the EIS will also be available via BLM's Southline Project website.

A number of organizations and special interest groups have been notified and coordinated with for this Project and have been placed on the Project mailing list. A list of these organizations is provided in table 5-13.

Table 5-13. Organizations and Special Interest Groups Notified

Advisory Council on Historic Preservation
American Wind Energy Association
Anglers United
Animas Foundation
Archaeological Conservancy
Archaeology Southwest
Arizona Association for Environmental Education
Arizona Audubon Society
Arizona Cattle Growers Association
Arizona Dude Ranch Association
Arizona Farm Bureau
Arizona Land and Water Trust
Arizona League of Conservation Voters
Arizona Mining Association
Arizona Association of Conservation Districts
Arizona Off-Highway Vehicle Coalition
Arizona Power Authority
Arizona Public Service
Arizona Riparian Council
Arizona Society of Range Management
Arizona Solar Energy Association
Arizona Trails Association
Arizona Wilderness Coalition
Arizona Wildlife Federation
Audubon New Mexico
Avra Valley Coalition
Back Country Horsemen of America
Cascabel Working Group
Center for Biological Diversity
Center of Excellence for Hazardous Materials Management
Central Arizona Land Trust
Coalition for Sonoran Desert Protection
Coalition of Renewable Energy Landowners Association
Cochise County Farm Bureau
Community Watershed Alliance
Continental Divide Trail Alliance
Defenders of Wildlife
Desert Foothills Land Trust
Desert Laboratory on Tumamoc Hill
Doña Ana County Farm Bureau
Drylands Institute

Table 5-13. Organizations and Special Interest Groups Notified (Continued)

Ecology and Evolutionary Biology Department, University of Arizona
Empire-Fagan Coalition
Environmental Arizona
Freedom to Roam
Friends of Agua Fria National Monument
Friends of Ironwood Forest
Friends of Sonoita Creek
Friends of the Santa Cruz River
Gila Conservation Coalition
Gila Watershed Partnership of Arizona
Graham County Farm Bureau
Grand Canyon Wildlands Council
Grant County Farm Bureau
Greenlee County Farm Bureau
Hidalgo County Farm Bureau
Huachuca Audubon
International Brotherhood of Electrical Workers 611
International Society for the Protection of Mustangs and Burros
Las Cruces 4-Wheel Drive Club
Luna County Farm Bureau
Mountain Bike Association of Arizona
National Parks Conservation Association
National Tribal Environmental Council
National Trust for Historic Preservation
National Trust for Historical Conservation
National Wildlife Federation
Natural Resources Defense Council
The Nature Conservancy
The Nature Conservancy of New Mexico
The Nature Conservancy, New Mexico Field Office
New Mexico Cattle Grower's Association
New Mexico Conservation Voters
New Mexico Environmental Law Center
New Mexico Farm and Livestock Bureau
New Mexico Farm and Livestock Bureau, Collegiate Farm Bureau
New Mexico Federal Lands Council
New Mexico Interstate Stream Commission
New Mexico Land Conservancy
New Mexico Natural History Institute
New Mexico Off Highway Vehicle Alliance
New Mexico Off Highway Vehicle Association
New Mexico Solar Energy Association
New Mexico Wilderness Alliance
New Mexico Wildlife Federation
New Mexico Wind Working Group
New Mexico Wool Growers
Pima County Farm Bureau
Pinal County Farm Bureau
Public Lands Foundation

Table 5-13. Organizations and Special Interest Groups Notified (Continued)

Public Lands Interpretive Association
Redington Natural Resource Conservation District
Rocky Mountain Bird Observatory
San Pedro Natural Resource Conservation District
Shooting Roundtable
Sierra Club
Sierra Club, El Paso Group
Sierra Club Rincon Chapter
Sierra Club Rio Grande Chapter
Sky Island Alliance
Solar Reserve
Sonoran Institute
Southern Arizona Buffelgrass Coordination Center
Southern Arizona Leadership Council
Southwest Environmental Center
Southwest Natural Resources
Southwest New Mexico Grazing Association
Southwest Regional Conservation Committee
Southwestern Power Administration
Tonopah Area Coalition
Trust for Public Land
Tucson Audubon
Tucson Mountains Association
Union of Concerned Scientists
Upper Gila Watershed Alliance
Upper San Pedro Partnership
Western Environmental Law Center
Western Governors' Association
Western Interstate Energy Board
Western Regional Partnership
Western Resource Advocates
Western Watersheds Project
WildEarth Guardians
Wilderness Land Trust
The Wilderness Society
The Wilderness Society / BLM Action Center
Wings Over Willcox

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Chapter 6

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Chapter 7

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Chapter 8

DRAFT EIS COMMENTS AND RESPONSES

8.1 INTRODUCTION

The BLM and Western published an NOA for the Draft EIS/RMPA in the Federal Register on April 11, 2014. The NOA announced the release of the Draft EIS and the beginning of a 90-day comment period. This chapter provides public comments received by the BLM and Western in response to publication of the Draft EIS, and the BLM's and Western's responses to those comments. The information in this chapter did not exist in the Draft EIS.

A total of 89 comment submittals (letters, emails, commenters at hearings) was provided to the BLM and Western during the 90-day comment period. All comments on the Draft EIS were given careful consideration with necessary changes incorporated into this Final EIS. Comments are transcribed below in table 8-1 as they were received. The comments are sorted by resource category (see "Document Abbreviations") in the order in which they occur in the EIS.

As noted in section 5.2.4, the BLM and Western sent outreach letters to property owners within ½ mile of route variation alignments east of Willcox Playa in Cochise County and south of Tucson International Airport along Old Vail Connection Road in Pima County. The purpose of the outreach letters was to notify the property owners of the new route variations (see sections 1.12.2 and 2.7) that were added to the EIS analysis. A total of 35 comment submittals and inquiries (letters, emails, phone calls) was provided to the BLM and Western. As with comments during the 90-day comment period, these comments are transcribed below in table 8-1 as they were received and are addressed in the Final EIS (see comments starting with number 799).

8.2 RESPONSE TO COMMENTS

In responding to comments, every effort was made to address all questions, concerns, and other points presented by the commenter. Table 8-1 presents all of the comments that were received on the Draft EIS. It includes the comment letter number, commenter name, the specific comment, and the BLM's and Western's response to the comment. Comments have been recorded verbatim as they were received.

Not all comments in table 8-1 resulted in text changes that appear in the Final EIS. The "Agency Response to Comments" provided by BLM and Western, in many cases, refers to information that was already contained in the Draft EIS, or provides an explanation and/or clarification regarding why a text change to the document was not required. If a response indicates that information was presented in the Draft EIS, please note that the information is also included in the Final EIS. If a section of the Draft EIS is referenced in table 8-1, the information can be found in the Final EIS in the same section unless otherwise noted. Where the "Agency Response to Comments" warranted revising text in the EIS, the agency response refers to a corresponding section, figure or table, and unless otherwise noted, revisions were made as suggested by the commenter or comment. Please note that page numbers in the Final EIS are likely different from those in the Draft EIS.

The following is a list of comment type codes that were used to indicate each comment's associated resource or concern.

Order in Table 8-1	Document Abbreviations	Comment ID
1	1-AIR	Air Quality
2	15-NOISE	Noise and Vibration
3	4-GEO	Geology and Minerals
4	14-SOIL	Soil Resources
5	10-PALEO	Paleontological Resources
6	20-WATER	Water Resources
7	2-BIO	Biological Resources (Vegetation and Wildlife)
8	3-CUL	Cultural Resources
9	19-VIS	Visual Resources
10	7-LAND	Land Use (Farm/Range/Military)
11	12-SD	Special Designations
12	21-WILD	Wilderness Characteristics
13	11-REC	Recreation
14	13-SOCI	Socioeconomics and EJ
15	16-PHS	Public Health and Safety
16 (no comments received)	5-HAZ	Hazardous Materials
17	17-TRANS	Transportation
18 (no comments received)	6-IDA	Intentional Acts of Destruction
19	18-TRAIL	National Scenic and Historic Trails Assessment
20	9-NEPA	NEPA/Process
21	8-MISC	Miscellaneous (support/non-support)

Table 8-1. Comments on the Draft EIS and Agency Response

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
31	14	14	New Mexico Department of Environmental Quality	Nelson	1-AIR	AQB concurs with the statements in the draft EIS regarding air quality impacts, regulatory requirements and the use of best management practices (BMPs) during construction. The AQB appreciates the opportunity to participate in this review process and anticipates commenting on the Final EIS and RMP Amendment	Thank you for your comment.
166	32	32.12	EPA	Jansky/Weeks	1-AIR	Additional mitigation measures; page 606. This section notes that emissions related to construction impacts will be minimized through best management practices (bmp's) and other mitigation measures. Recommendation: EPA recommends that a Construction Emissions Mitigation Plan (CEMP) be developed for the project, and in addition to all applicable local, state, or federal requirements, the following mitigation measures be included in the CEMP in order to reduce air quality impacts associated with emissions of NOx, CO, PM, S02, and other pollutants from construction-related activities: Fugitive Dust Source Controls: Stabilize 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; • Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and • Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to I 0 mph. Mobile and Stationary Source Controls: • Plan construction scheduling to minimize vehicle trips; • Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections; • Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed; • If practicable, utilize new, clean equipment meeting the most stringent 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; and • Consider alternative fuels and energy sources such as natural gas and electricity (plug-in or battery). Administrative controls: • Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking; • Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and • Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).	A Construction Emissions Mitigation Plan (CEMP) would be part of the Erosion, Dust Control, and Air Quality Plan within the POD. See table 2-8 of the EIS for reference to the CEMP and appendix N of the EIS for the draft NEPA POD. The suggested mitigation measures would be considered in the CEMP.
174	34	34.1	ADEQ	Arnst	1-AIR	The part of your project in Pima County is located in a maintenance are for carbon monoxide (CO) and a nonattainment area for I O-micron particulate matter (PM10). As described, it may have a de minimis impact on air quality.	This information was stated and acknowledged in sections 3.2 and 4.2 (Air Quality) of the Draft EIS.
175	34	34.2	ADEQ	Arnst	1-AIR	Disturbance of particulate matter is anticipated during construction. Considering prevailing winds, to comply with other applicable air pollution control requirements and minimize adverse impacts on public health and welfare, the following information is provided for consideration	Particulate matter disturbance and prevailing winds were discussed and acknowledged in sections 3.2 and 4.2 (Air Quality) of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
176	34	34.3	ADEQ	Arnst	1-AIR	REDUCE DISTURBANCE of PARTICULATE MATTER during CONSTRUCTION. This action, plan or activity may temporarily increase ambient particulate matter (dust) levels. Particulate matter 10 microns in size and smaller can penetrate the lungs of human beings and animals and is subject to a National Ambient Air Quality Standard (NAAQS) to protect public health and welfare . Particulate matter 2.5 microns in size and smaller is difficult for lungs to expel and has been linked to increases in death rates; heart attacks by disturbing heart rhythms and increasing plaque and clotting; respiratory infections; asthma attacks and cardiopulmonary obstructive disease (COPD) aggravation. It is also subject to a NAAQS. The following measures are recommended to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site: I. Site Preparation and Construction A. Minimize land disturbance ; B. Suppress dust on traveled paths which are not paved through wetting , use of watering trucks, chemical dust suppressants , or other reasonable precautions to prevent dust entering ambient air; C. Cover trucks when hauling soil; D. Minimize soil track-out by washing or cleaning truck wheels before leaving construction site; E. Stabilize the surface of soil piles; and F. Create windbreaks. II. Site Restoration A. Revegetate any disturbed land not used; B. Remove unused material; and C. Remove soil piles via covered trucks.	These measures are included in table 2-7 in chapter 2 of the Draft EIS (now table 2-8 in the Final EIS). Sections 3.2 and 4.2 (Air Quality) have been revised in the EIS to include this information.
177	34	34.4	ADEQ	Arnst	1-AIR	The following rules applicable to reducing dust from open areas, dry washes or riverbeds , roadways and streets are enclosed. Arizona Administrative Code R 18-2-604 and R 18-2-605 and Arizona Administrative Code R18-2-804.	Table 2-8 in chapter 2, as well as section 3.2 (Air Quality), has been revised in the EIS to include this information.
389	68	68.66	Pima County	Bernal/Connolly	1-AIR	Item 2. Section – Executive Summary: ES. 7 Affected Environment, Issues, and Environmental Impacts: ES. 7.1 Air Quality. Page, Line – xx, 7, 16. Comment: Potential air quality impacts from ground-disturbing activities should be minimized. Resolution: In accordance with Pima County Code Title 17 fugitive dust emissions from construction activities should be controlled.	The executive summary of the EIS includes additional information on Pima County's air quality permitting requirements. Pima County requirements were discussed in section 3.2, table 3.2-4, and appendix B of the Draft EIS.
390	68	68.67	Pima County	Bernal/Connolly	1-AIR	Item 3. Section – Chapter 1: Section 1.13.1 Resource Issues. Page, Line – 29, Table 1-8. Comment: Additional impacts on non-attainment from carbon monoxide and smaller particulate matter in the air such as particulate matter 10 (PM10). Resolution: This would need to be rewritten to specify that mitigation measures would need to be used to minimize the potential additional impacts on non-attainment of any of the criteria pollutants. Or that there are “possible increases in certain criteria pollutants associated with the project.”	Section 1.13.1 of the Draft EIS only summarized those issues identified during scoping for the purpose of analysis; revisions to these issues are not appropriate to clarify here. Impacts such as possible increases to criteria pollutants are addressed in section 4.2 of the Draft EIS.
391	68	68.68	Pima County	Bernal/Connolly	1-AIR	Item 4. Section – Chapter 2: Section 2.4.1 Site Preparation and Preconstruction Activities: Framework Plans. Page, Line – 42, 24-41. Comment: PDEQ would like a copy of the Erosion, Dust Control, and Air Quality Plan to verify that the project is including the applicable Pima County Air Quality rules and regulations. Resolution: PDEQ would like a copy of the Erosion, Dust Control, and Air Quality Plan to verify that the project is including the applicable Air Quality rules and regulations.	Section 2.4.1 of the EIS has been revised to clarify that agencies like Pima County would be incorporated into the development of Framework Plans, as appropriate.
392	68	68.69	Pima County	Bernal/Connolly	1-AIR	Item 5. Section – Chapter 2: Section 2.4.1 Site Preparation and Preconstruction Activities: Framework Plans: Erosion, Dust Control, and Air Quality Plan. Page, Line – 45, 4-10. Comment: The Erosion, Dust Control, and Air Quality Plan should contain the appropriate references to Pima County Code Title 17. Resolution: The Erosion, Dust Control, and Air Quality Plan should contain the appropriate references to Pima County Code Title 17. Pima County Code Title 17 includes rules regarding the control of fugitive dust emissions from construction activities, as well as from portable stationary sources, including concrete batch plants.	Section 2.4.1 of the EIS has been revised to clarify that agencies like Pima County would be incorporated into the development of Framework Plans, as appropriate. Applicable County Plans, Laws, Ordinances, Regulations, and Standards Related to Air Quality, including Pima County, were discussed in chapter 3 of the Draft EIS (see table 3.2-4).
393	68	68.70	Pima County	Bernal/Connolly	1-AIR	Item 6. Section – Chapter 3: Section 3.2.2 Laws, Ordinances, Regulations, and Standards: Federal: Clean Air Act and National Ambient Air Quality Standards. Page, Line – 190, 10-13. Comment: The sentence for criteria pollutants needs to be revised for Particulate Matter 2.5 microns. Resolution: The PM standard for PM 2.5 is for particulate matter equal to or less than 2.5 microns in diameter.	Section 3.2.2 of the EIS has been revised based on this comment.
394	68	68.71	Pima County	Bernal/Connolly	1-AIR	Item 7. Section – Chapter 3: Section 3.2.2 Laws, Ordinances, Regulations, and Standards: Federal: Clean Air Act and National Ambient Air Quality Standards. Page, Line – 193, 10-11. Comment: HAPS are regulated by the National Emissions Standards for Hazardous Air Pollutants not because they did not meet specific criteria for the development of the National Ambient Air Quality Standards (NAAQS), but because the Clean Air Act authorizes the regulations of airborne toxic air pollutants and developing risk-based standards for each HAP is a difficult task. Instead EPA approaches HAPs with control technologies rather than set standards. Resolution: This sentence should be revised to include specific reference to the Clean Air Act and the NESHAP program.	Section 3.2.2 of the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
395	68	68.72	Pima County	Bernal/Connolly	1-AIR	Item 8. Section – Chapter 3: Section 3.2.2 Laws, Ordinances, Regulations, and Standards: State and Local Regulations. Page, Line – 194, 10-11. Comment: Arizona does not have additional ambient air quality standards. Pima County incorporates the NAAQS by reference and has statutory authority to operate the air quality programs. Resolution: This sentence needs to be revised.	Section 3.2.2 of the EIS has been revised based on this comment.
396	68	68.73	Pima County	Bernal/Connolly	1-AIR	Item 9. Section – Chapter 3: Section 3.2.2: State and Local Regulations, Arizona. Page, Line – 197, 13-35. Comment: This section is completely inaccurate and needs to be rewritten. Pima County does not have an agreement with the Arizona Department of Environmental Quality (ADEQ) for air quality regulations. Pima County has statutory authority pursuant to Arizona Revised Statute 49-402 (A.R.S. 49-112). Also, Pima County incorporates the NAAQS by reference. Resolution: This section needs to be rewritten to accurately depict State and Local authority. Including, but not limited to, statutory authority of the Pima County Air Pollution Control District.	Section 3.2.2 of the EIS has been revised based on this comment.
397	68	68.74	Pima County	Bernal/Connolly	1-AIR	Item 10. Section – Chapter 3: Section 3.2.2: State and Local Regulations, Arizona. Page, Line – 198, 1-6. Comment: This paragraph is out of context and needs to have explanation. Will the project be using a local concrete batch plant with an existing permit that would only operate within Pima County, a portable concrete batch plant with an existing permit through ADEQ, or will a new concrete batch plant be constructed that would necessitate application for the appropriate air quality permit? Resolution: PDEQ is the Air Quality permitting authority for sources of air pollution within Pima County. Concrete batch plants can obtain an Authorization to Operate under an ADEQ General permit within Pima County. If a portable plant from outside Pima County (that is permitted through the State of Arizona) will be used for the project permitting of the plant should be verified with PDEQ before construction/operation, and proper notification should be given for the location of the plant within Pima County.	Section 3.2.2 of the EIS has been revised based on this comment.
398	68	68.75	Pima County	Bernal/Connolly	1-AIR	Item 11. Section – Chapter 3: Section 3.2.2: State and Local Regulations, County. Page, Line – 198, 14-15. Comment: Table 3.2-4 will need to be updated. Pima County incorporates the NAAQS by reference. Resolution: Pima County does not have the same Ambient Air Quality Standards as ADEQ because Pima County incorporates the NAAQS by reference. Also, PDEQ is the Air Quality permitting authority for stationary sources of air pollution within Pima County, including concrete batch plants.	Section 3.2.2 of the EIS has been revised based on this comment.
399	68	68.76	Pima County	Bernal/Connolly	1-AIR	Item 12. Section – Chapter 3: Section 3.2.3 Issues to be Analyzed: Pima County Arizona. Page, Line – 203, 4. Comment: Summerhaven does not have a current maintenance plan, per the EPA SIP. Resolution: This sentence needs to be removed.	Section 3.2.3 of the EIS has been revised based on this comment.
400	68	68.77	Pima County	Bernal/Connolly	1-AIR	Item 13. Section – Chapter 3: Section 3.2.4 Analysis Area Conditions: Background Air Quality. Page, Line – 204, 10. Comment: The project should also identify air quality monitors operated by the Pima County Department of Environmental Quality that are within or near the vicinity of the air quality analysis area. Resolution: This section should state that PDEQ operates air quality monitors within Pima County including monitors which collected data presented in Appendix B.	Section 3.2.4 of the EIS has been revised based on this comment.
401	68	68.78	Pima County	Bernal/Connolly	1-AIR	Item 14. Section – Chapter 3: Section 3.2.4 Analysis Area Conditions: Regional Air Emissions Sources. Page, Line – 204, 16-25. Comment: Regional Air Emission Sources section needs to be rewritten as the sources listed in Table 3.2-5 are not PSD sources. Existing sources in Pima County that are Major Sources that have potential PSD emissions should be listed. Table 3.2-5 needs to be revised because the sources listed are Major sources, not PSD sources. Resolution: In Pima County “Major” means emitting or having the potential to emit 100 tons per year (tpy) or more of any criteria pollutant for the specific source categories listed in the PSD regulations. There are 28 listed source categories, which include power plants that use steam to generate electricity, petroleum refineries and glass fiber processing plants. If a plant does not fall into one of the listed source categories, then a threshold of 250tpy applies. The author should consult with the PDEQ Air Quality Permitting Section to determine the correct Major sources to list. The CalPortland Rillito Cement Plan is permitted through the Arizona Department of Environmental Quality and the author should contact ADEQ to determine if the CalPortland Rillito Cement Plant is a PSD source, or a Major source.	Section 3.2.4 of the EIS has been revised based on this comment.
402	68	68.79	Pima County	Bernal/Connolly	1-AIR	Item 15. Section – Chapter 3: Section 3.2.4 Analysis Area Conditions. Page, Line – 205, 5. Comment: This section should include a discussion regarding the CO2 equivalence of the SF6 emissions from the proposed substations. Resolution: Sulfur hexafluoride (SF6) is considered a potent greenhouse gas and as such the emissions of the SF6 from the substations should be discussed.	Section 3.2.4 of the EIS has been revised based on this comment.
403	68	68.80	Pima County	Bernal/Connolly	1-AIR	Item 16. Section – Chapter 4: Section 4.1.2 Cumulative Effects. Page, Line – 578, 24-25. Comment: Cumulative Impacts are discussed in detail in section 4.21, not 4.20 as stated. Resolution: This section needs to be rewritten to accurately depict applicable rules and regulations.	Section 2.2 of the EIS has been revised to indicate that section 4.21 is the discussion of cumulative effects.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
404	68	68.81	Pima County	Bernal/Connolly	1-AIR	Item 17. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 580, 21-25. Comment: This is inaccurate; the predicted emissions should be compared to the NAAQS. The standards the Draft EIS attributes to the State are inaccurate because Pima County incorporates the NAAQS by reference into Pima County Code Title 17. Resolution: This section needs to be rewritten to accurately depict applicable rules and regulations.	The proposed Project is also located in New Mexico, which has additional ambient air quality standards. The NMAAQS are additional ambient air quality standards applicable in the analysis area, as discussed in section 4.2.1 of the Draft EIS.
405	68	68.82	Pima County	Bernal/Connolly	1-AIR	Item 18. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 580, 32-41. Comment: Fugitive dust emissions should be minimized and controlled to meet requirements of Pima County Code Title 17. Resolution: This section should be revised so that fugitive dust emissions are minimized by control measures and controlled to meet requirements of Pima County Code Title 17.	Section 4.2.1 of the EIS has been revised based on this comment.
406	68	68.83	Pima County	Bernal/Connolly	1-AIR	Item 19. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 580, 35-36. Comment: Fugitive dust emissions should be minimized and controlled to meet requirements of Pima County Code Title 17. Resolution: Unpaved roads, unpaved haul/access roads, and staging areas affected by the project should be stabilized when in use and following use until the area becomes permanently stabilized by paving, landscaping or otherwise in order to control fugitive dust emissions, including windblown dust, or dust caused by vehicular traffic on the area pursuant to (sentence left incomplete)	Section 4.2.1 of the EIS has been revised based on this comment.
407	68	68.84	Pima County	Bernal/Connolly	1-AIR	Item 20. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 580, 40-41. Comment: Emissions from concrete batch plants would need to be controlled according to air quality permit conditions. Resolution: The project will need to verify that the proper air quality permit is in place for any concrete batch plants to be used within Pima County. Emissions from concrete batch plants would need to be controlled according to air quality permit conditions.	Section 4.2.1 of the EIS has been revised based on this comment.
408	68	68.85	Pima County	Bernal/Connolly	1-AIR	Item 21. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 581, 9-12. Comment: Pima County Code Title 17 covers fugitive dust emissions from construction activity in Pima County. Resolution: This section should include references to local air quality control. Pima County Code Title 17 covers fugitive dust emissions from construction activity in Pima County.	Section 4.2.1 of the EIS has been revised based on this comment.
409	68	68.86	Pima County	Bernal/Connolly	1-AIR	Item 22. Section – Chapter 4: Section 4.2.1 Introduction. Page, Line – 581, 11-12. Comment: Fugitive dust emissions should be minimized and controlled to meet requirements of Pima County Code Title 17. Resolution: Unpaved roads, unpaved haul/access roads, and staging areas affected by the project should be stabilized when in use and following use until the area becomes permanently stabilized by paving, landscaping or otherwise in order to control fugitive dust emissions, including windblown dust, or dust caused by vehicular traffic on the area pursuant to (sentence left incomplete)	Section 4.2.1 of the EIS has been revised based on this comment.
410	68	68.87	Pima County	Bernal/Connolly	1-AIR	Item 23. Section – Chapter 4: Section 4.2.2 Methodology and Assumptions: Analysis Assumptions. Page, Line – 581, 30-39. Comment: Assumptions for fugitive dust emissions should also list what control measures were assumed for any fugitive dust generating activities. Also, estimates for emissions from concrete batch plants would need to include a list of control measures assumed. Resolution: Emissions estimates for the emissions inventory should also list what control measures were assumed.	Appendix B in the Draft EIS contains assumptions used in the analysis and has been updated based on this comment.
411	68	68.88	Pima County	Bernal/Connolly	1-AIR	Item 24. Section – Chapter 4: Section 4.2.3 Impacts Analysis Results: Impacts Common to All Action Alternatives: Construction. Page, Line – 586, 15-18. Comment: If fugitive dust emissions are included in off-site visibility impacts at Saguaro National Park Class I area, the Project should reevaluate the impacts with control measures for fugitive emissions. Pima County Code Title 17 states that “No person shall cause, suffer, allow, or permit diffusion of visible emissions, including fugitive dust, beyond the property boundary line within which the emissions become airborne, without taking reasonably necessary and feasible precautions to control generation of airborne particulate matter.” Resolution: The Project will need to comply with Pima County Code Title 17 fugitive dust provisions. Visible fugitive dust emissions should not cross property boundary. There should be no impact at Saguaro National Park East due to visible fugitive dust emissions from the Project.	Section 4.2.3 of the EIS has been revised based on this comment.
412	68	68.89	Pima County	Bernal/Connolly	1-AIR	Item 25. Section – Chapter 4: Section 4.2.3 Impacts Analysis Results: Route Group 3 – Apache Substation to Pantano Substation. Page, Line – 597, 32-36. Comment: Will the project be using a local concrete batch plant with an existing permit that would only operate within Pima County, a portable concrete batch plant with an existing permit through ADEQ, or will a new concrete batch plant be constructed that would necessitate application for the appropriate air quality permit? Resolution: PDEQ is the Air Quality permitting authority for sources of air pollution within Pima County. Concrete batch plants can obtain an Authorization to Operate under an ADEQ General permit within Pima County. If a portable plant from outside Pima County (that is permitted through the State of Arizona) will be used for the project permitting of the plant should be verified with PDEQ before construction/operation, and proper notification should be given for the location of the plant within Pima County.	Section 4.2.2 of the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
413	68	68.90	Pima County	Bernal/Connolly	1-AIR	Item 26. Section – Chapter 4: Section 4.2.3 Impacts Analysis Results: Route Group 3 Impacts to Ambient Air Quality. Page, Line – 600, 1-2 & 10-11. Comment: This Table is inaccurate, only the NAAQS should be listed, not Arizona Ambient Air Quality Standards. Pima County incorporates the NAAQS by reference. Resolution: The air quality authorities in Arizona, including for example the State and Pima County incorporate the NAAQS by reference. The more stringent NAAQS apply to these areas despite the lag in updating the State rules or Local Code (Pima County Code Title 17).	Section 4.2.3 of the EIS has been revised based on this comment.
414	68	68.91	Pima County	Bernal/Connolly	1-AIR	Item 27. Section – Chapter 4: Section 4.2.3 Impacts Analysis Results: Route Group 4 – Pantano to Saguaro. Page, Line – 602, 3-5 & 603, 1-2. Comment: Will the project be using a local concrete batch plant with an existing permit that would only operate within Pima County, a portable concrete batch plant with an existing permit through ADEQ, or will a new concrete batch plant be constructed that would necessitate application for the appropriate air quality permit? Resolution: PDEQ is the Air Quality permitting authority for sources of air pollution within Pima County. Concrete batch plants can obtain an Authorization to Operate under an ADEQ General permit within Pima County. If a portable plant from outside Pima County (that is permitted through the State of Arizona) will be used for the project permitting of the plant should be verified with PDEQ before construction/operation, and proper notification should be given for the location of the plant within Pima County.	Section 3.2.2 of the EIS has been revised based on this comment.
415	68	68.92	Pima County	Bernal/Connolly	1-AIR	Item 28. Section – Chapter 4: Section 4.2.3 Impacts Analysis Results: Route Group 4 Impacts to Ambient Air Quality. Page, Line – 604, 7-8 & 14-15. Comment: This Table is inaccurate, on the NAAQS should be listed, not Arizona Ambient Air Quality Standards. Pima County incorporates the NAAQS by reference. Resolution: The air quality authorities in Arizona, including for example the State and Pima County incorporate the NAAQS by reference. The more stringent NAAQS apply to these areas despite the lag in updating the State rules or Local Code (Pima County Code Title 17).	Section 4.2.3 of the EIS has been revised based on this comment.
416	68	68.93	Pima County	Bernal/Connolly	1-AIR	Item 29. Section – Chapter 4: Section 4.21.4 Cumulative Effects by Resource: Air Quality and Climate Change: Construction. Page, Line – 1072, 1-6. Comment: Fugitive dust emissions should be minimized and controlled to meet requirements of Pima County Code Title 17. Resolution: Fugitive dust from earth moving associated with the Project and other construction activities should be controlled in accordance with Pima County Code Title 17. Unpaved roads, unpaved haul/access roads, and staging areas affected by the project should be stabilized when in use and following use until the area becomes permanently stabilized by paving, landscaping or otherwise in order to control fugitive dust emissions, including windblown dust, or dust caused by vehicular traffic on the area pursuant to (sentence left incomplete)	Applicable county rules were addressed in section 3.2.2 of the Draft EIS.
417	68	68.94	Pima County	Bernal/Connolly	1-AIR	Item 30. Section – Appendix B: Section Supplemental Air Quality Information: State and Local Regulations: Pima County. Page, Line – B-4, 22-33. Comment: This section is inaccurate. Pima County has statutory authority pursuant to Arizona Revised Statute 49-402 (A.R.S. 49-112), as well as delegation from the US EPA for certain portions of the air quality program. Resolution: This section needs to be rewritten to accurately depict applicable rules and regulations.	Appendix B of the EIS has been revised based on this comment.
418	68	68.95	Pima County	Bernal/Connolly	1-AIR	Item 31. Section – Appendix B: Section Supplemental Air Quality Information: State and Local Regulations: Pima County. Page, Line – B-4, 28-33. Comment: This section is inaccurate. A fugitive dust activity permit is also required for blasting activities. Resolution: This section needs to be rewritten to accurately depict applicable rules and regulations.	Appendix B of the EIS has been revised based on this comment.
167	32	32.13	EPA	Jansky/Weeks	15-NOISE	Noise and Vibration. Chapter 4; page 627. All 4 route groups have noise sensitive receptors (nsr's) that will experience short-term construction noise as high as 83 a-weighted decibels (dBA). BMP's discussed in the DEIS, and in the Programmatic EIS developed for Western States Energy Corridors, are expected to reduce the noise levels below the maximum level. The DEIS also states that the project will comply with all local noise ordinances. There is not a quantitative or qualitative discussion of how much noise levels will be reduced, and if this reduction will comply with local ordinances or the Noise Pollution Control Act of 1972. Recommendation: The FEIS should include a quantitative or qualitative discussion of how much noise levels will be reduced by project bmp's.	Section 4.3 in chapter 4 in the EIS has been revised to clarify how noise levels would be reduced by project PCEMs.
170	32	32.16	EPA	Jansky/Weeks	4-GEO	Geology and Mineral Resources. Chapter 3; page 220. Line 24 of the DEIS states no earth fissures are documented in route group 1. Line 27 says route group 1 crosses approximately 227 fissures. Recommendation: For the FEIS, please clarify which information regarding fissures and route group 1 is correct.	Section 3.4 in in the EIS has been revised to clarify the number of fissures intersected by the proposed Project.
713	82	82.132	SunZia	Wray	14-SOIL	Geology and Soils The affected environment and environmental consequences for earth resources do not include analyses of impacts resulting from the construction and operation of the Southline Project, with regard to floodplain hazards, subsidence, future oil and gas leases, or future extraction of mineral resources. The absence of these studies indicates that the range of impacts was not fully analyzed and is therefore deficient. We request that this deficiency be corrected.	Data on, and impacts to, geologic hazards, including subsidence, future oil and gas leases, and future extraction of mineral resources (mining claims), was included in the Draft EIS in sections 3.4 and 4.4 (Geology and Minerals). Sections 3.7 and 4.7 (Water Resources) of the Draft EIS included information on floodplain hazards.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
706	82	82.125	SunZia	Wray	10-PALEO	Fossil localities are not discussed as part of impacts from the Southline Project. The Potential Fossil Yield Classification is the best way to assess impacts to paleontological resources, but the presence or absence of previously recorded fossil localities can help determine if classifications of 2 or 3 need to be assessed, or help in determining mitigation requirements. For example, having previously recorded fossil localities in an area mapped as Qa might suggest a further look in those sediments within the Southline Project area. Please include Fossil localities in the impact analysis. The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Available data on the Potential Fossil Yield Classification (PFYC) and known localities were used in the Draft EIS in sections 3.6 and 4.6. The PFYC maps used were shown as figures 3-6.1a and 3-6.1b in the Draft EIS (now figures 3-6.1a–d in the Final EIS). Section 4.6 of the Draft EIS described potential impacts to fossil localities. The actual location of any particular fossil site is protected from public disclosure so as to protect the site. And in no way is the PFYC system meant to imply that further research, including field surveys, would be required where proposed projects are in Category 2 or 3 areas, where the fossil potential is low to moderate or unknown, and thus finds are not expected to be made. For this proposed Project, mitigation for Category 1, 2, or 3 areas is the stipulation that all work in the vicinity of a find shall stop immediately and the local BLM office will be contacted (see table 2-8 in the Final EIS).
32	14	14	New Mexico Department of Environmental Quality	Nelson	20-WATER	The U.S. Environmental Protection Agency (USEPA) requires National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water discharges from construction projects (including common plans of development) that will result in the disturbance (or re-disturbance) of one or more acres, including expansions, of total land area. Since this project will exceed one acre (including staging areas, etc.), it will require appropriate NPDES permit coverage prior to beginning construction. Among other things, this permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (revegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters. In addition, permittees must ensure that there is no increase in sediment yield and flow velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 9.4.1.1).	The comment accurately reflects the permitting requirements per NPDES as stated and acknowledged throughout the Draft EIS (see chapters 2, 3, and 4).
159	32	32.5	EPA	Jansky/Weeks	20-WATER	Wetlands/Waters of the U.S. Executive Summary; page xxii. The DEIS states "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." Recommendation: Change the word "or" to "including" as wetlands are considered WUS under the Clean Water Act (CWA). If there is a need to differentiate between jurisdictional wetlands and isolated wetlands or "non-jurisdictional" wetlands; then that distinction should be made.	The executive summary in the EIS has been revised based on this comment.
160	32	32.6	EPA	Jansky/Weeks	20-WATER	Chapter 2; page 46. The DEIS states "General water quality is protected under the Federal Clean Water Act (CWA), and a permit may be required if a project would result in discharges to regulated WUS. The purpose of a Stream, Wetland, Well, and Spring Protection Plan (SWWSPP) would be to describe measures to protect those resources from potential impacts during construction, operation, and maintenance activities. The plan would describe avoidance, minimization, and mitigation measures and would be intended for use as a guide to determine the appropriate site specific measures to be implemented during construction activities. Also, page 42 of the DEIS states the final Plan of Development (POD) for the SWWSPP will not be completed until after the FEIS. Recommendation: A draft POD should be made a part of the FEIS so measures for avoiding, minimizing, and mitigating impacts to aquatic resources can be reviewed and commented on. Without knowing the finalized route, having a field verified delineation of WUS, or the mitigation required to offset project impacts; it is difficult to adequately assess the environmental impacts of the proposed project.	A draft NEPA POD is available with the EIS (see appendix N).
161	32	32.7	EPA	Jansky/Weeks	20-WATER	Chapter 3; page 258. Portions of the wetlands and WUS section state that wetlands, ephemeral arroyos, special aquatic sites, and drainages exist within the analysis area, and would require protection or compensatory mitigation if permanently impacted. Recommendation: Jurisdictional wetlands and other special aquatic sites are protected under the CWA. The nature of the impact, permanent or otherwise, has no bearing on that determination. Both permanent and temporary impacts to jurisdictional waters would be addressed under Section 404 of the CWA, which requires that all practicable alternatives for avoiding and minimizing impact to WUS be made, and that all unavoidable impacts be mitigated. Please make clear in the FEIS that any impacts to wetlands will require protection or mitigation.	Section 3.7 in the EIS has been revised to make clear that a jurisdictional delineation would be completed for the selected alternative, if the ROW is approved, and that all practicable methods of avoidance to WUS would be accomplished through micro-siting. Any potential impacts would require protection or mitigation through the CWA permit process.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
162	32	32.8	EPA	Jansky/Weeks	20-WATER	Chapter 3; page 258: The DEIS states "An inventory of all wetlands within analysis area boundary from National Wetlands Inventory (NWI) maps indicates that approximately 7,639 acres of wetlands occur within the analysis area, consisting of 20 freshwater ponds (typically stock tanks), 6 lakes, 1 freshwater forested/shrub wetland, and 3 other wetland areas." Recommendation: It is evident that the NWI maps serve as the bases for determining the presence or absence of aquatic features for this document. The NWI maps provide a good starting point, however, it should be noted that NWI maps are not intended to delineate or certify the presence or absence of jurisdictional WUS. Also, NWI maps are not 100% accurate in identifying aquatic features. Prior to commencement of dredge or fill activities a field verification along the alignment should be made to accurately delineate WUS, including wetlands, should be made. This field verification should be conducted in conjunction with the Clean Water Act Section 404 permitting process.	Section 3.7 in the EIS has been revised to clarify that a WUS delineation would be completed for the selected alternative in conjunction with a Section 404 CWA permit.
168	32	32.14	EPA	Jansky/Weeks	20-WATER	Chapter 4; page 685. The new build and upgrade sections of the proposed project have unavoidable impacts to floodplains associated with placing structures in floodplains. This requires consultation with the FEMA designated floodplain administrator for the area. Recommendation: Please consult the local FEMA floodplain administrator to determine if project impacts to floodplains will remain within allowable levels. Include this consultation in the FEIS.	FEMA floodplains and local requirements were discussed in section 3.7.3 of the Draft EIS; section 4.7 in the EIS has been revised to include reference to local FEMA floodplain administrator based on this comment.
229	42	42.3	U.S. International Boundary and Water Commission	Anaya	20-WATER	The USIBWC requests that proposed construction activities be accomplished in a manner that does not change historic surface runoff characteristics at the international border. The USIBWC will not approve any construction near the international boundary in the United States that increases, concentrates, or relocates overland drainage flows into either country. This requirement is intended to ensure that developments in one country will not cause damage to lands or resources in the other country. The USIBWC will need copies of any hydrological or hydraulic studies and site specific drawings for work proposed in the vicinity of the international boundary, particularly if culverts or other structures are proposed to be constructed in any drainage courses that cross the boundary. We will also require that you assure that structures constructed along the United States/Mexico border are maintained in an adequate manner and that liability issues created by these structures are addressed.	Chapter 2 (see table 2-8), as well as sections 3.7 (Water Resources) and 3.11 (Land Use) in chapter 3 in the EIS, has been revised based on this comment.
280	57	57.1	ADEQ–Water Quality	LeStarge/Taunt	20-WATER	On behalf of Linda Taunt, Deputy Division Director of the Water Quality Division, Arizona Department of Environmental Quality (ADEQ), ADEQ does not see any impacts related to water quality that have not been addressed already in the Draft Environmental Impact Statement.	Thank you for your comment.
330	68	68.7	Pima County	Bernal/Connolly	20-WATER	Also, as the Federal Emergency Management Agency (FEMA} considers electrical transmission as a critical facility, access to such facilities for maintenance and repair during times of flooding is a very significant issue. As well as the need to protect any substation from a 500-year floor event, as per FEMA guidelines (please see attached comments from Pima County Regional Flood Control Department).	Sections 3.7 and 4.7 of the EIS have been revised to include additional information on FEMA's guidelines for 500-year floodplains.
419	68	68.96	Pima County	Bernal/Connolly	20-WATER	We commented that electrical transmission is considered a critical facility by FEMA and as such accessibility for maintenance and repair during times of flooding is a significant issue which should be evaluated during the NEPA process and that substations should be protected from the 500-year flood event per FEMA guidelines. This issue does not appear to have been explicitly addressed. Adding discussion of Critical Facility designations and requirements to ES.7.16 Public Health and safety is recommended. Protection from 500 year flood should be identified in the substation descriptions and identified in the floodplain section beginning on page 258.	The executive summary and section 3.7 in the EIS has been revised based on this comment.
420	68	68.97	Pima County	Bernal/Connolly	20-WATER	The routes, maintenance access roads and fencing will cross numerous watercourses regulated by Pima County. Although Pima County Regional Flood Control District (PCRFCD) authority with regard to federal floodplains, local floodplains and Regulated Riparian Habitat (RRH) has been acknowledged on page 251 and 252, RRH is notably excluded from DEIS decision space and operational elements. This appears to be in part due to the incomplete understanding of RRH as it relates to the Pima County Conservation Lands System (CLS). While Important Riparian Area (IRA) incudes RRH, not all RRH is IRA under the CLS. While inclusion of IRA in the DEIS is significant, RRH should be identified here as well.	Sections 3.7 and 4.7 in the EIS have been revised based on this comment.
421	68	68.98	Pima County	Bernal/Connolly	20-WATER	The federal definition of wetlands is too narrow for the affected environment and PCRRH should be assessed and mitigated as the best available local information. It is notable that Pima County CLS IRA has been quantified and that RRH mapping is not available across the entire project and therefore cannot be used for route comparison purposes.	Sections 3.7 and 4.7 in the EIS have been revised to include available RRH for the relevant portions of the proposed Project in Pima County, based on this comment.
422	68	68.99	Pima County	Bernal/Connolly	20-WATER	RRH should be added to line 27 on page 252 of section 3.7.4 Issues to be Analyzed.	Section 3.7 in the EIS has been revised for the relevant portions of the proposed Project in Pima County, based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
423	68	68.100	Pima County	Bernal/Connolly	20-WATER	RRH should be called out in the “Framework” management and mitigation plans described in Chapter Two. Specifically RRH should be added to ES7 Affected Environment, Issues and Environmental Impacts and the appropriate mitigation plans including the: Plant and Wildlife Species Conservation Measures Plan; Stream, Wetland, Well, and Spring Protection Plan; and Reclamation, Vegetation, and Monitoring Plans.	Section 2.4.1, as well as sections 3.7 and 4.7 in the EIS, has been revised for the relevant portions of the proposed Project in Pima County, based on this comment.
424	68	68.101	Pima County	Bernal/Connolly	20-WATER	Non-xeric PCRRH should be added to the maps of surface water and wetlands contained in Chapter 3.	Maps found in section 3.7 of the EIS have been revised to include the relevant portions of the proposed Project in Pima County, based on this comment.
425	68	68.102	Pima County	Bernal/Connolly	20-WATER	Although RRH application will be limited to determining local impact and required mitigation it should be acknowledged. To that end we further recommend that RRH and IRA be added to the acronym/glossary list and that footnotes be added wherever the term riparian is used to reduce confusion with the other vegetation inventories used including the National Wetland Inventory and SWReGap.	The acronym and glossary list have been revised in the EIS. When appropriate, RRH has been used instead of “riparian” so that the difference is clear to the reader. No footnotes have been added.
426	68	68.103	Pima County	Bernal/Connolly	20-WATER	Line 17 and 18 on page 69 describe that access roads will be located to avoid “riparian vegetation”. A reference to required permitting shall be added to comply with regulating PCRRH.	Section 2.4.2 in chapter 2 of the EIS has been revised to clarify that an Access Road Plan would be prepared, which would comply with appropriate Federal, State, and local agency requirements. These requirements would include regulated PCRRH.
427	68	68.104	Pima County	Bernal/Connolly	20-WATER	Recently maintenance of transmission lines within Pima County has been conducted which unnecessarily destroy RRH which contribute to erosion and local flooding. Mechanical and chemical means have been used to control vegetation growth along power lines to prevent fires from damaging transmission facilities. The NEPA process should include evaluation of alternative maintenance plans which minimize destruction of riparian habitat. This issue is not included in those to be analyzed listed in Section 3.16.3 on page 544 of Chapter 3.	As discussed in section 2.4.1 of the Draft EIS, vegetation management practices along the ROW would 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 2008a)), Western operation and maintenance clearing practices and construction specifications, electric utility ROWs, and International Society of Arboriculture BMPs. The Vegetation Management Plan would be part of the POD as one of the Framework Plans and would be based on NERC Reliability Standard FAC-003-1. Table 2-8 of the Draft EIS also describes design features and mitigation to minimize impacts to riparian vegetation, which is important to the BLM and Western in considering this proposed Project.
428	68	68.105	Pima County	Bernal/Connolly	20-WATER	In order to mitigate impacts to RRH on linear projects the use of Best Management Practices to control erosion and to replace habitat damaged during construction is appropriate. These impacts are site specific and should be considered in tower placement and design, access road routing, and maintenance practices. Still total impacts may best be addressed on a County wide basis by submitting a Conservation Plan. Such plans are an option under PCRFCD Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines which allow large development including utility projects where the special needs of large scale projects are met while supporting the onsite preservation and mitigation of RRH.	Section 2.4.1 and sections 3.7 and 4.7 in the EIS have been revised to clarify how Pima County requirements would be incorporated into the development of Framework Plans and be used to minimize potential impacts from the proposed Project.
429	68	68.106	Pima County	Bernal/Connolly	20-WATER	Per the DEIS the new towers may be of the lattice type. During scoping we commented that consideration should be given to monopoles if placement is within floodways or riparian habitat to minimize the footprint and potential to become clogged with debris during floods. It is not clear if this item has been addressed.	Chapter 2 of the Draft EIS stated that lattice towers and monopoles are being considered for the New Build portion of the Project, while monopoles are proposed for the Upgrade portion of the Project.
430	68	68.107	Pima County	Bernal/Connolly	20-WATER	In conclusion the footprint, placement and accessibility of the lattice towers and access roads will impact the exposure of these facilities to flood damages. Minimization and mitigation of the impacts on flood hazards and riparian habitat will require site specific design and consideration of county wide cumulative effects. Final consideration of these issues will occur during permitting.	The comment accurately reflects the discussion provided in section 2.4.2 of the Draft EIS: "Structure selection and individual structure placement would be determined during the final design phase of the Project."
525	76	76.45	Arizona State Land Department	Ojeda	20-WATER	In POD, Page 8-2, Table 8-1; With regards to the Wetland delineation and permit, please note that the ASLD as land manager must be consulted prior to filing any documentation with the U.S. Army Corps of Engineers.	Comment on the POD noted and shared with Southline Transmission Line, LLC, for incorporation into the final POD. A draft NEPA POD is included as an appendix to this EIS (see appendix N). Additionally, section 3.7 in the EIS has been revised to include a similar statement.
9	5	5.5	Town of Marana	Spencer	2-BIO	Willcox Playa is an ACEC and an Audubon Important Bird Area. Migrating sandhill cranes and other bird species face innumerable threats twice per year during migration. Please do not add another serious peril to bird migration and to the daily movements of the sandhill cranes.	The potential impact of the proposed transmission line on wildlife, along with a description of mitigation measures and other measures proposed to reduce potential impacts, was analyzed in section 4.8.2 of the Draft EIS. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives for their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included in the Agency Preferred Alternative.
41	15	16	BIA		2-BIO	Page 270, line 12: The Nation has a Tribally Sensitive Species list which should have been referenced or discussed, even if the Nation d id not want to share it. Appendix D, Table D-1 should have made reference to the list (if shared).	BLM and Western coordinated with the Tohono O’odham Nation to ensure that tribally sensitive species for the tribe were considered in the EIS. Sections 3.8 and 4.8 (Biological Resources) and appendix D have been revised in the EIS to indicate that the species of tribal concern for the Nation were considered in the analysis; however, based on coordination with the Nation, the actual list and analyses of species are not included in the document.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
42	15	15.10	BIA		2-BIO	Page 271: The Nation has a sensitive species list. The Nation should have received equal treatment in this section.	Sections 3.8 and 4.8 (Biological Resources) and appendix D have been revised in the EIS to indicate that the species of tribal concern for the Tohono O'odham Nation were considered in the analysis. Based on coordination with the Nation, the actual list and analyses of species are not included in the document.
43	15	15	BIA		2-BIO	Page 323: The Nation's sensitive species list should have been mentioned/incorporated in this section.	Sections 3.8 and 4.8 (Biological Resources) and appendix D have been revised in the EIS to indicate that the species of tribal concern for the Tohono O'odham Nation were considered in the analysis. Based on coordination with the Nation, the actual list and analyses of species are not included in the document.
44	15	15.12	BIA		2-BIO	Page 692, line 404: Impacts to sensitive species on the Nation should have been addressed. If the Nation did not or would not provide a list, that fact should have been stated so in Chapter 3. As written, it appears the document ignored or left out the Nation's sensitive species. Whether the omission was because of lack of cooperation by the Nation or an oversight by the document preparers is not clear.	Sections 3.8 and 4.8 (Biological Resources) and appendix D have been revised in the EIS to indicate that the species of tribal concern for the Tohono O'odham Nation were considered in the analysis. Based on coordination with the Nation, the actual list and analyses of species are not included in the document.
45	15	15.13	BIA		2-BIO	Page 722: Pima pineapple is known to be present on the San Xavier Reservation. Surveys will need to be conducted.	Western completed surveys for the Pima pineapple cactus across the San Xavier Reservation in the summer of 2014. Table 2-8, which includes project design features and mitigation, in chapter 2 of the EIS has been revised to indicate that additional species specific surveys for the Pima pineapple cactus on the San Xavier Reservation would be conducted, if needed.
50	16	16.3		Kestler	2-BIO	I am concnered about the impact on wildlife in the Wilcox Playa area - particulary on the birds. It is very important that there be minimal harm to wildlife. My experience with birds tells me that this is particularly important because of the increase in the power to be carried.	The potential effects of the proposed transmission line on wildlife, including migratory birds, along with a description of mitigation measure and other measures proposed to reduce potential impacts, were described in section 4.8.2 of the Draft EIS. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations at Willcox Playa (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives for their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as part of the Agency Preferred Alternative.
141	26	26.4		Hatch	2-BIO	I will be including my (previously submitted) list of 138 endangered flora & fauna in the local area East of Interstate 10, along with a link to an album of photos and videos I've personally taken near our residence at 3983 North Sheppard Road, Willcox, AZ – including many of the endangered species on that list – which you can download at your convenience and feel free to share with whomever or whatever entity. I will follow up by printing and sending this message and a flash drive with all of the above mentioned photos and videos	Thank you for sharing your research regarding special status species near the Willcox Playa and surrounding area. Impacts to biological resources, including vegetation, wildlife, and special status species, were considered in sections 3.8 and 4.8 (Biological Resources) of the Draft EIS.
164	32	32.10	EPA	Jansky/Weeks	2-BIO	Chapter 5; page 1130. The DEIS states there will be adverse effects to threatened and endangered species and migratory birds. According to the DEIS, BLM has consulted the U.S. Fish and Wildlife Service (FWS) to gather information on species occurrence, potential effects of the action on species, and species specific mitigation measures. At this time consultation is ongoing. Section 5.6 is titled "Formal Consultation", and Section 7 of the Endangered Species Act (ESA) is a sub-heading of this section. If formal consultation on Section 7 of the ESA was entered into between BLM and FWS, it is not apparent. Formal Section 7 consultation has strict time frames that must be adhered too, whereas, informal consultation does not. There is no correspondence between BLM and FWS to determine when formal consultation was initiated. There is not a biological assessment from BLM or a biological opinion from FWS to determine the effects of the project on special status species. Recommendation: The FEIS should include correspondence between BLM and FWS to determine if formal or informal consultation is occurring. Include the biological assessment from BLM if one was prepared. The FEIS should also contain a biological opinion from FWS	Section 5.5.2 (formerly section 5.6) of the EIS has been revised to include information on formal consultation with the FWS. Additionally, the BO and amendment have been included as an appendix (see appendix M in the EIS).
219	41	41.4	Hearing	No ID Speaker	2-BIO	I had a question about the potential wildlife considerations on this. Were there any factors in the design to try to minimize impacts from wildlife collisions with the Sandhill cranes you see on the playa a lot, golden eagles, things of that nature?	The potential impacts of the proposed transmission line on wildlife, along with a description of mitigation measures and other measures proposed to reduce potential impacts, was described in section 4.8 of the Draft EIS. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8. Chapter 2, as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional mitigation measures for wildlife. Therefore, P7 remains part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
234	44	44.1	Quantitative Programming Corporation	Santinello	2-BIO	As currently conceived, Southline could negatively impact an Important Bird Area, the Willcox Playa, as well as the San Pedro River Valley, Cienega Creek and Tumamoc Hill, and should be adjusted and constructed accordingly. I wanted to let the Bureau of Land Management know it would be much better for the future wellbeing of this area if these special habitats were avoided and protected to the greatest extent possible.	The potential environmental impacts of the proposed Project and alternatives on resources like Willcox Playa, the San Pedro River valley, Cienega Creek, and Tumamoc Hill were analyzed in chapter 4 of the Draft EIS. As noted in the Draft EIS, BLM and Western developed local alternatives around Tumamoc Hill, with various stakeholders, to minimize impacts to Tumamoc Hill. As discussed in section 3.8 of the Draft EIS, the existing Western line and ROW cross the San Pedro River and Cienega Creek; therefore, upgrading the transmission line in place, as proposed by this project, would minimize potential impacts to these sensitive special habitats. Additionally, the Agency Preferred Alternative in the EIS includes an alternative that would move the existing line away from crossing Tumamoc Hill proper. Even though the line would still be on Tumamoc Hill property, this move minimizes impacts to Tumamoc Hill (see chapter 2).
235.1	45	45.1		Foley	2-BIO	As currently conceived in its Draft EIS, the Southline project would be routed adjacent to an Important Bird Area, the Willcox Playa, and through or adjacent to important bird habitats such as the San Pedro River Valley, Cienega Creek and Tumamoc Hill	The potential environmental impacts of the proposed Project and alternatives on resources like Willcox Playa, the San Pedro River valley, Cienega Creek, and Tumamoc Hill were analyzed in chapter 4 of the Draft EIS. As discussed in section 3.8 of the Draft EIS, the existing Western line and ROW cross the San Pedro River and Cienega Creek; therefore, upgrading the transmission line in place, as proposed by this project, would minimize potential impacts to these sensitive special habitats. Additionally, the Agency Preferred Alternative in the EIS includes an alternative that would remove the existing line away from crossing Tumamoc Hill proper. Even though the line would still be on Tumamoc Hill property, this move minimizes impacts to Tumamoc Hill resources (see chapter 2). Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative.
236	45	45.2		Foley	2-BIO	Wherever possible, riparian, scrub mesquite, and upland Sonoran Desert vegetation shoul be preserved in place rather than allowing mass grading, especially with regard to sensitive areas such as those described above.	As discussed in chapter 2 of the Draft EIS, grading would only be conducted where necessary.
240	46	46.3		Hamel	2-BIO	The wildlife here and negative effects on them have me concerned. We have coatimundi, Harris hawks, Mexican Freetailed bat, AZ Big Brown bat, Gila monsters, 4 types of Orioles, multiple types of hummingbirds, Sand Hill Cranes, Herons, Bear, Deer, Bobcat, javelina, road runner, Blue Bgrosbeak, desert tortoise, Flycatchers – this is a beautiful unspoiled area and we don't want it ruined.	The potential impacts to biological resources, including wildlife, were considered in sections 3.8 and 4.8 (Biological Resources) of the Draft EIS.
266	49	49.17	Cascabel Working Group	Meader	2-BIO	San Pedro River Crossing. While the routing of the project will minimize impacts to the San Pedro River and its riparian area, the Environmental Impact Statement should stipulate that construction of the project will be done without the clear-cutting and removal of riparian vegetation. The riparian vegetation at the river crossing is remnant mesquite woodland and scrubland and is short enough to leave in place, as is the practice with the existing line. This should also be done with the crossing of Cienega Creek and Davidson Canyon.	Project design features and mitigation measures in table 2-7 in the Draft EIS (now table 2-8 in the Final EIS) indicated that removal of riparian scrubland would be avoided, where possible. This would apply to the San Pedro River, Cienega Creek, and Davidson Canyon crossings.
287	60	60.2		Wood	2-BIO	Destruction of property/vegetation (mine) during construction,	The potential impact of the proposed transmission line on property in terms of land use was described in section 4.11.1, property value in section 4.15, and vegetation in section 4.8 of the Draft EIS.
294	62	62.1	Town of Marana	Spencer/Grossman	2-BIO	The transmission line appears to pass less than half a mile from the Ina Road Bridge, which is a roost for approximately 30,000 bats; Mexican free-tailed bats (Tadarida brasiliensis) and cave myotis (Myotis velifer). Although these bats are not listed as threatened or endangered, a roost of this size is significant and acts as a maternity colony during April/May. If there are methods appropriate to transmission lines and towers that will aid in deterring bats, please implement such measures.	Thank you for your comment and the information provided. BLM and Western worked with the FWS and AGFD regarding potential impacts to bats. Potential impacts to bats at the Ina Road bridge, along with mitigation, have been added to table 2-8 and in section 4.8 in the EIS.
295	62	62.2	Town of Marana	Spencer/Grossman	2-BIO	The farm fields of Marana and the surrounding area are home to several burrowing owl burrows. The areas around concrete-lined ditches are often inhabited by the owls and should be surveyed by a qualified biologist (as stated in the EIS) just prior to construction. Please coordinate with AZ Game and Fish Department and Bob Fox, Wild at Heart: bob@wildatheartowls.org; phone: 480-595-5047 if owls are located within the area proposed for disturbance.	Project design features in the Draft EIS indicate the types of considerations for burrowing owls (see table 2-7 in the Draft EIS, now table 2-8 in the Final EIS). Preconstruction surveys would be conducted to determine the presence of burrowing owls in areas of suitable habitat, including farm fields. If the species is present, mitigation measures outlined in section 4.8 and table 2.8 of the EIS would be implemented.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
296	62	62.3	Town of Marana	Spencer/Grossman	2-BIO	Please consider aligning the Southline along an existing transmission line or the Sunzia line on the same right-of-way as much as possible to reduce the effects to migratory birds and other species. The EIS states that combining the two lines to the extent possible would increase levels of disturbance to natural resources, but no real explanation is provided for this statement.	As described in chapter 2 of the Draft EIS, local agency alternatives were developed to consider routing the Southline and SunZia transmission line projects where appropriate (see local alternatives DN1 and LD4). It should be noted that in Avra Valley, within the Town of Marana, the proposed Project is a rebuild of an existing line and is not close to the not yet constructed SunZia alignment, which is located east and north of the Tortolita Substation. Collocation of the proposed line with other transmission lines would decrease the overall level of impacts by limiting the impacts to a smaller overall area; however, localized impacts at the site of the collocated lines would be greater due to larger blocks of disturbance. The benefits of collocation with the SunZia transmission line are dependent upon that project being constructed. Section 4.21 of the EIS has been revised to include additional information on the cumulative effects of two transmission lines.
297	62	62.4	Town of Marana	Spencer/Grossman	2-BIO	Large numbers of winter migrant hawks inhabit the farm field and riverine land in the Marana area, including crested caracara (Caracara cheriway), peregrine falcons (Falco peregrinus), prairie falcons (Falco mexicanus), great-horned owls (Bubo virginianus), and many other bird species, including mountain plovers (Charadrius montanus). It is difficult to determine how these species (and the sandhill cranes and other large birds in other locations along the R-O-W) will be affected when no details are provided for the mitigation other than saying that an “Avian Protection Plan” will be developed. More detail should be incorporated into this EIS.	The Avian Protection Plan will adhere to APLIC guidelines for reducing collisions, including co-locating lines. Additional information has been added to section 2.4.1 of the EIS that clarifies how the Avian Protection Plan content would be developed and examples of measures that ***could*** be used. Sections 3.8 and 4.8 of the EIS have been revised to address the additional guidance.
298	62	62.5	Town of Marana	Spencer/Grossman	2-BIO	The current preferred alternative slices through approximately 2 miles of riparian habitat on the Santa Cruz River, just west of the Pinal Airpark in Pinal County. It would be preferable to cross the river at a right angle rather than running through the riparian area for such a great distance, to avoid effects on migrating birds that follow the waterway during spring and fall.	The proposed alignment follows the existing line through an area that has minimal riparian vegetation and has been disturbed since the existing line was installed; a new alignment would increase new disturbance.
299	62	62.6	Town of Marana	Spencer/Grossman	2-BIO	Buffelgrass, Johnson grass, giant arundo, and Sahara mustard are two of the invasive species that occur in the area. Please include a plan to avoid introducing or spreading invasive species.	The BLM and Western are aware of the potential for the proposed Project to result in conditions favorable to the expansion of invasive species. Mitigation commitments for invasive species were included in table 2-7 in the Draft EIS (now table 2-8 in the Final EIS).

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
309	66	66.1	Volunteer Ecologists	Reichenbacher	2-BIO	A little over a century ago scientists at the Carnegie Desert Laboratory on Tumamoc Hill discovered a delicate vine clambering over shrubs and cacti. This would become Tumamoca macdougalii (Tumamoc globeberry) a new genus and a new species known only from Tumamoc Hill (known to botanists as the "type locality"). History did not record the exact location from which the first specimens were collected , but it is highly likely to have been within two hundred yards of what, under the current preferred alternative, would be an upgraded comer 230 kV tower site. This tower site is 11 yards from a known Tumamoc globeberry plant that we have been monitoring since 2007. The i mage above (taken 20 Aug. 201 1) shows the plant (indicated by pink flagging tape). The three wooden towers carryi ng the current 1 15 kV lines to be replaced are directly behind. Fig. B-68 (DEIS Vol. 4, p. K68) shows the current environment of the north side of Tumamoc Hill and the same image with a simulated replacement tower. Since the footprint of the new tower would be similar or somewhat larger than that of the existing poles, our concern is with impacts caused by construction activities. For a long time Tumamoc globeberry was known only from Tumamoc Hill. Then it sporadically turned up elsewhere in southern Arizona and Sonora, Mexico. It was listed as a federal endangered species in 1986, but then more surveys showed it was widespread, though never common, through the remote deserts of western Sonora. The circumstances of listing and delisting are too complex to go into here, but they have to do with the Central Arizona Project (CAP). One of us (F. Reichenbacher) participated in the listing and delisting process as a U.S. Bureau of Reclamation consultant. These discussions noted various likely future impacts to Tumamoc globeberry including locations where we all believed that it would be possible to focus on conservation and not impact avoidance and mitigation. Tumamoc Hill was one of these locations. In 2007 our group of volunteer ecologists revisited select populations of Tumamoc globeberry in the Tucson and Avra Valley area. We are sorry to report that many of the populations have experienced steep population declines; affecting several populations we had hoped were well protected. In 2013 we found nine Tumamoc globeberry plants on Tumamoc Hill, all that remains of a population that included 50 to 100 individual plants in the 1980's and 1990's. All are within 150 yards of the tower site pictured above. The justification for removing Tumamoc globeberry from the endangered species list focused on the large populations in Mexico. Although delisting monitoring was done as required by law, no one to our knowledge has revisited any of the populations in Mexico since 1995. The population declines we have documented in the Tucson area occurred between 1995 and 2007. Our monitoring surveys have documented several Tumamoc globeberry populations in danger of local extinction, including the type location of the genus and species on Tumamoc Hill. The cause seems to be related to habitat changes caused by the Tucson urban heat island compounded by the effects of global warming. In the early 1990's no one was thinking about this; certainly not in connection with a curious vine in the Sonoran Desert. IfTumamoc globeberry populations continue to decline, it would then seem necessary for the federal government to consider relisting.	Thank you for the extensive information on the Tumamoc globeberry. Chapter 2 (see table 2-8 of the EIS), as well as sections 3.8.1 and 4.8.1 of the EIS, has been revised to include additional considerations for Tumamoc globeberry. The Agency Preferred Alternative was identified in part to avoid impacts on Tumamoc Hill by moving the preferred alignment to the west of Tumamoc Hill on segment TH1a (see section 2.7 of the EIS), which would run along Starr Pass Boulevard and Greasewood Road, rather than crossing Tumamoc Hill in the existing Western ROW. As noted in table 2-8 in the Final EIS, preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups would be conducted to minimize impacts to Tumamoc globeberry monitoring plots and plants on Tumamoc Hill.
316	67	67.5	Arizona Game and Fish Department	Ritter/Francis	2-BIO	The DEIS states that a reduction in the range of occurrence of any sensitive species would be a significant impact, and that individual projects are required to implement measures to mitigate impacts to special status species. Two species the DEIS does not mention under the Department's Species of Greatest Conservation Need section are the American pronghorn and the ornate box turtle. Due to the loss of habitat within their range, American pronghorn and ornate box turtle have each been elevated one tier in the Arizona State Wildlife Action Plan: 2012-2022. Pronghorn are now a tier lb species, and the ornate box turtle is a tier la species. Pronghorn are found adjacent to the New Mexico border in the Playa de los Pinos along the APA route and in the valley near the Circle I Hills. Box turtles are found in Sulphur Springs Valley and San Simon Valley. The Department recommends incorporating these species into your evaluations.	Sections 3.8 and 4.8 of the EIS have been revised based on this comment.
331	68	68.8	Pima County	Bernal/Connolly	2-BIO	Other concerns noted in further detail in the attachments herein include: • the notable omission of Regulated Riparian Habitat (RRH) from the DEIS decision space and operational elements; • conservation of sensitive vegetative resources, including riparian areas, Pima pineapple cacti, saguaro and ironwood; • control and eradication of invasive species;	Sections 3.8 and 4.8 of the EIS have been revised based on this comment.
333	68	68.10	Pima County	Bernal/Connolly	2-BIO	• potential compromise to regionally important biological corridors;	Potential impacts to biological resources, including regionally important biological corridors, were considered in sections 3.8 and 4.8 (Biological Resources) of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
353	68	68.30	Pima County	Bernal/Connolly	2-BIO	We call your attention to an important monitoring plot for the Tumamoc globeberry that is located along the current power line alignment at Tumamoc Hill. While this rare plant is no longer federally protected, the plants in monitoring plot and the data associated with the monitoring site are very important to our understanding of trends in the species. Impacts to this monitoring site from construction and maintenance can and should be completely avoided. While the alternative routes may affect other Tumamoc globeberry populations, these other populations are not associated with a wealth of long-term data on the status of the species.	Chapter 2 (see table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional considerations for Tumamoc globeberry. The Agency Preferred Alternative was selected in part to avoid impacts on Tumamoc Hill by moving the preferred alignment to the west of Tumamoc Hill on segment TH1a (see section 2.7), which would run along Starr Pass Boulevard and Greasewood Road, rather than crossing Tumamoc Hill in the existing Western ROW. As noted in table 2-8 in the Final EIS, preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups would be conducted to minimize impacts to Tumamoc globeberry monitoring plots and plants on Tumamoc Hill.
355	68	68.32	Pima County	Bernal/Connolly	2-BIO	Additionally, the rebuild crosses through or is adjacent to several County-owned preserves, including Cienega Creek Natural Preserve, Bar V Ranch, Tucson Mountain Park, and Tumamoc Hill and mitigation or compensation for impacts is not proposed. These lands are of particularly high value to County residents for their cultural and natural resources values; the County also intends to rely on most of these areas as mitigation lands for our forthcoming Section 10 Incidental Take Permit from the U.S. Fish and Wildlife Service. We recommend that Southline mitigate unavoidable natural resource impacts by protecting lands elsewhere in the Conservation Lands System.	Chapter 2 (see table 2-8), as well as section 4.8.1 of the EIS, has been revised to include additional consideration for Pima County Conservation Lands. Disturbance within Pima County Conservation Lands would primarily occur within the Western ROW for the existing line. As described in section 2.4.1 of the Draft EIS, a Reclamation, Vegetation, and Monitoring Plan would be developed, areas of temporary disturbance would be restored, and the success of that restoration would be monitored. If during final Project design it is determined that impacts that could not be mitigated through restoration would occur outside of the existing ROW within Conservation Lands, then compensatory mitigation would be considered. Please note that lands within the existing ROW for Western's 115-kV lines would not be appropriate for mitigation lands for Pima County's section 10 permit.
437	69	69.1	Nature Conservancy	Marshall	2-BIO	The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends. We recognize that new transmission lines are an integral part of the shift to renewable energy supplies in the Southwest. Our comments are focused on helping develop a balanced decision that responds to the need for energy while minimizing impacts to wildlife and other important natural resources.	Thank you for your comment.
440	69	69.4	Nature Conservancy	Marshall	2-BIO	The DEIS discloses substantial impacts to cranes from the preferred alternative, but it does not consider the importance of the Playa to cranes from the perspective of cumulative effects. Historically, the Playa was one of several areas frequented by wintering cranes. But with the loss of habitat at the delta of the Colorado River, the Playa is now the primary wintering area in Arizona. Whereas BLM has identified alternatives to the north that would avoid impacts, the cranes do not have alternative locations in the region that provide the feeding, loafing, and roosting habitats found at Willcox Playa and areas to the East and South. Selecting an alternative that minimizes the disclosed impacts as well as further cumulative impacts to Sandhill Cranes and other water-dependent species would minimize diminishment of the environmental baseline and increase the likelihood that the Willcox Playa and Sulphur Springs Valley remain viable habitat. We encourage BLM to select an alternative for Route Group 2 that does not bisect travel routes between Willcox Playa and feeding, roosting, and loafing areas to the East and South.	The potential impacts of the proposed transmission line on wildlife, along with a description of mitigation measures and other measures proposed to reduce potential impacts, were analyzed in section 3.8 of the Draft EIS. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative. Section 4.21.4 of the EIS has been revised to clarify the potential cumulative effects on sandhill cranes.
443	70	70.1		Engoron-March	2-BIO	Special habitats must be avoided and protected to the greatest extent possible while developing the southern transmission.	Potential impacts to biological resources were considered in sections 3.8 and 4.8 (Biological Resources) of the Draft EIS. It is the policy and goals of both lead agencies, the BLM and Western, to avoid sensitive areas to the extent practicable. Project design features outlined in table 2-7 of the Draft EIS (now table 2-8 in the EIS) were developed to assist in routing and Project design to avoid special habitats whenever practicable.
444	71	71.1	U.S. Fish and Wildlife Service	Nicholopoulos	2-BIO	Table 3.8-7. Federal Endangered Species Act Species by Route Group, Chapter 3, page 316. Cactus Ferruginous Pygmy-Owl is listed as Endangered in this section; however, the species was de-listed because it was found to be not warranted, "Additionally, using the currently accepted taxonomic classification of the pygmy-owl (Glaucidium brasilianum cactorum), we find that listing the pygmy-owl is not warranted at this time throughout all or a significant portion of its range, including the petitioned and other potential DPS configurations" (Federal Register, Vol 76, No. 193, p. 61856, October 5, 2011).	Sections 3.8 and 4.8 of the EIS have been revised to include additional clarification for species delisted under the ESA.
445	71	71.2	U.S. Fish and Wildlife Service	Nicholopoulos	2-BIO	Comment 2. Table 3.8-10 New Mexico Wildlife Conservation Act Species by Route Group, Chapter 3, Page 321. The Bendire's Thrasher is one the Service's highest-priority non-ESA-listed bird conservation targets and is listed on the Service's list of Birds of Conservation concern. Bendire's Thrasher has also recently become of high interest to the New Mexico Department of Game and Fish, but their list of Species of Greatest Conservation Need has not yet been updated. This species is found in the Southline Transmission Line project area; potential impacts to that species and its habitats should be addressed in the document.	Sections 3.8 and 4.8 of the EIS have been revised to include information on the Bendire's thrasher.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
446	71	71.3	U.S. Fish and Wildlife Service	Nicholopoulos	2-BIO	Rare Plants. Consideration for the rare plant, Tumamoc globeberry (Tumamoca macdougalii), should be given during this project. Although no longer listed as an endangered species under the ESA, the plant is quite rare, appears to be declining, and is listed as sensitive by both the BLM and U.S. Forest Service. The species is also protected under the Arizona Native Plant Law as a salvage-restricted plant. In the past decade, the numbers of individuals in monitored populations have declined. For example, there were I 78 plants recorded at Tumamoc Hill in I985; in 2013, only 9 individuals remained. The preferred alternative would involve placing tower sites within this population already known to be in decline and in danger of local extinction. The preferred alternative would have one tower being placed approximately ten meters from a monitored plant.	Chapter 2 (see table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional considerations for Tumamoc globeberry. The Agency Preferred Alternative was identified in part to avoid impacts on Tumamoc Hill and the long-term monitoring plots by moving the preferred alignment to the west of Tumamoc Hill on segment TH1a (see section 2.7), which would run along Starr Pass Boulevard and Greasewood Road rather than crossing Tumamoc Hill in the existing Western ROW. BLM and Western will work with the species' experts to develop the surveys for this plant, and utilize previously collected location data. If the species is found within the ROW during preconstruction surveys, individual plants would be avoided.
447	71	71.4	U.S. Fish and Wildlife Service	Nicholopoulos	2-BIO	Therefore, we recommend an alternative route be taken away from Tumamoc Hill (e.g. THI A, THI B, or THI C), though other routes may also go through appropriate Tumamoc globeberry habitat. We also recommend surveys be conducted for the plant in suitable habitat to ensure the protection of these plants. Should it not be possible to avoid the Tumamoc Hill alternative, ensure great care be taken during pole placement to avoid plants at this location. We are in touch with a group of volunteer scientists who monitor the population yearly during fruiting when plants are most easily located. This group plan to survey and monitor throughout the Tumamoc Hill corridor in August of 20 I4. We would be happy to assist you in contacting them. It is important to preserve existing populations of this species to prevent further decline and avoid the need to re-list this species under the ESA to ensure adequate protection for the conservation of this species.	Thank you for the offer of assistance. If the species is found within the ROW during preconstruction surveys, individual plants would be avoided. The Agency Preferred Alternative was identified, in part to avoid impacts on Tumamoc Hill and the long-term monitoring plots by moving the preferred alignment to the west of Tumamoc Hill on segment TH1a (see section 2.7), which would run along Starr Pass Boulevard and Greasewood Road, rather than crossing Tumamoc Hill in the existing Western ROW. Further, the BLM and Western would work with the species' experts to determine locations of known plants and to craft effective surveys, and the Project would avoid all known locations to protect the rare plant.
448	71	71.5	U.S. Fish and Wildlife Service	Nicholopoulos	2-BIO	Sandhill Crane. As previously stated in out June 4, 20 I2, scoping comments, we are concerned about the effects to sandhill cranes from locating the powerline along the east edge of the Willcox Playa. The Draft EIS states there will be collisions and likely mortality, and we agree. Therefore, we recommend an alternative route be located farther east of the Willcox Playa. While collisions may not be eliminated, we believe they would occur less often than the proposed location. We are currently coordinating with the BLM, WAPA, and Arizona Game and Fish Department in exploring alternative locations. If alternative locations to the east are feasible, we offer our assistance in determining specific locations and coordinating with the applicant.	The potential impacts of the proposed transmission line on wildlife, along with a description of mitigation measures and other measures proposed to reduce potential impacts, were analyzed in section 4.8 of the Draft EIS. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative.
535	78	78.8	Coalition For Sonoran Desert Protection	Campbell	2-BIO	In the arid Sonoran Desert, "direct ground disturbance" can cause irreparable harm to Sonoran Desert flora and fauna. It can take decades for vegetation to re-establish itself if active restoration isn't completed. An increase in "ambient noise levels" can also negatively impact local wildlife and their ability to forage, rest, and mate in their habitat, especially for smaller wildlife species with small home ranges. Increased access and use of CLS lands through new access roads and by OHV and other users can have a variety of negative impacts to these lands.	The potential impact of the proposed transmission line on vegetation and wildlife was addressed in sections 3.8 and 4.8 of the Draft EIS. Additionally, the potential impacts to land use and in terms of changing access were addressed in sections 3.7 and 4.7 of the Draft EIS.
536	78	78.9	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Pima County guidelines clearly state that all impacts to CLS lands should be mitigated. This includes mitigating for impacts to Important Riparian Areas, Biological Core Management Areas, Special Species Management Areas, and Multiple Use Management Areas at a prescribed ratio consistent with their biological importance. The DEIS should be revised to include adequate mitigation for all impacts to Pima County's CLS lands. The DEIS directly quotes the mitigation policies for the CLS, as outlined in Pima County's Comprehensive Land Use Plan. These mitigation policies should be adhered to in full for the Southline Transmission Line Project to satisfactorily mitigate for all impacts to the CLS.	Chapter 2 (see table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional clarification for mitigation for Pima County Conservation Lands. However, the area to be crossed is in an existing ROW for an existing Western line and the additional impacts from the upgrade of the existing transmission line would occur within that ROW and disturbance area. Little disturbance outside the ROW would be expected to occur in CLS areas. Any additional ROW, if acquired, would be for protective clearance from development at the edge of the ROW and to ensure safe clearance for conductors. If during Project design it is determined that Project facilities would have impacts outside of the existing ROW, compensation for those additional impacts would be considered.
537	78	78.10	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Analysis of Impacts to Arizona's Wildlife Linkages Habitat fragmentation and loss are currently recognized as the principal threats to biological diversity. Any actions that result in fragmentation would have a significant impact on biological resources. While the BLM acknowledges these facts by incorporating statements into the DEIS, it does not adequately assess potential impacts caused by habitat fragmentation or impacts to wildlife linkages and movements as a result of this project. The Southline Transmission Line Project has the potential to significantly impact the movement of some wildlife species. We appreciate that the BLM included information about designated wildlife linkages within the vicinity of the analysis area. However, further analysis of potential impacts to these areas and to the various species that may utilize them is necessary. Also, as noted on p. 311 of the DEIS, other natural topographical features have been identified as animal movement corridors, although not all of these have been analyzed and modeled in linkage assessments. In order to better evaluate potential effects from this project, the BLM should also address possible impacts to these non-designated corridors and how these could affect wildlife movement.	Potential impacts to wildlife corridors were addressed in section 4.8 of the Draft EIS. As described in section 4.8 of the Draft EIS, impacts would be minimized through: spanning ephemeral drainages and riparian areas; revegetating temporary disturbance areas; and monitoring and rectifying erosion and invasive species issues if they arise.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
538	78	78.11	Coalition For Sonoran Desert Protection	Campbell	2-BIO	As shown in Table 3.8-6, nine movement corridors occur within the analysis area, which are used by a variety of focal species. These areas may also be important for a number of other non-focal species that are not shown in the table. In its assessment of potential impacts to these corridors, however, the BLM only provides very general information, including the expected acreage to be affected within each linkage and the broad statement that impacts "would include habitat loss, degradation, and fragmentation as well as increased OHV access due to the presence of access roads" as well as "potential barriers to movement along the corridor" (p. 746). Such a broad summary does not provide adequate information on how species' movements could be affected by this project. Further information and analysis is needed on how each area will be affected and on how the various species that use these corridors could be impacted.	Sections 3.8 and 4.8 have been revised based on this comment. As described in section 4.8 of the Draft EIS, impacts would be minimized through: spanning ephemeral drainages and riparian areas; revegetating temporary disturbance areas; and monitoring and rectifying erosion and invasive species issues if they arise.
539	78	78.12	Coalition For Sonoran Desert Protection	Campbell	2-BIO	In the DEIS, the BLM repeatedly states that impacts for each of the routes and alternatives would be as described for the potential cougar corridor in route group 1 (as shown on p. 746). This is misleading and could seriously downplay potential impacts to some species, especially considering that the various species that use these corridors would be affected differently within each area.1 For example, as noted in the DEIS, wide-ranging and generalist species, such as mountain lions, may experience minimal movement restriction within the corridors as a result of this project. However, the BLM does not address the fact that species with very specific habitat requirements, limited movement ability, inability/unwillingness to cross open or disturbed spaces, etc., may experience significant movement restrictions. Depending on what parts of the corridors are affected – and to what degree the habitat is changed – the modified areas may no longer serve as functional corridors for some species. The BLM needs to further analyze potential impacts on corridor usage by a diversity of species as a result of this project. Footnote: 1 Andrén, H. 1994. Effects of habitat fragmentation on birds and mammals in landscapes with different proportions of suitable habitat: a review. Oikos 71:355–366.	Thank you for providing this information and these references. Sections 3.8 and 4.8 of the EIS have been revised based on this comment. As described in section 4.8 of the Draft EIS, construction, operation and maintenance of the proposed transmission line and the associated access roads would create temporary impacts associated with the presence of workers and equipment that may cause species to avoid using work areas during construction activities.
540	78	78.13	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Similarly, the BLM must more thoroughly assess cumulative impacts to wildlife species as a result of changes to movement corridors. As climate change, drought, human development, and other factors alter habitat availability, quality, and range, the ability for species to move is becoming increasingly important. As the DEIS indicates, numerous past, present, and reasonably foreseeable actions could affect both available habitat and movement ability. Cumulatively, these projects will result in major, adverse, long-term impacts that will continue to fragment habitat and create barriers to species movement, access to resources, and genetic interchange (p. 1092–1093). Movement corridors may cease to be functional for some species, resulting in population-level – perhaps even species-level – impacts. This is a significant impact that must be more thoroughly analyzed.	Section 4.21.4 of the EIS, which discusses the potential cumulative impacts to biological resources, has been revised based on this comment.
541	78	78.14	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Lastly, in the interest of using the best available science, we encourage the BLM to review and incorporate information from the Pima County Wildlife Connectivity Assessment, funded by Pima County's Regional Transportation Authority and completed by the Arizona Game and Fish Department in 20122. This assessment resulted from a multi-year process involving a large group of community stakeholders and scientists and provides a more detailed analysis of wildlife linkages in Pima County, including areas where the Southline Transmission Line Project will have impacts. Footnote: 2 The Pima County Wildlife Connectivity Assessment can be found at: http://www.azgfd.gov/w_c/conn_Pima.shtml	Thank you for your comment. Sections 3.8 and 4.8 of the Draft EIS used information from the Pima County Wildlife Connectivity Assessment (see AGFD (2012b) in chapter 6).
542	78	78.15	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Mitigation for Impacts to Arizona's Wildlife Linkages The proposed Southline Transmission Project has numerous potential impacts to Pima County's and southern Arizona's wildlife linkages. The protection of wildlife linkages is a core focus of the Sonoran Desert Conservation Plan and the Coalition for Sonoran Desert Protection. Significant local resources, including millions of dollars of open space purchases and infrastructure investments, have been spent on protecting Sonoran Desert wildlife linkages in recent years. The DEIS falls short in not requiring any significant mitigation for these impacts.	Proposed Project design features in the Draft EIS for the rebuild of the existing line with existing access roads include measures to limit weed introduction and spread, minimize impacts to washes, riparian corridors, and other species' movement areas, limit spans to approximately 1,200 feet, reclaim disturbed areas, avoid removal of riparian vegetation except when needed to maintain safety standards for line clearance, and exclude roads from riparian areas. These features were described in table 2-7 (now table 2-8 in the Final EIS) and section 4.8-2 of the Draft EIS.
543	78	78.16	Coalition For Sonoran Desert Protection	Campbell	2-BIO	Generally speaking, a new or upgraded transmission line, new or improved access roads, and increased vehicle traffic and associated maintenance activities will fragment wildlife habitat and potentially sever wildlife linkages and migration corridors. New access roads associated with the transmission line could facilitate the introduction and spread of invasive species as well as unauthorized motorized activity and associated disturbances that could impair the functionality of wildlife linkages.	The potential risk of invasive species and mitigation for these species were covered in sections 3.8 and 4.8 of the Draft EIS. However, sections 3.8 and 3.8 of the EIS have been revised to clarify the types of potential impacts that would result from upgrading or building a new transmission line. Proposed project design features in the Draft EIS include measures to limit weed introduction and spread, minimize impacts to washes, riparian corridors, and other species' movement areas, limit spans to approximately 1,200 feet, reclaim disturbed areas, avoid removal of riparian vegetation except when needed to maintain safety standards for line clearance, and exclude roads from riparian areas. These features were described in table 2-7 (now table 2-8 in the Final EIS) and section 4.8-2 of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
544	78	78.17	Coalition For Sonoran Desert Protection	Campbell	2-BIO	In the list of "Additional Mitigation Measures" on p. 809-810 of the DEIS, there are no mitigation measures that address restoration of ground disturbances. Most of the mitigation measures describe measures for pre-construction and construction activities, but almost none of them address the post-construction timeframe. We recommend the inclusion of additional mitigation measures that require active restoration of ground-clearance/disturbance activities with a plant palette reflective of the local ecosystem.	All Project design features and mitigation measures are now outlined in chapter 2 of the EIS (see section 2.4.6 and table 2-8). The Draft EIS included this information previously in table 2-7. Additional text has been added to section 2.4.3 (see "Reclamation Plan") and to section 4.8 in the EIS regarding operational mitigation measures and to indicate that plant palettes for the revegetation efforts would be specific to the local ecosystem.
547	78	78.20	Coalition For Sonoran Desert Protection	Campbell	2-BIO	While we recognize the need for improved transmission lines as we increase our use of renewable energy and upgrade our energy infrastructure, we cannot support a project that does not adequately mitigate for its impacts to such a highly sensitive and threatened ecosystem such as the Sonoran Desert. The present-day realities of climate change only increase the pressure to preserve and protect the Sonoran Desert, one of the most seriously threatened ecosystems with the greatest projected impacts from climate change.	Chapter 2 (see section 2.4.6 and table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional mitigation considerations.
696	82	82.115	SunZia	Wray	2-BIO	No information on biology of individual species is presented without access to supplementary reports. Appendix E only presents basic information on Endangered Species Act listed species. Without such information, including the potential response of any species to exposure from the impacts of the Southline Project, conclusions regarding the specific (e.g., behavioral response of individuals) or general (e.g., contribution of the Southline Project's effects to overall population trends) impacts of the Southline Project are unsupported.	The Draft EIS considered species and provided basic information for those species. Material in appendix E of the Draft EIS cited other additional information sources about species impacted. This information was considered in preparation of the Draft EIS. Overall impacts were described in section 4.8 of the Draft EIS.
697	82	82.116	SunZia	Wray	2-BIO	No general discussion of a number of potential Southline Project impacts is presented. Transmission lines can have offsite direct and indirect impacts to species susceptible to predation or those that display a negative response to vertical structures or human activity. In those cases, acres of ground disturbance may not adequately reflect the total area of impact.	Relevant portions of section 4.8 of the Draft EIS addressed the potential impacts of predation and human activity (i.e., noise), as well as introduction of transmission line towers.
698	82	82.117	SunZia	Wray	2-BIO	Additional potential impacts not discussed in detail include erosion, sedimentation, and the potential for blasting that will likely disturb sensitive wildlife, such as roosting bats. We request that this deficiency be corrected.	Relevant portions of section 4.8 of the EIS have been modified to address the potential impacts of erosion, sedimentation, and impacts from blasting.
699	82	82.118	SunZia	Wray	2-BIO	The statements regarding the amount of habitat present in the analysis area do not support the conclusions drawn, or they are not stated clearly. Is the intent to state that the loss of habitat in the analysis area will not result in a detectable population change in the analysis area? If so, there is no information about the proportion of the analysis area that could also support each species. If the intent is to make a statement about potential changes in regional populations, the phrasing is unclear and no information is presented on the status of regional populations or the extent of their habitat for any species. Please clarify.	Section 4.8 of the EIS has been revised for clarification.
700	82	82.119	SunZia	Wray	2-BIO	The Big Burro Mountains to Cedar Mountains Potential Cougar Corridor is only discussed in the context of providing habitat, presumably for resident Mountain Lions, and the statements of the potential impacts of the Southline Project (e.g., total acres affected out of total acres in the Corridor) reflect that approach. However, if the intent is to define a movement corridor connecting two blocks of habitat, then the entire corridor is crossed by the Southline Project. To support a conclusion that the Southline Project would have a low impact on the corridor, a discussion of the species' response to project-related actions is required.	Sections 3.8 and 4.8 of the EIS have been revised to clarify impacts to the Big Burro Mountains to Cedar Mountains Potential Cougar Corridor.
701	82	82.120	SunZia	Wray	2-BIO	Table 4.8-21 identifies the Colorado River Toad and Sonoran Green Toad as the same species. They are separate species. This is stated correctly in Table 3.8-8. Please correct by clarifying that these are different species, and identifying the impacts of the Southline Project on each	Section 4.8 of the EIS has been revised and the analysis updated.
702	82	82.121	SunZia	Wray	2-BIO	No information is presented in the form of relative intensity of impacts among alternatives, restricting the comparison of alternatives to one of merely comparing acreage affected. Please also evaluate relative intensity among alternatives	Section 4.8 of the Draft EIS used acreage/area as a surrogate for relative intensities with distinctions provided for the differences between impacts from the New Build and Upgrade sections.
704	82	82.123	SunZia	Wray	2-BIO	The Wildlife section provides acres of impact by vegetation type, but does not identify the locations of that vegetation or connect vegetation to wildlife likely to be present.	Vegetation types addressed in the wildlife section (section 3.8) of the Draft EIS were depicted in figures 3.8-2 and 3.8-3 of the Draft EIS. The scale of these figures has been updated in the Final EIS to allow for a more detailed representation of the existing vegetation types (see figures 3.8-2a–f and figures 3.8-3a–d).
768	83	83.1	Audubon Arizona	Supplee	2-BIO	Audubon Arizona is the state office of the National Audubon Society and as such we respectfully submit the following comments concerning the Draft Environmental Impact Statement (DEIS) for the Southline interstate transmission line. Audubon has specific expertise and knowledge about birds, bird habitats and bird related recreation and economic values, therefore we are limiting our comments primarily to those topics.	Thank you for your comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
769	83	83.2	Audubon Arizona	Supplee	2-BIO	Our specific concern is the new build segment between Hidalgo and Apache sub-stations near Willcox Playa. Audubon Arizona believes the proponent alternative identified as E, F,Ga, Gb, Gc, I, and J segments will reduce the potential of bird strikes significantly. Sandhill crane flight patterns to and from the Playa and also the APECO ash pond are predominately to the south and east. Routing the Southline to the south side of the Playa will likely increase the potential for cranes striking the lines. Birds do fly north-northwest to farm fields in the Bonita area, but not in the same numbers.	Based on feedback by the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative. The potential impacts of the proposed transmission line on wildlife were described in section 4.8 of the Draft EIS. Additionally, APLIC guidelines would be adhered to for minimizing collisions and developing an Avian Protection Plan.
770	83	83.3	Audubon Arizona	Supplee	2-BIO	We offer some observations about and suggestions for bird strike mitigation later in this letter.	Thank you for your comment and sharing information with the lead agencies.
771	83	83.4	Audubon Arizona	Supplee	2-BIO	Willcox Playa/Cochise Lakes Important Bird Area (IBA). This IBA was identified as a Global Important Bird Area in October, 2011 and encompasses the 74 square mile, 47,343 acre Willcox Playa, a broad alkaline lakebed fringed with semi-desert grassland (primarily saltgrass and sacaton) and mesquite. Further details and maps for this IBA are located at http://aziba.org/?page_id=712.The playa is seasonally flooded to a shallow depth. Outlying this playa are the satellite lakes/wetlands of Cochise Lakes (or aka Lake Cochise), alkali flats, and Willcox Playa Wildlife Area containing Crane Lake. The Playa itself is administered by the Department of Defense and the U.S. Army Corps of Engineers. It is not managed in anyway, and is posted no trespassing. On the upper east side of the playa is the Arizona Game and Fish Department managed Willcox Playa Wildlife Area, consisting of 555 acres. There are ten “pot hole” ponds, and one 30-acre impoundment at the Wildlife Area.	Thank you for providing this information. Important Bird Areas were considered in sections 3.8 and 4.8 of the Draft EIS. Detail has been added to section 3.8 of the EIS regarding Willcox Playa/Cochise Lakes.
772	83	83.5	Audubon Arizona	Supplee	2-BIO	The significant avian values are over-wintering Sandhill Cranes and migratory and wintering shorebirds, waterfowl, and waterbirds. The Wildlife Area (Crane Lake), and Cochise Lakes are important sites for roosting, resting, and feeding. Sandhill Cranes depend heavily on the surrounding agricultural lands of the broader Sulphur Springs and Bonita	Habitat for and potential impacts to Sandhill cranes, migratory and wandering shore birds, waterfowl, and waterbirds were considered in sections 3.8 and 4.8 of the Draft EIS. Based on feedback by the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative.
773	83	83.6	Audubon Arizona	Supplee	2-BIO	Valleys for feeding, particularly in fields of waste corn. The site is important to special status avian species such as Swainson’s hawk, scaled quail, chestnut-collared longspur and Cassin’s sparrow. It supports significant concentrations of shorebirds (>100) and cranes (>2000). Willcox Playa and environs supports the second largest over-wintering concentration of Sandhill Cranes (Grus canadensis) in Arizona, typically 4,000 to 9,000 birds (White Water Draw Wildlife Area to the south over-winters 10,000 to 22,000 cranes). There are occasional years when crane numbers spike when a large number of birds (>13,000) from White Water Draw switch to roosting in this area (using either the Playa or Crane Lake).Most significantly both in spring and late summer shorebirds can stop-over in very substantial numbers (400-800 individuals at Cochise Lakes). These in-migration shorebird species using the include: Wilson’s Phalarope (April, May, July, Aug., Sept.), Willet (April), Least Sandpiper (April, Aug., Sept.), Western Sandpiper (April, Aug., Sept.), Long-billed Dowitcher (May, Sept.), Black- necked Stilt (July, Aug., Sept.), and American Avocet (July, Aug., Sept.), plus lesser numbers of other shorebird species (Killdeer, Marbled Godwit, Spotted Sandpiper, Solitary Sandpiper, Greater Yellowlegs, Long-billed Curlew, Baird’s Sandpiper, Pectoral Sandpiper, Stilt Sandpiper, and Red-necked Phalarope). Small numbers of some shorebirds occasionally breed within the IBA, including American Avocet and rarely Snowy Plover (Audubon WatchList 2007-Yellow, AZGFD Species of Greatest Conservation Need 2006).	Habitat for and potential impacts to Sandhill cranes, migratory and wandering shore birds, waterfowl, and waterbirds were considered in sections 3.8 and 4.8 of the Draft EIS. In particular, see table 3.8-11 for a list of all species considered. Based on feedback by the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative.
774	83	83.7	Audubon Arizona	Supplee	2-BIO	Ducks over-winter on the lakes in large flocks, primarily composed of American Wigeon, Northern Shoveler, Ruddy Duck, Lesser Scaup, Ring-necked Duck, Cinnamon Teal and Green- winged Teal. In rare very wet winters, waterfowl in huge numbers (>15,000, half or which are Green-winged Teal) come to feed and rest within the Playa.	Habitat for and potential impacts to ducks were considered in sections 3.8 and 4.8 of the Draft EIS. In particular, table 3.8-11 of the Draft EIS includes a list of all species considered.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
775	83	83.8	Audubon Arizona	Supplee	2-BIO	In a 2005 USDA Forest Service Technical Report, Manville said that collisions with power transmission and distribution lines are estimated to kill as many as 175 million birds annually, and an additional tens to hundreds of thousands more birds are electrocuted. The difficulty with quantifying the impact of these utilities is that due to great expanse of area they cover they are poorly monitored for both strikes and electrocutions (Manville 2005). In the San Luis Valley of Colorado, collisions with transmission lines were one of the contributing mortality factors to the experimental whooping cranes population. On certain sections of transmission lines in the San Luis Valley where wetlands and agricultural foods are bisected by transmission lines, Sandhill Crane collision events have been as high as 75 birds a night (Mark Smith pers. comm.). A 2000 report completed for Idaho Hells Canyon transmission line complex summarized the following factors contributing to the susceptibility of a bird species to collision and the risks associated with a transmission line (Bevanger 1994). (1) biological, (2) topographical, (3) meteorological, and (4) technical aspects. Biological aspects to consider include bird vision, flight abilities, flight speed, activity patterns, and behavior during displays, hunting, or landing. Topographical factors to consider include the transmission line height and alignment in relation to the surrounding terrain. Bird flight lanes often concentrate in low spots in the landscape, e.g., river drainages. Lines that run perpendicular to these areas are more apt to be hit by birds. Line siting in the Sulphur Springs Valley segment of Arizona should consider these factors and obtain information about the major Sandhill crane and avian flight corridors north to south across Interstate 10 between the Willcox Playa and Bonita valley to the north and south and south west from Wilcox Playa to farm fields in Kansas Settlement. The ideal mitigation in high risk areas for bird strike is to bury the line. Research at diverse locations reveals that Sandhill crane collisions with power lines are most prevalent for birds moving to and from feeding and roosting locations. An inferior solution to buried lines is installation of avian collision averters as recommended by Murphy, etal. 2009.	Thank you for providing this information. Based on feedback by the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included as a part of the Agency Preferred Alternative. Mitigation measures proposed, including use of avian flight diverters, were included in table 2-7 (now table 2-8 in the EIS) and section 4.8 of the Draft EIS. Sections 3.8 and 4.8 of the EIS have been revised to include information from the report cited.
776	83	83.9	Audubon Arizona	Supplee	2-BIO	Riparian Areas. We appreciate the use of an existing power line corridor in the vicinity of the San Pedro River valley. Audubon Arizona favors the Proponent preferred and agency proposes routing. The proponent alternative route H would also be acceptable as it parallels existing disturbances. Design of the transmission lines at the San Pedro River crossing should be such that removal of riparian trees is minimal and avoid the trimming (topping) or cutting down of riparian vegetation. It is not clear in the DEIS if the height of the lines over riparian area crossings is sufficient to eliminate the need to clear or top trees underneath. We would extend this recommendation to other riparian corridor crossing locations such as the Santa Cruz River.	The BLM and Western share the commenter's concerns about riparian crossings, and have proposed using existing crossings in part because of those concerns. As described in chapter 2 and section 4.8 of the Draft EIS, riparian areas would be spanned and vegetation would not be topped unless necessary to avoid potential safety issues and meet clearance requirements.
777	83	83.10	Audubon Arizona	Supplee	2-BIO	The Arizona Partners in Flight Bird Conservation Plan states, "Riparian woodlands comprise a very limited geographical area that is entirely disproportionate to their landscape importance, recreational value, and immense biological interest (Lowe and Brown 1973). It has been estimated that only 1% of the western United States historically constituted this habitat type, and that 95% of the historic total has been altered or destroyed in the past 100 years (Krueper 1993, 1996)… Riparian woodlands are among the most severely threatened habitats within Arizona…. Maintenance of existing patches of this habitat, and restoration of mature riparian deciduous forests should be among the top conservation priorities in the state". http://www.azgfd.gov/pdfs/w_c/partners_flight/APIF%20Conservation%20Plan.1999.Final.pdf	The BLM and Western share the commenter's concerns about riparian crossings, and have proposed using existing crossings in part because of those concerns (see chapter 2 of the Draft EIS). In addition, to minimize impacts on riparian woodlands, these areas would be spanned and vegetation removal limited to the minimum amount necessary to avoid potential safety issues and meet clearance requirements. Sections 3.8 and 4.8 of the EIS have been revised to include information from the report cited.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
778	83	83.11	Audubon Arizona	Supplee	2-BIO	The San Pedro River is a unique and extremely important biological asset in the arid southwest. As one of the few undammed and flowing rivers the San Pedro functions as a vital corridor and refugia habitat for a wide diversity of plants and animals and exhibits a remarkably intact riparian system including extensive stands of Fremont cottonwood (Populus fremontii), Goodding's willow (Salix goodingii) gallery forest and large mesquite (Prosopis velutina) bosques. Duncan and Slagle (2004) describe the San Pedro River as one of the most significant perennial undammed desert rivers in the United States. Species that are listed or proposed for listing under the Endangered Species Act are represented in sustainable numbers within this corridor. The National Audubon Society has recognized the San Pedro River corridor as a globally Important Bird Area (IBA). The values that earn this recognition include some of the highest nesting densities of riparian obligate birds in the western United States and a critically important fall and spring migration corridor for thousands of neotropical migrants. Further information about the two San Pedro River Important Bird Areas is available at http://aziba.org/?page_id=461 and http://aziba.org/?page_id=539 IBA designation is particularly relevant to protecting critical habitat utilized by birds during some part of their life cycle (breeding, feeding, nesting, and migrating) as well as conserving the general biodiversity of wildlife species. Over 100 species of breeding birds and another approximately 250 species of migrant and wintering birds occur in the area, representing roughly half the number of known breeding species in North America. The San Pedro River serves as a migratory corridor for an estimated 4 million migrating birds each year. Notably, 36 species of raptors, including the gray hawk (Asturina nititda = Buteo nitidus), Mississippi kite (Ictinia mississippiensis), common black hawk (Buteogallus anthracinus), and zone-tailed hawk (Buteo albonotatus) can be found within the San Pedro River watershed. Regarding the gray hawk, the San Pedro is thought to support more than 40 percent of the nesting gray hawks in the United States. Land birds occurring in significant numbers/density and/or diversity include Bell's vireo (Vireo bellii), Lucy's warbler (Vermivora luciae), and Yellow warbler (Setophaga petechial = Dendroica petechial).	Thank you for providing this information. The BLM and Western share the commenter's concerns about crossing the San Pedro River and have proposed using existing crossings in part because of those concerns (see chapter 2 of the Draft EIS). In addition to minimizing impacts on the San Pedro River, it would be spanned and vegetation removal limited to the minimum amount necessary to avoid potential safety issues and meet clearance requirements. The biological importance of the San Pedro River and the potential impacts to habitat associated with the river were addressed in sections 3.8 and 4.8 of the Draft EIS.
780	83	83.13	Audubon Arizona	Supplee	2-BIO	We applaud the proponent and BLM for considering the issue of introducing invasive plant species. Of particular concern is introduction of invasive plant species including but not limited to African buffelgrass (Pennisetum ciliaris), blue panic (Panicum antidotale, a Federal Noxious Weed), bermuda grass (Cynodon dactylon), Sahara mustard (Brassica tournefortii), and another African grass, Lehman's Lovegrass (Eragrostis lehmanniana). The highest risk of invasive species spread is by being carried on vehicles and equipment during construction and also during post- construction maintenance.	The BLM and Western share your concerns about invasive plant species and have proposed mitigation measures shown in table 2-7 (now table 2-8 in the EIS) and in section 4.8 of the Draft EIS to minimize the establishment and spread of noxious and invasive weed species. Thank you for your comment.
783	84	84.3		Kestler	2-BIO	If at all possible find ways to reduce likelihood of birds flying into the lines. I'm told there are sound frequencies that will minimize birds touching the live power lines.	As stated in chapter 2 and section 3.8 in the Draft EIS, an Avian Protection Plan would be a Project-tailored plan designed to reduce collision mortality that results from avian interactions with electric utility facilities. Section 3.8 of the EIS has been revised for clarification.
790	86	86.2	New Mexico Department of Game and Fish	Wunder	2-BIO	In general, the DEIS is difficult to read and distinguish between alternatives, local alternatives, routes and subroutes. On pages xxiii of the Executive Summary, it states that specific reasonable mitigation measures to reduce adverse effects to wildlife and habitats "could" be implemented. However, later chapters seem to suggest these mitigation activities will occur. The final EIS should definitely state that these reasonable mitigation measures will be implemented by the project proponent.	Tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) included a comparison of potential impacts by alternatives. Maps throughout the Draft EIS included color coding indicating alternative type (local, proponent, etc.). Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation.
791	86	86.3	New Mexico Department of Game and Fish	Wunder	2-BIO	Chapter 4 Environmental Consequences does not seem to correctly identify and quantify that Route Group 1, Subroute 1.2 (southernmost route) would impact significantly more Crane Migration Corridors and Wintering Areas (as identified by NMDGF), Bird Habitat Conservation Areas (as identified by the multi-agency Inter-Mountain Joint Venture), and undeveloped habitat.	Section 4.8 of the EIS has been revised to clarify impacts to Crane Migration Corridors and Wintering Areas, Bird Habitation Conservation Areas, and undeveloped habitat along subroute 1.2.
792	86	86.4	New Mexico Department of Game and Fish	Wunder	2-BIO	We believe that construction of Subroute 1.2 would cause cumulative effects from new habitat disturbance, fragmentation and loss, and migratory bird mortality that would be significant when compared to the Agency Preferred Alternative (Subroute 1.1)	The lead agencies agree with the commenter, and this is one reason that subroute 1.2 was not identified as the Agency Preferred Alternative in the Draft EIS. Sections 4.8.1 and 4.8.2 of the Draft EIS discuss the potential direct and indirect (not cumulative) impacts to biological resources in terms of habitat disturbance, fragmentation and loss, and avian mortality. Section 4.21 of the Draft EIS discusses the potential cumulative effects of the proposed Project.
794	86	86.6	New Mexico Department of Game and Fish	Wunder	2-BIO	LD-2 avoids direct impact to the Lordsburg Playa, but would be situated between playa basins and would likely cause mortality to migratory birds flying between basins. If LD-2 is chosen for implementation, bird diverters should be installed on the transmission lines to decrease the potential for bird strikes.	As stated in chapter 2 and section 3.8 in the Draft EIS, an Avian Protection Plan would be a Project-tailored plan designed to reduce avian collision mortality that results from avian interactions with electric utility facilities. Bird diverters will be used for the final route selected, as described by APLIC (2006). LD2 is not included in the Agency Preferred Alternative in the Final EIS.
795	86	86.7	New Mexico Department of Game and Fish	Wunder	2-BIO	However, the Department believes that LD3-A would cause significantly less mortality to cranes and other migratory birds than installing bird diverters on LD-2 transmission lines.	Section 4.8 of the EIS has been revised based on this comment. LD3a is included in the Agency Preferred Alternative in the Final EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
13	7	7.1	Hopi Tribe	Kuwanwisiwma	3-CUL	We concurred that this proposal is likely to adversely affect numerous prehistoric cultural resources significant to the Hopi Tribe and stated that we can 't really determine effects until an alignment is determined, and that it seems the BLM is working for the proponent because the BLM's objective is to provide the proponent with the right-of-way grant.	As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). BLM's decisions to be made are outlined in table 1-1. No one can assess the impacts to historic properties (NRHP eligible or listed) until the final route is determined. A Programmatic Agreement (PA) is being developed since "… effects on historic properties cannot be fully determined prior to the approval of the undertaking" (36 CFR 800.14(b)(ii)). This PA provides the process by which BLM will identify, evaluate, and resolve adverse effects to historic properties and is being developed in consultation with many parties (see appendix L). Please note that is the BLM and Western's preference to first avoid impacts to cultural resources; avoidance is the first step in the BLM's regional mitigation hierarchy, as described in chapter 2.
14	7	7.2	Hopi Tribe	Kuwanwisiwma	3-CUL	We have now reviewed the DEIS/RMPA that states that only 7% of the analysis has been previously surveyed and 997 archaeological sites and or historic bui lt environmental resources have been previously recorded. Tumamoc Hill and Mount Graham are identified as resources of concern to tribes. We again note the scant cultural resource data, and that the cultural resources survey will not be conducted until after the Record of Decision has been made and an alternative is selected.	This information was stated and acknowledged in sections 3.9 and 4.9 and appendix L (the PA) of the Draft EIS. The regulations for the NHPA are clear that Class III inventory does not have to take place prior to the ROD and they specify that in such a case a PA be developed. The draft Southline PA requires a Class III inventory of the area of potential effects (36 CFR 800.14 (b)(ii)) (see appendix L). The discovery of a large or important historic property may result in rerouting of the Agency Preferred Alternative.
15	7	7.3	Hopi Tribe	Kuwanwisiwma	3-CUL	We understand the BLM is attempting to develop a Programmatic Agreement to address the 7% cultural resource identification. Therefore we reiterate our request for continuing consultation on this proposal incl uding being provided with copies of the cultural resources survey of the area of potential effect and any proposed treatment plans for review and comment.	This information was stated and acknowledged in sections 3.9 and 4.9 and appendix L (the Programmatic Agreement) of the Draft EIS.
46	15	15.14	BIA		3-CUL	Page 1129, line 13: Should include THPOs.	Section 5.5 in chapter 5 of the EIS has been revised to include tribal historic preservation offices (THPOs).
163	32	32.9	EPA	Jansky/Weeks	3-CUL	Cultural Resources. Chapter 4; section 4.9 and 4.10. The project as a whole has been determined to have adverse effects to cultural, archeological, and historical resources. Some of these impacts are directly to the resources in question, and others are visual impacts associated with these resources. Each route group has surveyed resources that will be affected, under evaluated resources where determinations of eligibility have yet to be completed, and large areas that have not been surveyed. Due to the projects size and clear potential for adverse effects to occur, a Programmatic Agreement (PA) for the proposed project is currently being developed to comply with 36 CFR 800.4(b)(2) and 800.14(b)(1)(ii). According to the DEIS, the PA is a legally binding document which will outline the process that will be followed to identify, evaluate, and mitigate historic properties that may be affected by the proposed project. Recommendation: The proposed project will have many direct and indirect adverse impacts to cultural, archeological, and historical resources. Include a finalized PA, signed by all the parties listed in the Draft PA, in the FEIS. Also include any correspondence between the signatories of the PA, such as, consultation with any Tribal Historic Preservation Officer (THPO), State Historic Preservation Officer (SHPO), and Federal or State agency	Chapter 5 of the EIS has been revised to include additional information regarding tribal consultation. The final PA is in the EIS (see appendix L) and must be finalized prior to a decision by the BLM or Western.
335	68	68.12	Pima County	Bernal/Connolly	3-CUL	survey, documentation and mitigation of impacts to archaeological and historic sites and other cultural resources;	The potential impact of the proposed transmission line on cultural resources, including archaeological and historic sites, was analyzed in section 4.9 of the Draft EIS. As discussed in section 4.9 of the Draft EIS, the Project-specific PA stipulates the areas of potential effects (APEs) for this Project and the "direct effects" APE would be inventoried at the Class III level (see appendix L of the EIS).
336	68	68.13	Pima County	Bernal/Connolly	3-CUL	exacerbation of impacts to Tumamoc Hill;	The proposed local alternatives were formulated by local stakeholders specifically to reduce potential impacts to biological and cultural resources. The potential impacts to Tumamoc Hill were described in the relevant sections of chapter 4 of the Draft EIS. Adverse effects to this historic property will then be assessed as stipulated in the executed PA. Pima County has actively participated as a Section 106 Consulting Party and is also an invited signatory to the PA. A draft PA was included as appendix L to the Draft EIS; a final PA is included in the Final EIS.
356	68	68.33	Pima County	Bernal/Connolly	3-CUL	An important concern for Pima County is to protect its designated Conservation Areas and other properties owned and managed for cultural resources preservation purposes, including several intersected by the proposed Southline Transmission Line alignment, such as Empirita Ranch (National Register Listed), Valencia Site (National Register Listed, and Tumamoc Hill (National Register Listed as an Archaeological District and as a National Historic Landmark). We have grave concerns about the potential for Adverse Effects on these resources, in particular Valencia Site and Tumamoc Hill, and we ask that the HPTP closely follow the requirements of Section 106, and NEPA, and address adverse effects to these important resources.	As described in section 4.9 of the Draft EIS, adverse effects to historic properties would be assessed as stipulated in the executed PA, which has been developed to comply with Section 106 of the NHPA. Pima County has actively participated as a Section 106 Consulting Party and is also an invited signatory to the PA. A draft PA was included as appendix L to the Draft EIS; a final PA is included in the Final EIS (see appendix L).

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
357	68	68.34	Pima County	Bernal/Connolly	3-CUL	Tumamoc Hill is threatened by the greatest potential threat from the Southline upgrade of the existing Western right of way. We have expressed these concerns consistently throughout the public review and Section 106 processes at many meetings. We continue to argue for the avoidance of Tumamoc Hill and we restate our preference that the transmission line be removed from the vicinity of Tumamoc Hill. We prefer the proposed Local Alternatives developed for Route Group 4, including TH3-OPTION and TH3B, which follow the existing utility corridor along the Santa Cruz River, well to the east of Tumamoc Hill, removing any potential adverse effect to Tumamoc Hill. The DEIS includes the Agency Preferred Alternative, which avoids Tumamoc Hill by using several subroute alternatives to pass by Tumamoc Hill on the west side, using Greasewood Road. While we appreciate the intent to avoid impacting the Hill, this alternative presents its own set of problems, including a right of way between 100-150 feet wide still needs to intersect the National Register-listed Tumamoc Hill, the problem of accessing each transmission line pole from the adjacent streets, the potential to adversely affect the historic fence surrounding Tumamoc Hill (a contributor to the National Register listing), and the significant potential for adverse visual effect because of proximity to Tumamoc Hill as well as the neighboring residential subdivisions in the area.	The comment accurately reflects the analysis of impacts to Tumamoc Hill throughout the Draft EIS. Local alternative segments TH3a and b, and TH3-Options A, B, and C, are alternatives considered in detail and are not located on Tumamoc Hill. Since the fence is a feature within the NHL and the National Register District, it will be fully considered in the efforts to avoid, minimize, and mitigate any adverse effects to the entire historic property, including the fence, which is a contributing element.
359	68	68.36	Pima County	Bernal/Connolly	3-CUL	p. xxv in Section 7.8, Lines 9-14: Lists impacted sites, including National Register-listed or eligible sites; Valencia Site, Empirita Ranch, Tumamoc Hill. Does not list important sites that are considered, but not determined, eligible, such as West Branch Site.	The West Branch site is considered appropriately in the Draft EIS. The executive summary of the Draft EIS includes only listed properties. This is appropriate, as the West Branch is not the only site that is clearly eligible, but has not been placed on the National Register. Listing all of these sites in the executive summary would not change anything in terms of analysis, and it would add unnecessary length to the summary.
362	68	68.39	Pima County	Bernal/Connolly	3-CUL	p. 44, Chapter 2, discussion of HPTP, lines 24-30: The discussion includes avoidance, minimization, and mitigation of impacts with reference to the HPTP, but there is no mention of cultural resources monitoring needed during construction, or a program of monitoring to assess long-term effects of the transmission line during its use life, or the need to monitor certain maintenance and repair activities that might occur during the transmission line use life, and any use, repair, or maintenance of access roads. There is no mention of the need to conduct cultural resources monitoring at the end of the transmission line use life during Decommissioning activities. All these listed activities have potential for Adverse Effects on cultural and historic resources.	As stated in chapter 2 of the Draft EIS, the HPTP would be developed pursuant to the PA, which Pima County is a party to. As discussed in the PA in appendix L of the Draft EIS, if decommissioning takes place in the future, it would be considered a separate undertaking when it occurs. Chapter 2 of the EIS has been revised to clarify this. Monitoring is built into much of the process as detailed in the draft PA (III.A.i.). A Monitoring and Discovery Plan will be included in the HPTP. The need for and utility of monitoring is addressed on a site by site basis, depending on the circumstances. Most maintenance and repair activities should not require monitoring, although some activities may warrant it. In the HPTP, there will be a list of operations and maintenance activities that will not require additional Section 106 review. Any other activities would warrant a review, and a requirement for monitoring may result. The operation of the transmission line should not cause long-term adverse effects to historic properties remaining in the APE. Historic properties that could be adversely affected by operations and maintenance would be mitigated during construction. A final PA is included in the Final EIS.
363	68	68.40	Pima County	Bernal/Connolly	3-CUL	p. 58, Table 2-3 compares the disturbances of various possible transmission pole types and construction methods, identifying the single-pole tabular steel pole to have the smallest footprint (on p. 58), but the point is that all poles and construction methods cause ground disturbances with a potential to impact cultural resources that should be taken into account.	The comment accurately reflects the analysis provided in chapter 4 of the Draft EIS.
365	68	68.42	Pima County	Bernal/Connolly	3-CUL	Table 2.7 Design Features for Environmental Protection by Resource; mentions that cultural resources survey reporting requirements will follow BLM Handbooks, but should also state that (in Arizona) reporting shall meet standards of ASM and AZ-SHPO. Same table does not indicate the HPTP will mitigate impacts from the Decommissioning at the end of the transmission line's use life. The effects on cultural resources from Decommissioning activities should be taken into account.	As stated in chapter 2 of the Draft EIS, the HPTP would be developed pursuant to the Section 106 PA and would include provisions for monitoring and discovery (see table 2-7 of the Draft EIS, now table 2-8 in the EIS). Pima County is a Section 106 Consulting Party and an Invited Signatory to the PA. Therefore, Pima County has been involved in the consultations for the Project and will continue to provide their feedback as the PA is executed and implemented. Reporting standards are detailed in the PA (Section VII) and include both Federal and State (NM and AZ) standards. As discussed in the PA in appendix L of the Draft EIS, if decommissioning takes place in the future, it would be considered a separate undertaking when it occurs.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
366	68	68.43	Pima County	Bernal/Connolly	3-CUL	p. 110, Chapter 2, 2.4.5 Decommissioning: There is no discussion of potential adverse effects of Decommissioning Activities and the need for cultural resources monitoring.	As discussed in the PA in appendix L of the Draft EIS, if decommissioning takes place in the future, it would be considered a separate undertaking when it occurs. 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. Chapter 2 has been revised in the EIS to include similar language. Monitoring is built into much of the process as detailed in the draft PA (III.A.i.). A Monitoring and Discovery Plan will be included in the HPTP. The need for and utility of monitoring is addressed on a site by site basis, depending on the circumstances. Most maintenance and repair activities should not require monitoring, although some activities may warrant it. In the HPTP, there will be a list of operations and maintenance activities that will not require additional Section 106 review. Any other activities would warrant a review, and a requirement for monitoring may result. The operation of the transmission line should not cause long-term adverse effects to historic properties remaining in the APE. Historic properties that could be adversely affected by operations and maintenance would be mitigated during construction. A final PA is included in the Final EIS.
372	68	68.49	Pima County	Bernal/Connolly	3-CUL	p. 336, Chapter 3, Section 3.9.5, Cultural Resources: The discussion of the Class I records search defines the visual effects corridor as 10 miles centered on the transmission line (p. 332, lines 1-5). The cultural resources analysis area for the upgrade section cites the "existing 500- foot" right of way corridor. The Western easement (1950) includes a legal description right of the alignment, but does not define a specific width or any dimension to the right of way, so this assumed dimension of 500 feet is an unsupported claim by Western that should be negotiated with land owners/managers whose lands are crossed by the transmission line before construction can take place.	Section 3.9.5 of the EIS has been revised to clarify that the existing ROW is 100 feet and the analysis area for the upgrade is 500 feet.
373	68	68.50	Pima County	Bernal/Connolly	3-CUL	The Class I Records Search Methods are described in this section; used City of Tucson records for list of National Register Properties and Districts. Did not use Pima County's up-to-date comprehensive list of National Register-listed Historic Properties and Districts.	Section 3.9 of the EIS has been revised to clarify that Pima County data were also used in the development of the analysis.
374	68	68.51	Pima County	Bernal/Connolly	3-CUL	Figure 3.9-1b depicts Archaeology Southwest's Cultural Resources Priority Areas in the upgrade section (southern Arizona). Pima County has useful cultural resources sensitivity mapping based on the Cultural Resources Element of the Sonoran Desert Conservation Plan that is based on expert knowledge and incorporates known associations of recorded sites with mapped environmental zones (Conservation Lands System) to develop predictive mapping of projected areas of cultural sensitivity in eastern Pima County. This sensitivity mapping is available to public access and GIS files can be shared on request. While limited to Pima County, the sensitivity mapping does cover a large portion of the Southline upgrade section and could contribute to refining the Class I inventory results.	Sections 3.9 and 4.9 have been revised in the EIS to include additional cultural resources sensitivity mapping provided by Pima County.
379	68	68.56	Pima County	Bernal/Connolly	3-CUL	p. 577, Chapter 4 Environmental Consequences: p. 813, Chapter 4.9 Cultural Resources, Section 4.9.2, lines 22-24, describe the Southline upgrade section right of way as 150 feet wide, but as mentioned, this is not a legally defined right of way and needs to be negotiated with land owners/managers. Direct effect analysis area determined to be 100 feet either side of the right of way, total 350 feet wide corridor.	As described in chapter 2 of the Draft EIS, the new 230-kV line would be built 50 feet away from the edge of the existing 100-foot ROW, parallel to the existing line. This would allow the existing line to remain in service until the new line is energized, at which point the existing line would be decommissioned and removed. The existing ROW would then be abandoned, except for a 25-foot-wide strip along the edge, which would become part of the new 150-foot ROW. ROW and land acquisition were described in chapter 2 of the Draft EIS as well.
381.1	68	68.57	Pima County	Bernal/Connolly	3-CUL	p. 814-815 Resource Forecasting. This discussion has better data for the upgrade section from survey, but contains an extended description that attempts to quantify the forecast of potential numbers of sites within the APE that seems needlessly complicated and drawn out. It uses formulae developed in other areas that may be appropriate, but again, this section is overly complicated and unnecessarily "scientistic."	Predictive modeling is a complicated mathematical and statistical exercise. It is necessary to explain this process in the EIS to support the results of the modeling. These results are the basis of the analysis, which is presented and explained in the EIS.
381.2	68	68.58	Pima County	Bernal/Connolly	3-CUL	No matter how well developed a mathematical formula is, its calculations and results are no better than the fundamental assumptions underlying the exercise. The description is valid for the DEIS, and does provide numbers that can be used for planning mitigation, etc., but it should be placed in a more realistic context to avoid the danger of estimated numbers of sites becoming conceptually realized and treated as if they are real entities, rather than well based guesses. The relative accuracy and reliability of such forecasting should be explained.	The purpose of the predictive modeling is to forecast the potential for historic properties, both in density and sensitivity, and is necessary for the NEPA analysis. Although the results of the model could be used for other purposes, such as planning for the Proponent, this is not how BLM will be using it. NEPA analysis necessarily relies on assumptions and predictions, but the Section 106 process does not. The Section 106 process requires that the agency official “take the steps necessary to identify historic properties within the area of potential effects” (36 CFR 800.4(b)). The only sites that will be considered through the Section 106 process will be actual sites located on the ground, within the area of potential effects. Section 3.9 of the Draft EIS was reviewed in light of this comment, and no changes to the text were found to be necessary for the EIS.
382	68	68.59	Pima County	Bernal/Connolly	3-CUL	p.817, lines 24-43, We appreciate this section's discussion of some of the flaws of the quantitative forecasting methods	Thank you for your comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
383	68	68.60	Pima County	Bernal/Connolly	3-CUL	p.818, lines 1-12, Archaeological Sensitivity: Using the scale of 1-5 seems to be a simpler, more direct method of making site estimates	Thank you for your comment.
384	68	68.61	Pima County	Bernal/Connolly	3-CUL	p. 850 Table 4.9-13 Route Group 4 Projects site numbers and site density, based on known sites (determined by previous survey) and should provide reliable measures of cultural resources impacts. Subroute 4.1 is shown to contain higher site numbers and site density; these are useful, if already known data.	The comment accurately reflects the analysis provided in section 4.9 of the Draft EIS.
385	68	68.62	Pima County	Bernal/Connolly	3-CUL	p. 853 Visual Analysis, also shows high resources numbers and density, so visual impacts should reflect this.	The comment accurately reflects the analysis provided in section 4.9 of the Draft EIS.
386	68	68.63	Pima County	Bernal/Connolly	3-CUL	p. 855, Direct impacts on cultural resources also determined this way and should give good estimates of effect.	The comment accurately reflects the analysis provided in section 4.9 of the Draft EIS.
387	68	68.64	Pima County	Bernal/Connolly	3-CUL	p. 861-862, Substations and Substation Expansions: on p. 862, line 3, Valencia Site is shown to be within the footprint of the Del Bac substation expansion. The HPTP should take this into account and address such impacts.	As stated in section 4.9 in the Draft EIS, measures to avoid, minimize, and/or mitigate any adverse effects on historic properties would be developed by BLM in consultation with the Section 106 consulting parties. As stated in chapter 2 of the Draft EIS, the HPTP would be prepared pursuant to the PA.
555	79	79.8	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	In addition, the Comparison of Alternatives discussion presented in Section 2.10 does not include some of the information on cultural resources that is presented in Chapters 3 and 4. The only information discussed in section 2.10 for each alternative was the number of known cultural resources, listed properties, trails, and the number of forecast cultural resources. The Comparison Summary, Table 2-11 provided numbers for estimated NRHP eligible resources and Impact Intensity but this information should have also been included in the discussion of each alternative to help inform on the best route with regards to cultural resources. Other information presented in Chapter 3, but not used in the Comparison of Alternatives, is the number of features digitized off of historic maps. As currently presented, Chapter 2 does not contain much information on the archaeological sensitivity analysis that is presented in Chapters 3 and 4 and we wonder why so much time was devoted to this complex analysis.	Tables 2-11, 2-12, 2-13, and 2-14 in chapter 2 of the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) have been revised to include more summary detail. Please note that chapter 2 is a description of the proposed Project and its alternatives, and the summary of impacts tables are necessarily brief. Chapter 3 describes the affected environment, and chapter 4 presents the analysis of the environmental consequences. Both chapters 3 and 4 are much richer in detail concerning the actual resources and the potential impacts.
556	79	79.9	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Given the large number of alternatives and general paucity of cultural resource information in the project area, Class II survey along each alternative, or in areas predicted to have a high number of cultural resources based on current data, would have provided more specific information on the estimated number of cultural resources that have the potential to be impacted.	We agree that a Class II inventory would provide more specific information, but BLM determined that due to the availability of the predictive model for southern New Mexico and the high percentage of previous inventory for the upgrade (approximately half of the undertaking), Class II inventory would not be necessary for the NEPA analysis. Cultural resources are just one of the resources considered in the selection of the Agency Preferred Alternative and when considered in the larger context, most often do not drive the decision-making. Other resources that are more difficult to mitigate, or physical circumstances, tend to be the major factors in the NEPA decision. Additional information on trial crossings based on inventory done for SunZia and reconnaissance done by BLM has been added to the EIS (see appendix F).
557	79	79.10	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Field visits to proposed crossings of the Butterfield Trail would also provide information on whether proposed transmission lines will cross intact segments of the Trail. Class II survey data and visits to Butterfield Trail crossing would be more meaningful information that could assist in the evaluation of alternatives.	BLM determined that this additional information would not be necessary for the evaluation of the alternatives. BLM will attempt to avoid as many crossings of the Butterfield Trail as possible, and the Agency Preferred Alternative would achieve that objective, as opposed to the other alternatives. Wherever the trail is crossed, in accordance with the PA for the project and the resulting HPTP, measures would be taken to avoid, minimize, and mitigate any adverse effect to that segment of trail, provided that that particular segment is determined to be a historic property.
558	79	79.11	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Page 148, Table 2-11, Comparison Summary for Subroute 1: Afton Substation to Hidalgo Substation (Continued). In the row Cultural Resources, Agency Preferred Alterative column, the table states that the impacts are the "Same as subroute 4. 1." This should be "Same as subroute 1.1."	Chapter 2 of the EIS has been revised based on this comment.
559	79	79.12	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Pages 339-340, Figures 3.9-la and 3.9-lb. Archaeology Southwest's Cultural Resource Priority Areas are indicated as a hatched area but not labeled with the name of the area. The name should be provided on the Figure to make it easier for the reader.	Figures in the EIS were not modified; the priority area names are available in the Project Record.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

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560	79	79.13	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Page 364, Line 13, Table 3.9-14. It is unclear how the numbers presented in this table were generated. It was my understanding from reading the Sensitivity Measures discussion on page 337 and Section 3.9.9, pages 355-360, that the table presented the numbers of known cultura] resources and their sensitivity level. Based on my reading of these pages, it would seem Low Sensitivity (l) sites are sites that have been determined not eligible. Table 3.9-14 lists 38 sites with low sensitivity in Route group 1. However, on page 356, the text says that there are 20 not eligible sites. Additionally, high sensitivity sites (5) include listed sites, historic towns, NHT, NHLs and cemeteries or gravesites. On page 356, the text discusses one NHL that is listed, three historic trails and 2 Cultural Resource Priority Areas (CRPA). Table 3.9-14 lists 9 sites as being high sensitivity. Perhaps there some discussion needs to preface the Table to explain how these numbers were generated and how they are different from what was previous]y presented in the discussion in Section 3.9.9.	Section 3.9 of the EIS has been revised based on this comment.
561	79	79.14	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Page 366, Line 40, Page 367, Table 3.9-15, Page 368, Line 4 and Table 3.9-16. Need to change "New Mexico State Register of Historic Places" to "New Mexico State Register of Cultural Properties."	Section 3.9 of the EIS has been revised based on this comment.
562	79	79.15	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	3-CUL	Pages 823-825, Tables 4.9-1. 4.9-2 and 4.9-3 and Pages 834-836, Tables 4.9-5, 4.9-6 and 4.9- 7 should include totals at the bottom of each column to get a better understanding of the number of cultural resources, etc. that will be impacted for each Subroute.	Tables in section 4.9 of the EIS have been revised based on this comment.
693	82	82.112	SunZia	Wray	3-CUL	Section 4.9.1 Index of Total Potential Effect (New Mexico) oversimplifies the total number of eligible site acres by ignoring unevaluated sites which may be eligible for the National Register of Historic Places (“NRHP”). For example, of 710 Archaic sites in the sample, 191 were recommended or determined eligible, while 28 were recommended or determined not eligible. This leaves a total of 491 Archaic sites, which should all be treated as eligible, or at the very least be taken into consideration as a third category within the predictive model. This applies to all site type categories, particularly Protohistoric sites which are rare, and are more likely to be eligible by today’s recording standards.	The predictive model did not provide eligibility information, but this information was gathered subsequently so that site sensitivity could be taken into consideration. We agree that eligible or not eligible oversimplifies site sensitivity in general, and that is why the sensitivity categories developed during the SunZia EIS were adopted for the Southline Project. Although we could have treated unevaluated sites as eligible, or could have provided another category for those sites, we feel that when using predictive modeling, many assumptions are made, and the ultimate result is an educated guess as to how many sites, eligible or not, would be encountered. For NEPA, predictive modeling based on previously recorded sites and surveys is common, and BLM’s predictive model provided an additional technique for prediction. Ultimately, the Class III inventory will identify all of the historic properties that could be affected by the undertaking, regardless of what was predicted using modeling.
694	82	82.113	SunZia	Wray	3-CUL	Unfortunately, this oversimplification is incorrectly carried forward in the Draft EIS for determining sensitivity areas and we request that it be corrected.	BLM does not agree that there has been an oversimplification, nor that it has any real bearing on the results of the prediction of site sensitivity in the analysis area. Expanding the analysis as the commenter suggests will not change the outcome of the selection of the Agency Preferred Alternative. This does not need to be corrected.
20	8	8.5		Anderson	19-VIS	I note that the Proponent Alternative from Wilcox AZ to Afton NM: 3. It would move any “adverse visual impact” from the vicinity of I-10 to the rarely used border highway. Seems it would be more attractive for all concerned.	This information was stated and acknowledged in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS.
25	9	9.5		Cotignola	19-VIS	Plus they will discover the low land taxes & they will discover Southern Luna Counties many many mountain views	The potential for Project related employment and changes in social and economic conditions was discussed in sections 3.15 and 4.15; visual impacts were analyzed in sections 3.10 and 4.10 of the Draft EIS. The potential cumulative effects of the proposed Project, along with other past, present, and reasonably foreseeable actions, were described in section 4.21 of the Draft EIS.
144	27	27.3	New Mexico State University’s Unmanned Aircraft Systems Flight Test Center	Zaklan	19-VIS	3. How will you be documenting the building of the lines from a visual perspective?	This information was stated and acknowledged in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS, which provides a comprehensive analysis of existing conditions and potential impacts of the proposed facilities, including impacts from construction and operation. Visual simulations were also included in appendix K of the Draft EIS. Based on feedback from the public and cooperating agencies, new simulations have been included in the Final EIS.
197	38	38.14	Hearing	Yordani	19-VIS	And then I'm concerned about how much of an eyesore there will be for those looking at the towers. And as a city and a county are we able to stop something like this? And then how much of any health and environmental impact on the surrounding community? And will we be just fine without it?	Potential visual impacts were described in sections 3.10 and 4.10 of the Draft EIS. Potential impacts to public health and safety were considered in sections 3.16 and 4.16 of the Draft EIS. County and city authorizations, such as Conditional Use Permits, were described in chapter 2 of the Draft EIS.
239	46	46.2		Hamel	19-VIS	We would have every sunrise, sunset, and moonrise ruined by these 170ft poles on the proposed routes.	The potential visual impact of the proposed towers was stated and acknowledged in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS. Visual simulations were also included in appendix K of the Draft EIS. Based on feedback from the public and cooperating agencies, new simulations have been included in the Final EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
267	49	49.18	Cascabel Working Group	Meader	19-VIS	Tumamoc Hill. While the routing of the upgraded line around Tumamoc Hill in Tucson will be on the margins of the property rather than direction across it, the impact will still be significant, especially visually. This remains a concern. The project should work directly and closely with Tumamoc Hill personnel to further minimize and reduce impacts in any way possible.	As discussed in section 5.4 of the Draft EIS, BLM and Western conducted several Tumamoc Hill outreach meetings and Section 106 meetings in Tucson, Arizona. Alternatives in the EIS (TH1 and TH3) were developed as a result of this outreach, and the Agency Preferred Alternative in the EIS was designed, in consultation with stakeholders, to go around rather than through Tumamoc Hill. Additional vantage points from within and around Tumamoc Hill are presented in the EIS (see sections 3.10 and 4.10 and appendix K).
283	58	58.3	National Park Service	Trenchik/Montano	19-VIS	Visual Resources Ch 3 (3.10.2) –page 374, line 31. Federal lands Include federal lands with viewsheds that may be affected by the project, even if the project doesn't cross their property. For example "In addition, the project may affect the viewsheds of protected federal lands mandated to provide visitor/recreational experiences in undisturbed natural areas, including national parklands (Saguaro National Park) and wilderness areas."	This information was stated and acknowledged in section 3.10 of the Draft EIS.
291	60	60.6		Wood	19-VIS	Lastly, The eyesore the new higher poles will be	The potential visual impact of the proposed towers was stated and acknowledged in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS.
337	68	68.14	Pima County	Bernal/Connolly	19-VIS	visual impacts, especially where the alignments are near or within residential areas and natural preserves	The potential visual impacts of upgrading the existing towers with taller monopoles, including potential impacts on residential areas and natural preserves, were discussed in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS. As noted in chapters 1 and 2 of the Draft EIS, the existing Western line has been in place since 1951.
351	68	68.28	Pima County	Bernal/Connolly	19-VIS	Impacts on Viewsheds (Scenic Quality) "Additional changes to scenic quality would occur from the introduction of upgraded transmission structures, including monopole and lattice-type structures along the existing transmission line. There are 2.4 miles of Subroute 4.1 which cross Class B scenery (5 percent of the Subroute), and 46.0 miles which cross Class C scenery (95 percent of the Subroute). Impacts from those changes to scenic quality in Class B and C would be minor to moderate (Draft EIS, Volume 2, Page 891)." Brief descriptions of the referenced scenic quality Classes and the methodology applied in determining 'minor to moderate' impacts would have been helpful, given the stretches of land impacted. Simulated views in Figures B-34, 50, 66, 68, 72, 78, and 90 reveal the significant height difference of the transmission line poles and lattice structures. The impacts on scenic quality could be considered 'low' or 'moderate' from a great distance but not at distances from which the referenced figures were photographed.	Descriptions of the scenic quality and sensitivity along subroute 4.1 (and all alternative subroutes) were included in section 3.10 of the Draft EIS. Sections 3.10 and 4.10 in the EIS have been revised to include descriptions of the referenced scenic quality classes and clarify methodology. As noted, visual simulations in appendix K of the Draft EIS were developed to disclose the potential visual changes that would occur if the existing Western line is upgraded. Additionally, based on feedback from the public and cooperating agencies, new simulations have been included in the Final EIS. Tower height was also a consideration in the visual resources analysis.
375	68	68.52	Pima County	Bernal/Connolly	19-VIS	p. 428, Chapter 3, in the discussion of visual effects, Tumamoc Hill is considered a "Class A" resource, an important cultural and visual resource.	The importance of Tumamoc Hill has been acknowledged by BLM and Western since early in the process. As discussed in section 5.4 of the Draft EIS, BLM and Western conducted several Tumamoc Hill outreach meetings and webinars in Tucson, Arizona. Alternatives in the Draft EIS (TH1 and TH3) were developed as a result of this outreach, and the Agency Preferred Alternative in the Draft EIS was designed, in consultation with stakeholders, to go around rather than through Tumamoc Hill. The potential visual and cultural impacts of the proposed Project, including potential impacts to Tumamoc Hill, were described in sections 4.11 and 4.9 of the Draft EIS, respectively.
434	68	68.111	Pima County	Bernal/Connolly	19-VIS	One of the primary concerns identified by Development Services in previous comments was visual impacts. The photo simulations now provided help to clarify the mass and appearance of the smaller preferred monopoles and provide some impression of impacts on a few representative viewsheds.	The comment accurately reflects the analysis provided in sections 3.10 and 4.10 and appendix K of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
452	72	72.5	Mountain View Ranch		19-VIS	In connection with the foregoing, the California Public Utilities Commission ("CPUC") recently applied the concept of "overburdening" in a proceeding involving Southern California Edison Company "SCE"). In its Decision No. 13-07-018, issued July 16, 2013, the CPUC granted the Petition of the City of Chino Hills ("Chino Hills") for Modification of Decision No. 09-12-044. In the earlier decision, the CPUC had authorized SCE to construct a double-circuit 500 kV transmission line on towers 195-198 feet tall in a 150' right-of-way already occupied by SCE electric transmission facilities. In that regard, SCE's existing facilities 1 were to be removed from the aforesaid right-of-way; and, in fact, some of the removal of existing facilities and construction of new facilities had already occurred in the Chino Hills' area as of the time the CPUC reconsidered its earlier decision. On further consideration, the CPUC concurred with Chino Hills' argument that the previously authorized replacement facilities would have a "significant and unavoidable impact" on the residential viewscape in question, and particularly those who lived along the right-of-way. In addition, the CPUC proved to be sympathetic to Chino Hills' argument that the visual impact in question would unfairly impose on the affected residents of Chino Hills "too large a burden for the new transmission infrastructure that is being installed to benefit all Californians." Further, the CPUC concluded that the transmission supporting structure, which would "dwarf ' adjacent homes did not comport with the community values of Chino Hills and affected residents. Moreover, the CPUC recognized that the previously approved facilities could result in a diminution in property values and a reduction in local tax revenues to the detriment of affected residents and Chino Hills itself. footnote#1: The existing facilities were a 220 kV line, which had been erected in the 1940s on 75' lattice towers.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western would acquire additional land rights in accordance with Federal law for those easements determined to be insufficient. The potential visual impacts of the Upgrade Section of the proposed Project are analyzed in sections 3.10 and 4.10 of the Draft EIS.
456	72	72.8	Mountain View Ranch		19-VIS	As Currently Proposed, the "Upgrade" Portion of The Project Would Have a Substantial Adverse Impacts on Mountain View and Other Nearby Residential Subdivisions. I . Visual Impact. At page 890, lines I 3-14, the DEIS states as follows: "Visual contrast in the Upgrade Section would result from the introduction of taller transmission structures. Visual contrast to the Upgrade Section was determined to be low to moderate" [emphasis added]	The comment accurately reflects the analysis provided in sections 3.10 and 4.10 and appendix K of the Draft EIS. Section 4.10 of the Final EIS has been revised to acknowledge that while impacts are anticipated to be low to moderate and not significant at a landscape level, individual perspectives on the visual impact of the proposed Project may be different.
457	72	72.9	Mountain View Ranch		19-VIS	Further, at page 1096, lines 24-29, the DEIS states that "Other past and present actions in the CEAA have converted larger portions of the Upgrade Section analysis area to residential, commercial, and industrial development associated largely with the city of Tucson and surrounding lands. Because the proposed Upgrade Section would be located along existing transmission corridors, visual effects are likely to blend in with existing development and associated visual impacts and not substantially contribute to cumulative effects in concert with these other developments." [emphasis added] However, (i) the "comparison of typical existing and proposed structure types" depicted in Figure 2-12 to the DEIS indicates that the physical contrast between the existing 115 kV single circuit "H" frame structure and the proposed 230 kV double-circuit monopole structure is quite dramatic, with the latter physically and visually overwhelming or "dwarfing" the former.4 Further, the photographs set forth at Figure B-59 (KOP 43-04) of the DEIS effectively refute the above-quoted suggestions that (i) "visual effects are likely to blend in with existing development and associated visual impacts," and (ii) the visual contrast with existing residential development will be "low to moderate."5 With all due respect to the preparers of the DEIS, these observations and conclusions are simply incorrect with respect to that portion of Mountain View located south of Interstate 10 and the residential subdivisions located immediately to its west and south of Interstate 10. Physical Impact. In the Executive Summary portion of the DEIS, the following statements appear m connection with a discussion of the Project's right-of-way requirements: "The anticipated ROW width for the Upgrade Section 230-kV transmission line is 150 feet. . . In certain areas of the Upgrade Section, development and constraints may not allow for the expansion of the existing 100-foot ROW." [DEIS Executive Summary, page xvii, lines 5-1O] footnotes: 4 A copy of Figure 2-12 is attached hereto as Appendix "E." 5 A copy of Figure B-59 (KOP U3-04) is attached herto as Appendix "F." In that regard, the Sonoita Ranch housing development depicted in those photographs, is sim ilar to and near Mountain View.	The comment accurately reflects the analysis provided in sections 3.10 and 4.10 and appendix K of the Draft EIS. Section 4.10 of the Final EIS has been revised to acknowledge that while impacts are anticipated to be low to moderate and not significant at a landscape level, individual perspectives on the visual impact of the proposed Project may be different.
474	74	74.4	U.S. Forest Service	White	19-VIS	I will reiterate what I submitted earlier here, and some may benefit national historic trails as well as the Continental Divide Trail: Although the transmission line will cross the trail on existing utility corridors (under the preferred alternative), the difference in scale of the structures will be noticeable, and the length of time trail users are under transmission lines and exposed to the noise and foreground visual impacts will be longer. Therefore all possible mitigation measures should be implemented to minimize experiential and visual impacts, such as installing towers that oxidize to a natural patina, and spacing towers for maximum possible distance from the trail and/ or matching structure spans.	These are Project design features considered in table 2-7 in the Draft EIS (now table 2-8 in the Final EIS), and accurately reflect the analysis provided in section 4.10 of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
475	74	74.5	U.S. Forest Service	White	19-VIS	Weather conditions and time of day can make a huge difference in the visual impact of these structures. I drove I-10 recently into a storm that made the backdrop very dark, with sunlight from the west illuminating all the existing transmission lines that parallel the freeway. They appeared as a veritable forest of white towers against the dark sky.	Sections 3.10 and 4.10 of the EIS have been revised to include a description of how light conditions (as affected by weather) can affect scenic quality.
504	76	76.24	Arizona State Land Department	Ojeda	19-VIS	Generally speaking, the existing conditions appear to have been based on existing VRI data. Please clarify whether the VRI data covered all lands within the project area, including state lands. If so, please explain whether or not there was also a project-level analysis of existing conditions throughout the project corridors, and the methodology and results of that analysis.	Section 3.10 of the EIS has been revised to provide clarity on the VRI data used in the analysis.
506	76	76.26	Arizona State Land Department	Ojeda	19-VIS	Considering the total length of all of the alternatives, more KOP/simulations may be warranted to fully illustrate the potential impacts to the resource.	As discussed in section 3.10.2 of the Draft EIS, KOPs considered in the analysis were identified based on comments from the public during scoping, as well as using feedback from cooperating agencies. The KOPs and simulations considered in appendices I and K of the Draft EIS are sufficient for the analysis as they are illustrative of all landscape types, alternatives routes, and transmission tower structure options. The EIS has been revised to include additional simulations (see appendix K) based on public and agency comments.
639	82	82.58	SunZia	Wray	19-VIS	Section 3.10.1, page 373 – This section states multiple widths for the visual study area. Given that all alternatives should be consistently studied regardless of jurisdiction, we request the analysis use one study area that would result in a consistent affected environment and environmental consequence section.	All alternatives analyzed in detail are considered equally in the Draft and Final EISs. The rationale for the difference in the analysis area between the New Build Section and Upgrade Section is described in sections 3.10 and 4.10 of the Draft EIS and is based on the appropriate level of analysis, in keeping with BLM methods for evaluation.
640	82	82.59	SunZia	Wray	19-VIS	Key Observation Points (“KOPs”) are used for compliance or to document typical impacts to viewers. Landscape or scenic-quality impacts are based on changes to the landscape regardless of where the landscape is viewed from. The BLM needs to understand these changes to keep their Visual Resource Inventory (“VRI”) updated; also, scenic-quality impacts are used to make determinations regarding the preferred route regardless of jurisdiction. This distance of 10–18 miles for the viewshed seems arbitrary and is not consistent with the distances associated with the visual study areas. Using such a vast distance implies that there would be impacts to views 10 to 18 miles away. Even if there were views at such a distance, the dominance and contrast would be low to non-existent. Distance or Influence zones from other similar and permitted (i.e., already vetted) 345 kV or 500 kV projects should be used as the benchmark for effects analysis. The viewshed should be conducted in a manner that is consistent with the study area for visual resources.	Section 4.10.2 of the Draft EIS stated, “The methodology used for the impact analysis of the visual resources is three-tiered. The first level of analysis is a discussion of the changes to the landscape in the areas of analysis resulting from the actions prescribed under each alternative. The second level of analysis is an assessment of impacts resulting from those same actions as seen from KOPs along the potential project routes. The third level of analysis is an assessment of whether the proposed changes to the landscape would meet BLM’s objectives for management of visual resources where the potential project routes crossed BLM-managed lands.” The viewshed in the Draft EIS was delineated out to 10 miles, not 18 miles, which is consistent with recent research on visibility of transmission facilities in western landscapes by Argonne National Laboratory (ANL). Methods used for the visual resource analysis (see sections 3.10 and 4.10 in the Draft EIS), including KOP selection, are based on BLM visual resource methodology. Using other projects as a benchmark for the effects analysis may not be appropriate for a project of this scale, within this geography, and in addition is typically not a vetted process for BLM visual resource management studies.
641	82	82.60	SunZia	Wray	19-VIS	Section 3.10.8, page 376 – The area of exposure, i.e., 10 miles on either side of the centerline, does not seem to correlate with the analysis area set forth in section 3.10.1. This inconsistency in methodology makes this section confusing, as the study area for determining visual impacts seems to be based on several distances without criteria associated with the project description.	The area of exposure used in the Draft EIS (see section 3.10) is based on BLM VRM guidance as well as viewshed mapping to ensure that the analysis is comprehensive. The viewshed in the Draft EIS was delineated out to 10 miles, not 18 miles, which is consistent with recent research on visibility of transmission facilities in western landscapes by ANL. Clarification of the viewshed buffer is included in the EIS (see sections 3.10 and 4.10).
642	82	82.61	SunZia	Wray	19-VIS	Further, this viewshed implies that wherever the project can be seen in these zones, impacts may occur; otherwise why else would a viewshed be conducted in terms of a visual analysis? Areas of visual effect and distance zones should be reconciled based on actual potential effects of the project description (i.e., towers, ancillary facilities, and access roads) and described as such.	The viewshed analysis, as described in sections 3.10 and 4.10 in the Draft EIS, is conducted to establish the boundary of the area of potential effects (APE). The APE does not constitute impact, but simply defines the boundary within which impacts are determined and analyzed.
643	82	82.62	SunZia	Wray	19-VIS	Sections 3.10.7–3.10.15, page 376 – The inventory section provides what is included in the inventory, but does not explicitly state what the methods are based on (i.e., BLM methods, other 345 kV projects, Project Description, etc.).	Sections 3.10 and 4.10 (Visual Resources) in the EIS have been revised to clarify methodology. Section 3.10.7 of the EIS has been revised to reference the BLM guidance, and section 4.10.2 of the EIS specifically discusses methodology and assumptions.
644	82	82.63	SunZia	Wray	19-VIS	New terms and concepts that are cited but have not been defined to this point in the Draft EIS should be defined.	Sections 3.10 and 4.10 (Visual Resources) in the Draft EIS do not introduce new terms needing specific definitions for clarity.
645	82	82.64	SunZia	Wray	19-VIS	Studies for visual resources should be replicable, but this section does not seem to provide a holistic approach based on the goals of the NEPA and federal guidance regarding visual resource analysis. Please explain the methodology used and how it complies with federal guidance on visual resource analysis.	Sections 3.10 and 4.10 (Visual Resources) in the EIS have been revised to clarify that the analysis was conducted in keeping with BLM VRM methodology and regulatory compliance.
646	82	82.65	SunZia	Wray	19-VIS	The analysis states that the criteria to establish the area of exposure and viewshed are based on transmission line spans of 1,000 feet. Although this is important in defining areas of effect for visual resources, other components are just as important, including typical height of tower(s), width of access roads, and other temporary and permanent ancillary features. We request that these metrics be used in this analysis in order to better predict the Southline Project’s visual impacts.	Sections 3.10 and 4.10 (Visual Resources) in the EIS have been revised to clarify that the analysis was conducted in keeping with BLM VRM methodology and regulatory compliance.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
647	82	82.66	SunZia	Wray	19-VIS	Additionally, using the terms for “area of exposure” versus “viewshed” does not define what the affected environment should be for visual resources. NEPA language should be used so the visual resource inventory, and later, impact analysis, is consistent with other resources studies in this Draft EIS. While using the area of exposure to help define and identify KOPs for the project is appropriate, we request that other criteria be used as well, most specifically, the BLM’s 10 environmental factors for assessing contrast as well as specific criteria as identified in the Visual Resource Management (“VRM”) Manual 8431.	Sections 3.10 and 4.10 (Visual Resources) in the EIS have been revised to clarify that the analysis was conducted in keeping with BLM VRM methodology and regulatory compliance.
648	82	82.67	SunZia	Wray	19-VIS	Additionally, KOPs should be identified not just where the project may be seen (i.e., area of exposure), but where sensitive landscapes (i.e., scenic quality units) or sensitive viewers are located. We request the Draft EIS disclose where impacts are, in addition to resources that would not be impacted.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. As stated in section 3.10.11 of the Draft EIS, “Selection of KOPs occurred within the proposed area of public exposure and relates to locations of visually sensitive publics or visually sensitive locations.”
649	82	82.68	SunZia	Wray	19-VIS	The KOP analysis should include KOPs regardless of whether they are exposed to the transmission line or not.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology.
650	82	82.69	SunZia	Wray	19-VIS	Section 3.10, pages 372–386 – The methodology seems to be a hybrid of the BLM inventory system for planning-level decisions. VRI concepts such as scenic quality, sensitivity level rating units (“SLRUs”), and distance zones are being used to inventory all land for the project, which may not be appropriate for the detailed project level inventory. While the BLM VRI should be used to provide context from a planning perspective and potential plan amendments, the scale of the VRI is not appropriate for a linear ROW project such as Southline. For example, the scenic quality rating units (“SQRUs”) are too large to assess effects to scenic quality based on the relatively narrow size of the project ROW. In this regard, where appropriate, we request that the Draft EIS use project-level data to define the affected environment.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. The assessment of visual contrast was based on the BLM’s 10 environmental factors, as described on page 867 of the Draft EIS. The analysis of impacts to scenic quality was described at the Project level for each alternative subroute in chapter 4 of the Draft EIS.
651	82	82.70	SunZia	Wray	19-VIS	Also, the methodology discussion seems to mix planning-level elements with project-level elements, making the inventory section hard to understand and reducing the defensibility of the project. For example, the maps associated with this section depict distance zones prepared from the centerline for the project using 0–5 miles and 5–15 miles. These distance zones are being depicted as VRI, however, the BLM’s distance zones are developed from sensitive viewing locations, not a specific project. Therefore, when a KOP is described within the 0–5 mile distance zone, this may not be accurate based on the BLM’s VRI. This analysis needs to be updated to be project specific.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology.
652	82	82.71	SunZia	Wray	19-VIS	Also, the maps within this chapter do not illustrate the SQRUs crossed by the project which is important for context.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Maps to support the analysis in section 3.10 of the EIS include scenic quality rating units crossed by the project.
653	82	82.72	SunZia	Wray	19-VIS	In regard to the items above, we request that a set of maps should be included in this section that clearly depict the BLM’s VRI including SQRUs, SLRUs, distance zones, and Visual Resource Inventory Classes.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Maps to support the analysis in section 3.10 of the EIS include BLM VRI information.
654	82	82.73	SunZia	Wray	19-VIS	USFS data should be mapped where the project would affect USFS lands.	Maps to support the analysis in sections 3.10 and 4.10 of the EIS have been revised to include more detailed geographic context and to support the analysis.
655	82	82.74	SunZia	Wray	19-VIS	In addition to these planning-level maps and information, project-level information should be mapped including viewshed, KOPs and the visual-sensitive land uses that KOPs were derived from, and project-level scenic quality units, as appropriate.	Maps and data presented in the Draft EIS included viewshed, KOPs, visual sensitive lands, and scenic quality rating units.
656	82	82.75	SunZia	Wray	19-VIS	KOP information, without the underlying land use, is ambiguous and does not provide the context to understand the affected environment and KOP selection.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Sections 3.10 and 4.10 of the EIS have been revised to consider land use in terms of the visual resources.
657	82	82.76	SunZia	Wray	19-VIS	Section 3.10.10, pages 33–37 – The relationship between concern level and BLM SLRUs is not evident and is hard to follow and needs to be modified to correct this issue. Concern levels seem to be associated with sensitive receptors, while SLRUs are associated with concern for the landscape, not a viewer’s viewshed. This inconsistency creates confusion and implies that if a residence (or other high concern viewer) happens to fall within a low BLM SLRU, the occupant’s concern for change would be low (or at least lower). A viewer’s sensitivity (or concern) for changes in the landscape remains the same no matter what BLM VRI unit it falls within, compared to existing conditions.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Sensitivity level is not solely derived from the existing RMPs, but rather from a combination of existing “planning level” designation, combined with “project level” determination.
658	82	82.77	SunZia	Wray	19-VIS	Contrast resulting from the project may change, but sensitivity or concern remains the same. The Draft EIS should describe what the SLRU data, as well as the sensitive receptor data (i.e., concern level), means in terms of inventory and potential impacts.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology.
659	82	82.78	SunZia	Wray	19-VIS	Section 3.10 – Deming Valley SLRU has residential viewers defined as being of moderate sensitivity. Residential viewers should have a high sensitivity regardless of the planning level SLRU. The analysis should be corrected by identifying and disclosing the impacts to these residential viewers.	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Section 4.10 of the EIS has been revised to include a clear description of sensitivity from residences.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
660	82	82.79	SunZia	Wray	19-VIS	Planning level SLRU should be separated explicitly from viewing receptor concern level	Methods used in the Draft EIS (see sections 3.10 and 4.10) for the visual resource analysis are based on BLM visual resource methodology. Sections 3.10 and 4.10 in the EIS have been revised to discuss planning level sensitivity level rating unit separately. Impacts to specific receptors associated with each alternative subroute were described in section 4.10.3 of the Draft EIS.
661	82	82.80	SunZia	Wray	19-VIS	Section 4.10.1, pages 866–867 – The Draft EIS states, “impacts based on existing condition.” Impacts for visual resources are looking at the change on the landscape and on viewers’ viewshed, in context with the landscape character for scenic quality and concern level for viewers. Contrast is merely a measurement of change in the landscape, but the other context of the resources being evaluated is what the impacts are based on.	The section quoted in the Draft EIS states that impacts are based on the change to the existing conditions. Section 4.10 of the Draft EIS provides sufficient clarification of both contrast and impacts in keeping with BLM guidance on VRM and NEPA.
662	82	82.81	SunZia	Wray	19-VIS	Section 4.10.2, page 866 – Similar to the comment above, contrast is a measurement of change. Impact is landscape change or contrast (witnessed or inherent landscape features) in conjunction with the context of sensitive resources. Contrast by itself does not constitute an impact. For example, a high-contrast condition may occur within 100 feet of a house. However, due to topography in the area, the high contrast may not be visible, and therefore impacts to the residential viewers would be nominal. However, if the SQRU is in a pristine state for the location in which the project is proposed, but it is a C-class landscape, impacts may only be low/moderate-to-moderate. If that landscape is designated as an A-class landscape, then impacts on scenic quality may be high.	The section quoted defines that impacts are based on the change to the existing conditions. Sections 3.10 and 4.10 of the EIS have been revised to clarify how impacts described in terms of contrast are in keeping with BLM guidance on VRM and NEPA.
663	82	82.82	SunZia	Wray	19-VIS	Section 4.10.2, page 866 – The term “impact” should be taken out of compliance methods and narratives and compliance with a VRM Class should only be based on contrast. There would be impacts to viewers and impacts to scenery but compliance is purely an administrative function to manage the landscape and inform the public of the level of mitigation being imposed.	The term “impact” in section 4.10 of the Draft EIS is used appropriately.
664	82	82.83	SunZia	Wray	19-VIS	Section 4.10.2, page 868 – This section states that there are two kinds of viewers: common and sensitive. Based on the text, sensitive viewers are defined as views from residences. “Common Views”, a new term introduced thus far, should be defined.	The term “common views” in section 4.10 of the Draft EIS is considered understandable to the reader as used in this context.
665	82	82.84	SunZia	Wray	19-VIS	Please explain why if a view is designated as “common”, then why would it be considered a KOP.	Viewer sensitivity is also considered in the analysis as discussed in the Draft EIS (see section 4.10). In this case, common landscape is in a location where many viewers would be exposed to change.
666	82	82.85	SunZia	Wray	19-VIS	Visual Contrast Rating (“VCR”) forms should be used to demonstrate compliance with BLM VRM Classes (VRM HB 8431).	The VCR forms are included in appendix J, and information is presented within the analysis in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS.
667	82	82.86	SunZia	Wray	19-VIS	How are impacts to viewers and scenic quality defined? Please revise the text to provide an explanation.	Sections 3.10 and 4.10 of the EIS have been revised to clarify the terms “viewers” and “scenic quality,” as appropriate.
668	82	82.87	SunZia	Wray	19-VIS	Section 4.10.2, page 868 – The visual elements associated with “highly rural” to “high density urban landscape” are not described; please define. The two aforementioned terms are land-use definitions, and not standard visual resource-related definitions.	Terms used to describe community composition are used in sections 3.10 and 4.10 (Visual Resources) of the EIS. These terms are descriptors intended to articulate population characteristics within the area and are not technical descriptors based solely on visual resources.
669	82	82.88	SunZia	Wray	19-VIS	Section 4.10.2, page 869 – Earlier in the affected environment section, the analysis area was based on whether the line was new or the line would be upgraded. This resulted in two study areas with varying boundaries. However, line 7 states that a 10-mile buffer was analyzed around all project elements. This is inconsistent with the text in the affected environment section and implies a different inventory area, as compared to the impact area. We request that the inventory area be consistent across all alternatives studied and all land ownership jurisdictions.	All alternatives analyzed in detail were considered equally in the Draft and Final EIS. The rationale for the difference in the analysis area between the New Build Section and Upgrade Section is described in sections 3.10 and 4.10 of the Draft EIS and has been clarified in section 3.10.9 of the EIS.
670	82	82.89	SunZia	Wray	19-VIS	Section 4.10.2, page 869 – We request that the criteria be expressly defined, otherwise terminology is arbitrary (i.e., highly sensitive, aesthetic importance, and miles of project visibility). These criteria make it appear as though impacts were evaluated against them, but they are not identified in the affected environment section.	The criteria established and implemented in the visual resources analysis are based upon and in keeping with BLM Manual 8400 series.
671	82	82.90	SunZia	Wray	19-VIS	Does the project with high contrast that is seen for several miles constitute a significant impact? How will this be measured using KOPs?	In the Draft EIS, the usage of “high” impacts or contrast is in keeping with BLM VRM guidance and specifically pertains to visual resources, whereas the usage of “significant” has a different connotation within the reporting.
672	82	82.91	SunZia	Wray	19-VIS	High impacts and significant impacts are similar. The difference between high and significant impacts is not clear and requires clarification.	In the Draft EIS, the usage of “high” impacts or contrast is in keeping with BLM VRM guidance and specifically pertains to visual resources, whereas the usage of “significant” has a different connotation within the reporting.
673	82	82.92	SunZia	Wray	19-VIS	Section 4.10.2 – Results – Mitigation planning is absent from the Draft EIS discussion of impacts. Without a discussion on mitigation planning the public cannot understand how impacts would be minimized or avoided.	In the Draft EIS, the potential impacts of the proposed Project on the cultural, physical, and human environment, along with a description of mitigation measures and other measures proposed to reduce potential impacts, have been considered in the EIS. Mitigation measures are included in the EIS (see section 2.4.6).
674	82	82.93	SunZia	Wray	19-VIS	Initial versus residual impacts are not discussed, please include an explanation or such a discussion.	Residual impacts are also discussed in chapter 4.10 of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
675	82	82.94	SunZia	Wray	19-VIS	How will miles of mitigation be compared across all alternatives?	Mitigation is not based entirely on Project length (miles), but rather on minimizing potential impacts where they are expected occur. BLM and Western will work with landowners to carefully micro-site the Project, as appropriate. Mitigation measures for all resources are included in the EIS (see section 2.4.6).
676	82	82.95	SunZia	Wray	19-VIS	Impact results are largely deficient, in regard to describing what the impact will be from a visual standpoint. Most impacts are only defined as high, moderate, or low, but the Draft EIS does not explain if the impact is due to access roads, puller-tensioner sites, laydown areas, a transmission tower, or all of the components of the Southline Project; please correlate the level of impact to the project component that is causing the impact.	Section 4.10 (Visual Resources) in the EIS has been revised to better clarify the potential impacts of the proposed Project in terms of impacts to the existing environment from the introduction of the proposed Project. In addition, each visual contrast rating sheet includes a “proposed activity description” (see appendix I of the EIS).
677	82	82.96	SunZia	Wray	19-VIS	We request that this section be revised to provide a full explanation of the visual impacts to viewers and the landscape, what mitigation is applied, and how the mitigation would reduce the impact.	Sections 3.10 and 4.10 of the EIS have been revised to better clarify the potential impacts of the proposed transmission line on the cultural, physical, and human environment, including visual resources (sections 3.10 and 4.10). Mitigation measures for all resources are included in the EIS (see section 2.4.6).
678	82	82.97	SunZia	Wray	19-VIS	For areas where the Southline Project would not comply with VRM classes, we request that the Draft EIS explain what KOP has views of the VRM class and which VCR sheet documents the non-compliance.	Descriptions of compliance with VRM designations are included for each alternative under consideration in section 4.10 of the Draft EIS. The complete set of visual contrast rating sheets in appendix I includes a description of compliance/non-compliance for each KOP. Sections 3.10 and 4.10 (Visual Resources) in the EIS have been revised based on this comment.
679	82	82.98	SunZia	Wray	19-VIS	The mitigation documented on the VCR sheet should be discussed in the body of the Draft EIS.	Mitigation in the visual contrast rating sheets was included in the body of the Draft EIS. Sections 3.10 and 4.10 of the EIS have been revised to better clarify the potential impacts of the proposed transmission line in terms of visual resources (sections 3.10 and 4.10). Mitigation measures from the visual contrast rating sheets have been included in table 2-8 of the EIS and are considered in the impact analysis.
680	82	82.99	SunZia	Wray	19-VIS	We recommend that the Draft EIS be supplemented to address the confusing nature of how these impacts were evaluated by actually disclosing impacts and the rationale for the conclusions reached. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on this important resource section.	Please note that the EIS reflects consideration of all comments received during the public comment period. The EIS includes responses to comments received during the public comment process and provides revised EIS text based on those comments. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
682	82	82.101	SunZia	Wray	19-VIS	Section 3.13, page 493 – The text states that opportunities for solitude and/or primitive recreation are based on hearing a project or seeing a project or other man-made structures/disturbance. Given this, the visual resource assessment should include views from wilderness character units to ascertain opportunities preserved or lost for solitude and/or primitive recreation.	The “visual influence” is captured during the wilderness characteristics inventory under the “naturalness” assessment. While visual influence is considered, it is not the basis of the wilderness character. There are many wilderness areas (designated) from which one can see transmission lines, but those instances are not in and of themselves characteristics that negate a wilderness designation, or the potential for wilderness characteristics. In the Draft EIS, see sections 3.12 and 4.12 for a discussion of special designations (designated wilderness areas) and sections 3.13 and 4.13 for the wilderness characteristics inventory.
1	1	1.1	–	Hitchcock	7-LAND	It looks as though the route this line will follow is the I-10 route, but I am not quite sure if that is correct? If it is correct, does it jeopardize in any way the electromagnetic free area that Ft Huachuca and its surrounding electronic ranges contain? If it does, MOVE IT FARTHER NORTH around any close contact with Sierra Vista, Ft Huachuca or its electronic ranges. Run it from Wilcox straight west to Tucson! It would be truly inconsiderate to put financial decisions over the protection of our Nation.	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. BLM and Western have coordinated closely with the DOD, Ft. Huachuca, and BSETR to minimize impacts to the BSETR mission and to select the Agency Preferred Alternative. These potential impacts are described in sections 3.11.3 and 4.11.3 of the EIS.
28	11	11	–	Howell	7-LAND	1. How do you deal with leakage from lines or electrical appliances, tv, ratio, etc. 2. How is livestock affected? Also humans?	Information on the potential effects of electromagnetic fields from the proposed transmission line was described in sections 3.16 and 4.16 of the Draft EIS. Section 4.11.2 of the EIS has been revised to consider how EMF may affect livestock.
64	25	25.2	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-11 (Subroute 1), page 151. Local Alternative Segments DN1 -- needs the following bullet added: "-Crosses MTR VR-263"	Table 2-11 (now table 2-15 in chapter 2 of the EIS) has been revised based on this comment.
65	25	25.3	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-11 (Subroute 1), page 151. Local Alternative Segments D -- needs the following bullet added: "-Crosses MTR VR-263"	Table 2-11 (now table 2-15 in chapter 2 of the EIS) has been revised based on this comment.
66	25	25.4	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Subroute 2.1 - Proponent Preferred -- needs the following corrections: first MTR bullet should be changed to read, "- Crosses military training routes (MTRs) VR-259, VR-260, VR-263, and VR-1233"; second MTR bullet, "- Crosses MTRs VR-260 and VR-267" should be deleted. (VR-267 is not crossed by the project.)	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
67	25	25.5	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Subroute 2.2 - Proponent Alternative -- needs the following corrections: MTR bullet should be changed to read, "- Crosses MTRs VR-259 and VR-260". (VR-267 is not crossed by the project.)	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
68	25	25.6	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Local Alternative Segments LD3a -- needs the following bullet corrected to read: "- Crosses MTRs VR-263 and VR-1233"	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
69	25	25.7	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Local Alternative Segments LD3b -- needs the following bullet deleted: "-Crosses MTR VR-1233"	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
70	25	25.8	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Local Alternative Segments LD4 -- needs the following bullet added: "- Crosses MTRs VR-260, VR-263, and VR-1233"	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
71	25	25.9	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Local Alternative Segments LD4-Option 5 -- needs the following bullet added: "- Crosses MTRs VR-260, VR-263, and VR-1233"	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
72	25	25.10	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-12 (Subroute 2), page 162. Local Alternative Segments WC1 -- needs the following bullet added: "-Crosses MTR VR-259"	Table 2-12 (now table 2-16 in chapter 2 of the EIS) has been revised based on this comment.
73	25	25.11	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Table 2-13 (Subroute 3), page 172. Subroute 3.1 - Proponent Preferred (Upgrade) -- needs the following bullet added: "- Crosses military training route (MTR) VR-259"	Table 2-13 (now table 2-17 in chapter 2 of the EIS) has been revised based on this comment.
74	25	25.12	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Chapter 3, contents, page Xlvii, lines 24-25. The following figures need to be inserted into the list: "Figure 3.11-4. Military Training Routes and Airspace Restrictions in the New Build Section ……. 463" and "Figure 3.11-5. Military Training Routes and Airspace Restrictions in the Upgrade Section..... 464"	The table of contents in the EIS has been revised based on this comment.
75	25	25.13	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 466, line 43. The following sentences should be inserted here: "...miles left and right of the route. Nautical miles have been converted to statute miles for the purposes of this analysis. FAA Sectional charts only display the MTR centerline, not the actual MTR leg widths. See figure 3.11-4 and 3.11-5 for actual route points and leg widths. MTRs are subdivided into Instrument MTRs, Visual MTRs, and Slow-..."	Section 3.11.3 in the EIS has been revised based on this comment.
76	25	25.14	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 467, lines 12-14. The following sentence is confusing and inaccurate since page 461, lines 25-27 includes MTRs in the analysis area. It should be deleted: "Although airspace restrictions are present in the vicinity of the proposed Project and alternatives, the military analysis area does not overlap with these areas."	Section 3.11.3 in the EIS has been revised based on this comment.
77	25	25.15	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Sections 3.11.3 and 4.11.3, Military Operations, page 467, Tables 3.11-14.; 3.11-15; 3.11-16; 3.11-17; 4.11-16; and 4.11-17. Two things. First, this table and other tables included below inaccurately display the "Length of Analysis Area Crossed by MTR". For example. look at Table 3.11-14, Proposed Route – P2, VR-263, with a value of “0.05” miles. That equals only 264 feet. I believe the original calculations may have only accounted for just the (very thin) MTR centerline and not the actual width of affected MTR legs. Secondly, some of the subroutes are mis-labeled and are shown in the wrong Route Groups. The following changes should be made, as listed below.	Sections 3.11.3 and 4.11.3 in the EIS have been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
78	25	25.16	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 467, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The P2-subroute 1.1 segment crosses 19.3 miles of VR-263, not 0.05 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
79	25	25.17	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 467, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The P4a-subroute 1.1 segment crosses 8.7 miles of VR-263, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
80	25	25.18	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 467, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. In accordance with Table 2-8, p. 86, the "P4b-subroute 1.1" is actually in Group 2, not Group 1, and should be labeled "subroute 2.1", not 1.1. Also, the P4b-subroute 2.1 segment crosses 11.4 miles of VR-263, not zero miles. The P4b-subroute 2.1 segment also crosses 8.4 miles of VR-1233, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
81	25	25.19	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. In accordance with Table 2-8, p. 86, the "P6b-subroute 1.1" is actually in Group 2, not Group 1, and should be labeled "subroute 2.1", not 1.1. Also, the P6b-subroute 2.1 segment crosses 5.9 miles of VR-260, not 0.04 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
82	25	25.20	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section . In accordance with Table 2-8, p. 86, the "P7-subroute 1.1" is actually in Group 2, not Group 1, and should be labeled "subroute 2.1", not 1.1. Also, the P7-subroute 2.1 segment crosses 6.6 miles of VR-259, not 0.05 miles. The P7-subroute 2.1 segment also crosses 13.4 miles of VR-260, not 0.47 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
83	25	25.21	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. In accordance with Table 2-8, p. 86, the "P8-subroute 1.1" is actually in Group 2, not Group 1, and should be labeled "subroute 2.1", not 1.1. Also, the P8-subroute 2.1 segment crosses 0.5 miles of VR-259, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
84	25	25.22	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative DN1 segment crosses 6.8 miles of VR-263, not 0.05 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
85	25	25.23	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative D segment crosses 7.3 miles of VR-263, not zero miles.	Section 3.11 in the EIS has been revised based on this comment.
86	25	25.24	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The S7 - subroute 1.2 segment crosses 34.1 miles of VR-263, not 0.05 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
87	25	25.25	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The S8 -subroute 1.2 segment crosses 14.6 miles of VR-263, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
88	25	25.26	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The F -subroute 2.2 segment crosses 5.9 miles of VR-260, not 0.04 miles.	Section 3.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
89	25	25.27	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative LD3a segment crosses 19.9 miles of VR-263, not zero miles. The Local Alternative LD3a segment also crosses 22.3 miles of VR-1233, not 0.09 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
90	25	25.28	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative LD4 segment crosses 5.5 miles of VR-260, not 0.04 miles. There is a typo with the first listed VR-1233 which should be changed to "VR-263" with a height AGL of "100" feet, not 300 feet; and which the Local Alternative LD4 segment crosses "44.6" miles of VR-263, not 0.06 miles. The second listed VR-1233 should remain listed, but the Local Alternative LD4 segment crosses 35.5 miles of VR-1233, not 0.05 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
91	25	25.29	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative LD4-Option 5 segment is missing from this table and should be included with the following MTR crossing data: LD4-Option 5 crosses VR-260 with its height AGL of 300 feet a total of 5.1 miles. It also crosses VR-263 with its height AGL of 100 feet at total of 3.0 miles. It also crosses VR-1233 with its height AGL of 300 feet a total of 4.9 miles.	Section 3.11.3 in the EIS has been revised based on this comment.
92	25	25.30	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The Local Alternative WC1 segment crosses 1.3 miles of VR-259, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
93	25	25.31	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. The three Substations all cross about 0.27 miles of the correctly listed MTRs, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
94	25	25.32	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 468, Table 3.11-14. MTRs that Cross the Analysis Area - New Build Section. I could not verify the accuracy of the data regarding the listed staging areas, because I could not find the proposed locations of the staging areas within the DEIS. Also, I found that both this table and Table 3.11-16 seem to list a lot of the same designated staging areas, even though the two tables probably should list only the ones affecting the respective New Build and Upgrade sections. For example, why is staging area Gb listed on the New Build table, when Gb is only in the Upgrade section?	Section 3.11.3 in the EIS has been revised based on this comment.
95	25	25.33	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 469, Table 3.11-15. Military Operations Areas in the Vicinity of the New Build Section. If you consider that Tombstone C MOA starts at 14,500 feet AMSL, then this airspace would probably not be affected by the Southline Transmission project. On the other hand, Tombstone A and Tombstone B MOAs both start at 500 feet AGL and possible affects must be more closely examined. Perhaps, the distance to the nearest route (segment name) should be changed as follows: "Tombstone MOAs (A and B) -- 3.2 miles (S7) -- 0"	Section 3.11.3 in the EIS has been revised based on this comment.
96	25	25.34	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 469, line 11-15. The sentence phrase " The Army National Guard trains helicopter pilots near the Tortolita Substation. Military training flights occur between 1,000" should be removed and the rest of these lines clarified and corrected to read as follows: "The Jackal Low MOA overlies Graham County in southwestern Arizona. The lowest altitude of operation is 100 feet AGL and the highest is 10,999 feet above mean sea level (amsl). The Jackal Low MOA is always active Monday through Friday from 7 a.m. to 6 p.m.. It is active by Notice to Airmen (NOTAM) 6 p.m. to 10 p.m. Monday to Friday and intermittently on weekends."	Section 3.11.3 in the EIS has been revised based on this comment.
97	25	25.35	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 470, Table 3.11-16. MTRs that Cross the Analysis Area - Upgrade Section. In accordance with Table 2-8, p. 87, the "Ga - subroute 2.2" is actually in Group 2, not Group 3. Also, the Ga segment crosses 1.3 miles of VR-259, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.
98	25	25.36	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 470, Table 3.11-16. MTRs that Cross the Analysis Area - Upgrade Section. In accordance with Table 2-8, p. 87, the "Gb - subroute 2.2" is actually in Group 2, not Group 3. Also, the Gb segment crosses 1.0 miles of VR-259, not zero miles.	Section 3.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
99	25	25.37	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 470, Table 3.11-16. MTRs that Cross the Analysis Area - Upgrade Section. In accordance with Table 2-8, p. 87, the "Gc - subroute 2.2" is actually in Group 2, not Group 3. Also, the Gc segment crosses 7.4 miles of VR-259, not 0.07 miles. The Gc segment does not cross VR-1233 at all. All three typos (though different crossing distances?) referring to VR-1233 should be deleted.	Section 3.11.3 in the EIS has been revised based on this comment.
100	25	25.38	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 470, Table 3.11-16. MTRs that Cross the Analysis Area - Upgrade Section. I could not verify the accuracy of the data regarding the listed staging areas, because I could not find the proposed locations of the staging areas within the DEIS. Also, I found that both this table and Table 3.11-14 seem to list a lot of the same designated staging areas, even though the two tables probably should list only the ones affecting the respective New Build and Upgrade sections.	Section 3.11.3 in the EIS has been revised based on this comment.
101	25	25.39	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 470, line 14. If you consider that Tombstone C MOA starts at 14,500 feet AMSL, then this airspace would probably not be affected by the Southline Transmission project. On the other hand, Tombstone A and Tombstone B MOAs both start at 500 feet AGL and possible affects must be more closely examined. Perhaps the distance to the nearest route (segment name) should be changed as follows: "Tombstone A MOA -- 12.7 miles (U1a) -- 0"	Section 3.11.3 in the EIS has been revised based on this comment.
102	25	25.40	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 3.11.3, Military Operations, page 476, line 8-16. Numerous typographical errors here; namely, should be Arizona Air National Guard, not Army National Guard; seven MOAs, not five; three low- level MTRs, not one. The entire paragraph should be replaced with this one: "The 162nd Wing of the Arizona Air National Guard is located at the Tucson International Airport in Tucson. The 162nd Wing is the largest Air National Guard wing in the United States with three fighter squadrons, a reconnaissance group, and the Air National Guard/Air Force Reserve Test Center. The mission of the 162nd Wing of the Arizona Air National Guard is to provide fighter training programs and tactical reconnaissance. The 162nd Wing provides F-16 training for pilots through academic, simulator, and flight training. The 162nd Wing has scheduling responsibility and operational control of the Special Use Airspace for seven MOAs (including the Outlaw, Jackal, and Jackal Low MOAs located north of Tucson, the Morenci and Reserve MOAs located northeast of Tucson, and the Ruby and Fuzzy MOAs located south of Tucson), three low-level MTRs and one Air-to-Air Refueling Anchor. The 162nd Wing also regularly uses the Goldwater Range Complex and the Sells MOA."	Section 3.11.3 in the EIS has been revised based on this comment.
103	25	25.41	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, line 4. Should be changed to read as follows: "Segment P2 and P4a of Subroute 1.1 would cross MTR VR-263 …"	Section 4.11.3 in the EIS has been revised based on this comment.
104	25	25.42	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, line 7. Should be changed to read as follows: "Segment P2 and P4a of Subroute 1.1 would cross MTR VR-263. …"	Section 4.11.3 in the EIS has been revised based on this comment.
105	25	25.43	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Militaary Operations, page 939, line 9. Typos should be fixed to read as follows: " … would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. No other military installations…"	Section 4.11.3 in the EIS has been revised based on this comment.
106	25	25.44	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The P2 segment actually crosses 19.3 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
107	25	25.45	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The P4a segment actually crosses 8.7 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
108	25	25.46	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The S7 segment actually crosses 34.1 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
109	25	25.47	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The S8 segment actually crosses 14.6 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
110	25	25.48	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The DN1 segment actually crosses 6.8 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
111	25	25.49	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 939, Table 4.11-16. Route Group 1 Military Uses Resource Inventory Data. The D segment actually crosses 7.3 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
112	25	25.50	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 3. Should be changed to read as follows: "MTR VR-263 would be crossed by segment S7 and S8 of Subroute 1.2. Construction … "	Section 4.11.3 in the EIS has been revised based on this comment.
113	25	25.51	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 6. Should be changed to read as follows: "MTR VR-263 would be crossed by segment S7 and S8 of Subroute 1.2. At the intersection … "	Section 4.11.3 in the EIS has been revised based on this comment.
114	25	25.52	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 9. Should be changed to read as follows: "… VR-263. Unmitigated, segment S7 and S8 would result in moderate impacts to MTR VR-263 due to the potential …"	Section 4.11.3 in the EIS has been revised based on this comment.
115	25	25.53	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 17-18. Should be changed to read as follows: "Local alternatives A, B, and C do not intersect with any military facilities or MTR VRs. However, local alternatives DN1 and D would cross MTR VR-263. Construction impacts would be as described above ..."	Section 4.11.3 in the EIS has been revised based on this comment.
116	25	25.54	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 21-23. Should be changed to read as follows: "Local alternatives A, B, and C do not intersect with any military facilities or MTR VRs. However, local alternatives DN1 and D would cross MTR VR-263. At the intersections of local alternatives DN1 and D with MTR VR-263, the minimum flight altitude is 100 feet AGL. ... "	Section 4.11.3 in the EIS has been revised based on this comment.
117	25	25.55	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 25. Should be changed to read as follows: "… Unmitigated, DN-1 and D would result in moderate impacts to MTR VR-263 due to the potential for …"	Section 4.11.3 in the EIS has been revised based on this comment.
118	25	25.56	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 940, line 31-32. Should be changed to read as follows: "Segment P7 of Subroute 2.1 would cross the Willcox Playa, which is managed by the BSETR and is a possible site for test operations. Segments P4b, P6b, P7, and P8 would cross MTRs VR-259, VR-260, VR-263, and VR-1233 (Table 4.11-17). Construction ... "	Section 4.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
119	25	25.57	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, line 4-6. Should be changed to read as follows: "… the BSETR. Where subroute 2.1 intersects with MTR VR-259 (segments P7 and P8), VR-260 (segments P6b and P7), and VR-1233 (segment P4b), the minimum flight altitudes are 700 feet AGL (VR-259) and 300 feet AGL (VR-260, VR-1233), respectively. This is well above the proposed structure height of 90 to 170 feet, as described in section 2.4.2. On the other hand, wherever subroute 2.1 (segment P4b) intersects with MTR VR-263, the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, segment P4b would result in moderate impacts to MRT VR-263 due to the potential for airspace limitations at 100 feet AGL. Impacts for operation and maintenance ..."	Section 4.11.3 in the EIS has been revised based on this comment. BLM and Western will work with the Arizona Air National Guard (Tucson) during Project micro-siting.
120	25	25.58	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The P4b segment actually crosses 14.0 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
121	25	25.59	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The P6b segment actually crosses 5.9 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
122	25	25.60	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The P7 segment actually crosses 13.4 miles of MTR VRs, not 0.5 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
123	25	25.61	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The P8 segment actually crosses 0.5 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
124	25	25.62	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The F segment actually crosses 5.9 miles of MTR VRs, not zero miles. Also its foonote "* Value greater than zero but less than 0.1" should be deleted.	Section 4.11.3 in the EIS has been revised based on this comment.
125	25	25.63	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The Ga segment actually crosses 1.3 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
126	25	25.64	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The Gb segment actually crosses 1.0 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
127	25	25.65	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The Gc segment actually crosses 7.4 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
128	25	25.66	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The LD3a segment actually crosses 26.8 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
129	25	25.67	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The LD4 segment actually crosses 51.5 miles of MTR VRs, not 0.1 miles.	Section 4.11.3 in the EIS has been revised based on this comment.
130	25	25.68	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The LD4-Option 5 segment actually crosses 5.1 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
131	25	25.69	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The WC1 segment actually crosses 1.3 miles of MTR VRs, not zero miles.	Section 4.11.3 in the EIS has been revised based on this comment.
132	25	25.70	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 941, Table 4.11-17. Route Group 2 Military Uses Resource Inventory Data. The footnote "* Value greater than zero but less than 0.1" should be deleted.	Section 4.11.3 in the EIS has been revised based on this comment.
133	25	25.71	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 942, line 3-7. For consistency delete: "These would result in minor impacts for subroute 2.2 as it 4 would occur below the MTRs, which are used for aerial training, electronics, and communications testing." Then change the remaining lines to read as follows: "Temporary ground disturbance would occur during construction activities where segments F, Ga, Gb and Gc would cross MTRs VR-259 and VR-260. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."	Section 4.11.3 in the EIS has been revised based on this comment.
134	25	25.72	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 942, line 9. Should be changed to read as follows: "Segments F, Ga, Gb and GC of Subroute 2.2 would cross MTRs VR-259 and VR-260. Where VR-259 would…"	Section 4.11.3 in the EIS has been revised based on this comment.
135	25	25.73	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 942, line 18-19. Should be completely reworded as follows: "Local alternatives LD3a, LD4, LD4-Option 5, and WC1 intersect one or more of the following MTRs: VR-259, VR-260, VR-263, and VR-1233. LD3a intersects both VR-263 and VR-1233. Both LD4 and LD4-Option 5 intersect VR-260, VR-263, and VR-1233. LD4 would also intersect with the Morenci MOA. WC1 intersects only VR-259. Construction impacts would be as described above in "Impacts Common to All Action Alternatives."	Section 4.11.3 in the EIS has been revised based on this comment.
136	25	25.74	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 942, line 22-24. Should be completely reworded as follows: "Local alternatives LD3a, LD4, LD4-Option 5, and WC1 intersect one or more of the following MTRs: VR-259, VR-260, VR-263, and VR-1233. LD3a intersects both VR-263 and VR-1233. Both LD4 and LD4-Option 5 intersect VR-260, VR-263, and VR-1233. WC1 intersects only VR-259. Where LD3a, LD4, LD4-Option 5, and WC1 do not intersect with VR-263, but only intersect with VR-259, VR-260, and/or VR-1233, the minimum flight altitudes are 700 feet AGL (VR-259)and 300 feet AGL (VR-260, VR-1233), respectively. This is well above the proposed structure height of 90 to 170 feet, as described in section 2.4.2. On the other hand, wherever LD3a, LD4, and LD4-Option 5 intersect with MTR VR-263, the minimum flight altitude is 100 feet AGL. Therefore, the optional structure height of 90 feet (as described in section 2.4.2) would be required at MTR VR-263 in order to prevent impacts to MTR VR-263. Unmitigated, segments LD3a, LD4, and LD-Option 5 would result in moderate impacts to MRT VR-263 due to the potential for airspace limitations at 100 feet AGL. LD4 would also cross the Morenci MOA. The Morenci MOA occurs at ... "	Section 4.11.3 in the EIS has been revised based on this comment.
137	25	25.75	Arizona Air National Guard (Tucson) 162nd Wing Airspace Manager	Stine	7-LAND	Section 4.11.3, Military Operations, page 946, line 8-10. Should be completely reworded as follows: "Use the optional structure height of 90 feet in areas intersecting the MTR VR-263, which has a 100 feet AGL 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 powerlines more apparent to pilots flying low altitude at night. These measures would mitigate impacts to military training and airspace usage, as well as contribute to the safe conduct of our missions."	Section 4.11.3 in the EIS has been revised based on this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
329	68	68.6	Pima County	Bernal/Connolly	7-LAND	Typical of County regulatory authorities and infrastructure concerns with such projects, permits will be required for air quality control and right-of-way intrusions, and any potential conflicts with wastewater conveyance systems must be avoided. Furthermore, as per the Pima County Zoning Code, §18.07.040(8)(5), there are permitting requirements and design standards for power substations with an input voltage of 115 kV or greater. We understand the new substations are not proposed to be constructed; however, the expansion of existing substations, depending upon the extent of such expansions, may require modification of existing approvals, including the Board of Supervisors' modification of an existing substation permit.	Compliance with Pima County permitting requirements is discussed in sections 3.11.1 and 4.11.1 of the Draft EIS.
169	32	32.15	EPA	Jansky/Weeks	7-LAND	Farmlands. Chapter 4; page 935. The Agency Preferred Alternative will have adverse impacts to Farmland of Statewide Importance, Farmland of Unique Importance, and Prime Farmland. The impacts are not designated as significant by BLM because they do not comprise greater than 10% loss of prime or unique farmlands. Regardless of the 10% significance level established by BLM, any impacts to prime or unique farmlands require consultation with the National Resource Conservation Service (NRCS). Recommendation: The FEIS should have consultation documents between BLM and NRCS for prime and unique farmlands. The documents should indicate if the impacts to prime farmland soils are below de minimus levels and require no further consultation, or that further consultation and mitigation of impacts in necessary.	BLM coordinated with the NRCS regarding potential impacts to prime and unique farmlands; this coordination is available in the Project Record and referenced in section 4.11.2 of the EIS.
180	36	36.2	Hearing	No ID Speaker	7-LAND	I didn't see an overlay on the map in Doña County for the unmanned vehicle area for the university. Has that been considered?	BLM and Western received comments from NMSU's Unmanned Aircraft Systems Flight Test Center. As a result, sections 3.11.1 and 4.11.1 (Land Use) of the EIS have been revised to include information on the Unmanned Aircraft Systems Flight Test Center.
186	38	38.3	Hearing	No ID Speaker	7-LAND	How is that going to impact our airport (referring to the Benson Airport)	The potential impact of the proposed transmission line on transportation was analyzed in section 4.18 of the Draft EIS. The Benson Municipal Airport is located more than 1 mile from the nearest proposed Project route and would not be affected by the proposed Project.
227	42	42.1	U.S. International Boundary and Water Commission	Anaya	7-LAND	Portions of the Proponent (Proposed Upgrade) Alternative are located near the United States/Mexico international boundary and may require further consultation with the USIBWC. Projects located on or near the international boundary which may affect international boundary monuments or drainage flows into either country must be reviewed by the USIBWC. The USIBWC has a duty to access, maintain, and utilize the international boundary monuments along the United States/Mexico land boundary. The USIBWC is charged with these duties through treaties and international agreements between the United States and Mexico. We require that the proposed work, and related facilities not affect the permanence (disturb the foundations) of existing boundary monuments nor impede access for their maintenance. In addition, any proposed construction must allow for line-of-sight visibility between each of the boundary monuments.	Sections 2.4.6, 3.7 (Water Resources), and 3.11.1 (Land Use) in chapter 3 of the EIS have been revised to describe requirements of the U.S. International Boundary and Water Commission.
269	51	51.1	City of Benson	Brooks	7-LAND	I am very concerned about the 60 cycle noise emitted by this line in the San Pedro Valley. Fort Huachuca Intelligence gathering was chosen because of the lack of electronic noise emissions in the United States. Although the Forts listening bands world wide are in the KHz / MHz / and GHz bands there is magnetics and harmonics transmitted by the large electro magnetic fields put out by this line. Has studies been done to show this line in no way would effect the extremely sensitive and important intelligence gathering operations by the world listening antenna's of Fort Huachuca. I hope you have consulted with them on this.	BLM and Western have coordinated closely with the DOD, Ft. Huachuca, and BSETR to minimize potential impacts to the BSETR mission; the Agency Preferred Alternative also considers this coordination. These potential impacts were described in sections 3.11.3 and 4.11.3 of the Draft EIS. As discussed in section 2.9.1 of the Draft EIS, upgrading the existing Western line in the same location would keep the location of potential interference in an area that the military is already accounting for in its operations.
308	65	65.1	Department of Defense	Brashier	7-LAND	No additional comments were received from DoD. As we discussed at the Cooperating Agency meeting, the comments submitted by DoD in the previous round included detailed comments from LtCol David Stine, AZANG, 162 FW Airspace Manager, OSS/OSOA/162 OG Chief of Wing Scheduling, OSS/OSOS. These comments had been approved by the Clearinghouse and service headquarters, but were not incorporated into the draft by BLM. LtCol Stine has worked directly with your team and sent an email to BLM with the attached comments.	Sections 3.11.3 and 4.11.3 in the EIS have been revised to address LtCol David Stine's comments.
235.2	68	68.2	Pima County	Bernal/Connolly	7-LAND	Chief among our concerns is that the 'Rebuild' alignment crosses through or is adjacent to several County-owned preserves, including Cienega Creek Natural Preserve, Bar V Ranch, Tucson Mountain Park, Tumamoc Hill and Los Morteros;	Sections 3.11.1 and 4.11.1 (Land Use) in the EIS have been revised to include more information on county-owned preserves. However, it is worth noting that the existing Western line, ROW, and access points have been in existence since the lines were constructed in 1951, prior to the designation of the county-owned preserves.
332	68	68.9	Pima County	Bernal/Connolly	7-LAND	increased illegal access to and use of County-owned and leased properties that have been preserved for purposes of conservation and resource protection;	Sections 3.11.1 and 4.11.1 in the EIS have been revised based on this comment. However, it is worth noting that the existing Western line, ROW, and access points have been in existence since the lines were constructed in 1951, prior to the designation of the county-owned preserves.
340	68	68.17	Pima County	Bernal/Connolly	7-LAND	That segment of the preferred route that crosses through T15S,R14E, Section 31 and parts of Section 32 (Exhibit A) is an impediment to completing undertakings which are critically important to the region's economic health and affects the Federal Aviation Authority's (FAA) and the U.S. Air Force's federal interests.	Based on comments by Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. Additionally, U3aPC is part of the revised Agency Preferred Alternative in the EIS, as described in section 2.10.5 of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
346	68	68.23	Pima County	Bernal/Connolly	7-LAND	This route has 13 segments, U3b through U4, that stretch roughly 48.4 miles of which, 29.8 miles are on private land, 17.9 miles on State-owned land, and the remainder on County and Bureau of Reclamation lands (Draft EIS, Volume 2, Table 4.11-7, Page 919). Along the stretch of these segments, five “land types” have been identified (Draft EIS, Volume 2, Table 4.11-14, Page 933): (1) Total Representative ROW Acreage; (2) Farmland of Statewide Importance (FSI); (3) Farmland of Unique Importance (FUI); (4) Prime Farmland if Irrigated (PFI); and (5) Prime Farmland if Meeting Other Conditions (PFOC). It is not clear as to how these “land types” have attained their categorization, as a glossary of terms to define them does not exist as part of the draft EIS. The draft EIS determines 874.9 acres of land within “Total Representative ROW Acreage” (Draft EIS, Volume 2, Table 4.11-14, Page 933) with 25.1 acres of FUI, the latter amounting to approximately three percent of the former. It is not empirically conclusive that lands categorized under FSI, FUI, PFI, and PFOC are subsets of TRRA, as PFOC lands in Segment U3h, exceed TRRA lands by over 100 acres.	Sections 3.11.2 and 4.11.2 in the EIS have been revised based on this comment.
347	68	68.24	Pima County	Bernal/Connolly	7-LAND	The Draft EIS states that “[T]he construction of the transmission line would result in a minor direct effect by eliminating farmland from production, if it cannot be avoided” (Draft EIS, Volume 2, Page 932). An empirical explanation of this conclusion from BLM and other project proponents is essential for the County to review and either agree or disagree. Also, while it is good to know that “[A]dditional efforts to avoid farmlands would be available during completion of the final design,” some mention of these stated efforts, earlier than the ‘final design’ stage is greatly desired in order for Pima County to assess their potential validity and effectiveness. Also, while stating that “[N]o direct or indirect effects of rangelands are expected to occur during the Project operation,” such can be reassuring only with the provision of verifiable data.	Sections 3.11.2 and 4.11.2 in the EIS have been revised to clarify potential impacts to farmlands and range lands and the basis for the potential impacts.
348	68	68.25	Pima County	Bernal/Connolly	7-LAND	This route has 10 segments, MA1 through TH3b (Draft EIS, Volume 2, Table 4.11-7, Page 920), and raises very similar issues and concerns as those mentioned in “Proponent Preferred Route (Subroute 4.1)” above. Such as, the absence of empirical data when stating that “[O]nly three of the local alternatives – TH3a, TH3b, and TH3-Option C – would result in minor direct effects to Farmlands of Unique Importance.” Also, inadequate explanation when stating that “[M]inimal acres of rangeland in the ROW would be directly affected by the construction of the transmission line under any of these local alternatives” is not convincing, especially, without a ‘glossary of terms’ to define ‘minimal’ or ‘minor direct effects’, among other terms.	Sections 3.11.2 and 4.11.2 in the EIS have been revised based on this comment.
376	68	68.53	Pima County	Bernal/Connolly	7-LAND	p. 441, Chapter 3, lines 8-22: a brief discussion of the Pima County Comprehensive Plan refers to a "supplement" regarding environmental planning, calling it the "2012 SDCP." The document is not further named, and only briefly described in terms of environmental planning. This refers to the 2012 issuance of the Multi-species Conservation Plan, an integral part of the Sonoran Desert Conservation Plan. The discussion should correctly recognize the documents it cites in the DEIS and correctly place the MSCP in the appropriate context of the SDCP.With reference to other local planning documents discussed in the DEIS, it is worth noting that both the City of Tucson and Pima County are developing new comprehensive plans that will be in effect most likely before the proposed Southline project goes to construction, if it is approved. The discussion should refer to the up-to-date planning documents and Southline should be certain that the transmission line plans meet the requirements and the intent of these new planning documents.	Sections 3.11.2 and 4.11.2 in the EIS have been revised based on this comment.
377	68	68.54	Pima County	Bernal/Connolly	7-LAND	p. 451, Chapter 3, Land Ownership, lines 4-20: This discussion incorrectly identifies the acreage in Pima County ownership that is intersected by Southline Transmission Line. The DEIS lists only the Cienega Creek Natural Preserve; does not list Empirita Ranch, Valencia Site, or Tumamoc Hill. Table 3.11-6 incorrectly reports the acreage. The discussion and table should be corrected.	Section 3.11.1 and table 3.11-6, as well as section 4.11.1, in the EIS have been revised based on this comment.
378	68	68.55	Pima County	Bernal/Connolly	7-LAND	p. 487, Chapter 3, lines 30-33 incorrectly list land management at Tumamoc Hill as, "Pima County and Arizona College of Science". The management listing needs to be corrected.	Section 3.12 in the EIS has been revised based on this comment.
449	72	72.1	Mountain View Ranch		7-LAND	The Plat for development of Mountain View was approved by the Board of Supervisors of Pima County, Arizona, on October 17, 2000; and, marketing and development of Mountain View has since been in progress. In that regard, Lots 1-132 of Mountain View are located directly adjacent to the south side of Interstate 10 and just east of State Highway 83; and, Lots 133-362 are located on the north side of Interstate 10. Mountain View is located in picturesque rolling Arizona-Sonora Desert terrain, with spectacular views of surrounding mountain ranges, as the name of the subdivision correctly suggests. In that regard, attached as Appendix "A" are copies of photographs taken by one of the principals of Developer/Investor on or about July 3, 2014 which illustrate (i) the view shed from various lots in Mountain View, and (ii) the viewshed from Sonoita Ranch, a single-family residential community immediately to the west of State Highway 83. Attached as Appendix "B" is a copy of the approved Plat map for Mountain View, which identifies the location of Lots 1- 132 in relation to Interstate 10 and State Highway 83.	As discussed in section 1.1 of the Draft EIS, the existing Western line was constructed in 1951; thus, the line and ROW predate the Mountain View Ranch Subdivision by more than 50 years. Planned residential development projects, such as the Mountain View Residential Development, are considered in section 4.21 in terms of the cumulative effects of the proposed Project.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
450	72	72.2	Mountain View Ranch		7-LAND	Based upon Developer/Investor's review of the March 2014 Draft Environmental Impact Statement/Draft Resource Management Plan Amendment (collectively "DEIS") for the Southline Transmission Line Project ("Project"), it appears that both the Project Proponents' Preferred Route and the Agency's Preferred Alternative Route contemplate use of the Western Area Power Administration's ("WAPA") existing transmission system easement which transects that portion of Mountain View located south of Interstate 10, a few miles west of the Pantano Substation. The easement in question is 100' feet width, and it transects portions of Lots 8, 9, 10, 11, 12, 27,28, 30, 33, 36, 39, 40, 41, 42, 43, 92, 95, 96, 104, 105, 106, 107 and 113 in the part of Mountain View located south of Interstate 10. Thus, and as discussed in Section II below, the Project would have direct and substantial adverse impacts upon current and future residents of Mountain View, prospective purchasers of homes in Mountain View and Developer/Investor.	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. As described in chapter 2 of the Draft EIS, the proposed Project (Proponent Preferred, and Agency Preferred Alternative) includes use of Western's existing ROW. As discussed in section 1.1 of the Draft EIS, the existing Western line was constructed in 1951; thus, the line and ROW predate the Mountain View Ranch Subdivision by more than 50 years. Planned residential development projects, such as the Mountain View Residential Development, are considered in section 4.21 in the Draft EIS in terms of the cumulative effects of the proposed Project.
485	76	76.5	Arizona State Land Department	Ojeda	7-LAND	Generally speaking, it appears that the DEIS does not discuss remnant parcels as an issue of concern.	Sections 3.11.1 and 4.11.1 in the EIS have been revised to include information regarding remnant parcels.
492	76	76.12	Arizona State Land Department	Ojeda	7-LAND	Generally speaking the construction/upgrade of new access roads may create opportunities for unauthorized OHV use, which could adversely affect State Trust Land. This indirect and cumulative effect should be addressed in detail.	Sections 3.11.1 and 4.11.1 in the EIS have been revised based on this comment.
493	76	76.13	Arizona State Land Department	Ojeda	7-LAND	Generally speaking it is unclear if the proposed alignment and ultimate location of associated roads, substations, and pole locations…take into consideration the creation of remnant parcels (location, size, shape or other characteristics of a parcel relative to its future economic value.	Sections 3.11.1 and 4.11.1 in the EIS have been revised to include information regarding remnant parcels.
508	76	76.28	Arizona State Land Department	Ojeda	7-LAND	Please update this section to include impacts to (acreage) ASLD Agricultural and Range land uses.	Sections 3.11.1 and 4.11.1 in the EIS have been revised based on this comment.
510	76	76.30	Arizona State Land Department	Ojeda	7-LAND	Please provide information regarding ASLD's Marana, Rincon Posta Que Mada, Marana and Houghton Road Corridor Conceptual Plans (background to be emailed seperately) and reference ARS 37-331.03 (conceptual planning). Please contact Tim Bolton, in the Southern Arizona Office for further information.	Sections 3.11.1 and 4.11.1 in the EIS have been revised based on this comment.
610	82	82.29	SunZia	Wray	7-LAND	Also, existing substations would be expanded along the path of the Upgrade Section and within the Tucson metropolitan area, apparently requiring significant, although undisclosed levels of impact to surrounding land uses. The Southline Draft EIS is not complete until these impacts are fully analyzed and fully disclosed to the public.	Sections 3.11.1 and 4.11.1 in the EIS have been revised to clarify how potential impacts to surrounding land uses have been considered, including the proposed expansion of existing substations. Additional detail on the location and type of expansions at the existing substations has been included in section 2.4.2 of the EIS. As discussed in the Draft EIS, impacts to land use are not considered significant.
611	82	82.30	SunZia	Wray	7-LAND	This is especially critical for the 30 single-family residences in the Drexel subdivision that are likely to be impacted by Southline's ROW requirements. We request the Draft EIS be supplemented to correct this deficiency by significantly expanding the disclosure of likely effects from these expansions.	Sections 3.11.1 and 4.11.1 in the EIS have been revised to clarify how potential impacts to surrounding land uses have been considered, including residential development along Western's existing ROW. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
634	82	82.53	SunZia	Wray	7-LAND	Section 3.11 Land Use (Affected Environment) oversimplifies existing land uses by grouping development categories (e.g., Developed, low-intensity; Developed, medium- intensity; Developed, high-intensity) in terms of gross acreages for the New Build Section and the Upgrade Section without any further detailed descriptions.	Section 3.11.1 of the EIS has been revised to clarify how development categories were derived.
635	82	82.54	SunZia	Wray	7-LAND	This oversimplification is carried forward in Section 4.11 Land Use (Environmental Consequences) – Impacts Common to All Alternatives, which describes potential impacts to all development categories as being minor and temporary. The assignment of minor impacts does not appear substantiated, given that the Upgrade Section requires a new 150-foot wide ROW overlapping a distance of 25 feet of the existing ROW, and is routed through the historic Tumamoc Hill area, Tohono O'odham tribal lands, Tucson Mountain Park, and residential areas in Tucson where condemnation of multiple residential properties would be necessary, albeit such impacts are not disclosed in this Draft EIS.	As described in section 2.4.3 in the Draft EIS, only an additional 50 feet of ROW would be required, not an additional 150 feet. This section of the EIS has been revised for added clarity. As further clarified in chapter 2 of the Final EIS, no new ROW is anticipated between the Del Bac and Rattlesnake substations. Section 4.11.1 of the EIS has been revised to clarify how development categories were derived and how impacts were characterized.
707	82	82.126	SunZia	Wray	7-LAND	Land Use: Section 3.11 Land Use (Affected Environment) oversimplifies existing land uses by grouping development categories (e.g., Developed, low-intensity; Developed, medium-intensity; Developed, high-intensity) in terms of gross acreages for the New Build Section and the Upgrade	Section 3.11.1 of the EIS has been revised to clarify how development categories were derived.
708	82	82.127	SunZia	Wray	7-LAND	Section without any further detailed descriptions. This oversimplification is carried forward in Section 4.11 Land Use (Environmental Consequences) –Impacts Common to All Alternatives, which describes potential impacts to all development categories as being minor and temporary.	As described in section 2.4.3 in the Draft EIS, only an additional 50 feet of ROW would be required, not an additional 150 feet. This section of the EIS has been revised for added clarity. As further clarified in chapter 2 of the Final EIS, no new ROW is anticipated between the Del Bac and Rattlesnake substations. Section 4.11.1 of the EIS has been revised to clarify how development categories were derived and how impacts were characterized.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
709	82	82.128	SunZia	Wray	7-LAND	The assignment of minor impacts is unsubstantiated, given that the Upgrade Section requires a 150 foot right-of-way overlapping a distance of 25 feet of the existing right-of-way, and is routed through the historic Tumamoc Hill area, Tohono O'odham tribal lands, Tucson Mountain Park, and residential areas in Tucson where condemnation of multiple residential properties would be necessary. We request that these impacts be properly disclosed in a supplemental Draft EIS so that the public can be made aware of such possibilities. The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Sections 3.11.1 and 4.11.1 in the EIS have been revised to clarify how potential impacts to surrounding land uses have been considered, including impacts to Tumamoc Hill, Tohono O'odham Nation lands, Tucson Mountain Park, and residential areas in urban Tucson. As described in section 2.4.3 in the Draft EIS, only an additional 50 feet of ROW would be required, not an additional 150 feet. And in some cases, such as between Del Bac and Rattlesnake substations, the additional 50 feet would not be obtained. This section of the EIS has been revised for added clarity. Section 4.11.1 of the EIS has been revised to clarify how development categories were derived and how impacts were characterized. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
729	82	82.148	SunZia	Wray	7-LAND	The following comments, although resource specific to Land Use and Environmental Justice, are exemplary of the inadequate detail provided by all 20 resource reports, which the Draft EIS heavily relied upon to evaluate and disclose environmental impacts. These comments are cursory in nature as our requests for an extension to the comment period were denied. Detailed comments on the remaining resource reports are not provided in this letter due to time constraints. However it is apparent that the level of detail to support an informed and reasoned analysis regarding the context and intensity of impacts is inadequate in most of the resource reports.	The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS.
730	82	82.149	SunZia	Wray	7-LAND	Southline Transmission Project Resource Report 7: Land Use. The land use report was reviewed to ascertain the level of detail that was used to determine and disclose impacts that could result from the construction and operation of the Southline Project as reported in the Draft EIS. Although more detailed maps were included in the resource report, which allows a reviewer to better understand locational information regarding the alignment of the proposed study corridor and representative right-of-way, the level of detail is still inadequate and appears to be a cursory desktop review relying on National Land Cover Database ("NLCD") GIS data.	The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS.
731	82	82.150	SunZia	Wray	7-LAND	It does not appear that any field survey work was conducted, or that efforts were made to confirm that the data provided a meaningful tool for understanding and identifying potential impacts.	The comment accurately reflects the analysis provided in sections 3.11 and 4.11; no field visits were made to field validate data; however, the best available data were used for the Draft EIS.
732	82	82.151	SunZia	Wray	7-LAND	Although, the NLCD is the most ubiquitous information available on a landscape scale, it is most useful for landscape scale policy and planning. It lacks the sufficient site specific information to evaluate context and intensity of localized impacts that could result from the Southline Project. The NLCD should have been accompanied by field verification of real property that could potentially be affected by the Southline Project.	No field visits were made to field validate data; however, the best available data were used for the Draft EIS.
733	82	82.152	SunZia	Wray	7-LAND	Furthermore, Section 7.2.1 of the Land Use Resource Report identifies the area of analysis for the Upgrade Section as 150 feet wide. This is misleading as it is inconsistent with the total right-of-way impact in the Upgrade Section, which requires an additional 125-foot right-of-way to allow for the construction of a new double- circuit 230 kV line to mitigate the removal of Western's existing 115 kV line.	The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS. As described in section 2.4.3 in the Draft EIS, only an additional 50 feet of ROW would be required, not an additional 150 feet. In some cases, such as between Del Bac and Rattlesnake substations, the additional 50 feet would not be obtained. This section of the EIS has been revised for added clarity.
520	76	76.40	Arizona State Land Department	Ojeda	7-LAND	Vol 1 of 4, Page 457, Line 18-21; The DEIS states, "Both the NMSLO and the ASLD indicated that additional information might be available by researching hard-copy office files or conducting field trips to confirm the status of range improvement projects. These efforts have not been undertaken." Please contact ASLD Natural Resources Division to verify that this statement is still accurate.	Additional coordination with NMSLO and ASLD was completed as a result of this comment and information included in section 4.11.2 of the EIS.
16	8	8.1		Anderson	12-SD	Is there any conflict overlap with proposed Organ Mountain/Desert Peaks Monument Proposal	At the time of the publication of the Draft EIS, the Organ Mountains–Desert Peaks National Monument was proposed for designation and analyzed as a reasonably foreseeable action in section 4.20. Sections 3.12 and 4.12 of the EIS have been revised and now reflect designation of the Organ Mountain–Desert Peaks National Monument by presidential proclamation on May 21, 2014. The Agency Preferred Alternative in the EIS would not be located within the National Monument.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
18	8	8.3		Anderson	12-SD	I note that the Proponent Alternative from Wilcox AZ to Afton NM: 1. Lies along the border, probably close enough to fall outside of the proposed Morgan Mountain/Desert Peaks Monument area, except for the northward jog to the (existing) Afton Substation.	At the time of the publication of the Draft EIS, the Organ Mountains–Desert Peaks National Monument was proposed for designation and analyzed as a reasonably foreseeable action in section 4.20. Sections 3.12 and 4.12 of the EIS have been revised and now reflect designation of the Organ Mountain–Desert Peaks National Monument by presidential proclamation on May 21, 2014. The Agency Preferred Alternative in the EIS would not be located within the National Monument.
281	58	58.1	National Park Service	Trenchik	12-SD	The NPS supports the Department of the Interior's efforts to be "smart from the start" in permitting renewable energy projects and related transmission infrastructure. The NPS encourages the Bureau of Land Management (BLM) to make every effort to ensure that transmission lines are constructed and operated in an environmentally responsible manner that serve the public interest, protect cultural and natural resources, and protect our treasured landscapes. While the NPS supports the development and modernization of our nation's energy grid, we maintain that it can and should be done using the least environmentally impactful methods. Addressing impact topics that effect NPS lands and NPS administered sites helps us provide the utmost protection of resources and the visitor experience.	The potential impact of the proposed transmission line on NPS lands and administered sites was analyzed in the Visual Resources (sections 3.10 and 4.10) and Land Use (sections 3.11.1 and 4.11.1) of the Draft EIS.
282	58	58.2	National Park Service	Trenchik/Montano	12-SD	Ch 2, Framework Plans. Page 42, Line 24. Request opportunity to review/comment on the following draft "Framework" plans when they are available – Noxious Weed Management Plan; Reclamation, Vegetation and Monitoring Plan; Plant and Wildlife Species Conservation Measures; and Avian Protection Plan.	Section 2.4.1 of the EIS has been revised to clarity that agencies like the NPS would incorporated into the development of Framework Plans, as appropriate.
529	78	78.2	Coalition For Sonoran Desert Protection	Campbell	12-SD	Impacts to Pima County's Conservation Lands System (CLS) On p. 948 (Impacts Common to All Action Alternatives – Construction), the DEIS states, "Potential impacts from construction activities that would be common to all action alternatives include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect with special designations…Increases in ambient noise levels, the presence of equipment, and dust would be temporary and would decrease with the completion of construction activities. Impacts to special designations during construction would be minor since the activities would be short-term in nature, and would not occur within special designations…Substation expansions that may occur within County special designations would be constructed in areas that are already in operation and have been previously disturbed."	Chapter 2 of the EIS has been revised to include additional information on substation expansion areas that was not available when the Draft EIS was prepared. Section 4.12 in chapter 4 of the EIS has been revised to clarify the potential impacts of the proposed Project on Pima County CLS.
530	78	78.3	Coalition For Sonoran Desert Protection	Campbell	12-SD	Furthermore, on p. 948-949 (Impacts Common to All Action Alternatives – Operation and Maintenance), the DEIS states, "Potential indirect impacts could include changes to the natural, historic, cultural, or visual character of some special designations. Other impacts could include increased access to areas due to the presence of access roads. This could lead to increased use of areas by OHV users, which could conflict with management objectives for some special designations."	This information was discussed in section 4.12 of the Draft EIS and includes Pima County CLS. Section 4.12 in chapter 4 of the EIS has been revised to clarify the potential impacts of the proposed Project on Pima County CLS.
531	78	78.4	Coalition For Sonoran Desert Protection	Campbell	12-SD	Lastly, on p. 954 (Subroute 3.1-Construction-Proponent Preferred), the DEIS states, "The impacts to Pima County special designations would be negligible since subroute 3.1 would occur in areas that already contain utilities, including existing Western lines. Further, the transmission line would span the important Biological Core and Important Riparian Areas and no towers would be constructed within the specially designated areas. The impact would be negligible to the Multiple Use areas since transmission lines are an allowable use for this designation, and existing Western lines are already in operation for all portions of subroute 3.1."	This information was discussed in section 4.12 of the Draft EIS and includes Pima County CLS. Section 4.12 in chapter 4 of the EIS has been revised to clarify the potential impacts of the proposed Project on Pima County CLS.
532	78	78.5	Coalition For Sonoran Desert Protection	Campbell	12-SD	The described impacts to other subroutes under consideration in Pima County reference the above paragraphs, along with other similar paragraphs for other subroutes addressed earlier in the DEIS (that also state that impacts will be “negligible”). In the spirit of brevity, we are not going to cite every paragraph that describes proposed impacts and mitigation for the large number of subroutes being considered. However, the three instances cited above provide a representative example of what is presented and proposed in the DEIS.	This information was discussed in section 4.12 of the Draft EIS and includes Pima County CLS. Section 4.12 in chapter 4 of the EIS has been revised to clarify the potential impacts of the proposed Project on Pima County CLS.
533	78	78.6	Coalition For Sonoran Desert Protection	Campbell	12-SD	We strongly disagree with the assertion that the Southline Transmission Line Project would cause “negligible” impacts to Pima County’s CLS.	Section 4.12 in chapter 4 of the EIS has been revised to clarify the potential impacts of the proposed Project on Pima County CLS.
534	78	78.7	Coalition For Sonoran Desert Protection	Campbell	12-SD	The “Impacts Common to All Alternatives” for both construction and operation and maintenance describe significant potential impacts related to ground disturbance, increases to ambient noise levels, increased future access due to the presence of access roads, and the potential for increased use by OHV users.	This comment does not raise questions about the analysis or provide additional information for consideration. This information is stated and acknowledged in section 4.12 of the EIS. None of the potential impacts described in chapter 4 of the Draft EIS, or summarized in tables 2-11, 2-12, 2-13, or 2-14, in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) would be characterized as significant impacts resulting from the proposed Southline Transmission Line Project.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
270	52	52.1	New Mexico Wilderness Alliance	Calman	21-WILD	The DEIS says that a desk-top LWC inventory was done on a two-mile wide corridor along the proposed routes of the transmission line. It says that they established boundaries of potential units via satellite and GIS data, but they haven't done on-the-ground inventory for the naturalness and solitude criteria yet. It then says that this on-the-ground inventory of the units will be available in the Final EIS. Our concern is that if data is only made available when the Final is published, it means the actual inventory will never be available for public comment. So, is this really true, and if so, is there a reason that it's not being made available? It's our understanding that BLM Manual 6310 and BLM directives state that the inventories need to be made available to the public at the earliest possible time. I assume you'd need the inventories completed before making a final decision and issuing an FEIS.	The inventory herein is available for the public. No decision on the proposed Project would be made by BLM until at least 30 days after publication of the NOA for the Final EIS. Additionally, these inventories would later be incorporated in BLM's RMP when the respective RMP undergoes a revision or update; the public would have a chance to participate in that process, as directed by BLM and CEQ regulations.
681	82	82.100	SunZia	Wray	21-WILD	Wilderness. Section 3.13, page 492 – We request that wilderness characteristic units be developed for the Draft EIS. Because of this deficiency, impacts and, thus mitigation, cannot be determined, preventing sound analysis upon which an informed decision can be based.	Wilderness inventory units (WIUs) were described in sections 3.13 and 4.13 of the Draft EIS. Sections 3.13 and 4.13 of the EIS include an updated analysis that considers all four criteria (size, naturalness, opportunity, and other opportunities) and the results of fieldwork.
683	82	82.102	SunZia	Wray	21-WILD	In addition, impacts to wilderness character should be based on the project visual influence on the wilderness character unit. Contrast and KOPs should be used for this assessment.	BLM Manual 6310 does not require visual contrast rating sheets to ascertain a WIU's visual character. As discussed in sections 3.13 and 3.14, the "visual influence" is captured during the wilderness characteristics inventory under the "naturalness" assessment. While visual influence is considered, it is not the basis of the wilderness character as this comment indicates. There are many wilderness areas (designated) from which one can see transmission lines, but those instances are not in and of themselves characteristics that negate a wilderness designation, or in our case, potential for wilderness characteristics.
684	82	82.103	SunZia	Wray	21-WILD	Section 3.13.1, page 493 – According to VRM HB 6310, a wilderness characteristic study area should contain the entire wilderness character unit that is bisected or interferes with the project. In this manner, direct, indirect, and cumulative effects take into account the acreage of an entire unit. The impact is related to how many acres lose wilderness characteristics based on the 4 criteria (size, naturalness, opportunity, etc.).	Wilderness inventory units (WIUs) were described in sections 3.13 and 4.13 of the Draft EIS. Sections 3.13 and 4.13 of the EIS have been revised to include an updated analysis that considers all four criteria (size, naturalness, opportunity, and other opportunities) and the results of fieldwork.
685	82	82.104	SunZia	Wray	21-WILD	Cumulative effects should examine past, present, and reasonably foreseeable future actions measured against the acreage of wilderness characteristics.	The cumulative effects analysis for wilderness characteristics in section 4.21.4 has been revised in the EIS based on this comment, where spatial data are available for those actions considered in the analysis.
509	76	76.29	Arizona State Land Department	Ojeda	11-REC	Generally speaking, the DEIS should clarify ASLD's recreational permit process. Please refer to http://www.azland.gov/programs/natural/recreation_permit.htm	Section 3.14 in the EIS was updated to add information on the ASLD recreational permit process.
3	3	3.1	Westside Development Neighborhood Association	Zeeger	13-SOCI	The green line route will have an effect on all the neighbors along this route starting at Starr Pass and Coati Ave moving south along San Joaquin Ave to Kennedy Park. How will this be addressed?	The potential impact of the proposed transmission line and alternatives in terms of land use, social and economic consideration, and environmental justice was analyzed in chapter 4 of the Draft EIS (section 4.11, Land Use, and section 4.15, Socioeconomics and Environmental Justice). Section 4.15.3 of the Draft EIS discussed potential effects on property values from construction and operation in the Upgrade Section.
21	9	9.1		Cotignola	13-SOCI	We see that yous have plans to build a substation in Deming. Question #1 – What does that mean for Deming and the Rest of Southern Luna County New Mexico if anything at all	The potential impact of the proposed transmission line and alternatives in terms of land use, social and economic consideration, and environmental justice was analyzed in section 4.15 in chapter 4 of the Draft EIS. As discussed in section 4.15, the proposed alternatives could provide significant long-term benefits by increasing the ability of the grid to meet demand growth in the region.
23	9	9.3		Cotignola	13-SOCI	I'm sure that in time the Columbus Port of Entry will create growth & development North of it ok in fact that its job. But its our opinion we believe that on both of these roads & highways it would create job plus it would bring or attract growths South of Deming in Southern Luna County New Mexico which is very much needed. babe ruth once said if you build it they will come and if you build it come they will	The potential for Project related employment and changes in social and economic conditions was discussed in sections 3.15 and 4.15 of the Draft EIS.
24	9	9.4		Cotignola	13-SOCI	Plus I know a little bit about land location. If the South – West water is not the attraction for land buyers / home buyers & developer. in the South-West its mountain view like the Organ Mountain are for Las Cruces. Sometime land buyers & home developer will soon discover Southern Luna Counties Low land prices like I did.	The potential for Project related employment and changes in social and economic condition, including property value, was discussed in sections 3.15 and 4.15 of the Draft EIS. Additionally, information on potential visual impacts were discussed in sections 3.10 and 4.10 (Visual Resources) of the Draft EIS.
26	10	10		Skinner	13-SOCI	Concerned about transmission lines running to close to Village of Columbus residents	The location of proposed Project and alternatives, including proximity to Columbus, New Mexico, was described in chapter 2 of the Draft EIS. Additionally, the potential impact of the proposed transmission line and alternatives in terms of land use, social and economic consideration, and environmental justice was analyzed in chapter 4 of the Draft EIS (section 4.11, Land Use, and section 4.15, Socioeconomics and Environmental Justice). Finally, the Agency Preferred Alternative in the EIS does not include the route (subroutes 1.2 and 2.2) running close to Columbus, New Mexico.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
29	12	12		Harris	13-SOCI	1. Proposed will affect existing homes in the Akela area build around an air-park runway. 2. Proposed will affect exiting areas with housing north of Deming. 3. Proposed may result in increased cost in dealing with private land owners. 4. Alterative along US MEX border will be mainly across BLM and NM State trust land and affect very few homes and private property.	The potential impact of the proposed transmission line and alternatives in terms of effects on property values was discussed in section 4.15 of the Draft EIS. As discussed in chapter 2 (see section 2.7.1), the proposed route near Akela would parallel an existing EPEC 345-kV transmission line and would comply with FAA requirements. Tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) compared impacts of alternatives, including surface ownership and social and economic impacts.
195	38	38.12	Hearing	No ID Speaker	13-SOCI	Who is to gain monetarily and how much profit and what is going to be left in the area after you exit?	Southline Transmission Line, LLC (Southline), is the Project sponsor, as described in section 1.1 of the Draft EIS. Southline is an independent, private entity (a subsidiary of Hunt Power) and would profit from this proposed Project. The amount of profit is unknown.
196	38	38.13	Hearing	Yordani	13-SOCI	What are the benefits come out of this for our surrounding area? I guess his answer was our power hook-ups.	The potential for Project related employment and changes in social and economic conditions, such as employment and tax benefits, was discussed in sections 3.15 and 4.15. As discussed in section 1.3.1 of the Draft EIS, the Project includes multiple proposed interconnections with existing substations and has been designed to improve the electric transmission infrastructure in southern New Mexico and southern Arizona, including the Benson area, in order to strengthen the existing system.
243	46	46.6		Hamel	13-SOCI	I don't want those towers + lines negatively impacting the value of our ranch. And it will be a negative impact on our values.	Your opposition to the Project is noted and included here and in the Project Record. The potential impact of the proposed transmission line and alternatives in terms of effects on property values was discussed in section 4.15 of the Draft EIS.
258		49.9	Cascabel Working Group	Meader	13-SOCI	Section 2.4.3 Project Construction Activities, Upgrade of Existing Western Transmission Line, page 98. This section notes that the desired method of replacing the 115-kV line will be to build the new 230-kV lines next to it while leaving the old line in service, and then the old line will be removed once the new lines are in place. This requires the initial acquisition of an additional 125 feet of right-of-way for a 200-foot width with the final right-of-way increased by 50 feet to 150 feet. The line itself will be moved 100 feet from its present alignment. While this method seems acceptable in open country, it will likely raise strong objections where the line crosses private property, at least around Benson and through the J-6 Ranch and Mescal communities. If this route is chosen, as seems likely, it is strongly recommend that Southline not attempt to use this method to replace the line in these areas but that the old line first be taken out of service. The J-6 Ranch and Mescal residents have voiced the strongest objections to the project, and if their wishes are going to be overridden, the impact upon their properties should be minimized.	Section 2.4.3 of the Draft EIS described the upgrade of the existing Western 115-kV line. As described in this section in the Draft EIS, only an additional 50 feet of ROW would be required, not an additional 125 feet. The area through Tucson between Del Bac and Rattlesnake substations is not conducive to the parallel construction technique described; thus, outages on the line would need to be taken in order to tear out and rebuild on the existing 100-foot ROW. This section of the EIS has been revised for added clarity and to include information on the potential use outages on the line.
259	49	49.10	Cascabel Working Group	Meader	13-SOCI	Also, the increased height of the new poles may increase property owner objections because the poles are visible from greater distances. The width of the new poles and lines will be similar or less than the current width, the one difference being the addition of a second set of lines, so width seems a less objectionable parameter. The DEIS states that the height of the new poles can vary from 100-140 feet in height, with the distance between them varying from 700-1100 feet. I assume that the shorter pole heights would be used when the poles are closer together. It may be worth considering a minimal pole spacing to accommodate the lowest possible pole height. Current pole spacing through the J-6 and Mescal communities is 700 feet. Property owners should be asked whether this spacing and pole height would be more acceptable, with the new poles being placed in the same locations as the old ones, unless a property owner would like the locations changed. The issue here is lessening the objections, if possible, of those residents who are going to strongly object to this routing no matter what Southline does to lessen the impact.	As discussed in section 2.4.3 in the Draft EIS, the width of the structures and new conductors would be larger than the existing structures and conductors. Section 2.4.2 of the EIS has been revised to clarify that Western would work with private landowners during the micro-siting of the proposed line to minimize impacts.
288	60	60.3		Wood	13-SOCI	Destruction of property/vegetation (mine) during construction,	The potential impact of the proposed transmission line on property in terms of vegetation was described in chapter 4 of the Draft EIS. See section 4.8.1 for impacts to vegetation, section 4.15 for property value, and section 4.11 for land use (in the Draft EIS). See table 2-7 for design features for environmental protection in the Draft EIS (now table 2-8 in the EIS).
289	60	60.4		Wood	13-SOCI	Placement of new poles. I don't want them on my side of existing line and to be sure my neighbor opposite the line doesn't want them on his side	Section 2.4.2 of the EIS has been revised to clarify that Western would work with private landowners during the micro-siting of the proposed line to minimize impacts.
290	60	60.5		Wood	13-SOCI	Decreases usable/buildable property due to increased ROW easement.	Section 2.4.2 of the EIS has been revised to clarify that Western will work with private landowners during the micro-siting of the proposed line to minimize impacts, such as clarifying that some uses would not be allowed. The potential impact of the proposed transmission line on property in terms of land use was described in section 4.11.1 and in terms of property value in section 4.15 of the Draft EIS.
338	68	68.15	Pima County	Bernal/Connolly	13-SOCI	economic development locally and within the region	The potential for Project related employment and changes in social and economic conditions was discussed in sections 3.15 and 4.15 of the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
343	68	68.20	Pima County	Bernal/Connolly	13-SOCI	The recognition of this area as an economic lynchpin was initiated with Pima County's investment of $6 million to purchase the undeveloped areas of Section 31 in order to protect Raytheon Plant operations from encroachment. Subsequently, this area has been targeted for expansion of Aerospace, Defense, and Technology employment and is a critical component for an industrial corridor from Nogales Highway to I-10. Section 31 is also an integral part of those lands south of Tucson International Airport that the Joint Planning Advisory Council which includes the Pima, Maricopa, and Central Arizona Associations of Governments has identified as the ideal location for the Import Distribution Center for the State of Arizona for goods coming into the United States from Mexico and Asia. The Arizona Commerce Authority has referred several potential tenants to the Business Park who would require between 500 to 1,000 acres for their operations. TESLA, one of the pending, potential tenants, is currently examining the feasibility of locating a $5B battery development and manufacturing facility to this site. Development of a significant employment center is an important socioeconomic factor for this region which currently suffers from high unemployment. Investments and partnerships supporting federal needs and interests of the FAA Tucson Airport Authority, US Air Force, National Guard Bureau, and Raytheon have led to the relocation of 4 miles of the Hughes Access Road at a cost approximating $12M, in addition to the development of the Aerospace, Defense, Technology Research and Business Park (see Exhibit B).	Section 4.15 in the EIS has been revised to include additional information on the economic importance of this area.
470	73	73.4	Sonoita Hills Community Association		13-SOCI	As was the situation in the Chino Hills case, the proposed Upgrade Section structures in the Mountain View Ranch Subdivision and .surrounding single-family residential community area(s) would be "located right outside the residents' backdoors . . . [and would] transform the open space along the right-of-way to an eye sore." [See Decision No. 13-07-018 at pages 11-12] In addition, we believe that the proposed replacement facilities would destroy the property value of those who reside along the 100' right-of-way herein question.	As discussed in section 1.1 of the Draft EIS, the existing Western line was constructed in 1951; thus, the line and ROW predate the Mountain View Ranch Subdivision by more than 50 years. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the Draft EIS.
710	82	82.129	SunZia	Wray	13-SOCI	Environmental Justice The impact analysis for the environmental justice population is deficient in two ways. First, the impact indicator and determination of significant impacts for environmental justice populations do not meet the context and intensity requirements for evaluation in a NEPA document. For example, as stated in the Draft EIS Section 4.15.2, the impact indicator for Environmental Justice Populations is "…anticipated high and disproportionate adverse socioeconomic or environmental effects on environmental justice communities relative to effects across the analysis area as a whole", whereas, the determination of significant impacts are stated in the Draft EIS as "(h)igh and disproportionate adverse effects on environmental justice communities." This does not explain the range or scale of impacts, for environmental justice populations, and therefore no meaningful comparison between alternatives can be made.	Sections 3.15 and 4.15 in the EIS have been revised to clarify indicators and determinations of significance for environmental justice; however, no high or disproportionate impacts to environmental justice communities are anticipated.
711	82	82.130	SunZia	Wray	13-SOCI	Second, the analysis area of environmental justice populations is too narrow in the Upgrade Section. To make a meaningful evaluation of disproportionately affected environmental justice populations, the reference-area comparison should contain a geographic boundary that is indicative of the overall population of the urbanized areas around Tucson. This will more accurately reflect the relative disproportionate effects on environmental justice populations.	The analysis area in the Draft EIS (sections 3.15 and 4.15) was identified based on the area most likely to bear environmental effects. As stated in section 4.15 of the Draft EIS, no high or disproportionate impacts to environmental justice communities are anticipated.
712	82	82.131	SunZia	Wray	13-SOCI	The determination in Section 4.15.2, pages 1020–1021 is that "In the Upgrade Section, 26 of the 38 Census tracts that could be crossed by any of the action alternatives can be defined as potential environmental justice communities…, few, if any, of these adverse effects would be "high" and, given the prevalence of low-income and minority residents throughout the area, disproportionate impacts on these groups are likely inevitable from any feasible transmission line alignment." Given that the majority of census tracts crossed by the Southline Project are defined as environmental justice populations, the land-use impacts that are related to condemnation and recreation that have not been disclosed in the Draft EIS (see Specific Resource Areas of Concern-Land Use, in this comment letter) would likely disproportionately affect environmental justice populations resulting in high impacts. The analysis needs to be corrected in order to fully disclose the level of impact on environmental justice populations. The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Sections 3.11.1 and 4.11.1 (Land Use) and sections 3.15 and 4.15 (Socioeconomics and Environmental Justice) in the EIS have been revised to clarify the relationship between land use and environmental justice communities; however, no high or disproportionate impacts to environmental justice communities are anticipated.
728	82	82.147	SunZia	Wray	13-SOCI	Additionally, the non-disclosure of potentially significant environmental impacts to Land Use and Environmental Justice population through Tucson resulting from the construction and operation of the Upgrade Section should have instigated a search for alternatives that would have less impact on these important environmental resources.	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. As noted in section 2.6 of the Draft EIS, alternatives were developed based on environmental concerns expressed during scoping, including the potential for major environmental impacts; consideration of the BLM and DOE NEPA guidelines, including recommendation to evaluate or dismiss; and review of all route alternatives and rationale by cooperating agencies and the ID team. Section 2.9 of the Draft EIS describes other alternatives that were dismissed from consideration. Further, no other alternatives were identified that would meet the goals of the Project (i.e., interconnections with existing substation) and were otherwise reasonable.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
736	82	82.155	SunZia	Wray	13-SOCI	Southline Transmission Project Resource Report 11: Socioeconomics and Environmental Justice. This report was reviewed to ascertain the level of detail that was used to determine and disclose impacts that could result from the construction and operation of the Southline Project as reported in the Draft EIS. The analysis of determination of potential environmental justice populations does not meet the CEQ guidance provided in Environmental Justice; Guidance Under the National Environmental Policy Act (CEQ 1997).	The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS.
737	82	82.156	SunZia	Wray	13-SOCI	The analysis provided in the resource report confuses the suggested method for determining the presence of environmental justice populations. As quoted, CEQ guidance in the resource report Section 11.2.1: “minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent or (b) the population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.” The analysis disregards the operation and significance of the conjunction ‘or’ and relies only on one criterion for the determination of environmental justice populations within the area of analysis for the Southline Project. For example: CH2M Hill 2013, page 11-28); CH2M Hill 2013, page 11-30); (CH2M Hill 2013, page 11-39); (CH2M Hill 2013, page 11-40). This is an egregious oversight and disregards potential environmental justice populations that are likely present by the data shown in Tables 11-12, 11-13, 11-22 and 11-23 of the resource report. CEQ guidance suggests that if either of the conditions (i.e., environmental justice populations greater than 50% or percentage of the affected area is meaningfully greater than the environmental justice population percentage in the reference area) is satisfied, then environmental justice populations are present. The use of only one condition for determination is inadequate and therefore the conclusions are incomplete.	The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS.
738	82	82.157	SunZia	Wray	13-SOCI	A detailed analysis and rationale for determining a meaningfully greater proportion of environmental justice populations within the area of analysis when compared to an appropriate unit of geographical analysis is absent from the resource report and Draft EIS. The results of this additional analysis would likely constitute significant disproportionate impacts to environmental justice populations as a result of the construction and operation of the Southline Project, particularly in the Upgrade Section, and potentially within the new build section as well.	Sections 3.15 and 4.15 in the EIS have been revised to clarify indicators and determinations of significance for environmental justice.
739	82	82.158	SunZia	Wray	13-SOCI	Additionally the results should be evaluated for high and adverse impacts. The further identification of the presence of environmental justice populations within the areas of analyses should be further evaluated in terms of context and intensity when compared to the location of environmental impacts identified for the Southline Project. For example, where environmental justice populations are identified for visual impacts, land use/condemnation, health and hazardous materials, system outages, socioeconomic impacts, etc., they should be evaluated for a determination of disproportionality to environmental justice populations when compared to the geographical area of analysis (reference area). These results should then be compared to the other alternatives examined in detail by the Draft EIS. However, since no alternatives in the Upgrade Section avoid environmental justice populations or communities, disproportionate impacts to these populations (potentially significant) are unavoidable. We request that this analysis be corrected and the remaining resource reports be evaluated and corrected should errors be found.	Sections 3.15 and 4.15 in the EIS have been revised to clarify indicators and determinations of significance for environmental justice. The Southline Transmission Line Resource Reports cited in the Draft EIS are some of many valuable reference documents used in the analysis. Data used in the Draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS.
740	82	82.159	SunZia	Wray	13-SOCI	The level of analysis outlined herein should have been done in connection with the Draft EIS, but, having failed to do so, the BLM and Western are now required to supplement the Draft EIS and re-publish it for public review and comment. The lack of sufficient identification and analysis of impacts to environmental justice populations cannot be cured between the Draft and Final EIS.	Please note that the EIS reflects consideration of all comments received during the public comment period on the Draft EIS. The EIS includes responses to comments received during the public comment process (chapter 8 of the EIS) and provides revised EIS text based on those comments. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
779	83	83.12	Audubon Arizona	Supplee	13-SOCI	Economic Values of Ecotourism. We wish to emphasize the economic values of watchable wildlife, particularly bird watching, to the communities of the San Pedro River and its tributaries, as well as Willcox. The Willcox Playa and associated environs represent well-known ecotourism hot-spots and birders in particular come from all over the world to bird this region. Ecotourism is especially important for the dispersed rural communities in Cochise, Pima and Pinal counties. Willcox hosts a major birding festival focused upon the wintering Sandhill Crane (Grus canadensis) population that attracts hundreds of visitors every year. If ecotourism were reduced because of direct, indirect and cumulative impacts of the transmission line, there would be direct economic impacts to the various communities, from Winkelman to Benson and Willcox, that are not assessed in the DEIS. In a 2006 study, the Outdoor Industry Foundation reported that all outdoor wildlife-related recreational activities generated $730 billion annually for the United States economy, and of that, watchable wildlife generated $43 billion annually. They reported 66 million Americans participated in wildlife viewing, which supported 466,000 jobs. Estimated economic returns included retail sales averaging $8.8 billion, trip related expenditures of $8.5 billion, and state and federal tax receipts of $2.7 billion. The report is available at http://www.outdoorindustryfoundation.org./ Although much of this economic impact is due to outdoor recreation, other visitors may come to these areas for sight-seeing, for family gatherings, for educational benefits and for many other values not captured by the category of outdoor recreation. According to a 2011 study by the National Fish and Wildlife Foundation, http://www.nfwf.org/Content/ContentFolders/NationalFishandWildlifeFoundation/HomePage/ConservationSpotlights/TheEconomicValueofOutdoorRecreation.pdf, a minimum estimate of the combined value of outdoor recreation, nature conservation and historic preservation shows that over 9.4 million jobs were created while $107 billion was generated by local, state and federal tax revenues. The most recent economic analysis using US Fish and Wildlife Service data calculated for each Arizona county states that ecotourism is worth over $1.5 billion dollars to Arizona each year - over $300 million in Pima County, over $95 million in Pinal County, and over $25 million in Cochise County each year. http://tucsonaudubon.org/images/stories/conservation/AZ_County_Impacts_-_Southwick.pdf. This analysis revealed that Arizona created 15,058 full and part-time jobs and accounted for salaries and wages of $429,391,051, or nearly $430 million in total household income. Arizona engendered over $57 million in state taxes (state sales taxes of $46,756,837 and state income taxes of $10,821,828) and federal income taxes of $75,544,307. Home owners near parks and protected areas are repeatedly seen to have property values more than 20% higher than similar properties elsewhere. This information should be included in the economic analysis section of the DEIS.	Section 3.15.9 (Tourism and Recreation) in chapter 3 of the EIS has been revised to include additional information on the economic value of ecotourism. Further, potential impacts to eco-tourism were a consideration in the decision to include route variations P7a, P7b, P7c, and P7d in the EIS.
27	11	11		Howell	16-PHS	1. How do you deal with leakage from lines or electrical appliances, tv, ratio, etc. 2. How is livestock affected? Also humans?	Information on concerns about EMF and the potential effects on humans from electromagnetic fields from the proposed transmission line was described in sections 3.16 and 4.16 of the Draft EIS. Sections 3.11.2 and 4.11.2 of the EIS have been revised to consider how EMF may affect livestock.
165	32	32.11	EPA	Jansky/Weeks	16-PHS	Public Health and Safety. Chapters 3 and 4. Valley Fever (coccidioidomycosis) has a high prevalence rate in Arizona. Of the 150,000 valley fever infections diagnosed each year in the US, 60% occur in Arizona. Since the Arizona Department of Health Services made it a reportable disease in 1997, the rate of new Valley Fever cases has more than quadrupled over the last decade from 36 cases per 100,000 population in 1999, to 155 cases per 100,000 in 2009. More than 90% of the reported cases occur within a narrow 200 mile corridor generally following Interstate 1O; stretching from Northwest Maricopa County to Green Valley in the southern part of Pima County. This area includes the major metropolitan areas of Phoenix and Tucson. Recommendation: The Final EIS should consider that workers contracting Valley Fever is a possibility, and describe any additional mitigation or prevention measures that may be used.	Sections 3.16 and 4.16 in the EIS have been revised to address potential impacts to construction workers for Valley Fever.
209	38	38.26	Hearing	No ID Speaker	16-PHS	What' s the physical impact? If it's going through our property and we 're right there by it, what' s the physical impact on humans?	Information on concerns about electrocutions and the potential effects on humans from EMFs from the proposed transmission line was described in sections 3.16 and 4.16 of the Draft EIS.
223	41	41.8	Hearing	No ID Speaker	16-PHS	On that same topic, the -- the handout you have about the electromagnetic fields, it says that if you are 300 feet from the edge well, if you're a hundred feet from the edge of the right-of-way you're at 20. What would that be the equivalent of? So if you had a house, how close would you put it to that.	Information on concerns about the potential effects on humans from EMFs from the proposed transmission line was described in sections 3.16 and 4.16 of the Draft EIS. As noted in the Draft EIS, EMFs emitted by the proposed Project would not exceed exposure guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.
286	60	60.1		Wood	16-PHS	I am concerned about the following. A) Health hazard to me and my family and others who live near the transmission line due to double voltage and double wires.	Information on concerns about electrocutions and the potential effects on humans from EMFs from the proposed transmission line were described in sections 3.16 and 4.16 of the Draft EIS. As noted in the Draft EIS, EMFs emitted by the proposed Project would not exceed exposure guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
349	68	68.26	Pima County	Bernal/Connolly	16-PHS	The Draft EIS states that "[A]ll future or planned land uses in Pima and Pinal counties, Arizona, would be required to conform to the terms and conditions of the proposed Project and alternatives where applicable, if a ROW is granted by the BLM." Given the binding nature of this requirement, a detailed study on the economic, environmental, and social impacts of high voltage transmission lines (HVTL) on adjacent and abutting properties is greatly desired. It is understood that the project proposes to share existing transmission line rights-of-way in certain areas but there are no data provided on what impacts doubling the Kilo Volts on these lines will have on adjacent property, given that almost 30 miles of the ROW occurs on private land.	Information on concerns about electrocutions and the potential effects on humans from electromagnetic fields from the proposed transmission line were described in sections 3.16 and 4.16 of the Draft EIS. As noted in the Draft EIS, EMFs emitted by the proposed Project would not exceed exposure guidelines proposed by the ICNIRP, the IEEE, and the ACGIH.
431	68	68.108	Pima County	Bernal/Connolly	17-TRANS	The Pima County Department of Transportation has reviewed the proposed Southline Transmission Project regarding the proposed high voltage upgrade and rebuild of transmission lines through Pima County, as indicated on their submittal document. Any work adjacent to or within Pima County right of way should be coordinated with the Department of Transportation. Please contact Robert Johnson (520) 724-6461 or Ted Roberts (520) 724-6367, who coordinate utilities with County right of way.	Sections 3.18 and 4.18 of the EIS have been revised to include information that proposed Project work adjacent to or within Pima County ROW would be coordinated with the Pima County Department of Transportation.
432	68	68.109	Pima County	Bernal/Connolly	17-TRANS	Pima County has established and adheres to certain roadway development standards and regulations to preserve and protect natural cultural resources to prevent and reduce air pollution and to insure safe public transportation facilities. Pima County objects to and does not support any request within public right of way unless there are appropriate conditions of the right of way application approval. The conditions of the approval should preserve and protect natural and cultural resources (plant survey and preservation plan cultural resources survey), prevent the reduce air pollution (paved roadway) and insure safe public transportation facilities (provisions for drai9nage and appropriate roadways design, width, horizontal and vertical alignment).	Sections 3.18 and 4.18 of the EIS have been revised to include information on roadway development standards in Pima County, per Pima County Department of Transportation guidelines.
142	27	27.1	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	17-TRANS	I am the New Mexico State University's Unmanned Aircraft Systems Flight Test Center (UAS FTC) Deputy Director, and it was suggested that this might interfere with our conducting of UAS test flights. I do not believe that this is the case, however, in the interest of safety of flight for these UAS and our manned aircraft assets, I thought I would get in touch and research some basic information. I have noted that it will be a 345 KV line or group of lines going from Afton, NM to Apache, AZ	Sections 3.11.1 and 4.11.1 (Land Use) of the EIS have been revised to include information on NMSU's Unmanned Aircraft Systems Flight Test Center. The proposed Project and alternatives were described in chapter 2 of the Draft EIS.
146	27	27.5	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	17-TRANS	NMSU's UAS FTC was the first UAS FTC in the national airspace system (NAS) and began in 2007. We have performed some research with EPRI on distribution lines. We currently have many UAS assets and are continuing to work with the FAA on the concept of operations and safe flight of UAS for civil applications in the NAS. If you would like, NMSU UAS FTC would be happy to discuss and work with you using UAS to support your efforts in the terrain mapping of the line, recording the building of the line, and developing UAS procedures for performing inspections.	Thank you for your comment and offer of assistance. Sections 3.11.1 and 4.11.1 (Land Use) of the EIS have been revised to include information on NMSU's Unmanned Aircraft Systems Flight Test Center.
147	27	27.6	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	17-TRANS	I have attached a handout of the NMSU Unmanned Aircraft Systems Flight Test Center. The gray shaded area is our FAA approved flight area, but additional space can be attained if needed. At the meeting, I mentioned that UAS might be an asset in you environmental impact assessment. Also UAS would be a very good tool for the design and planning for the pipeline. Advances in UAS and sensors have mapping down to 4 cm and provide excellent accuracy	Thank you for your comment and offer of assistance. Sections 3.11.1 and 4.11.1 (Land Use) of the EIS have been revised to include information on NMSU's Unmanned Aircraft Systems Flight Test Center.
148	27	27.7	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	17-TRANS	The southline as proposed will have not have any impact on the New Mexico State University Unmanned Aircraft Systems Flight Test Center.	Sections 3.11.1 and 4.11.1 (Land Use) of the EIS have been revised to include information on NMSU's Unmanned Aircraft Systems Flight Test Center.
433	68	68.110	Pima County	Bernal/Connolly	17-TRANS	Scenic Route requirements of the Chapter 18.77.040.E5 apply for roadways designated Scenic per the Pima County Major Streets and Scenic Routes Plan.	Sections 3.18 and 4.18 of the EIS have been revised to include information on scenic route requirements in Pima County, per the Pima County Major Streets and Scenic Routes Plan.
264	49	49.15	Cascabel Working Group	Meader	18-TRAIL	Section 3.9.6, Analysis Area Conditions, Historic Trails and National Historic Trail Corridor, Pages 350-352. Although this is not a deficiency in the DEIS, it may be of interest because of the various trails mentioned in this section. In 1856–57 the Department of the Interior built or routed the Yuma–El Paso Wagon Road (the Lynch Wagon Road) across the area that the Southline Project traverses. The Southline will cross it at some location(s). Finding this route would be nearly impossible today, but I am attaching a map that shows the route from El Paso to central Arizona. A portion of the route is still used today by ranchers along the Tres Alamos Wash northwest of Croton Springs on the Willcox Playa.	Sections 3.9 and 4.9 of the EIS have been revised to include information on the Yuma–El Paso Wagon Road.
471	74	74.1	U.S. Forest Service	White	18-TRAIL	I am pleased to see much of my previous recommendations incorporated into the DEIS. One error remains regarding the Arizona Trail on Pg. F-9, line 13: "At this time, a CMP has ye to be developed for the Arizona Trail, and there is no lead agency identified."	Appendix F in the EIS has been revised to correct this information.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
472	74	74.2	U.S. Forest Service	White	18-TRAIL	As the assigned administering agency for the Arizona Trail, the U.S. Forest Service is the lead agency in the development of the CMP. This should be corrected in Appendix F and anywhere else it may occur in the DEIS.	Appendix F in the EIS has been revised to correct this information.
473	74	74.3	U.S. Forest Service	White	18-TRAIL	As I had difficulty downloading the documents into a searchable format, I was unable to locate the mitigation measures related to the project design criteria to see if my recommendations were incorporated.	Project design features previously provided were included in table 2-7 in the Draft EIS (now table 2-8 in the EIS).
476	74	74.6	U.S. Forest Service	White	18-TRAIL	Construction of additional roads crossing the trail and disturbance of the trail tread should be avoided. National Scenic Trails are intended to be in a non-motorized setting and mitigation should include measures to prevent motor vehicles of any kind from accessing the ANST or CDT during or after construction, or coming within a quarter mile of the ANST on routes created by the project, after it is completed. The primitive roads south of I-10, including those following utility corridors, are very popular with off-highway vehicles. Some of these motorized recreationists are very persistent and monitoring may be needed to ensure closed and rehabilitated project access roads are not reopened, leading to access to the ANST.	As stated in chapter 2 of the Draft EIS, the proposed Project would be designed, as feasible, to use existing access roads with minimal improvement to minimize creation of additional access routes. The intent is to do no more than is necessary to get equipment in and out safely and to prevent erosion and damage to vegetation. Post-construction monitoring of OHV users is the responsibility of the landowner or manager.
477	74	74.7	U.S. Forest Service	White	18-TRAIL	My recommendation about the State Land Department ROW for the Arizona Trail, held by Pima County, was incorporated and I would like to add that the time of year of construction will make a big difference for trail users. Most through hikers and riders will be passing through in Feb – April and Oct – Nov. The trail is used more lightly during the summer months. It is very popular with day hikers and riders and this activity occurs more during the cooler season.	Impacts to trail users would be minor and limited to conductor stringing operations since the trail crossing would be mid-span (see table 2-14 (now table 2-18 in the EIS) and section 4.12 in the Draft EIS). Any trail impacts would be brief (a few hours at most) and directed toward the safety of trail users.
478	74	74.8	U.S. Forest Service	White	18-TRAIL	All possible measures should be taken to provide a reasonable detour during the time construction is occurring in the area of the Arizona Trail. These considerations also apply to the Continental Divide Trail, although day use in the affected sections is probably minimal.	This is a Project design feature in table 2-7 in the Draft EIS (now table 2-8 in the EIS).
687	82	82.106	SunZia	Wray	18-TRAIL	National Historic and Scenic Trails Comment 106. Appendix F, page F-10 – Per BLM guidance (see HB 6250 and 6280), trail organizations associated with each trail should be brought into the process for national trails analysis. For Southline, these public organizations include Continental Divide Trail Society, Continental Divide Trail Coalition, Anza Trail Foundation, Anza Trail Coalition of Arizona, and the Arizona Trail Association. To be fully compliant with the guidance, meetings to inform these relevant organizations should occur. Please describe planned actions for complying with BLM's guidance on this issue.	Members of the public, including trail organizations, were afforded the opportunity to review the analysis in the Draft EIS. Members of the public did provide comments on National Historic and Scenic Trails. Additionally, the National Park Service is charged with managing trails and is also involved in this process as a cooperating agency. The EIS addresses all comments received during the public comment period (chapter 8). The EIS includes responses to comments received during the public comment process and provides revised EIS text based on those comments. As the Project continues, BLM will continue to work with these trail groups in addressing trail impacts from the Project. These groups will be instrumental in assisting BLM with many aspects of compliance with Section 106 (historic trails) and the BLM Manuals 6250 and 6280. BLM also coordinates with the Oregon-California Trails Association (OCTA), Southern Trails Chapter.
688	82	82.107	SunZia	Wray	18-TRAIL	Appendix F, pages F-10 – One mile on either side of the centerline is not consistent with the visual resource study. As stated in the visual resource assessment, a 10-mile buffer was used to assess visual impacts. If visual impacts were identified to that distance, the trail's visual values would be impacted, and therefore the analysis using a 2-mile buffer is inadequate.	The analysis area in the Draft EIS was identified based on the area most likely to bear environmental effects. Please note that the analysis area in the Draft EIS (appendix F) is consistent with the analysis area used for the same analysis in the SunZia Southwest Transmission Line Final EIS (see appendix L).
689	82	82.108	SunZia	Wray	18-TRAIL	The public trail organizations know the trail resources and should be consulted regarding the appropriate analysis area in conjunction with the relevant agencies and trail administrators.	The public trail organizations and the trail administrators and relevant agencies were consulted on the proposed Project. Members of the public, including trail organizations, were afforded the opportunity to review the analysis in the Draft EIS. Members of the public did provide comments on National Historic and Scenic Trails. The EIS addresses all comments received during the public comment period. The EIS includes responses to comments received during the public comment process (chapter 8) and provides revised EIS text based on those comments.
690	82	82.109	SunZia	Wray	18-TRAIL	Appendix F, pages F-18 – Mitigation planning and residual impacts – the terminology in this section is not consistent with other sections in the Draft EIS; please conform or explain this inconsistency.	Appendix F in the EIS has been revised for consistency.
573	80	80.11		Magruder	9-NEPA	5. Compared with the SunZia project. The SunZia Project is a proposed and competing alternative to the Southline Project. There is a reasonable probability only one of these projects will eventually be constructed. As both can meet similar east-west transmission requirements, comparison of their critical characteristics will be important considerations for all non-federal decision makers in the cities, counties and both Arizona and New Mexico/El Paso in addition to the various federal decisions makers required by NEPA to issue a Record of Decision (ROD). Briefly below, some of the critical performance characteristics of these two systems are discussed below.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
580	80	80.18		Magruder	9-NEPA	6. Conclusion. It is concluded that the proposed Southline Transmission Project Alternative uses the best approach for ROWs, increases necessary additional power needs for customers in Southern Arizona and New Mexico/El Paso, significantly increases reliability for all these customers, can resolve the issues involving the Apache Power Plant with an interconnection at the Apache Substation, and removes any possible constraints on the transmission lines to El Paso, Texas. Two Alternatives should be in either a Supplemental EIS or the Final EIS, to include (1) Impacts of re-locating the “Bowie” natural gas power plant near the Apache Power Plant and (2) Comparison of the impacts of the Southline versus the SunZia Projects in Southern Arizona and New Mexico. 7. Recommendation. It is recommended that the Southline Project final EIS or a Supplemental EIS include two new Alternatives for the impacts for relocating the “Bowie” natural gas plant at the Apache Power Plant and to compare the Southline and SunZia Projects impacts on Southern Arizona and New Mexico/El Paso customers.	The not yet constructed SunZia project, and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western’s evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western’s Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. A comparison with the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter’s concerns were best directed at that process for appropriate consideration. Please note that the EIS reflects consideration of all comments received during the public comment period. The EIS includes responses to comments received during the public comment process and provides revised EIS text based on those comments. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Considering relocation of the Bowie natural gas plant is out of the scope of the current analysis and does not meet the agencies' purpose and need, as described in chapter 1.
6	5	5.2	Town of Marana	Spencer	9-NEPA	I read the Draft EIS and I urge you to locate your transmission lines so they do not cross through or near wetlands and sandhill crane wintering areas. I am one of the thousands of people who visit Willcox Playa, AZ and Bosque del Apache, NM annually to view the cranes, snow geese, hawks, eagles, and waterfowl.	In coordination with the Arizona Game and Fish Department, the EIS has been revised to consider additional minor route variations (P7a, P7b, P7c, and P7d) near Willcox Playa. AGFD has provided mitigation measures to improve wildlife habitat and thus offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8 and include funding the relocation of Crane Lake, funding riparian emergent wetlands, and funding the management of non-native vegetation.
7	5	5.3	Town of Marana	Spencer	9-NEPA	Mitigating by using “line marking devices” should not be your first option- avoidance of these sites should be the priority.	Additional mitigation for vegetation and wildlife was provided by the FWS and is considered in the EIS; relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation. In addition, and in coordination with the AGFD, chapter 2 of the EIS has been revised to consider additional minor route variations (P7a, P7b, P7c, and P7d) near Willcox Playa. AGFD has also provided mitigation measures to offset impacts to wildlife habitat in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8; P7 remains included in the Agency Preferred Alternative.
8	5	5.4	Town of Marana	Spencer	9-NEPA	I read that the Forest Service did not like one of the alternate routes around the Willcox Playa because of fire hazard management, but that is not an acceptable reason to route the line near important bird areas like the Lordsburg and Willcox Playas.	Alternatives considered but eliminated from detailed analysis are discussed in section 2.9 of the Draft EIS. Chapter 2 of the EIS has been revised to consider minor route variations (P7a, P7b, P7c, and P7d) near Willcox Playa. AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
10	5	5.6	Town of Marana	Spencer	9-NEPA	The cumulative effects of habitat loss, disruption of migratory routes, and potential electrocutions of birds creates an increasingly serious threat to our birds.	The anticipated cumulative effects of the proposed Southline Project, along with other reasonably foreseeable projects in terms of potential avian impacts, were described in section 4.21 of the Draft EIS.
11	5	5.7	Town of Marana	Spencer	9-NEPA	I strongly urge you to avoid the Lordsburg and Willcox Playas and to take great care to avoid affecting burrowing owls.	Mitigation for burrowing owls can be found in chapter 2 of the EIS (see table 2-8). The potential impact of the proposed transmission line on wildlife was analyzed in section 4.8 of the Draft EIS.
17	8	8.2		Anderson	9-NEPA	What if any, is the connection with the Sunzia	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline’s request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western’s evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western’s Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter’s concerns were best directed at that process for appropriate consideration.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
19	8	8.4		Anderson	9-NEPA	I note that the Proponent Alternative from Wilcox AZ to Afton NM: 2. Might alleviate the need for building one or both of the two substations which are shown as the Agency Preferred Alternative – one could perhaps just upgrade the existing Afton substation if necessary.	The proposed Project and alternatives are described in chapter 2 of the Draft EIS. As discussed in section 2.4.2 of the Draft EIS, the proposed Project would involve the interconnection with and upgrades of 14 existing substations and the potential construction of one new 345-kV substation facility proposed for Luna County, New Mexico (referred to as "Midpoint Substation").
22	9	9.2		Cotignola	9-NEPA	Question #2 – by building this doesn't that mean that elic power poles & power lines in time can then run & be built south of Deming off of Hwy #11 & Hwy OR County Road #C010 South 10 to Columbus, NM	The potential impacts of reasonably foreseeable actions, such as future transmission line projects, are acknowledged and described in section 4.21 of the Draft EIS.
33	15	15	BIA		9-NEPA	Page 19: The appropriate BIA law/regulation associated with our federal action is 25 CFR Part 169.	Table 1-5 in chapter 1 of the EIS has been revised based on this comment.
34	15	15	BIA		9-NEPA	Page 23,line 35: Should have included Tribal Historic Preservation Officer (THPO) .	Section 1.7 in chapter 1 of the EIS has been revised based on this comment.
35	15	15	BIA		9-NEPA	Page 24, line(s) land 2: Should include THPOs also.	Section 1.7 in chapter 1 of the EIS has been revised based on this comment.
36	15	15	BIA		9-NEPA	Page 25, line 8: Actually negotiating with the San Xavier District of the Nation Requires BIA action to renew existing easement(s) and issue new ROW for the additional 50 feet. There is no mention of the BIA action (that BIA is a fellow action agency) other than the table on page 19.	Chapter 1 of the EIS has been revised based on this comment, and clarifies what the BIA's role is and BIA's decision to be made.
37	15	16	BIA		9-NEPA	Page 28, lines 5-9: Was there specific outreach to the Nation? No mention of meetings with the Nation or the District specifically.	Information on all outreach with Native American Tribes, including the Tohono O'odham Nation and San Xavier District, is discussed in section 5.5, chapter 5, of the Draft EIS.
38	15	16	BIA		9-NEPA	Page 48, lines 26-31: It is anticipated that final acquisition of the additional 50 feet through allotments would/could be done at a later date? It would appear that a BIA decision document synchronous with the Bureau of Land Management (BLM)/Western Area Power Administration (WAPA) Record of Decision (ROD) is not expressly required as discussed in previous teleconferences?	Chapter 1 of the EIS has been revised to clarify what the BIA's role is and BIA's decision to be made and the status of the ROW lease negotiations between Western, BIA, and the Tohono O'odham Nation.
39	15	16	BIA		9-NEPA	Page 49, lines 20-25: Can the BIA expect that if needed, Southline/WAPA will conduct archaeological surveys and Pima pineapple surveys across San Xavier when the time comes?	Table 2-8 (previously table 2-7 in the Draft EIS) regarding project design features and mitigation in chapter 2 of the EIS has been revised to indicate that archaeological surveys and species specific surveys for the Pima pineapple cactus on the San Xavier would be conducted for the additional 50 feet of ROW. The existing ROW has been the subject of archaeological and Pima pineapple cactus surveys over the years (see sections 3.8 and 4.8 of the EIS).
40	15	16	BIA		9-NEPA	Page 93, line 11: No construction yards are proposed to be located on the San Xavier Reservation? BIA would need to be informed as to location and dimension so that it could be accommodated in the ROW.	Chapter 2 of the EIS has been revised to include more detailed maps indicating where potential staging areas (construction yards) would potentially be located. Additionally, chapter 1 of the EIS has been revised to clarify what the BIA's role is and BIA's decision to be made, including approval of any staging areas, if needed.
47	15	15.15	BIA		9-NEPA	The BIA Western Region Realty staff continues to work with WAPA and the San Xavier District, along with the individual land owners, to see the ROW renewal and eventual 50- foot acquisition through to completion. At this time we see no issues that would jeopardize the projected completion date of BLM/WAPAs FEIS/ROD.	Thank you for your comment.
48	16	16.1		Kestler	9-NEPA	Thank you for not crossing Tumamoc Hill. This is an important concern for me	Thank you for your comment.
49	16	16.2		Kestler	9-NEPA	Please limit access to 150 feet - more is unnecessary	The proposed Project and alternatives were described in chapter 2 of the Draft EIS, including the proposed width of the Western ROW.
51	16	16.4		Kestler	9-NEPA	Please keep building minimal in all areas and, as much as possible reuse existing lines, poles, etc.	The proposed Project and alternatives, as well as project design features, were described in chapter 2 of the Draft EIS.
52	17	17.1	City of Tucson	Dent/Romero	9-NEPA	We appreciate avoiding Tumamoc hill with the preferred alignment. Neighbors in A-mountain neighborhood (south of Tumamoc hill & Sentinel Peak) have concerns about disruption of project.	As described in chapter 2 of the Draft EIS, there are several options for alternatives around Tumamoc Hill. Alternatives considered in detail in the Draft EIS were described in chapter 2. The potential environmental impacts of all alternatives considered in detail were described in chapter 4 of the Draft EIS.
53	17	17.2	City of Tucson	Dent/Romero	9-NEPA	Councilor Regina Romero would appreciate additional dialogue with neighbors, and consideration of mitigation below powerline. This could include discussions regarding possible natural resource park, walking paths, and trails below the lines. Assistance with funding for these mitigation efforts may be appreciated by neighbors seeking area improvements.	Post-construction ROW uses such as those suggested by Councilor Romero are generally compatible with the operation and maintenance of a transmission line, as long as access to structures is preserved and nothing is constructed in the ROW that would reduce conductor-to-ground clearance. Reduced ground clearance would pose a safety hazard to maintenance workers and the public and violate NERC requirements; accordingly, certain restrictions on landowner activities would be included in the ROW agreements. Landowners retain ownership and all other rights to their properties, so permission to develop portions of the ROW for the uses identified by Councilor Romero would need to be negotiated with each affected ROW landowner. Since such activities are not part of Southline's proposed Project or the agencies' Federal actions, they are beyond the scope of this EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
57	21	21.1	–	Stogsdill	9-NEPA	I'm just wondering if your high line is gonna come through congruent with that existing feed line for our area or if you're planning on going to the uh, to some other parcel to route this high line of yours.	BLM provided the requested data on May 30, 2014. The proposed Project and alternatives were described in chapter 2, along with maps of the proposed Project and alternatives, in the Draft EIS.
60	24	24.1	Rafter JL Ranch	Miller	9-NEPA	I do not have a problem with power lines as everyone needs power. I do have a problem with what may come with them, such as solar power plants or alternative power projects, which would take a grazer's grazing leases away for alternative energy. This is why I would prefer the southern route (proponent alternative) down by HWY 9 in New Mexico. This would take the power lines far enough away that they would not be a problem for us from alternative power in the future. If this would be a problem to take the southern route, I would prefer the northern most route (Agency Preferred Alternative)l although this is closer to us and could be a problem with alternative energy in the future.	Previous and pending solar applications were analyzed as a reasonably foreseeable action in section 4.21 of the Draft EIS. Section 4.21 of the EIS has been revised to address the potential reduction in grazing leases from future solar development. Please note that projects, including solar or other generation, proposed on BLM lands would undergo a separate NEPA evaluation, including opportunities for public comment.
62	24	24.2	Rafter JL Ranch	Miller	9-NEPA	There hav already been proposals for solar power to come on to State Land that we lease and we do not want to have problems like that in the future.	Previous and pending solar applications were analyzed as a reasonably foreseeable action in section 4.21 of the Draft EIS. Section 4.21 of the EIS has been revised to address the potential reduction in grazing leases from future solar development. Specific concerns regarding solar projects on state lands should be directed to the State agencies (Arizona State Land Department and New Mexico State Land Office).
138	26	26.1	–	Hatch	9-NEPA	Several of my neighbors were at the meeting and brought to me the distressing news that the route for the proposed Southline Transmission Project high-voltage power line is (despite local input) all but decided to be ran over lands that are in their natural state and home to a HUGE variety of both permanent and migratory endangered fauna and flora – as opposed to a previously "proposed" route that would put this hideous and destructive monstrosity of a high-voltage power line down in the bottom of Sulpher Springs Valley – where the land has already been utterly destroyed by un-successful attempts at farming and is currently criss-crossed by existing power lines.	As discussed in section 1.2.1 of the Draft EIS, BLM and Western will base their respective decisions on the analysis in the EIS. The proposed Project and alternatives are described in chapter 2 of the EIS. The potential effects of the proposed Project on vegetation and wildlife were discussed in sections 3.8 and 4.8 (Biological Resources) of the Draft EIS, including the potential effects from Agency Preferred Alternative on the east side of Willcox Playa.
139	26	26.2	–	Hatch	9-NEPA	Much to my dismay, all of the "maps" I was able to find were pretty much useless in terms of being able to see exactly the routes proposed through our area – because Interstate 10 was (deliberately..??) not marked for reference at all and because no matter how much you magnify the "maps," you can't see the names of ANY local streets or landmarks that would provide useful reference to the exact location of the proposed route	Maps in the EIS have been revised to include more detailed locational information.
140	26	26.3	–	Hatch	9-NEPA	I hereby unequivocally state (as I did at the first Willcox hearing) that ANY proposed route that passes to the East of Interstate 10 (which runs North and South through the Willcox area) is TOTALLY UNACCEPTABLE, due to the catastrophic and permanent damage that would be done to local and migratory endangered species, not to mention the impact of 170 foot tall UGLY metal high-voltage power towers on a view that is currently wild, beautiful and unencumbered. Especially when there is (was..??) a viable alternative route West of Interstate 10 through already irrevocably destroyed and / or poorly developed and abandoned areas	The potential environmental impacts of the proposed Project and alternatives were analyzed in chapter 4 of the Draft EIS, including impacts to wildlife and vegetation (section 4.8) and visual resources (4.11).
143	27	27.2	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	9-NEPA	1. What route specifically will it follow, a map would be wonderful? 2. What will the altitude/height will the towers be at?	The proposed Project and alternatives were described in chapter 2 of the Draft EIS, including maps of the proposed Project and alternatives.
145	27	27.4	New Mexico State University's Unmanned Aircraft Systems Flight Test Center	Zaklan	9-NEPA	4. What is your plan for inspection of the transmission lines once it is complete?	The proposed Project and alternatives, including proposed plans for operation and maintenance, were described in chapter 2 of the Draft EIS.
149	28	28.1	–	Balch	9-NEPA	we own property in Arizona outside of Willcox. Our parcel number is 20316065. I'm just wondering how close this is going to run to our property	BLM provided the requested data on May 14, 2014. The proposed Project and alternatives, including proposed plans for operation and maintenance, were described in chapter 2 of the Draft EIS.
153	31	31.2	Wild Heart Ranch	Lannon	9-NEPA	I appreciate also that they were willing to meet early on with community and environmental groups and to actually listen to them.	Thank you for your comment.
155	32	32.1	EPA	Jansky/Weeks	9-NEPA	EPA rates the DEIS as "EC-2" i.e., EPA has "environmen tal concern s and requests additional information" in the Final EIS (FEIS). The EPA's Rating System Criteria can be found at http:/www .epa.gov/compliance/nepa/comments /ratings.htm l. The "EC" rat ing is based on the potential for adverse impacts to protected species, public health and safety, historic, cultural , or archeological resources, and waters of the U.S. (WUS). The "2" indicates the DEIS does not contain sufficient information to fully assess protected species, noise, public health and safety, prime farm lands, historic, cultural , or archeological resources and WUS. We have enclosed detailed comments which clarify our concerns. Responses to comments should be placed in a dedicated section of the FEIS and should include the specific location where the revision, if any, was made	The EIS has been revised accordingly, and responses to the EPA's detailed comments are provided below.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
156	32	32.2	EPA	Jansky/Weeks	9-NEPA	Alternatives Clarification. Chapter 2; page 117. The potential alignments of the transmission lines in this project are divided into routes, subroutes, segments, and nodes; from largest to smallest respectively. Many of the route segments have multiple nodes which share the same name. For instance, there are 3 nodes of segment LD4 and 2 nodes of segment LD3a. When the existing environment or environmental consequences are being described it is difficult to determine which node is being discussed.	Chapters 3 and 4 of the EIS have been revised to provide more specificity regarding the location of impacts, where appropriate. Additionally, maps in the EIS have been revised to include more detailed locational information.
157	32	32.3	EPA	Jansky/Weeks	9-NEPA	Alternatives Clarification. Also, when describing effects scale is important. Air resources can be affected over many miles or counties, whereas cultural resources may be limited to an exact location. Stating an effect occurs in route segment "P2", when "P2" is over 20 miles long, does not let the reader know exactly where the effect is taking place. This makes it difficult to perform a comparative analysis of every alternative. Recommendation: When describing the environment or effect of the project, consider the scale, and be as exact as necessary in stating the location where the effect is taking place	The potential impact analysis in chapter 4 of the EIS has been revised to include more information, where appropriate, on the scale of impacts.
158	32	32.4	EPA	Jansky/Weeks	9-NEPA	Alternatives Clarification. There is a selection of an environmentally preferred alternative and a listing of the route segments that comprise this alternative. There is also a brief description of why the alternative is more environmentally preferred. Missing from the document is a rationale, e.g. cost, as to why this alternative was not chosen. Recommendation: In cases where the environmentally preferred alternative differs from the Agency Preferred Alternative, explain why the environmentally preferred alternative was not chosen.	Chapter 2 of the Final EIS has been revised to provide more rationale on the selection of the Agency Preferred Alternative and its relationship to the Environmentally Preferred Alternative.
171	32	32.17	EPA	Jansky/Weeks	9-NEPA	Chapter 4; page 1067. The DEIS provides a list of reasonably foreseeable future projects for the upgrade section in Table 421-1 (p. I 067). The DEIS lists the Electrical District 5 - Palo Verde Hub Project, 109 miles in Maricopa and Pinal counties, but does not list the Electrical District 2 to Saguaro #2 Transmission Line Rebuild Project. Recommendation: The FEIS should update the list of reasonably foreseeable projects used in the cumulative effects analysis to include the proposed Electrical District 2 to Saguaro #2 Transmission Line Rebuild Project.	Section 4.21 in chapter 4 of the EIS has been revised to include the proposed Electrical District 2 to Saguaro #2 Transmission Line Rebuild Project as a reasonably foreseeable action.
172	32	32.18	EPA	Jansky/Weeks	9-NEPA	Consultation and Coordination. Chapter 5; page 1126. Coordination with several local, state, and national agencies concerning environmental laws and executive orders is ongoing. Without specifics, and the available opinions of the agencies BLM is tasked with consulting, it is difficult to assess the potential environmental effects of the DEIS. Recommendation: EPA asks that BLM not release the Record of Decision (ROD) until all applicable permits and coordination has been finalized.	The EIS reflects the additional input received from cooperating agencies and the various Federal, State, and local agencies with whom the agencies are coordinating since the Draft EIS was completed, including the comments on and responses to comments on the Draft EIS. Coordination with these entities will continue beyond the EIS and ROD. Permitting entities require detailed project information in order to issue their permits, and in some cases permits are not obtained until filed for by the construction contractor. Southline would need an agency decision, either selection of a proposed Project route if the ROW application is authorized, and/or a decision on Western's participation in the proposed Project, before it could apply for most project permits. Section 1.5.4 of the EIS has been revised to clarify the timing of proposed Project permits.
178	35	35.1	Hearing-USACE	Gatewood	9-NEPA	For the preferred alternative, has there been one major issue that has been identified that has, say, put the preferred alternative in jeopardy?	The Agency Preferred Alternative, and rationale for selection in the Draft EIS, was described in section 2.10.5 of the Draft EIS. Potential avian conflicts at Willcox Playa continue to be a concern for wildlife agencies and the public. As a result, BLM and Western, in coordination with AGFD, developed mitigation measures along segment P7 to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. The mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
179	36	36.1	Hearing	Anderson	9-NEPA	I'm just curious as to what's the purpose of the substation on the border that happens to tack on to the alternative route? If you go with the agency-preferred alternative, would you then be building two substations or just one?	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. The proposed Midpoint South Substation is one of two alternatives for a new proposed substation in New Mexico. See section 2.4.2 of the Draft EIS for a description of substation alternatives, which indicates that only one Midpoint Substation would be constructed.
184	38	38.1	Hearing	No ID Speaker	9-NEPA	Would you show us just where Benson is and J-6 and Nogales. It said Nogales for some reason. Yeah, I didn 't understand the map. Where it says Nogales, why is it Nogales? It's not going down to Nogales. Do you have another map that would show a specific area?	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. The proposed Nogales Substation was described in section 2.4.2 of the Draft EIS. Maps in the EIS have been revised to include more detailed locational information.
185	38	38.2	Hearing	No ID Speaker	9-NEPA	What is the length of that red one? (referring to Alternative H north of Benson)	As described in table 2-8 in chapter 2 of the Draft EIS (now table 2-7 in the EIS), alternative H measures 19.3 miles.
187	38	38.4	Hearing	No ID Speaker	9-NEPA	I missed a lot when you went over the -- This is rebuild, this is new, this is rebuild. So at some point in the evening maybe that could be resaid.	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. Maps in the EIS have been revised to include more detailed locational information.
188	38	38.5	Hearing	No ID Speaker	9-NEPA	It's a matter of language . You're talking substations . We're talking towns and communities. So I don't know where some of these substations are. So it doesn't really make sense to me.	Maps in the EIS have been revised to include more detailed locational information and distinguish between towns and substations.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
189	38	38.6	Hearing	No ID Speaker	9-NEPA	Were you just replacing some poles on that line like last week? (referring to the existing Western line)	Western has an ongoing maintenance program on all of its transmission lines, and replacement of deteriorated poles that fail testing is part of that program. Even though the proposed Project would replace the existing line, it is not certain the proposed Project would be built, and if it is approved, construction is still a few years away. Maintenance of Western's existing line was considered in section 4.21 of the Draft EIS in terms of anticipated cumulative effects.
190	38	38.7	Hearing-Defenders of Wildlife	Sargent	9-NEPA	Can you compare and contrast the purpose and need for Southline versus the purpose and need for SunZia? Could you speak to what the difference in purpose and need is, you know, according to the proponents.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. BLM and Western's purpose and need were described in section 1.2 of the Draft EIS. Southline's objectives in developing the proposed Project were described in section 1.3 of the Draft EIS.
191	38	38.8	Hearing-Defenders of Wildlife	Sargent	9-NEPA	But has BLM looked at any sort of cumulative impact of both lines? (referring to Southline and SunZia)	The cumulative effects of the proposed Southline Project along with other reasonably foreseeable projects, including the not yet constructed SunZia project, in the analysis area were described in section 4.21 of the Draft EIS.
192	38	38.9	Hearing	No ID Speaker	9-NEPA	So there's two different projects. We could have another power line going through another area? (referring to Southline and SunZia)	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project.
193	38	38.10	Hearing	No ID Speaker	9-NEPA	What do you find when you look at the cumulative impacts?	The cumulative effects of the proposed Southline Project along with other reasonably foreseeable projects in the analysis area were described in section 4.21 of the Draft EIS; these are described in the same section of the Final EIS.
194	38	38.11	Hearing	No ID Speaker	9-NEPA	What is the source of the electrical generation and where it starts in Afton?	Section 1.3.1 of the EIS has been revised to clarify that the proposed Project would be a transmission-only project. Southline would not purchase power from generators or sell power to others. The proposed Project, as described in chapter 2 of the Draft EIS, would interconnect with up to 14 existing stations where new or existing power generation resources could interconnect to and utilize the capacity Southline would add to the system.
198	38	38.15	Hearing-Cascabel Working Group	Meader	9-NEPA	One of my big questions was: You're bringing two 345-kilovolt volt lines into the Apache generating station and then you're leaving with just two 230-kilovolt lines . If you're generating a lot of power in New Mexico, how do you accommodate that power past the Apache generating station when you're cutting the transmission capacity in half? And I don't know if that's a question to be answered here .	Section 1.3.1 of the EIS has been revised to clarify that the proposed Project would be a transmission-only project. The calculation of transfer capacity is complex and is not determined solely by the number or voltage of lines entering or exiting a substation. Transfer capability is determined through technical studies that evaluate how a project interacts with the existing system in various conditions. Physical properties, including voltage level and many other factors, are inputs in these studies, but overall capability is determined by the proposed Project's relationship to the overall system. Southline WECC Path Rating studies indicate that the Project can support approximately 1,000 MW in the east-to-west direction across both the New Build 345-kV and Upgrade 230-kV sections, and approximately 400 MW in the west-to-east direction across both the Upgrade 230-kV and New Build 345-kV sections.
199	38	38.16	Hearing-Cascabel Working Group	Meader	9-NEPA	The other question I had is, you can't build a project because it's a good idea. You have to build it because you can make money. And my question was : How many or what level of power purchase agreements do you have to have beforehand to get financing for the project and to justify building the project? It seems a little risky just to go ahead and build this without having some generation all lined up and without utilities having agreed to purchase that. Those are the two big points that I wanted to make . They are more questions than comments I think.	Section 1.3.1 of the EIS has been revised to clarify that the proposed Project would be a transmission-only project; Southline would not purchase power from generators or sell power to others. Instead, power generators or utilities needing transmission capacity would apply for capacity on the Southline Project and pay Southline for the ability to move their power on the line. The proposed Project, as described in chapter 2, would interconnect with up to 14 existing stations where new or existing power generation resources could interconnect to and utilize the capacity Southline would add to the system.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
200	38	38.17	Hearing	Cook	9-NEPA	I'm not sure it's going to be used that effectively. I wanted some interaction. I have some maps here that show where it's going to go in relation to Benson .It appears that one of the routes is going to go pretty much through Benson. I have to guess, but here I am on page 21 of 32. And I can see the legend below and there 's nothing that shows where the proposed line is going to go. I have to assume it's the white and green segmented line . So that appears to go right through our golf course and just north of the interstate. So it looks like I can't have any questions answered; is that the problem with speaking right now?	The commenter is not referring to maps published in the Draft EIS. Commenter was provided with the opportunity to ask questions during public hearing in Benson, Arizona. As described in section 2.7 of the Draft EIS, there are two alternatives near the Town of Benson – upgrading the existing Western line through Benson (segment U2) and an alternative north of the Benson Municipal Airport (local alternative H).
201	38	38.18	Hearing	Cook	9-NEPA	The second one or comment sort of is: It appears that there's a segmented white and green line that's going farther north of Benson and then beyond the airport north of the airport and then coming south following along the railroad tracks and then beyond J-6 crossing, apparently, the freeway. When we get to that portion, I understand that we have very huge power lines much farther north probably around nine or ten miles north of Ocotillo Road, and they present much less of a sight disturbance for us. I wonder why you didn't choose that one but you chose the two that are closer to Benson and more unappealing to us	The commenter is not referring to maps published in the Draft EIS. The proposed Project and alternatives, including Alternatives Considered but Eliminated from Further Analysis (section 2.9) and the Agency Preferred Alternative (section 2.10.5), were described in chapter 2 of the Draft EIS. A description of the rationale for identifying the Agency Preferred Alternative in the Final EIS is included in section 2.10.5.
203	38	38.20	Hearing	Cook	9-NEPA	The following green line was where the one proposed -- I guess your main proposal is. The one that you call H, Alternative H, is your second choice. Now the one that I was referring to that is where the real tall poles, they are even off the map. I'm wondering why you're going so close to our city instead of going so out -- when you can go out of the way and there would be much less visually imposing to everybody or to most people. And if, once you get that far, you can -- it follows along the north end of these mountains and north of Wilcox also and it's out of everybody's way almost. If you follow up Ocotillo Road, that's got to be this one with Benson there. And you count the section lines, one, two, three, four, five, six, seven, it's more like eight, nine, ten, or eleven sections north and it crosses north of Tres Alamos Wash, and it's a huge power line that goes around the south end, south side of the Rincons over here and on the south side of where the Mt. Graham, those mountains, whatever they are. They are out of the way. It's mostly ranch land. You have fewer people to complain about it. It's much less visually imposing . Why are you proposing putting it here rather than out of sight out of mind?	The commenter is not referring to maps published in the Draft EIS. The proposed Project and alternatives, including Alternatives Considered but Eliminated from Further Analysis (section 2.9) and the Agency Preferred Alternative (section 2.10.5), were described in chapter 2 of the Draft EIS. The comment refers to local alternative BE1, an alternative eliminated from further analysis in the Draft EIS (see section 2.9).
204	38	38.21	Hearing	No ID Speaker	9-NEPA	When I started listening to what you were doing, I think maybe part of the dilemma here or the not understanding is that the confusion is that a year ago we had the SunZia lines and they were much bigger, much more impactful . And then how many of you here think that this has to do with SunZia, that it might be the stuff going up to San Manuel and that? Or do we all understand that this is the existing line already? So that was my commenting. Because at first I thought, Well this isn't what we were talking about last time . This is totally different. So maybe that's part of the confusion here.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. The cumulative effects of the proposed Southline Project along with other reasonably foreseeable projects, including the not yet constructed SunZia project, in the analysis area were described in section 4.21 of the Draft EIS.
205	38	38.22	Hearing	Cook	9-NEPA	The Alternative H, is it a viable alternative or is your mind made up to rebuild or upgrade the existing green line?	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD
206	38	38.23	Hearing	Kephart	9-NEPA	I'm from Dragoon, and the existing line crosses my property. You said something about needing an additional 50 feet. Is that the road, the service road, you'll be using? Do you know if the line, not the road?	The proposed Project and alternatives were described in chapter 2 of the Draft EIS. As described in chapter 2 of the Draft EIS, where possible, the new 230-kV line would be built 50 feet away from the edge of the existing 100-foot ROW, parallel to the existing line. Once the old line is removed, the old 100-foot ROW plus the additional 50 feet would equal the new ROW, with the new line ending up offset 25 feet from the center of the new 150-foot ROW. The existing access road would be used along the Upgrade Section; no new access in the existing Western ROW or added ROW is anticipated.
207	38	38.24	Hearing	No ID Speaker	9-NEPA	Would there be lights on the towers?	As described in section 2.4.2 of the Draft EIS, aircraft warning lighting may be required for the conductor on certain spans, in accordance with FAA guidelines. Lighting would typically be required near airports or where low-level military flight paths would cross the proposed Project.
208	38	38.25	Hearing	Lindberg	9-NEPA	Is there a slide that you would show that -- to show the two different pole arrangements that are on that board?	Diagrams of structure types were available as figures 2.3 through 2.12 in the Draft EIS.
210	39	39.1	Hearing	Haenichen	9-NEPA	I'm with the Arizona Governor's Energy Policy Office, and I'm also on the Transmission Line and Siting Committee . I was wondering if there was any rough idea about when this thing might hit the committee	Southline Transmission, LLC, would be responsible for submittal of the application for a Certificate of Environmental Compatibility. BLM and Western are not responsible for ACC submissions.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
211	39	39.2	Hearing	Moffatt/Pima County	9-NEPA	Since you did the 2012 study, Pima County, in cooperation with the airport and the Air Force and a number of entities, have started to relocate Hughes Access Road south of the Raytheon Plant and develop the corridor across Old Vail connection as an industrial corridor. Now, this – the existing line crosses the -- the Summit, which is a community and then crosses Old Vail connection and then across airport property. And it crosses a section of land that is being prepared for industrial development. So one of our preferences, because it pretty much bisects that section of land, is to be able to reroute the line along Old Vail connection, avoid Summit, but also avoid this property, go approximately a mile west and intersect another utility corridor that goes east of the Santa Rita district. So that would be helpful to the airport, to Pima County. And I notice we weren't doing this project, so we didn't have those comments included in your report at that time . But this is a major economic development project for the area, so we'd like to have that considered.	Based on comments by Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. The Agency Preferred Alternative in the EIS has changed since the Draft EIS and now includes route variation U3aPC. BLM and Western continue to coordinate with Pima County.
212	39	39.3	Hearing	Terpering/AZGFD	9-NEPA	I'm Kristin Terpening with Arizona Game and Fish Department. And I was hoping someone can explain to me what went into the decision to align the route on the west side of the Wilcox Playa since it seems to be outside of the Buffalo Soldier Range that I know the DOD needs to consider. Is there someone who can explain that?	The Agency Preferred Alternative, and rationale for selection in the Draft, was described in section 2.10.5 of the Draft EIS. Details on further coordination with AGFD regarding impacts to wildlife habitat in the Willcox Playa area and selection of the Agency Preferred Alternative have been added to chapter 5 of the EIS.
213	39	39.4	Hearing	Mayro/City of Tucson	9-NEPA	I'm Linda Mayro with Pima County. And thank you for considering Tumamoc Hill . Pima County owns the west half of Tumamoc Hill for conservation purposes. And I notice, although it is realigned, it still impacts the National Historic Landmark and our property. It's not in the public right-of-way. So we would consider this, not as desirable perhaps , as the alternative that may go along the east side. But I will put that in comments for you.	As described in chapter 2 of the Draft EIS, there are several options for alternatives around Tumamoc Hill. Alternatives considered in detail in the EIS are described in section 2.7. The Agency Preferred Alternative, and rationale for selection, was described in section 2.10.5 of the Draft EIS.
214	40	40.1	Hearing	No ID Speaker	9-NEPA	What is the process of extending the right-of-way from the existing 100 to 150 when you need it?	The proposed Project and alternatives, including upgrading Western's existing lines and expanding the ROW (see section 2.4.3), were described in chapter 2 of the Draft EIS.
215	40	40.2	Hearing	No ID Speaker	9-NEPA	So there's another major power transmission line that is being proposed along, not the same, but similar location, the SunZia Project, and I was wondering if you could address the relationship . Are they serving some of the same purposes and needs ? So then in the Draft EIS are you looking at the cumulative impacts of both?	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. The cumulative effects of the proposed Southline Project along with other reasonably foreseeable projects, including the not yet constructed SunZia project, in the analysis area were described in section of the Draft EIS.
216	41	41.1	Hearing	No ID Speaker	9-NEPA	What is this going to do? Is it going to go through the City of Willcox?	The potential impact of the proposed transmission line on the physical and human environment, along with a description of mitigation measures and other measures proposed to reduce potential impacts, was analyzed in chapter 4 of the Draft EIS. The location of the proposed Project and alternatives was described in chapter 2 of the Draft EIS; there are several Project alternatives in and around the Willcox area. The Agency Preferred Alternative in the Final EIS is discussed in section 2.10.5.
217	41	41.2	Hearing	No ID Speaker	9-NEPA	Where are the power sources coming from? I've heard Apache. Is that the only power source that this electric line will be providing?	Section 1.3.1 of the EIS has been revised to clarify that the proposed Project would be a transmission-only project. Southline would not purchase power from generators or sell power to others. Instead, power generators or utilities needing transmission capacity would apply for capacity on the Southline Project and pay Southline for the ability to move their power on the line. The proposed Project, as described in chapter 2, would interconnect with up to 14 existing stations where new or existing power generation resources could interconnect to and utilize the capacity Southline would add to the system.
218	41	41.3	Hearing	No ID Speaker	9-NEPA	Then am I to understand that there's no actual power source that you're going to be connected to and, at this time, that you have an actual contract that this is who we 're going to have electricity coming from?	Section 1.3.1 of the EIS has been revised to clarify that the proposed Project would be a transmission-only project. Southline would not purchase power from generators or sell power to others. Instead, power generators or utilities needing transmission capacity would apply for capacity on the Southline Project and pay Southline for the ability to move their power on the line. The proposed Project, as described in chapter 2, would interconnect with up to 14 existing stations where new or existing power generation resources could interconnect to and utilize the capacity Southline would add to the system.
220	41	41.5	Hearing	No ID Speaker	9-NEPA	The other question in the areas where you're looking at non-corridor routes, could you describe in general why those areas were selected and are following existing corridors and what the tradeoffs were in positioning your preferred alternative there.	The proposed Project and alternatives, including routing considerations, were described in chapter 2 of the Draft EIS. The Agency Preferred Alternative, and rationale for selection in the Draft EIS, was described in section 2.10.5 of the Draft EIS. As discussed in section 1.2.1 of the Draft EIS, BLM and Western will base their respective decisions on the analysis in the EIS. The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
221	41	41.6	Hearing	No ID Speaker	9-NEPA	So I know that there's still some concern over part of the SunZia-proposed route and the preferred alternative there. Does this give anymore support to that by adding, "this is in a dual corridor," or are these two totally separate discussions?	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. Additionally, as discussed in section 2.10.5 in the EIS, BLM and Western selected the Agency Preferred Alternative to maximize use of existing and proposed linear ROWs by paralleling existing infrastructure and transmission lines.
222	41	41.7	Hearing	No ID Speaker	9-NEPA	So you said that the new poles will be the single pole with three lines on each side of it. And how much taller are they than the existing poles? And how does that affect how far down the electro magnetic field would reach the ground or how wide the corridor between -- where that goes? And are they -- are they allowed to be kept -- or strung further apart than the existing poles? Are they stronger and therefore able to be fewer of them along the line?	The proposed Project and alternatives, including structure heights, spacing, and dimensions, were described in chapter 2 of the Draft EIS (see section 2.4.2, Project Components). Diagrams of structure types are available as figures 2-3 through 2-12 in the Draft EIS. The potential impact of the proposed transmission line on human health and safety, including impacts from electromagnetic fields, is analyzed in section 4.16 of the Draft EIS.
224	41	41.9	Hearing	Shaver	9-NEPA	I was just going to comment because I'm from Wilcox as well and the -- the map with the playa showing the line going east and south from the playa, there is already a line there. It's a 230 line, and so that -- that corridor they are talking about, that 's not brand new. So it would just widen that I assume, widen that right-of-way and wouldn't probably be taller than the existing Southwest Transco line, would it? I mean it would probably be about the same.	The proposed Project and alternatives, including structure heights, were described in chapter 2 of the Draft EIS. Diagrams of structure types were available as figures 2-3 through 2-12 in the Draft EIS. The proposed Project would parallel the existing SWTC line on the east side of Willcox Playa and as proposed, the structure would be taller. The Agency Preferred Alternative, as described in section 2.10.5 of the Final EIS, would parallel the existing SWTC line.
225	41	41.10	Hearing	Shaver	9-NEPA	Some of you might have thought that that was going to be a new line, but that's already there, so it wouldn't be a new line . And it seems to me that the -- the path using the existing right-of-ways would be less noticeable to those of us who are in the area. Because it would -- it would definitely widen it, and unfortunately for those whose land it crosses, it might widen that right-of-way that you can't build upon. However, following that existing route would minimize the impact, I would think, to our local area. Just kind of a comment.	The proposed Project and alternatives, including structure heights, were described in chapter 2 of the Draft EIS. Diagrams of structure types were available as figures 2-3 through 2-12 in the Draft EIS. Additionally, information on visual resources can be found in sections 3.10 and 4.10 of the Draft EIS.
226	41	41.11	Hearing	Graham	9-NEPA	Jim Graham from Cochise. What's the procedure for compensation for landowners for widening the easement?	The ROW easement acquisition process was described in section 1.9 of the Draft EIS.
228	42	42.2	U.S. International Boundary and Water Commission	Anaya	9-NEPA	If the Proponent Alternative, or any combination of alternatives, include portions on or adjacent to the international boundary , it is required that engineering drawings be submitted to the USIBWC for review and approval prior to beginning any construction near the international boundary. These drawings must show the location of each component in relation to the international boundary and the boundary monuments. The USIBWC requires that all structures be off-set from the international boundary by a minimum of two feet, maintain a clear line-of-sight between any affected boundary monuments, and maintain a 10-foot radius off-set around the international monuments.	Chapter 2, as well as sections 3.7 (Water Resources) and 3.11 (Land Use) in chapter 3 have been revised to describe requirements of the U.S. International Boundary and Water Commission.
230	42	42.4	U.S. International Boundary and Water Commission	Anaya	9-NEPA	Once the proposed project is better defined, we recommend that project specific details be submitted for review and comment by both Sections of the IBWC.	Chapter 2, as well as sections 3.7 (Water Resources) and 3.11 (Land Use) in chapter 3 of the EIS, has been revised to describe requirements of the U.S. International Boundary and Water Commission.
231	43	43.1		Davis	9-NEPA	As a Dona Ana county resident I am against the Southline Transmission Line project.	Statement of preference.
232	43	43.2		Davis	9-NEPA	Having seen your work in the past there is NO regards for environmental impact even though you claim to have had studies which of course have shown NO impact, nor will studies for this project. Impossible! Your construction has no regard for wildlife, flora or fauna, you plow through whatever is in your path and no least intrusive effort is made although such claims are present. Claims for regeneration afterwards are not met. I suggest either use existing lines or negate the effort. As a side topic and as a power user, based on any past related work, this leads to no decrease in our rates	The proposed Project and alternatives, including the no action alternative, were described in chapter 2 of the Draft EIS. The potential impact of the proposed transmission line on the physical and human environment, along with a description of project design features, mitigation measures and other efforts proposed to reduce potential impacts, was analyzed in chapter 4 of the Draft EIS. These potential impacts were also summarized and compared in tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS). As described in chapter 5 of the Final EIS, the BLM and Western invited over 50 local, State, and Federal agencies to participate as cooperating agencies, demonstrating the agencies' commitment to adequately analyzing impacts to the physical and human environment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
233	43	43.3		Davis	9-NEPA	I will ask for you to preserve the environment but this will of course fall on deaf ears as the decision was made long ago. Asking for input is only a formality, any impact studies will be false in pointing to no impact or disregarded.	As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. As described in chapter 5 of the Final EIS, the BLM and Western invited over 50 local, State, and Federal agencies to participate as cooperating agencies, demonstrating the agencies' commitment to adequately analyzing impacts to the physical and human environment. BLM's decisions to be made are outlined in table 1-1. The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. The NEPA process, including publication of the Draft EIS, is designed to disclose potential impacts to the public, as well as solicit and include feedback from the public in the analysis.
237	45	45.3		Foley	9-NEPA	Line placement adjacent to or through these areas should be avoided to the maximum extent possible, and the line should be buried where appropriate. Public access to power line maintenance roads should be restricted so as to prevent the proliferation of unauthorized roads and trails.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS now includes a section on alternative construction methods, such as burying the proposed transmission line.
238	46	46.1		Hamel	9-NEPA	My husband and I have been following the Line Project. We own a small ranch that is located in the middle of a section of this project. I've enclosed 2 maps to show the 2 routes we do not approve of a the route that we would be in favor of. We chose this location because of the 360 degrees beauty of the scenery. The routes proposed will literally ruin our views from every window in our home. We paid a lot of money to have all lines buried on our ranch.	The potential impact of the proposed transmission line in terms of visual resources, as well as property values, was analyzed in chapter 4 of the Draft EIS.
241	46	46.4		Hamel	9-NEPA	On the maps enclosed you can see where Ive indicated our location. The proposed routes to the east + West are the 2 rts. We really do not want. We know you will choose a route in the end. We ask that you choose the 3rd proposed RTE that crosses the I-10 + goes North of us and West up + around us. It will still negatively impact us but to a much lesser degree.	Statement of preference.
242	46	46.5		Hamel	9-NEPA	I wish all these lines could be buried. It would make things so much better.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS now includes a section on alternative construction methods, such as burying the proposed transmission line.
244	46	46.7		Hamel	9-NEPA	As I reread this, Ive come back to add that studying the rest of the route thru town and around the drylake will really ruin the views everywhere thru this valley. Our community is very special we re developing vinyards for wines. We already get lots of tourists for the beauty of this land. This line will ruin it for everyone.	The potential impact of the proposed transmission line in terms of visual resources was analyzed in section 4.10 of the Draft EIS. Additional visual simulations around the Willcox area have been added to appendix K of the EIS.
246	47	47.2	Riley, Carlock, and Applewhite	Loftland	9-NEPA	There were 19 resource reports prepared by the applicant's consultant, CH2M Hill, and ultimately cited to and relied upon in the DEIS by the BLM. 1 These resource reports were not made available on the BLM's project website, or made readily available for public review; thus, we request that the comment period on the DEIS be extended for an additional 30 days after we have received a copy of the above-listed 10 resource reports, and after all 19 resources reports have been made "readily available" for public review.	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
247	47	47.3	Riley, Carlock, and Applewhite	Loftland	9-NEPA	The NOA implies that all supporting documentation, including the resource reports relied upon in the DEIS, would be available online? However, the resource reports are not available. Consequently, inquiries were made with the BLM offices identified above, where hardcopies of the DEIS are located, to determine if there was location for one to review, analyze, and acquire copies of the resource reports; but we were unable to locate any hardcopies of the resource reports, or identify a location where there were readily available for review.the DEIS for the Southline Project As you are no doubt aware, if the BLM references and relies upon materials outside the DEIS, it must do the following: Ensure that the analysis and assumptions in the materials are accurate and can be relied upon in the DEIS. Cite specific page numbers or relevant identifying information to each piece of material referenced and relied upon in the DEIS. Ensure that the materials are made readily available for public review.	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received by the BLM or Western Project contact listed on the Project website. The literature cited style in the Draft EIS was based on Government Printing Office (GPO) publication standards.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
248	47	47.4	Riley, Carlock, and Applewhite	Loftland	9-NEPA	In summary, we request that the BLM provide copies of the resource reports listed on page 1 on this letter. We would prefer an electronic copy (CD or DVD). We likewise request that the comment period be extended to allow us the opportunity to meaningfully consider the resource reports, upon which the analysis in the DEIS is based, before submitting a substantive comment on the DEIS. A minimally appropriate extension would be 30 days after we have received the resource reports. Finally, it would be appropriate for the BLM to clarify to the public that, notwithstanding the NOA, the resource reports, which are supporting materials, are not available online; likewise, the BLM should clarify how other members of the public can acquire copies of the resource reports.	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received by the BLM or Western Project contact listed on the Project website. The length of the public comment period was not extended beyond the original 90-day period.
250	49	49.1	Cascabel Working Group	Meader	9-NEPA	Attached are comments on the Southline Transmission Project from the Cascabel Working Group. I am also attaching four supplementary documents to support these primary comments. These include two examples of No Action Alternative discussions from other EIS's and documentation on two additional renewable energy projects that have been proposed for the project area. I am sending a large scanned map separately because the file size is so large (the Leach Wagon Road). This is not a necessary part of our submission but may interest the EIS contractor given the other historic roads and trails that the DEIS discusses.	Noted.
251	49	49.2	Cascabel Working Group	Meader	9-NEPA	We are concerned about any project that affects the lower San Pedro Valley watershed and the people who live within it, hence our desire to offer comments. Our comments are ordered by section and page in the following discussion. One significant deficiency in the DEIS is the apparent lack of discussion of detailed mitigation strategies, especially regarding impacts upon birds at Willcox Playa. The great strength of the project is its co-location with existing corridors to the maximum extent possible and the reuse of existing right-of-way.	Additional mitigation for vegetation and wildlife was provided by the FWS and is considered in the EIS. Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation. In coordination with the AGFD, the EIS has been revised to consider minor route variations east of the Willcox Playa (P7a, P7b, P7c, and P7d). The AGFD has provided mitigation measures to offset impacts to wildlife habitat and management goals and objectives in their Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
252	49	49.3	Cascabel Working Group	Meader	9-NEPA	Executive Summary. The Executive Summary does not provide a synopsis of the project proponent's objectives. This would seem to be an important component of an executive summary.	The executive summary in the EIS has been revised based on this comment.
253	49	49.4	Cascabel Working Group	Meader	9-NEPA	Executive Summary page xv, line 8. The Governor's Consistency Review is stated for only the state of New Mexico. While Arizona would not undertake a Governor's Consistency Review for resource management plan amendments, would Arizona's Governor not undertake a consistency review for the Final Environmental Impact Statement?	Per the BLM Land Use Planning Handbook (H-1601-1), proposed plan amendments must undergo a 60-day Governor's consistency review prior to final approval. The Arizona Governor would not review the Final EIS.
254	49	49.5	Cascabel Working Group	Meader	9-NEPA	Section 1.3.2 Mitigate Existing Congestion, page 10. References to the need to alleviate transmission congestion on Path 47 in southwestern New Mexico are confusing, as congestion is measured in several ways. The Western Electricity Coordinating Council (WECC) does so in four ways (WECC 2009) 1. Actual flow grouping. For each path, sum the magnitude of all individual U75 and U90 actual flow metrics for all seasons and heavy- and light-load hours. This summed number represents the path-usage ranking number for the path. 2. Actual flow grouping. For each path, identify the highest U75 actual flow metric calculated for each season and heavy- and light-load hours. This maximum number represents the path- usage ranking number for the path. 3. Net Schedule grouping. For each path, sum the magnitude of all individual U75 and U90 net schedule metrics for all seasons and for heavy- and light-load hours. (It was felt this schedule ranking method might produce ranking results similar to the actual flow ranking Method #1.) This summed number represents the path-usage ranking number for the path. 4. Maximum directional schedule grouping. For each path, identify the highest U75, U90 and U99 directional schedule metrics calculated for all seasons and for heavy- and light-load hours. This maximum number represents the path-usage ranking number for the path. By the first three methods, Path 47 is one of these least congested transmission paths in the West. Only by method 4 is the path seriously congested, that is, in terms of west-to-east scheduling. In terms of the path's ability to carry power at peak load, again, the path is uncongested. No physical problems exist in the actual delivery of power. As a 2011 WECC report states2, "Path 47 was not congested in the 2020 expected future study case, or any other cases in the 2010 Study Program." What is at issue here is that El Paso Electric has scheduled all of the west-to-east capacity on Path 47 for its use. The actual physical capacity of the path is not fully used, however. Whether or not this capacity needs to be increased depends largely upon El Paso Electric's future plans for new generation, which the DEIS does not assess. This issue is discussed more fully below.	The proposed Project addresses various regional needs, including Path 47 congestion. As discussed in sections 1.1.1 and 1.3 of the Draft EIS, the purpose of the Project is to improve reliability in southern New Mexico and southern Arizona, mitigate existing congestion, increase the ability to meet the increasing demand for electricity, and facilitate generation and public policy goals by increasing the capacity of the existing electric transmission grid. Thus, the benefits of the proposed Project are broader than just addressing Path 47 congestion. Section 1.3.2 of the EIS has been revised to provide additional clarification on congestion. Please note that Southline is working with WECC to determine the path rating for this proposed Project.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
255	49	49.6	Cascabel Working Group	Meader	9-NEPA	Section 1.3.3, Increase the Ability to Meet Electrical Demand Growth, page 11. One criticism of the Southline Project's objectives is that the use of the project is not directly tied to the projected needs and plans of regional utilities. These needs have not been quantified, nor has the project been proposed and sized according to them. The justification of the project is very general. Assessing these plans seems more critical for the new-build section, as replacing the line in the upgrade section appears necessary given the age and technology of the current line. All regional utilities that might use the new lines have developed integrated resource plans for the next 15 years or more that state how much new generation capacity is needed to meet growth in demand and where those facilities would potentially be sited. The siting of this generation will determine where new transmission capacity needs to be built to access and deliver the power to customers. El Paso Electric has traditionally used the high-capacity lines in southwestern New Mexico (Path 47) to draw power from the Palo Verde nuclear generating station and power plants in the Four Corners area. It is EPE's scheduling of these lines to capacity that has created the apparent congestion on them. The degree to which this scheduling congestion needs to be eliminated is determined by where EPE intends to construct the power facilities needed to meet future projected demand. The company's integrated resource plan3 shows that EPE intends to build nearly 2,500 megawatts of new natural gas capacity by 2031 adjacent to existing facilities in the El Paso area and does not intend to draw increased power from far-distant westerly sources. This brings into question the need to build two new 345-kV lines across this region.	Section 1.3.3 of the Draft EIS discusses the significant growth in southern New Mexico and southern Arizona, which will be accompanied by increased electrical demand. How regional utilities will meet future load growth depends on the availability and cost of various resources, including both transmission and generation. Section 1.3.3 of the EIS has been revised to provide additional clarification on congestion.
256	49	49.7	Cascabel Working Group	Meader	9-NEPA	The other question is whether Arizona utilities intend to build or access new generation in southeastern Arizona or southwestern New Mexico to meet future power needs and whether they will need this new transmission capacity to access the power. Essentially all new conventional generation is slated to be natural gas and sited close to the population centers where it is needed, not far distant from them as has been the practice in the past. Again, this planned siting of new energy facilities brings into question the need to build so much new transmission capacity out of southwestern New Mexico. While the solar energy resources of southwestern New Mexico are highly rated, any area to which this energy might be exported in the Southwest has extremely abundant high-quality solar resources. None of these areas should ever need to import solar energy from such distant sources no matter how rich those sources are. This makes the Southline's use for solar development very uncertain. Southwestern New Mexico's solar resources seem likely to be developed far more slowly than anticipated, if they are ever fully developed at all, which brings into question building so much new capacity to support such development, especially with the SunZia Project targeting the same resources for export. The reduction in transmission capacity by 50% from the upgrade section to the new-build section will seriously limit the amount of eastward transmission of power through the lines. The capacity of the 230-kV lines effectively determines the capacity of the transmission project as a whole, which would leave the 345-kV lines underutilized when the 230-kV section of the project is fully subscribed. This would result in an inefficient use of transmission capacity. Not tying the project specifically to future utility needs and plans in the region and not having the commitment of these utilities to use the project is risky. No attempt has been made to assess these needs and plans and to coordinate the project's use with them. Such an assessment seems essential.	Sections 1.3.1, 1.3.2, and 1.3.3 of the EIS have been revised to provide additional information on congestion, capacity, and the overall objectives of Southline Transmission, LLC. Transmission capacity would not be reduced by 50% from the New Build to the Upgrade sections. The calculation of transfer capacity is complex, and is not determined solely by the number or voltage of lines entering or exiting a substation. Transfer capability is determined through technical studies that evaluate how a project interacts with the existing system in various conditions. Physical properties, including voltage level and many other factors, are inputs in these studies, but overall capability is determined by the project's relationship to the overall system. Southline WECC Path Rating studies indicate the Project can support approximately 1,000 MW in the east-to-west direction across both the New Build 345-kV and Upgrade 230-kV sections, and approximately 400 MW in the west-to-east direction across both the Upgrade 230-kV and New Build 345-kV sections.
257	49	49.8	Cascabel Working Group	Meader	9-NEPA	Conflict with SunZia. While the BLM, WAPA, and both the SunZia and Southline projects have denied that the purpose of the two projects overlaps or conflicts, nevertheless, both will be competing for the same new generation sources in southwestern New Mexico, both will relieve transmission congestion in a similar way in the new-build area, and both would facilitate solar energy development in much the same way. No attempt has been made by either project or either environmental impact statement to assess the degree of overlap in the function of the two projects, that is, how much one may fulfill the function and purpose of the other. Neither can afford to compete with the other for generation sources and the sale of transmission capacity in this area, and they will be doing so. This weakens the financially viability and utilization of both. Not realistically assessing the relationship between the two ignores the physical and economic reality they face and is a major oversight.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21 of the Draft EIS). An assessment of the economic viability of the proposed Project is not within the scope of Western's or BLM's jurisdiction or authority, and is outside the scope of the NEPA process. Regulation of utilities is an authority exercised by States; neither of the agencies has any authority over the actions of public or private utilities. Section 1.4 of the Draft EIS included a discussion of electric transmission regulation and planning.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
260	49	49.11	Cascabel Working Group	Meader	9-NEPA	Section 2.5, No Action Alternative, Page 112. This is a very weak discussion (or non-discussion) of the No Action Alternative. The discussion of the upgrade portion of the project is adequate and explains what will happen if Southline is not approved, but no discussion of not building the new-build portion is provided. The discussion merely states that the project won't be built and the right-or-way will not be granted. These new lines would be built to meet a foreseeable need. What are the consequences of not meeting that need with this project? More importantly, what are the alternative ways or likely actions that will be used to meet them? Are there potential environmental effects of not building the lines? Public Service Company of New Mexico and, most importantly, the El Paso Electric Company will have considered congestion on Path 47 independently from the SunZia and Southline projects. They will have strategies and plans to address this for themselves without these new merchant transmission projects being built. The discussion of the No Action alternative should include a summary of these alternatives if at all possible. In addition, how might not building the project affect solar energy development? Could SunZia benefit by shifting solar transmission use to that project? I am attaching examples of discussions of the No Action Alternative for the Sunrise Powerlink and Devers 2 projects for reference. They are not applicable to the Southline in several ways, but they may be useful references	As described in section 1.2 of the Draft EIS, the agencies' needs are to address Southline's application for a ROW grant across BLM land and their request to upgrade part of Western's system. Western also needs to make decisions about the nature of its participation in and financing of the proposed Project. WECC is the regional entity responsible for coordinating and promoting bulk electric system reliability in the Western Interconnection (see section 1.4.3 of the Draft EIS). The Draft EIS discusses the no action alternative in chapters 2 and 4. How other entities other entities may be affected commercially by the no action alternative, as well as the commercial and regulatory merits of merchant transmission development, is beyond the scope of a NEPA analysis. The proposed Project intersects the service areas of multiple load serving entities. While each of these load serving entities would consider a range of scenarios by which they could address foreseeable need, the proposed Project would expand their options for meeting customer needs.
261	49	49.12	Cascabel Working Group	Meader	9-NEPA	Section 2.10.6 Environmentally Preferred Alternative, Willcox Playa, pages 143-144. Skirting the Willcox Playa with the project raises perhaps the greatest environmental concern because of abundant birds, especially the daily foraging for food by sandhill cranes in surrounding agricultural fields. This section notes the different between the environmentally preferred alternative and the Agency Preferred Alternative and that the environmentally preferred alternative was not chosen for routing around the playa. The DEIS states the follows: "Routing north (WC1) and west of Willcox Playa (Gb and 10 Gc), it would avoid avian impacts and issues along the southeast side of Willcox Playa (at Proponent 11 Preferred segment P7) and follow the I-10 corridor (WC1)." No reason or explanation is given for not selecting the environmentally preferred alternative. The routing selection will increase the impact upon the birds that use the playa. What were the agency reasons for making this choice? Because this issue is so sensitive, this should be carefully explained.	Chapter 2 of the EIS includes more information on how the Agency Preferred Alternative was selected. Additionally, local route variations have been included in the EIS (P7a, P7b, P7c, P7d, and U3aPC) in response to public and agency comments and concerns about impacts near the Tucson International Airport and Willcox Playa. BLM and Western have worked in coordination with AGFD on development of mitigation measures to offset impacts to wildlife habitat in their Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
262	49	49.13	Cascabel Working Group	Meader	9-NEPA	If the line must go around the playa, the west-side route clearly seems to be the less damaging for birds. First, the line parallels the playa shore for 7.5 miles vs. 11.7 miles. Second, most birds would appear to leave the playa to feed on agricultural fields to the south and southeast, whereas very few agricultural fields occur to the west. The bird traffic into the lines on the east side could be an order of magnitude greater or more. The new 345-kV lines are going to be large and tall with double the number of cables. The steel lattice towers will stand 140' high compared to the existing 230-kilovolt line and poles, which are to remain in place and are probably 80+ feet high. The three transmission cables in the existing line are oriented horizontal with respect to each other, whereas the two sets of three cables for the 345-kilovolt lines will be vertical. This means that birds will have to fly through three layers of cables with the new lines, increasing the potential for collisions. Routing the project to minimize this potential is important. The best west-side alternative route would appear to follow the south side of I-10 through Willcox. I am assuming that the BLM did not choose this because of potential objections from Willcox residents. The other option is to take the lines well north of Willcox, placing them adjacent to TEP's 345-kilovolt lines before turning south, which may be less objectionable. It is strongly recommended that one of these alternatives be chosen.	Additionally, minor route variations have been included in the EIS in response to public and agency comments and concerns about impacts to Willcox Playa. BLM and Western have worked in coordination with AGFD on development of mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
263	49	49.14	Cascabel Working Group	Meader	9-NEPA	Migratory Birds, New Build section, Route Group 2 – Hidalgo Substation to Apache Substation 29, Willcox Playa and Twin Lakes, Pages 326-329. Section 3.11.1 Land Use, State, Willcox Playa Wildlife Area, Page 439. The EIS provides no in-depth mitigation plan for the impact upon birds around the Willcox Playa other than the use of line-marking devices. The discussion of Tumamoc Hill does address impacts somewhat by explaining the routing around the hill. A lack of inclusion of detailed mitigation strategies in the draft EIS seems a deficiency. The SunZia Environmental Impact Statement contains a major section on mitigation measures.	Additional mitigation for vegetation and wildlife habitat was provided by the FWS and AGFD and is considered in the EIS. Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
265	49	49.16	Cascabel Working Group	Meader	9-NEPA	Table 4-21.1, List of Projects Considered in the Cumulative Impact Analysis, New Build Section, Reasonably Foreseeable Future Actions, Page 1062. Two projects are missing from this list and from the analysis: (1) enXco Development's (now EDF Renewable Energy's) proposed 600-megawatt Afton solar CPS/trough project, and (2) Torch Renewable Energy's 30-megawatt solar photovoltaic project proposed for Allen Flat near Torch's Red Horse 2 wind farm in northwest Cochise County. I am attaching Appendix B from the BLM's Draft Solar PEIS that lists enXco's proposed project.4 I cannot determine whether this project is still being considered. I am also including Torch Renewable Energy's application to Cochise County for its solar project. While Torch's application does not state the size of the project, Unisource Energy's 2014 Integrated Resource Plan5 indicates that it is 30 megawatts (USE intends to purchase the power).	Section 4.21 of the EIS has been revised to include these additional renewable energy projects.
275	56	56.2	Southwest Power Group	Crane	9-NEPA	As I indicated during our conversation, we are requesting that the comment period for the Southline Project be extended 30 days to allow us, and other interested members of the public, the opportunity to review, analyze, and provide comments on the reports relied upon by the BLM in the Southline Project Draft EIS. We previously attempted to secure copies of these reports by contacting the various BLM offices the Notice of Availability for the Southline Project Draft EIS stated would have "supporting documents." However, we were shocked to learn that, despite the requirements of 43 C.F.R. § 46.135 and 40 C.F.R. § 1502.21, the resource reports were not at these locations, or readily available for review by the public.	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many valuable reference documents used in the analysis. Additionally, the reports are supporting information for the EIS, and are not part of the formal review of the EIS; therefore, the agencies were under no obligation to extend the comment period to accommodate review of these documents. Data requested by the public were made readily available as soon as a data request was received by the BLM or Western Project contact listed on the Project website. The length of the public comment period was not extended beyond the original 90-day period.
276	56	56.3	Southwest Power Group	Crane	9-NEPA	I am disappointed that BLM has decided to restrict public access to these important technical resource reports on which the agency has relied in preparation of its Draft EIS. My experience with NEPA had led me to believe that the lead federal agency assumes an obligation to make such materials reasonably available for review during a document comment period such as the one currently under way. I do not believe BLM has made the supporting documents to this Draft EIS reasonably available to the public. Despite the indication in your Notice of Availability of the Draft EIS that such materials were both available and accessible by way of BLM's website specifically established for this NEPA process, our attempts to obtain them have only been met with frustration and undue delays. By not providing these technical resource reports on a timely basis to the public for their review and comment, particularly given BLM's indicated reliance on them for conclusions in the Draft EIS, the agency may well have compromised the intent of NEPA regarding public participation. At your suggestion we visited "Galileo Project, LLC" located at 4700 S McClintock Drive, Suite 100 in Tempe, AZ. We were able to obtain a DVD of the reports and noted that two reports ("Report 15: Vegetation (CH2M Hill 2013a)" and "Report 15: Vegetation (CH2M Hill 2013g)") may incorporate a duplication.	The Southline Transmission Line Resource Reports cited in the draft EIS are some of many valuable reference documents used in the analysis. Data used in the draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS. Data requested by the public were made readily available as soon as a data request was received by the BLM or Western Project contact listed on the Project website. The length of the public comment period was not extended beyond the original 90-day period.
277	56	56.4	Southwest Power Group	Crane	9-NEPA	It is our understanding that CH2M Hill is consultant to the Applicant. Can you confirm that this is indeed correct?	CH2M Hill was retained by the proponent, Southline Transmission, LLC. Chapter 5 of the EIS includes a discussion of the first-party consultant to the Project.
279	56	56.6	Southwest Power Group	Crane	9-NEPA	Once again, given the need to include review of these technical reports as part of providing comments on the Draft EIS, I request that the BLM extend the comment period by an additional 30 days	The Southline Transmission Line Resource Reports cited in the draft EIS are some of many valuable reference documents used in the analysis. Additionally, the reports are supporting information for the EIS, and are not part of the formal review of the EIS therefore, the agencies were under no obligation to extend the comment period to accommodate review of these documents. Data used in the draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS. Data requested by the public were made readily available as soon as a data request was received by the BLM or Western Project contact listed on the Project website. The length of the public comment period was not extended beyond the original 90-day period.
292	60	60.7		Wood	9-NEPA	Please spare the residents of Benson and the folks who live on either side of Benson who will be affected by this project and use alternative route "H" to the north of Benson.	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally, including alternative H, which was described in section 2.7 of the Draft EIS.
300	63	63.1	Friends of Aravaipa Region	Else	9-NEPA	Our interest in the Southline Project is based upon promoting infrastructure improvements that avoid impacts to sensitive environmental lands. Since there are two major electrical infrastructure projects being proposed for siting in southern Arizona at this time, and since both of these projects would compete for generation resources in the overlapping region of southern New Mexico and southern Arizona, FAR is commenting on both projects	Thank you for your comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
301	63	63.2	Friends of Aravaipa Region	Else	9-NEPA	Comment #1- Lack of analysis on the competing and overlapping purposes of the proposed Southline and SunZia projects in the southern portions of New Mexico and Arizona. Although the Western Area Power Administration (Western) must certify that the project is in the public interest (page 8, line 27), there is no analysis in this DEIS of the competitive effect of the proposed SunZia project on transmission demand from generators in the region that are or will be powered by natural gas and renewable resources. Conversely, the SunZia EIS ignored the effect of Southline's competition for generation resources. Western's need to ensure action in the public interest and the BLM's mandate to minimize impacts by considering alternatives to a proposed action require that competing project proposals recognize and analyze the overlap in project purpose. The BLM has avoided making any realistic comparative analysis between the two projects in both of the planning processes, and instead, has left the two projects to compete as a horse race through the regulatory process. This lax approach does not serve the public interest or the BLM' s directives to minimize environmental impacts. This lack of analysis becomes increasingly problematic in light of third-party evidence submitted to the BLM during the SunZia planning process that the Group 1 route segment of the SunZia project (Eastern terminus to the Midpoint substation) is not economically feasible to construct and operate under market conditions projected for the stated construction timetable, thus creating the high probability that both the Southline and SunZia projects would originate and terminate in the same general regions, and closely parallel each other for approximately 100 miles. With a new requirement that SunZia bury portions of the Group 1 route near White Sands Missile Range, the economic feasibility of the so-called wind-first route segment has now become even less attainable in the reasonably foreseeable future. The BLM has not acknowledged this highly probable scenario. With this comment, the high probability of overlap between the two projects is herein reported to the BLM as part of the Southline planning process. The oversight agency has now been informed of this probability by FAR and other organizations during official comment periods and in Information Quality Act submissions on at least twelve occasions. The actual effects of a constructed infrastructure corridor will be obvious. Ignoring the obvious overlap of purpose during the planning process significantly reduces the credibility of the cumulative effects analysis of both projects, and demonstrates the need to take additional measures to ensure that the BLM does not arbitrarily dismiss relevant information during a public process mandated by the National Environmental Policy Act.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration.
302	63	63.3	Friends of Aravaipa Region	Else	9-NEPA	Comment #2- Lack of comparison of the Southline and SunZia projects with regard to the BLM's mandate to co-locate new infrastructure projects with existing linear infrastructure to the highest degree practical. With the two projects overlapping to such a high degree, it is imperative that the common oversight agency (the BLM) present the public and the decision maker with this comparison of co-location, taking into account all analyzed route alternatives of both projects. Although comparisons between the two projects were initiated during the Southline scoping process, this DEIS reflects that comparisons were terminated, apparently at the request of SunZia in their Information Quality Act letter to the BLM of June 1, 2012 (web reference follows): http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information _Resources_ Management/data_ quality.Par.38272.File.dat/SunZia%20Comment%20on%20Southline%20No.%202%20%286-1-12%29.pdf While the Southline proposal has presented a realistic energy development scenario, SunZia has not. In fact, the BLM has claimed that 81% to 94% of SunZia's resultant energy development would be renewable, and has used this assumption as the basis for its analysis of cumulative effects. SunZia's misleading "apples-to-oranges" argument in their above-referenced letter to the common oversight agency should not preclude the highly relevant comparison of environmental impacts between the two proposed projects.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration. Additionally, two alternatives considered in detail in the Draft EIS (as described in section 2.7) include local alternatives DN1 and LD4, which would parallel the selected alternative for the SunZia project. It is outside the scope of authority for BLM or Western to provide oversight to the electrical grid. WECC is the regional entity responsible for coordinating and promoting bulk electric system reliability in the Western Interconnection (see section 1.4.3 of the Draft EIS).
303	63	63.4	Friends of Aravaipa Region	Else	9-NEPA	Comment #3- Current preferred routing around the Willcox Playa. With great concerns regarding the impacts on wildlife in the Willcox Playa region, we incorporate by reference the submitted comments of the Cascabel Working Group. There was no reason provided in the DEIS about why the environmentally preferred alternative was not adopted near the Willcox Playa. This is unacceptable in a region of such high environmental value.	Route variations have been included in the EIS (P7a, P7b, P7c, P7d, and U3aPC) in response to public and agency comments and concerns about impacts to Willcox Playa. BLM and Western, in coordination with AGFD, developed additional mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
304	64	64.1	Aravaipa Property Owners Association	Choate	9-NEPA	Our interest in the Southline Project is based upon promoting infrastructure improvements that avoid impacts to sensitive environmental lands. Since there are two major electrical infrastructure projects being proposed for siting in southern Arizona at this time, and since both of these projects would compete for generation resources in the overlapping region of southern New Mexico and southern Arizona, APOA is commenting on both projects.	Thank you for your comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
305	64	64.2	Aravaipa Property Owners Association	Choate	9-NEPA	(1) Lack of analysis on the competing and overlapping purposes of the proposed Southline and SunZia projects in the southern portions of New Mexico and Arizona. Although the Western Area Power Administration (Western) must certify that the project is in the public interest, there is no analysis in this DEIS of the competitive effect of the proposed SunZia project on transmission demand from generators in the region that are or will be powered by natural gas and renewable resources. Conversely, the SunZia EIS ignored the effect of Southline's competition for generation resources. Western's need to ensure action in the public interest and the BLM's mandate to minimize impacts by considering alternatives to a proposed action require that competing project proposals recognize and analyze the overlap in project purpose. The actual effects of a constructed infrastructure corridor will be obvious. Ignoring the obvious overlap of purpose during the planning process significantly reduces the credibility of the cumulative effects analysis of both projects, and demonstrates the need to take additional measures to ensure that the BLM does not arbitrarily dismiss relevant information during a public process mandated by the National Environmental Policy Act.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)) as its own request. A comparison of the competing and overlapping purposes, and/or potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration. Future generation projects that are not reasonably foreseeable are too speculative to include in the analysis in the EIS.
306	64	64.3	Aravaipa Property Owners Association	Choate	9-NEPA	(2) Lack of comparison of the Southline and SunZia projects with regard to the BLM's mandate to co-locate new infrastructure projects with existing linear infrastructure to the highest degree practical. With the two projects overlapping to such a high degree, it is imperative that the common oversight agency (the BLM) present the public and the decision maker with this comparison of co-location, taking into account all analyzed route alternatives of both projects. Although comparisons between the two projects were initiated during the Southline scoping process, this DEIS reflects that comparisons were terminated, apparently at the request of SunZia. While the Southline proposal has presented a realistic energy development scenario, SunZia has not. In fact, SunZia has claimed that 81% to 94% of its resultant energy development would be renewable, and has used this assumption as the basis for its analysis of cumulative effects.	The not yet constructed SunZia project, and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). A comparison of the competing and overlapping purposes, and/or potential impacts from the not yet constructed SunZia project, is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration. Additionally, two alternatives considered in detail in the Draft EIS (as described in section 2.7) include local alternatives DN1 and LD4, which would parallel the selected alternative for the SunZia project.
307	64	64.4	Aravaipa Property Owners Association	Choate	9-NEPA	(3) Current preferred routing around the Willcox Playa. With great concerns regarding the impacts on wildlife in the Willcox Playa region, we incorporate by reference the submitted comments of the Cascabel Working Group. There was no reason provided in the DEIS about why the environmentally preferred alternative was not adopted near the Willcox Playa. This is unacceptable in a region of such high environmental value.	Route variations have been included in the Final EIS (P7a, P7b, P7c, P7d, and U3aPC) in response to public and agency comments and concerns about impacts to Willcox Playa. BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
310	66	66.2	Volunteer Ecologists	Reichenbacher	9-NEPA	We strongly feel that the Southline Transmission proponents should route the powerline well around Tumamoc Hill. The DEIS (Vol. 1, p. 129) identifies local alternatives TH I A, TH I B, or TH 1C. We urge the proponents to consider these in the strongest terms possi ble. While the alternative routes may affect other Tumamoc globeberry populations , none are the type population for a genus and species and none are now known to be in danger of extinction.	The EIS includes the Agency Preferred Alternative; see section 2.10.5 of the EIS for a description of the Agency Preferred Alternative and the change between Draft and Final EIS. All action alternatives described in section 2.6 of the EIS are considered equally, including local alternatives TH1a, TH1b, and TH1c, which are described in section 2.7 of the Draft EIS.
311	66	66.3	Volunteer Ecologists	Reichenbacher	9-NEPA	If the current preferred alternative is implemented as currently proposed, we would like to offer our services in working with the construction team to ensure that none of the Tumamoc globeberry plants on Tumamoc Hill are affected.	Thank you for the comment and offer of assistance. Chapter 2 (see table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional considerations for Tumamoc globeberry.
312	67	67.1	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	The Department is very interested in working with the BLM, Western, and Southline on developing appropriate mitigation for the Southline Transmission Line Project and requests continued involvement with effectiveness monitoring and adaptive management of that project as necessary. As published in 40 CFR §1508.20, mitigation includes (a) avoiding, (b) minimizing, (c) rectifying, (d) reducing or eliminating, and (e) compensating for environmental impacts.	The EIS has been revised to include additional mitigation, as proposed by the AGFD and FWS, as well as public comments on the Draft EIS (see table 2-8 and chapter 5 in the EIS). The BO and amendment are included in appendix M.
313	67	67.2	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	The primary issues of concern for the Department relate to the Agency Preferred Alternative where it, from the Arizona-New Mexico state line to the Apache substation. Although the preferred route avoids many sensitive resources, it does not avoid the Arizona Game and Fish Department's Willcox Playa Wildlife Area, and more specifically, the sandhill crane roost (Crane Lake) within the Wildlife Area. The Environmentally Preferred Alternative (EPA) described in the DEIS for the Arizona portion is clearly the alternative route posing the least impact to wildlife and habitat, and is therefore the route the Department recommends the BLM and Western select for the Final EIS. The impacts analysis presented in Table 2-12 of the DEIS indicates the Agency Preferred Alternative (APA) poses more impacts to wildlife and habitat than does Proponent Alternative 1 or 2. The Department was unable to compare the APA to the EPA since it was not included in Table 2-12. Additionally, under the APA column of Table 2-12 (page 160), it incorrectly states that Segment P7 is adjacent to the Willcox Playa Wildlife Area; it actually crosses the Wildlife Area and would therefore require Commission approval for a right-of-way.	Route variations have been included in the Final EIS (P7a, P7b, P7c, and P7d) in response to public and agency comments and concerns about impacts to Willcox Playa. BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat and management goals and objectives in the AGFD Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
314	67	67.3	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	The Department is planning enhancement of several wetlands and ponds within the Wildlife Area, most of which are in close proximity to Kansas Settlement Road. Between October and March, Sandhill cranes fly between roosting and feeding sites several times a day. Travel routes vary depending upon a number of variables, including weather patterns, roost conditions, and availability of forage. Within the Sulphur Springs Valley, cranes typically travel between roost sites such as Crane Lake and Whitewater Draw to the many grain fields in the area. To minimize strike hazards for the cranes, the Project would best be sited away from roost and agricultural fields to the maximum extent possible. We recommend investigating a new route alternative that would avoid the Willcox Playa Wildlife Area and move the line out of the crane's daily roost to forage to roost commute. Given our plans to enhance habitat on the Wildlife Area for waterfowl and other wildlife, relocating the Project along Kansas Settlement Road to avoid Crane Lake would only present a new bird strike hazard. Please consider the reroute depicted on the attached map (Attachment A), which follows an existing pipeline and existing roadways. Although this suggested route is adjacent to some agricultural fields, it is farther away from known roost sites and would likely be at a location within the crane's flight paths where the birds are of sufficient altitude that a strike would be very unlikely. This reroute has not yet been assessed in the field and would require the same degree of analysis as all the routes presented in the DEIS. We therefore request further discussion and collaboration with BLM, Western, and Southline on a possible reroute of the Project to avoid the Wildlife Area.	Minor route variations have been included in the EIS in response to public and agency comments and concerns about impacts to Willcox Playa (P7a, P7b, P7c, and P7d). BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat and management goals and objectives in the AGFD Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
315	67	67.4	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	Segment LD4 of the APA would not follow existing facilities and is located in an area currently devoid of any utility infrastructure. It appears the decision to make this segment part of the APA was based upon locating the Southline project adjacent to the proposed, yet currently un permitted, SunZia Transmission Line Project. Making the decision to locate the Southline Project along Segment LD4 in an undeveloped landscape under the guise of co-locating it adjacent to another even larger, yet un-permitted and un-built transmission line is premature and misleading. Therefore, the Department recommends following I-10 which has a "disturbance corridor" and not spread development out to undisturbed habitats.	The comment accurately reflects the description of local alternative LD4. The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally and could be selected in the ROD.
317	67	67.6	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	Also, the Cumulative Impacts section should include the Red Horse Wind and Solar project which is currently being constructed in Allen Flat. Additionally, an assessment on the increased ground water withdraws for additional solar and natural gas fired power plants should be evaluated for their impacts on current activities in the area (e.g. farming, conservation, rural wells, etc.).	Section 4.21 in the EIS has been revised based on this comment, to include the Red Horse Solar and Wind Project. The cumulative effects of past, present, and future actions in the analysis area are considered in section 4.21, including potential impacts to groundwater.
318	67	67.7	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	The DEIS describes residual and cumulative impacts on birds from the Southline project as "increased" due to mortalities from collisions with the transmission line, and it states that any Sandhill crane mortality would be a significant impact. The DEIS claims that with mitigation, impacts on Sandhill cranes would be minor/negligible to moderate and long-term (pg. 764). This mitigation would be accomplished by placing bird diverters, or line marking devices, on the new powerline. The Department disagrees with the effectiveness of this mitigation. Wright et al. (2009) found significant crane mortality from powerline collisions near night roosts in Nebraska. There would be a similar effect at Crane Lake since cranes often come to roost after dark (per. comm. George Hayes; Morkill and Anderson 1991). Various studies list the effectiveness of line marking devices in reducing avian powerline collisions 10-89%; however, they also list high winds and darkness as two factors responsible for many of those collisions. When considering Sandhill cranes in the Willcox Playa area, both windy conditions and night flights apply to their use of Crane Lake. Therefore, in addition to the proposed installation of flight markers, we recommend investigating the use of Bird Strike Indicators (BSis) in select locations as part of adaptive management. BSis would document bird strike frequency and be used in determining whether additional mitigation measures would be necessary. If BSis are not feasible, the Department suggests bird mortality surveys along the line to determine mitigation effectiveness, adjusting visibility markers in areas where most collisions occur. A minimum of two years is recommended, concentrating on November through February when cranes are present.	Minor route variations have been included in the EIS in response to public and agency comments and concerns about impacts to Willcox Playa (P7a, P7b, P7c, and P7d). BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
319	67	67.8	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	In areas where the Project coincides with desert tortoise habitat, we recommend the use of monopole towers. Self-supporting lattice structures provide readily accessible nest substrate and hunting perches for ravens which can have a significant impact on tortoise populations. Reducing these opportunities would minimize impacts to desert tortoises.The DEIS states it will require preconstruction surveys for desert tortoise, Gila monster, and Tucson shovel-nosed snake. The Department also recommends conducting surveys for other sensitive species (e.g. ornate box turtles, Western burrowing owl, Texas horned lizard, kit fox, etc.).	As described in chapter 2 of the Draft EIS, both monopole and lattice structures are being considered for the New Build Section of the Project, while monopoles are proposed for the Upgrade Section. Survey of sensitive species like kit fox, ornate box turtles, etc., have been added as Project design features to chapter 2 of the EIS (see table 2-8). In summary, because desert tortoise habitat is only found in the Upgrade Section, monopoles would be used, as described in chapter 2 of the EIS.
320	67	67.9	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	The Project will result in roads through previously undisturbed habitats. In areas where new access roads would be created, include dip and roll (Zeedyk) design to handle water while drastically reducing erosion potential. Enhancing water-harvesting capabilities of dirt access roads would create water and potentially forage for small birds, herps, and mammals.	Use of water bars as a design feature was included in table 2-7 in the Draft EIS (now table 2-8 in the EIS). Details of the use of water bars and/or rolling dip cross drains would be described in the Stormwater Pollution Prevention Plan.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
321	67	67.10	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	Compensation Strategies for Impacts For those impacts that cannot be minimized, the Department recommends the following compensation strategies: Cranes I. Providing adequate funding to ensure sufficient water availability at Crane Lake, Whitewater Draw. 2. Remove invasive tamarisk from in and around the Willcox Playa WA and plant native replacement species. 3. Creating new wetlands and roost sites. 4. Funding for long-term food resources. Grasslands I. Grassland restoration through mesquite or creosote removal within the Sulphur Springs Valley or Playa de los Pinos. 2. The purchase of private lands or conservation easements to exclude development and protect grasslands. Roads I. Establish an endowment fund to decommission superfluous dirt roads (for every mile of new access roads, a mile of superfluous road would be restored). Fund would have to cover the costs of identifying those superfluous roads, and all the work involved in identification, public hearings/meetings, landowner meetings, and all the restoration work and monitoring (with contingency actions in place).	Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area, which includes compensatory mitigation. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8. Additional mitigation for vegetation and wildlife, as provided in the BO and amendment from FWS (see appendix M of the EIS for the final BO and amendment), is included in section 2.4.6 of the EIS and considered in the analysis in chapter 4. If during final Project design it is determined that impacts that could not be mitigated through PCEMs and conservation measures in the BO and amendment, then compensatory mitigation would be considered.
322	67	67.11	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	Wildlife Water Catchment in Dial Canyon I. Construction of one or more wildlife watering facilities in areas just outside or adjacent to the Southline. a. The APA passes right next to a Department water catchment in Dial Canyon. We recently invested over $30,000 in renovations to this wildlife water.	Catchment 368 is located approximately 0.20 mile from LD4 and over 3 miles from the Agency Preferred Alternative (LD4-Option 5); no direct impacts to the catchment are anticipated. This catchment has been included as a present project in the cumulative effects section of the EIS (see section 4.21 of the EIS).
323	67	67.12	Arizona Game and Fish Department	Ritter/Francis	9-NEPA	Plan of Development The Department requests involvement in development of the Project Plan of Development (POD). Numerous opportunities exist for a broad range of wildlife and habitat enhancements across many areas of the Project area. We strongly recommend incorporation of adaptive management in the Plan of Development (POD). For example, specific thresholds for percent weed cover within the project ROW would allow for timely actions to be taken. For example, once a pre-determined threshold is reached, it would trigger a specific management action. The Department requests the following Framework Plans be made available with opportunity for comment prior to finalization of the Plan of Development (POD): • Access Road Plan • Plant and Wildlife Species Conservation Measures Plan • Erosion, Dust Control, and Air Quality Plan • Noxious Weed Management Plan • Reclamation, Vegetation, and Monitoring Plan • Avian Protection Plan • Decommissioning Plan Additionally, the Department requests review and involvement in the development of the Bird and Bat Conservation Strategy. We have wildlife management authority in the state of Arizona and should be included in any wildlife conservation strategies that are being developed. USFWS should be involved as well. We suggest including in the environmental training for construction crews that wildlife collisions on construction sites may include small reptiles, amphibians, and mammals not readily visible. Snakes and especially lizards are often attracted to roadways (including dirt roads) and may become casualties during the construction and operation phases of the project if drivers ignore project speed limits or are otherwise non-vigilant about watching for all wildlife when driving project roadways.	A draft POD is available with the EIS for review (see appendix N) and for the Department to provide feedback on. Section 2.4.1 of the EIS has been revised to clarity that agencies like the AGFD would be incorporated into the development of Framework Plans, as appropriate.
324	68	68.1	Pima County	Bernal/Connolly	9-NEPA	As stated in Mr. Huckelberry's letter to you, dated July 2, 2012 (attached), Pima County has several concerns with the proposed Southline Transmission Line Project, a portion of which, commonly known as the 'Rebuild', aims to upgrade and rebuild the existing Western Area Power Administration (WAPA) transmission structures and construct a new transmission line to connect the existing WAPA line and Tucson Electric Power Company's Vail Substation. This 'Rebuild' component of the overall WAPA project will double the existing voltage on the transmission lines from 115 kV to 230 kV, necessitating upgrades to several substations. The overall objective should remain, as much as possible, to locate, upgrade and rebuild the power stations as well as ancillary facilities including staging areas and access roads within the existing WAPA right-of-way and other previously impacted areas.	As discussed in the Draft EIS, the proposed ROW widths have been requested to allow for the movement and operation of construction and maintenance equipment and to allow for sufficient clearance between conductors and the ROW edge, as required by the National Electric Safety Code. Southline is also requesting ROWs for ancillary Project facilities and for access to the transmission line. In certain areas of the Upgrade Section, development and constraints may not allow for the expansion of the existing 100-foot ROW. Additional detail on the location and type of expansions at the existing substations has been included in section 2.4.2 of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
326	68	68.3	Pima County	Bernal/Connolly	9-NEPA	The DEIS makes no mention of mitigation or compensation for the Rebuild's impacts. These lands were secured for conservation and open space purposes due to their exceptional cultural and natural resource values. The County intends to rely on most of these preserves as mitigation lands for our forthcoming Section 10 Incidental Take Permit from the U.S. Fish and Wildlife Service. We recommend Southline mitigate unavoidable natural resource impacts by protecting lands elsewhere in the Conservation Lands System.	Additional mitigation for vegetation and wildlife was provided by the FWS and is considered in the EIS. Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation. Chapter 2 (see table 2-8), as well as sections 3.8.1 and 4.8.1 of the EIS, has been revised to include additional consideration for Pima County Conservation Lands. Disturbance within Pima County Conservation Lands would primarily occur within the Western ROW for the existing line.
327	68	68.4	Pima County	Bernal/Connolly	9-NEPA	Pima County proposes a minor modification to the route of the current WAPA line and the proposed Southline Transmission Line upgrade (see attached Exhibit B, Pima County Strategic Planning). The proposed re-route would re-locate the WAPA and Southline Transmission lines to the west along the northern edge of the Old Vail Connection intersecting with a Unisource utility easement on the east edge ofthe San Xavier District ofthe Tohono O'odham Nation then north to reconnect with the existing WAPA line. This area has been targeted for expansion of Aerospace, Defense, and Technology employment and is a critical component for an industrial corridor from Nogales Highway to 1-10.	Based on comments by and coordination with Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. Route variation U3aPC is also now part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS.
328	68	68.5	Pima County	Bernal/Connolly	9-NEPA	The segment of preferred route would be an impediment to completing the undertakings which are critically important to the region's economic health and affects the Federal Aviation Authority's and the U.S. Air Force's federal interests. Pima County has had preliminary discussions with the San Xavier District regarding the potential re-route and we would welcome the opportunity to partner with BLM,Unisource, WAPA and the Southline Transmission Line proponents to obtain necessary approvals to accomplish this relocation.	Thank you for your comments and willingness to work with Western and the BLM. Based on comments by Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. Route variation U3aPC is also now part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS.
334	68	68.11	Pima County	Bernal/Connolly	9-NEPA	development of FERC vegetative management plans that are sensitive to and retain our unique desert vegetation species;	As described in chapter 2 of the Draft EIS, a Reclamation, Vegetation, and Monitoring Plan will be prepared, along with several other Framework Plans.
339	68	68.16	Pima County	Bernal/Connolly	9-NEPA	Manabendra Changkakoti of our Office of Sustainability and Conservation (520.724.9952; Manabendra .Changkakoti@pi ma. gov) is coordinating the County's involvement with the Southline Transmission Line Project. Please contact him should you have questions, need additional information, or wish to discuss any of the points raised herein	Noted.
341	68	68.18	Pima County	Bernal/Connolly	9-NEPA	Pima County proposes a minor modification to the route of the current WAPA line and the proposed Southline Transmission Line upgrade as shown in Exhibit This proposed re-route would re-locate the WAPA and Southline Transmission lines to the west along the northern edge of Old Vail Connection intersecting with a Unisource utility easement on the east edge of the San Xavier District of the Tohono O'odham Nation then north to reconnect with the existing WAPA line.	Based on comments by and coordination with Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. Route variation U3aPC is also now part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS.
342	68	68.19	Pima County	Bernal/Connolly	9-NEPA	Pima County has had preliminary discussions with the San Xavier District regarding the potential re-route and we would welcome the opportunity to partner with BLM, Unisource, WAPA and the Southline Transmission Line proponents to obtain necessary approvals to accomplish this relocation.	Thank you for your comments and willingness to work with Western and the BLM. Based on comments by Pima County regarding lands south of the Tucson International Airport, a new approximately 6-mile-long route variation (U3aPC) is analyzed in the EIS. Route variation U3aPC is also now part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS.
344	68	68.21	Pima County	Bernal/Connolly	9-NEPA	There are multiple major projects, some of which are in close proximity to the existing WAPA line and proposed Southline upgrade that bisects Section 31. The status of these major projects follows (see Exhibit C): 1. Hughes Access Road Relocation – The FAA will be concluding the Environmental Assessment for this undertaking later in 2014. Construction is expected to start in early 2015 with completion expected by the end of 2015. Pima County will be purchasing Right-of-Way from the Tucson Airport Authority. 2. FAA – Tucson International Airport Parallel Runway Expansion project. The Airport's 5 year master plan update has been approved by the FAA and monies have been appropriated to begin an EIS to initiate the project. 3. USAF – the Tucson International Airport Runway Project necessitates a land swap and relocation of munitions storage bunkers on USAF Plan 44 (Raytheon). The FAA will initiate the Environmental Impact Statement (EIS) in April, 2015. This action will pertain to Parcels F & G on the map. 4. USAF Plant 44 Buffer – In order to rectify some safety arc issues and allow for space for relocation of the above munitions storage buffers as well as possible expansion, additional buffer space will be acquired from the Tucson Airport Authority by Pima County (Parcel H). 5. To rectify limited Munitions Storage Area issues on the 162nd Fighter Wing base on the northern, more populated end of the airport, the east end of Parcel H will be set aside for a new Munitions Storage Area. The lead federal agency for Steps 4 & 5 of the EIS will be the USAF in conjunction with the National Guard Bureau and Pima County.	Section 4.21 in the EIS has been revised based on this comment, to include the projects mentioned both in table 4.21-1 and the analysis of resources in section 4.21.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
345	68	68.22	Pima County	Bernal/Connolly	9-NEPA	Pima County Zoning Code requires a Conditional Use Permit for electrical transmission in certain zoning districts. The Draft EIS states consistency with this requirement but appears to lack the empirical information to back up this assertion.	Section 3.11.1 of the Draft EIS notes that a Conditional Use Permit would be required under certain conditions. Table 4.11-1 of the EIS has been revised to indicate that a Conditional Use Permit would be acquired, as appropriate, to ensure consistency.
350	68	68.27	Pima County	Bernal/Connolly	9-NEPA	Portions of segments U3e and U3f of Subroute 4.1 go through the Tumamoc Hill property; and, segments TH1 Option and TH1a of Route Group 4, Local Alternative are in close proximity, to the north and west of Tumamoc Hill. More detailed comments are provided in other sections of this report.	The comment accurately reflects the description of alternatives in chapter 2 of the Draft EIS.
352	68	68.29	Pima County	Bernal/Connolly	9-NEPA	We recommend subroute 4 local alternative sections TH3- Option A or B to avoid impacts to Tumamoc Hill and Tucson Mountain Park and to greatly reduce impacts to natural resources.	Statement of preference.
354	68	68.31	Pima County	Bernal/Connolly	9-NEPA	The Southline Transmission project proposed to rebuild and upgrade the existing WAPA route through Pima County. The DEIS documents impacts to the Conservation Lands System and to the Priority Conservation Areas for several species, yet mitigation actions for unavoidable impacts to these lands and species are not proposed or are inadequate to mitigate for impacts.	Chapter 2 (see table 2-8), as well as sections 3.8 and 4.8 of the EIS, has been revised to include additional clarification for mitigation for Pima County Conservation Lands. However, the area to be crossed is in an existing ROW for an existing Western line, and the additional impacts from the upgrade of the existing transmission line would occur within that ROW and disturbance area. Little disturbance outside the ROW would be expected to occur in CLS areas. Any additional ROW, if acquired, would be for protective clearance from development at the edge of the ROW and to ensure safe clearance for conductors. If during Project design it is determined that Project facilities would have impacts outside of the existing ROW, compensation for those additional impacts would be considered.
358	68	68.35	Pima County	Bernal/Connolly	9-NEPA	p.xviii Section 4.4 Route Group 4: Pantano Substation to Saguaro Substation Noted that the discussion identifies 10 Local Alternatives, 9 of which intended to avoid Tumamoc Hill. Agency Preferred Alternative includes Local Alternatives TH1a and TH1-OPTION	The comment accurately reflects the description of alternatives in the Draft EIS.
360	68	68.37	Pima County	Bernal/Connolly	9-NEPA	p. xxv in Section 7.8, Lines 15-18: Noted that no resource management plan amendment is needed for Southline upgrade section.	The comment accurately reflects the description of alternatives in the Draft EIS.
361	68	68.38	Pima County	Bernal/Connolly	9-NEPA	p. xxxiv in Section 9, Decisions to be Made section includes a list of land owners/managers that omits Pima County -- please note that while Pima County is a subdivision of the State, it is a separate land owner/manager (the section does mention that County requirements need to be followed).	The executive summary in the EIS has been revised based on this comment.
364	68	68.41	Pima County	Bernal/Connolly	9-NEPA	pp. 68-69, Chapter 2, Access Roads, lines 38 and 4-5: discussion says existing roads will be used "when feasible" with various rights of way widths listed, e.g., 16-24 feet and 30 feet; clams to cause "minimal disturbance" are not supported in the discussion – how will disturbance be minimized?	The referenced section in the Draft EIS in chapter 2 did describe how roads will be designed to minimize disturbance. Strategies would include, as stated on page 69 of the Draft EIS, use of existing roads, either paved or unpaved, minimizing grading to areas where needed to maintain access, etc.
367	68	68.44	Pima County	Bernal/Connolly	9-NEPA	p. 113 Chapter 2, Section 2.6 Action Alternatives:	Noted.
368	68	68.45	Pima County	Bernal/Connolly	9-NEPA	p. 128 Proponent Preferred Route Subroute 4.1 is 100% within the existing Western right of way through Pima County. Of the subroutes developed to avoid Tumamoc Hill, the Proponent and Agency Preferred Alternative includes Subroute 4.1, TH1A, TH1B, and TH1-OPTION.	The comment accurately reflects the description of alternatives in the Draft EIS.
369	68	68.46	Pima County	Bernal/Connolly	9-NEPA	p.129, Local Alternatives: Local alternatives, including 9 selected to avoid or minimize impacts on Tumamoc Hill were developed by Western and Southline. Local alternatives were developed using input from stakeholders.	The comment accurately reflects the description of alternatives in the Draft EIS.
370	68	68.47	Pima County	Bernal/Connolly	9-NEPA	p. 331, Chapter 3, Cultural Resources 3.9 and 4.9: The Agency Preferred Alternative avoids Tumamoc Hill with several Local Alternatives TH1a, TH1-OPTION, rerouting to the west by using Starr Pass, Greasewood, and Anklam Roads to avoid crossing the Hill in the existing Western right of way.	The comment accurately reflects the description of alternatives and the discussion in section 3.9 in the Draft EIS.
388	68	68.65	Pima County	Bernal/Connolly	9-NEPA	Item 1. Section – Executive Summary: ES. 1 Introduction. Page, Line - xiii, 19. Comment: The project will impact areas within Pima County. Pima County should be consulted and included on the preparation of future editions of the EIS. Resolution: Pima County should be a participating agency for further edits, review, etc. of the Environmental Impact Analysis.	As discussed in section 5.4 of the Draft EIS, Pima County was invited to be a cooperating agency.
435	68	68.112	Pima County	Bernal/Connolly	9-NEPA	Staff notes and supports efforts to modify the alignment to the extent that this will reduce direct impacts to historic Tumamoc Hill.	Noted.
436	68	68.113	Pima County	Bernal/Connolly	9-NEPA	Generally, modifications to existing permits or new permits as may be required for electrical substations over 115KV would be coordinated by Development Services Department.	Section 4.11.1 (see table 4.11-1) of the EIS has been revised to provide clarification regarding this comment.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
438	69	69.2	Nature Conservancy	Marshall	9-NEPA	We submitted comments during the scoping phase of this project and appreciate the opportunity to provide brief follow-up comments. Overall, we appreciate the approach taken by BLM to upgrade existing transmission lines where possible, thereby reducing environmental conflicts and minimizing new impacts to areas that currently do not support infrastructure. Our comments are limited to a concern about the preferred alternative identified in Route Group 2 from the Hidalgo Substation to the Apache Substation in southeastern Arizona and on the role of mitigation for offsetting unavoidable and permanent impacts.	Noted.
439	69	69.3	Nature Conservancy	Marshall	9-NEPA	We are concerned about the alternatives that pass along the eastern and southern margins of Willcox Playa. As the DEIS describes, the Playa is a unique feature that maintains seasonal water and supports a large wintering population of Sandhill Cranes, as well as other migratory species dependent on surface water.	Route variations have been included in the EIS (P7a, P7b, P7c, P7d, and U3aPC) in response to public and agency comments and concerns about impacts to Willcox Playa. BLM and Western, in coordination with AGFD, developed mitigation measures to offset impacts to wildlife habitat and management goals and objectives in the Willcox Playa Wildlife Area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
441	69	69.5	Nature Conservancy	Marshall	9-NEPA	Generally, BLM did a thorough job of assessing impacts in the DEIS due to construction and we commend the identification of Best Management Practices and other measures in the DEIS draft Plan of Development as a means of minimizing impacts. However, no measures were identified to offset unavoidable, permanent habitat losses to wildlife throughout the route but especially in new sections proposed and those related to cumulative impacts. If unavoidable, permanent direct and indirect impacts to habitat and species as well as cumulative impacts are not offset, then it is inescapable that the environmental baseline for the region's natural resources will be adversely affected. A diminished environmental baseline raises the prospect of additional species' listings under the Endangered Species Act and the considerable costs, regulatory burdens, and uncertainty that follow.	Additional mitigation for vegetation and wildlife was provided by the FWS and AGFD and is considered in the EIS. Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation.
442	69	69.6	Nature Conservancy	Marshall	9-NEPA	We believe this is an opportunity to apply regional mitigation strategies as described in Order No. 3330 issued by the Secretary of the Interior in 2013 cited in chapter 2 of the DEIS. While we recognize that this approach is still in development, we believe the Southline project fits the purpose and need under which the secretarial order was issued and note that similar strategies are being developed by BLM and partner agencies for Solar Energy Zones in Arizona	Additional mitigation for vegetation and wildlife was provided by the FWS and AGFD and is considered in the EIS. Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation.
451	72	72.3	Mountain View Ranch		9-NEPA	The Proposed "Upgrade" Would Improperly and Impermissibly "Overburden" the Right-Of-Way Granted In the 100' Easement Used by WAPA. WAPA currently operates and maintains a 115 kV single-circuit system in the 100' easement which transects the south portion of Mountain View, with the electric conductors and insulators affixed to "H" shaped wooden supporting structures that are 75' feet in height. The "Upgrade" portion of the Project proposes to replace these facilities with a double-circuit 230 kV system using steel monopole structures 134' (average) in height. In essence, the Project would more than quadruple the electric transmission capacity within the 100' easement, using supporting structures which are at least 59' or 79% greater in height than the existing facilities. Developer/Investor submits that such proposed usage of the 100' easement here in question far exceeds that usage contemplated at the time the 100' easement was granted. As a consequence, the usage contemplated and proposed by the Project would "overburden" both the easement and real property transected by the easement, as well as property directly adjacent thereto or nearby. Such "overburdening" is particularly inappropriate and impermissible when the real properties in question are both currently being used and planned for single-family residential purposes. In that regard, attached as Appendix "C" are copies of two "Contract and Grant of Easement" documents, which together constitute the 100' electric easement used by WAPA for its existing 115 kV single-circuit system that transects Mountain View south of Interstate 10. In Section 1 of each document, the grant of right-of-way in question is for "an electric transmission line," not lines. This limitation is repeated thereafter in each document by references (i) in Section 1 to "said !in," and (ii) in Sections 2, 3, 4 and 5 to "said transmission line." [emphasis added] Clearly, the use of two (2) or more transmission lines with multiple circuits was not contemplated or intended by the grantors of the easement here in question. Nor, presumably was it contemplated by the grantee (United States Department of Interior, Bureau of Reclamation), a sophisticated power transmitting entity, which prepared the easement documents.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.
452	72	72.4	Mountain View Ranch		9-NEPA	The DEIS appears to give no consideration to the concept of "overburdening," and its application to circumstances such as those that would be presented by the presence of the proposed "Upgrade" facilities across single-family residential subdivisions such as Mountain View Ranch and other subdivisions to the west of Mountain View and south of Interstate 10.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
454	72	72.6	Mountain View Ranch		9-NEPA	Comment 6. Accordingly, against this background, the CPUC concluded that that portion of the new transmission system project there in question should be undergrounded, and the costs of such undergrounding spread among all ratepayers who would benefit from the new transmission facilities when completed.2 Succinctly stated, "Infrastructure necessary to fulfill the state's energy goals should not disproportionately burden one community for the benefit of the larger population. "3 When examined within the context of the concept of "overburdening," the similarities between the Chino Hills fact situation and the impact of the proposed Upgrade Facilities on Mountain View and the single-family residential subdivisions located to its west and south of Interstate 10 are quite striking. For example, the proposed Upgrade facilities are intended to serve an alleged "need" which far transcends the current and future requirements for service of Mountain View and other nearby residential communities. In addition, the proposed Upgrade facilities would more than quadruple the electric transmission capacity of WAPA's existing system, just as SCE's proposed double-circuit 500 kV system would more than quadruple the transmission capacity of its then existing 220 kV system. In this instance, the replacement 134' steel monopole towers would almost double the existing 75' supporting structures. In the SCE situation, the increase in tower height was more than doubled, but the 150' right-of-way there was 50% wider than the 100' right-of-way which transects Mountain View and other adjacent single-family residential communities. Thus, the "overburdening" concept is both applicable and appropriate for application in the present situation. Footnotes: 2 Decision No. 13-07-018 at page 21. SCE has since complied with Decision No. 13-07-018, a copy of which is attached as Appendix D. 3 Supra.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.
455	72	72.7	Mountain View Ranch		9-NEPA	In view of the foregoing, Developer/Investor submits that both the Proponent's Preferred Route and the Agency's Preferred Alternative Route should be realigned so as to pass south of Mountain View and the other single-family residential communities located to the west of Mountain View, south of Interstate 10 and west of State Highway 83. In that regard, it appears that at one point in time the Proponent was considering a "potential routing option" that would have crossed State Highway 83 (from east to west) several miles south of Interstate 10 and Mountain View. [See Figure 2-1b (Figure 2-7 Viable Opportunities with Constraints Upgrade Section), page 36 to DEIS]. That "potential routing option" should be reconsidered and adopted at this time.	This potential routing option was considered by BLM and Western (see discussion of TU1 in section 2.9 in the Draft EIS, Alternatives Considered but Eliminated from Further Analysis). As noted, the presence of existing power lines entering and exiting the substation on this alternative would require additional line crossovers that severely compromise future lines from entering and/or exiting the substation and potential future expansion of facility. Rather than resolve, minimize, or reduce resource conflicts, this route substantially complicates the power system in the area.
458	72	72.10	Mountain View Ranch		9-NEPA	As previously discussed in Sections I and II(A) above, WAPA's existing 115 kV single-circuit system is located in a 100' easement which transects that portion of Mountain View located south of Interstate 10. Thus, because of both existing and planned development, as well as the 100' width limitation in the easement itself, there are both developmental and legal constraints upon use of the easement for purposes of constructing, operating and maintaining the contemplated Upgrade Section facilities in this area.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.
459	72	72.11	Mountain View Ranch		9-NEPA	In that regard, the DEIS appears to state that in such circumstances the manner of construction contemplated would be the "tear-down and rebuild-in-place method."6 Assuming solely for discussion purposes that the Project should proceed with the Upgrade Section alignment in this area currently contemplated by both the Project Proponent's Preferred Route and the Agency's Preferred Alternative Route, use of this construction method would clearly have a physical impact on residents of Mountain View and the residential subdivisions to the west of it, in terms of dust, noise, increased transportation and unsightly visual impacts, to name a few. Footnote: 6 DEIS Executive Summary, page xvi, line 43 -page xvii, line I.	The comment accurately reflects the description of alternatives in the Draft EIS. The potential impact of the proposed transmission line on air quality (dust), noise, transportation, and visual impacts was described in chapter 4 of the Draft EIS. As discussed in chapter 4 and summarized in tables 2-11, 2-12, 2-13, and 2-14 of the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS), with respect to impacts to air quality (dust), noise, and transportation, impacts would be temporary.
460	72	72.12	Mountain View Ranch		9-NEPA	In addition, to the extent that WAPA might find that it was in fact necessary to increase the existing right-of-way beyond 100', WAPA would be legally required to provide just and reasonable compensation to impacted landowners, including severance damages.	The ROW easement acquisition process is described in section 1.9 of the Draft EIS. If Western needs to expand the existing ROW, it would seek to negotiate a fair and reasonable settlement and provide just and reasonable compensation to impacted landowners, including severance damages.
461	72	72.13	Mountain View Ranch		9-NEPA	Realignment to Avoid Substantial Adverse Impact Thus, for the reasons discussed in Sections II(B)(l) and II(B)(2) above, as well as the "overburdening" discussion set forth in Section II(A), Developer/Investors submit that both the Project Proponent's Preferred Route and the Agency's Preferred Alternative Route should be realigned so as to pass south of Mountain View and the other single-family residential communities located to the west of Mountain View south of Interstate 10. In so doing, the aforementioned adverse impacts could be avoided.	The potential routing option was also considered by the BLM and Western; see a discussion of TU1 in section 2.9 in the Draft EIS (Alternatives Considered but Eliminated from Further Analysis). As noted in section 2.9 of the Draft EIS, the existing lines and substation would complicate the use of the reroute because of the need for additional line crossovers and would severely compromise future lines from entering or exiting this substation or any future expansion of it. This route does not resolve, minimize, or reduce resource conflicts, and it substantially complicates the power system in the area. Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
462	72	72.14	Mountain View Ranch		9-NEPA	If the Project Is Ultimately Approved and Constructed, the Proponent (and Any Successor-In-Interest) Should Be Required to Utilize the Best Available Technology and Materials to Minimize the Visual Impact of the Electric Transmission Supporting Structures and Conductors. As indicated in the discussion set forth in the preceding sections of these Comments, Developer/Investor believes that the alignment for the Upgrade Section of the Project currently contemplated by both the Project Proponent's Preferred Route and the Agency's Preferred Alternative Route should be adjusted so as to pass south of Mountain View and those single family residential communities located on the south side of Interstate 10 and west of State Highway 83.	Table 2-7 in the Draft EIS (now table 2-8 in the EIS) included non-reflective paint as a Project design feature to minimize the potential visual impacts. The potential routing option was also considered by the BLM and Western; see a discussion of TU1 in section 2.9 in the Draft EIS (Alternatives Considered but Eliminated from Further Analysis). As noted in section 2.9 of the Draft EIS, the existing lines and substation would complicate the use of the reroute because of the need for additional line crossovers and would severely compromise future lines from entering or exiting this substation or any future expansion of it. This route does not resolve, minimize, or reduce resource conflicts, and it substantially complicates the power system in the area.
463	72	72.15	Mountain View Ranch		9-NEPA	However, in the event the project is ultimately approved and constructed, the Proponent (and any successor-in-interest) should be required to utilize the best available technology and materials to minimize the visual impact of the electric transmission supporting structures and conductors. In that regard, it is Developer/Investor's current understanding that there are three (3) types of finish currently available for steel monopole supporting structures similar to those contemplated for the Upgrade Section of the Project. These types of finish are (i) dull galvanized (light gray); (ii) weathering steel (dark brown/rust) and (iii) tainted (epoxy paint). With respect to the electrical conductors, the DEIS indicates that the Project Proponent proposes to ". . . incorporate nonspecular conductors into the Project design to decrease reflectivity and visibility of Project features." [DEIS at page 901, lines 33-34] [emphasis added] Developer/Investor submits that that same design objective should govern the selection and use of finishes for Project supporting structures; and, compliance with such design criteria should be an express condition in applicable approvals for the Project, including a Certificate of Environmental Compatibility ("CEC") from the Arizona Power Plant and Transmission Line Siting Committee ("Siting Committee") and the Arizona Corporation Commission ("ACC"). Footnote: 7 In making this suggestion, Developer/Investor does not intend to suggest that it believes that the Project otherwise qualifies for a CEC for the Project in any form or alignment. That determination is for the Siting Committee and the ACC to make following evidentiary hearings and consideration of various issues, including whether or not there is in fact a "need" for the Project	Southline Transmission, LLC, would be responsible for submittal of the application for a Certificate of Environmental Compatibility. BLM and Western are not responsible for ACC submissions.
464	72	72.16	Mountain View Ranch		9-NEPA	Developer/Investor appreciates the opportunity to submit the preceding Comments on the March 2014 DEIS for the Project. As discussed in Section II(A) above, Developer/Investor submits that use of the 100' electric easement which transects Mountain View south of Interstate 10 for purposes of constructing, operating and maintaining the contemplated Upgrade facilities would constitute an inappropriate and impermissible "overburdening" of both (i) the right-of way which is the subject of those easements and the usage of the same therein contemplated and (ii) residential property adjacent to and nearby the right-of-way.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.
465	72	72.17	Mountain View Ranch		9-NEPA	In addition, as discussed in Section Il(B) above, construction, operation and maintenance of Upgrade facilities in the aforesaid 100' easement would have substantial adverse impacts on current and future residents in Mountain View, prospective homebuyers and Developer/Intervenor, as well as residents of other single-family residential communities located south of Interstate l 0 and west of State Highway 83. Accordingly, the alignment for the Upgrade Section of the Project should be adjusted so as to pass south of this area.	As discussed in section 1.1 of the Draft EIS, the existing Western line was constructed in 1951; thus, the line and ROW predate the Mountain View Ranch Subdivision by more than 50 years. The potential impact of the proposed transmission line on property in terms of land use was described in section 4.11.1 and in terms of property value in section 4.15 of the Draft EIS.
466	72	72.18	Mountain View Ranch		9-NEPA	Finally, any applicable approval of the Project should require the use of the best available technology and materials to mitigate and minimize the visual impact of supporting structures and electrical conductors for the Upgrade facilities.	Table 2-7 in the Draft EIS (now table 2-8 in the EIS) includes non-reflective paint as a Project design feature to minimize the potential visual impacts.
467	73	73.1	Sonoita Hills Community Association		9-NEPA	By means of this letter, Sonoita Hills adopts the Comments on the March 2014 Draft Environmental Impact Statement on the Southline Transmission Line Project, which Comments are contemporaneously being submitted by Mountain View Ranch Development Joint Venture, LLC and Mountain View Ranch Investment Joint Venture, LLC.	Thank you for your comments.
468	73	73.2	Sonoita Hills Community Association		9-NEPA	In the aforesaid Comments, there is a reference to and comparison with the circumstances surrounding the July 16, 2013 issuance of Decision No . 13-07-018 by the California Public Utilities Commission ("CPUC"), and the circumstances surrounding the proposed Upgrade Section of the Southline Transmission Line Project as it would impact the Mountain View Ranch Subdivision and other nearby single-family residential communities.	A decision of the California Public Utilities Commission (CPUC) regarding the proposed Upgrade Section of the Southline Transmission Line Project and possible impacts it may have on the Mountain View Ranch Subdivision or other residential communities in Arizona or New Mexico (the location of the project) has no bearing on the EIS process and is beyond the scope of this document.
469	73	73.3	Sonoita Hills Community Association		9-NEPA	In that regard , Sonoita Hills would additionally note the similarity in circumstances between residents of Chino Hills and Mountain View Ranch Subdivision homeowners and property owners who were aware of the existence of 75' tall electric transmission system supporting structures (constructed in the 1940s) at the time they purchased their respective properties, but had no reason to anticipate such structures would thereafter be proposed to be replaced by structures approaching or more than double the height of the pre-existing structures and with additional electrical conductors.	Western will review all of its land rights before construction of upgrade facilities occurs. Where necessary, Western will acquire additional land rights in accordance with Federal law for those easements determined to be insufficient.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
480	75	75.2		Sheehan	9-NEPA	I would also ask that public access to the power lines maintenance roads be restricted to reduce the number of off-road vehicles making trails and damaging vital desert landscapes. Thank you for your consideration.	As discussed in chapter 2 of the Draft EIS, "the proposed Project would be designed, as feasible, to use existing access roads with minimal improvement." Southline would work with landowners to determine what reasonable and legal road restrictions, such as gates, should be put in place.
481	76	76.1	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, ASLD is recognized by the Bureau of Land Management(BLM) and Western Area Power Administration (WAPA) as a cooperating agency (CA) however the memorandum of agreement is not attached to the DEIS. Further, cooperating agencies may have jurisdiction by law and/or special expertise and it appears that the text does not indicate which of these criteria apply to the cooperating agencies listed. The information is relevant in that the cooperating agency eligibility status defines the role, responsibility, and authority of the agency in the EIS process.	The memorandum of agreement between the BLM and Western, and each cooperating agency, is available in the Project Record. As noted in section 5.4 of the Draft EIS, the ASLD is a cooperating agency.
482	76	76.2	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, it appears that the DEIS identifies typical transmission structures that could be used for the proposed Project however it difficult to discern how the structure types vary in their resource impacts.	Estimated temporary and permanent disturbance impacts are generally characterized assuming the maximum extent of physical impact, such as for a lattice tower. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-8. Relevant sections of chapter 4 have been updated to indicate differences in impact types from different structure types, as appropriate.
483	76	76.3	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, it appears that the DEIS does not provide detailed information on the location of new and expanded access roads and affected jurisdiction to evaluate the level of impact to ranchers and other trust beneficiaries.	As a final route has not been selected and the Project has not yet been designed and micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 of the EIS. As stated in the Draft EIS, once design is finalized, all access roads would be surveyed, appropriate ROW would be acquired, and ROW would be mapped and incorporated into the Access Road Plan and Management Plan.
484	76	76.4	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, it appears that the specific locations of project features are generally not provided in the DEIS, nor are the land jurisdictions identified. As such, the potential for creation of remnant parcels on Arizona State Trust land cannot be determined.	Surface ownership (land jurisdiction) was depicted on figures 2-16 and 2-18 in the Draft EIS. Estimated mileage and disturbance by land managing agency were also presented in table 2-8 in the Draft EIS (now table 2-7 in the EIS). The potential for creation of remnant parcels is addressed in section 4.11.1 of the EIS. As a final route has not been selected and the Project has not yet been designed and micro-sited, the location of staging areas and temporary workspaces are not yet known. However, for the purposes of analysis in the Draft and Final EIS, assumptions on feature location and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
486	76	76.6	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, it appears that the location of new and expanded access roads are not detailed in the DEIS and so it is impossible to evaluate the site-specific impacts on resources and whether slopes would exceed 25 percent.	As a final route has not been selected and the Project has not yet been designed and micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
487	76	76.7	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking, it appears that the DEIS does not provide an evaluation of impacts by jurisdiction, including impacts to Arizona State Trust land	Tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) included a comparison of potential impacts by alternatives, as well as information regarding jurisdiction and impacts to State Trust lands.
488	76	76.8	Arizona State Land Department	Ojeda	9-NEPA	ASLD conceptual plans should be discussed in the DEIS. For additional information please contact Tim Bolton, Planning and Engineerig Section at 520-209-4263.	Sections 3.11 and 4.11 of the EIS have been revised to include information on ASLD conceptual planning.
489	76	76.9	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking all potential access roads should be identified by land jurisdiction.	As a final route has not been selected and the Project has not yet been designed and micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
490	76	76.10	Arizona State Land Department	Ojeda	9-NEPA	It is unclear whether the project crosses and or potentially impacts existing non-federal land use plans that apply to land included in the proposed project area. Applicable non-federal plans should also be disclosed given that the proposed project crosses a substantial amount of non-federal land. For additional information please contact Tim Bolton, Planning and Engineering Section at 520-209-4263.	Section 1.5 in the Draft EIS included a discussion of relevant policies, plans, and programs. Local jurisdiction planning needs are discussed in this section. In addition, all relevant land use planning policies and plans were included in section 3.10 (Land Use) of the Draft EIS.
491	76	76.11	Arizona State Land Department	Ojeda	9-NEPA	Generally speaking the DEIS siting constraints does not appear to have considered present and future use of the various Arizona State Trust Land.	Section 4.21 of the Draft EIS included an analysis of known past, present, and future actions, including those proposed on Arizona State Trust lands.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
494	76	76.14	Arizona State Land Department	Ojeda	9-NEPA	The proposed access road width both new and improved is excessive. A blanket approval for this size of road is not a best practices standard. The Arizona State Land Department will require a narrower roadway width in areas sensitive to excessive disturbance.	As a final route has not been selected and the Project has not yet been designed and micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type, road width, and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
495	76	76.15	Arizona State Land Department	Ojeda	9-NEPA	The DEIS should include ASLD's mission statement: "To manage State Trust lands and resources to enhance value and optimize economic return for the Trust beneficiaries, consistent with sound stewardship, conservation, and business management principles supporting socioeconomic goals for citizens here today and generations to come. To manage and provide support for resource conservation programs for the well-being of the public and the State's natural environment." http://www.azland.gov/support/missiongoals.htm	Chapter 5 of the EIS (see Agency Consultation and Coordination) has been revised to direct readers to the respective websites of cooperating agencies to find agency mission statements.
496	76	76.16	Arizona State Land Department	Ojeda	9-NEPA	ASLD right-of-entry permits are included in Table 1-5, but permits and restrictions associated with recreational use of State Trust land merit more discussion.	Information on ASLD's Recreation Permitting Program has been added to section 3.14.2 of the EIS.
497	76	76.17	Arizona State Land Department	Ojeda	9-NEPA	The issuance of a Certificate of Environmental Compatibility via the Arizona Corporation Commission should be reiterated in the "Decisions to be Made."	The Arizona Corporation Commission (ACC) does not have jurisdiction over Western—an agency of the U.S. Government—as it relates to this Project. Western is not required to obtain Certificates of Environmental Compatibility from the ACC on projects involving the upgrade of existing Federal facilities.
498	76	76.18	Arizona State Land Department	Ojeda	9-NEPA	The total length for each sub route is provided, but not by jurisdiction. Text descriptions and tables pertaining to alternatives are also missing details on land jurisdiction.	Tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) included a comparison of potential impacts by alternatives, as well as information regarding jurisdiction and impacts to State Trust lands.
499	76	76.19	Arizona State Land Department	Ojeda	9-NEPA	Detailed information regarding location i.e. land ownership and jurisdiction of Temporary Work Area preparation sites are not specified.	As a final route has not been selected and the Project has not yet been designed or micro-sited, the location of needed construction yards and laydown areas has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions for disturbance are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
500	76	76.20	Arizona State Land Department	Ojeda	9-NEPA	Access road locations, specifications, and jurisdictions should be disclosed as soon as possible so the Department may analyze impacts to Trust Lands.	As a final route has not been selected and the Project has not yet been designed or micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type, road width, and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS). As the proposed Project is designed, coordination with all landowners, including the ASLD, will occur so they will eventually have this information.
501	76	76.21	Arizona State Land Department	Ojeda	9-NEPA	The location of helicopter fly yards is not detailed. Impacts to resources, including cultural resources can also result from temporary use of land by helicopters.	As a final route has not been selected and the Project has not yet been designed or micro-sited, the location of needed access roads has not yet been determined. However, for the purposes of analysis in the Draft and Final EIS, assumptions on road type, road width, and land status are included in the analysis. Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
502	76	76.22	Arizona State Land Department	Ojeda	9-NEPA	The text does not mention whether a fire plan is being prepared as part of the POD.	Section 2.4.1 of the Draft EIS stated that a Fire Protection Plan is a Framework Plan prepared as part of the preparation of the POD.
503	76	76.23	Arizona State Land Department	Ojeda	9-NEPA	When specific geographic or resource features are mentioned as part of the "Transmission Line Route Alternatives", the applicable land jurisdiction tied to the feature is seldom provided which makes it very difficult to assess impacts to Arizona State Trust land.	Section 2.7 of the EIS has been revised to include relevant information regarding land status to these alternative descriptions.
505	76	76.25	Arizona State Land Department	Ojeda	9-NEPA	Because all project features (including access roads, regeneration stations etc.) have not been fully described and their specifications provided it is difficult to verify the ground disturbance estimates in Table 2-8.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
507	76	76.27	Arizona State Land Department	Ojeda	9-NEPA	The DEIS states, "Permanent ROWs for access roads to structure sites are also being requested in order to conduct maintenance throughout Project operation." Please expand on the term "Permanent." For information pertaining to ROW terms/timeframes, please contact Ruben Ojeda, ASLD Right of Way Section at 602.542.2648.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
511	76	76.31	Arizona State Land Department	Ojeda	9-NEPA	The DEIS states, "Southline and its construction contractor would develop a Reclamation, Vegetation, and Monitoring Plan that would guide restoration and vegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan would address all land disturbances, regardless of ownership. It would be developed in consultation with appropriate agencies and landowners and would be provided to these entities for review and concurrence." Considering the term "would" in this statement it's unclear if the proponent will develop one or all of these plans. Please clarify.	Framework Plans, including the Reclamation, Vegetation, and Monitoring Plan, were described in section 2.4.1 of the Draft EIS. The POD and associated Framework Plans would be the responsibility of Southline.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
512	76	76.32	Arizona State Land Department	Ojeda	9-NEPA	The DEIS states, “Special status plants, including the Pima pineapple cactus, would be avoided. Where avoidance is not possible, special status plants would be conserved by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regarding in compliance with local ordinances (Pima County). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan.” Please verify the Special Species status of the Pima Pineapple Cactus as it appears this plant’s status is listed as “Endangered” (see http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/PimaPineappleCactus/NR_PPC_5year_review.p df). Will conservation methods include the purchase of PPC mitigation/conservation bank credits?	The Pima pineapple cactus was discussed in sections 3.8 and 4.8 of the Draft EIS.
513	76	76.33	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 111, Line 40-41;The DEIS states, “A process for requesting and obtaining variances would be included in the final POD, and would include preparation of a Variance Plan. The Variance Plan would detail how requests would be tracked, approved, or not approved, as well as how it would be ensured that the requests have been covered by the analysis in the EIS.” For recordation purposes, the Department may require copies of all requests.	As noted in section 2.4.1 of the EIS, the POD and associated Framework Plans are a requirement of the BLM, and the final POD would need to be approved by the BLM and Western. These plans would incorporate appropriate Federal, State, and local agency guidance and regulation. A draft NEPA POD is included in appendix N of this EIS.
514	76	76.34	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 112, Line 5-7;The DEIS states, “When the variance requested is outside an area covered within the EIS and addressed in the ROW grant, approval from the authorized officer would be required. In these cases, additional environmental analysis may be required.” ASLD needs to be notified and or consulted of any variance request that meets this criterion.	Section 2.4.7 of the EIS has been revised to clarify that the POD and variance process are under the authority of the BLM and Western, and that variances requested on lands not managed by the BLM would require coordination with those agencies and landowners, such as ASLD, separately from the Federal variance process.
515	76	76.35	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 79, No line # mentioned;The DEIS states, “If the Arizona National Scenic Trail must be temporarily closed during construction, an alternate trail route (detour) would be provided during the closure. If it is necessary for trail users to leave the trail during the temporary closure, trail users would need to obtain permission from the ASLD.” If a detour is necessary and the detour is to be on Arizona State Land then, additional detail will be necessary to ensure disturbance is contained to one authorized route and not a series of newly created trails. Also, reiterating the Departments recreational permit in this section would be helpful.	Sections 3.14 and 4.14 (Recreation) in the EIS includes additional permitting and restrictions associated with recreational use of State Trust land, including detour needs for Arizona National Scenic Trail closures.
516	76	76.36	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4; Page 63-64, No line # mentioned; Please provide the ASLD ROW number(s) for the existing substations (Adams Tap, Pantano and Tortolita) located on Arizona State Trust Land.	As a final footprint for proposed substation expansion areas has not been selected, the affected ASLD ROW numbers are not known as of this publication date.
517	76	76.37	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4 page 140, Line 26-27; Please provide landownership percentage for both ASLD and NMSLO.	As a final route has not been selected and the Project has not yet been designed and micro-sited, the total acreage of surface ownership is an estimate only. Assumptions on land status are included in the analysis in the Draft EIS. As stated in the Draft EIS, once design is finalized, all access roads would be surveyed, appropriate ROW would be acquired, and ROW would be mapped and incorporated into the Access Road Plan and Management Plan.
518	76	76.38	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 512, Line 15; Please provide the ASLD ROW number for the 115 acres of State Land within the Willlcox Playa Wildlife Area.	As a final footprint for proposed Project has not been selected, the affected ASLD ROW numbers are not known as of this publication date.
519	76	76.39	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 485, Line 16; Please provide the ASLD ROW number for the 115 acres of State Land within the Willlcox Playa Wildlife Area.	As a final footprint for proposed Project has not been selected, the affected ASLD ROW numbers are not known as of this publication date.
521	76	76.41	Arizona State Land Department	Ojeda	9-NEPA	Vol 1 of 4, Page 439, Line 15 - 16; Please provide the ASLD ROW number for the 115 acres of State Land within the Willlcox Playa Wildlife Area.	As a final footprint for proposed Project has not been selected, the affected ASLD ROW numbers are not known as of this publication date.
522	76	76.42	Arizona State Land Department	Ojeda	9-NEPA	Vol 2 of 4, Page 628, no line # mentioned; It is unclear how the proponent will notify the ASLD and or its leaseholders of any required blasting.	As discussed in section 2.4.1 of the Draft EIS, a Blasting Plan would be prepared as one of several Framework Plans associated with the POD. Section 2.4.1 of the EIS has been revised to clarify that as part of the development of the Blasting Plan, Southline would work with agencies like ASLD to develop notification procedures, etc.
523	76	76.43	Arizona State Land Department	Ojeda	9-NEPA	Vol 3 of 4; Page F-18, no line # mentioned; It is not clear whether the Applicant has committed to implementing both standard mitigation measures as well as selective mitigation measures as part of the project. If yes, then should they also be listed as “design features?” Would additional mitigation measures be required by the BLM/Western and other agencies to address residual impacts?	Relevant sections (executive summary, as well as sections 2.4.6, 3.8, and 4.8) of the EIS have been updated to clarify proposed vs. committed mitigation.
524	76	76.44	Arizona State Land Department	Ojeda	9-NEPA	In POD, Page 8-2, Table 8-1; In order to legally access Arizona State Trust Lands a Right of Way applicaton or a Right of Entry instrument must be issued by the Department. Please contact Ruben Ojeda, Rights of Way Section for further information related to access upon State Trust Lands.	Noted. Thank you for your comment.
526	77	77.1		Linderg	9-NEPA	For the safety and general well being of the residents of Benson, AZ and the folks who live on either side who will be affected by the project, please seriously take into account the following. In order to avoid; A) Destruction of property and vegetation (mine) during construction of higher replacement structures (poles if you wish) with double the wires and double the voltage and B) The hazards associated therewith and C) Conflict of placement of new structures to one side or the other of existing structures where the lines fall on property line, as in my case and D) Increased easement ROW reducing usable property (also mine) of landowners, and E) The eyesore this represents to the community, I strongly suggest you take alternate route H to the North of Benson. It appears that lines already exsist on part if not all of proposed alternate H.	The potential impact of the proposed transmission line on land use and property, including residential properties, vegetation, public health and safety, and visual resources, was described in chapter 4 of the Draft EIS. The proposed Project, including Project design features and best management practices, was described in chapter 2 of the Draft EIS. The Agency Preferred Alternative in the EIS has been modified since the Draft EIS (see section 2.10.5 of the EIS); however, alternative H is not part of the Agency Preferred Alternative.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
527	77	77.2		Linderg	9-NEPA	No doubt the population of Benson has increased since 1952 increasing the afforementioned problems associated with using the exsisting line location through Benson. Common sense says avoid populated areas as much as possible. Alternate H is the best solution.	Changes in population in the Benson area were described in section 3.15 of the Draft EIS. As discussed in section 1.2.1 of the Draft EIS, BLM and Western will base their respective decisions on the analysis in the EIS. The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally.
528	78	78.1	Coalition For Sonoran Desert Protection	Campbell	9-NEPA	Proposed Mitigation for Impacts to the Sonoran Desert Conservation Plan The proposed Southline Transmission Line Project has numerous potential and serious impacts to lands under the umbrella of Pima County's Sonoran Desert Conservation Plan (SDCP), including the Conservation Lands System (CLS), critical Sonoran Desert wildlife habitat, threatened wildlife linkages, and rare riparian areas. We disagree with the contention in the DEIS that most of these impacts do not warrant adequate and appropriate mitigation. If these impacts cannot be avoided first and foremost, the Southline Transmission Line Project should be required to fully mitigate for all of its impacts. Where appropriate, local mitigation policies, such as those for Pima County's CLS, should be adhered to fully.	Chapter 2 (see table 2-8), as well as sections 3.8.1 and 4.8.1, of the EIS has been revised to include additional consideration for Pima County Conservation Lands. Disturbance within Pima County Conservation Lands would primarily occur within the Western ROW for the existing line.
545	78	78.18	Coalition For Sonoran Desert Protection	Campbell	9-NEPA	We also encourage further analysis and consideration of burying the transmission line in critical wildlife corridors if this would produce fewer disturbances than what is currently proposed. This would, of course, have to also involve active restoration of ground disturbance activities after the project is complete.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to include a section on alternative construction methods, such as burying the proposed transmission line. Burying a transmission line causes more physical disturbance than aboveground lines and causes greater impacts to critical wildlife corridors. Additionally, the cost of burying the transmission line would be prohibitively expensive and financially infeasible.
548	79	79.1	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	9-NEPA	It appears that the BLM did an excellent job engaging the public in order to identify proposed transmission line routes and utilizing this information to develop alternatives.	Thank you for your comment.
549	79	79.2	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	9-NEPA	However, there were almost too many alternatives to review and compare, making it difficult to evaluate them and the often the text and figures and tables did not correspond one-to-one. For instance, Figure 2-16, which provides an overview of the transmission line route and substation alternatives considered in detail does not list segments Pl , P2, P3, P4a or P7. These segments instead are simply labeled as the agency preferred/proponent preferred alternatives on the Figure although in the text of the document they are referred to as P l, P2, etc.	The length and complexity of the proposed Project and alternatives make presentation of information clearly and simply a challenge. The BLM and Western rely on agency and public input on the Draft EIS to provide suggestions; these comments are considered herein. Maps in the EIS now include more detailed locational information.
550	79	79.3	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	9-NEPA	Not including the labels on the Figure makes it harder for the reader to review the DEIS/Draft RMPA The BLM may want to consider whether there is a simpler way to present the different alternatives or whether the Figures can be revised to better reflect the text.	Maps in the EIS now include more detailed locational information.
554	79	79.7	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	9-NEPA	Furthermore, it appears that an amendment to the Mimbres Resource Management Plan (MRMP) would not be required under the Agency Preferred Alternative, although this was not particularly clear, depending on which section I read. For example, on page 145, the draft EIS/draft RMPA states that no plan amendment wou ld be required for the Agency Preferred Alternative. Yet, on page 1059, Lines 31-41, the draft EIS/draft RMPA states that under Route Group 2 Local Alternatives, segments LD2 and LD3a cross VRM Class II BLM-managed lands and the proposed plan amendment would reclassify 86.1 acres of VRM Class II land s to VRM Class III lands. Upon examination of the different Figures provided, it appears that only one portion of LD3a would intersect with VRM Class II lands, but not the portion that is part of the Agency Preferred Alternative. This information really cannot be gleaned from the text; one has to rely on the figures showing the transmission line routes.	As stated in the EIS (see section 2.10.8), no amendment to the Mimbres RMP would be required for the Agency Preferred Alternative. Section 2.10.8 in chapter 2 of the EIS has been revised for clarity.
567	80	80.5		Magruder	9-NEPA	Rights-of-Way (ROW). In general, the preferred proponent alternative makes extensive re-use of the existing transmission line ROW, and thus meets the "first law of transmission siting," that is, to use what exists before creating a new ROW. This approach creates considerably less environmental impacts and is strongly supported. The minor proposed changes from the existing ROWs and the new ROWs in New Mexico have acceptable environmental impacts.	The comment accurately reflects the analysis provided in the Draft EIS.
581	81	81.1	U.S. Bureau of Reclamation	Taylor	9-NEPA	I am writing to ask if there is a possibility of your granting the Bureau of Reclamation an extension to provide comments on this DEIS. I am still checking with staff here on whether or not we will actually have comments. I realize this is short notice, but if it is possible, we'd appreciate the opportunity to provide comments.	The length of the public comment period was not extended beyond the original 90-day period. BLM and Western note that Reclamation did not ultimately provide any comments.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
582	82	82.1	SunZia	Wray	9-NEPA	As written, the Purpose and Need Statement for the BLM is too conclusory, and does not adequately explain the need to be addressed by the proposed action. Rather, it is merely a recitation of the BLM's general obligations under the FLPMA.	Chapter 1 in the EIS has been revised to clarify the BLM's multiple-use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
583	82	82.2	SunZia	Wray	9-NEPA	As written, the BLM should consider as part of its alternatives all possible uses of the right-of-way, and not simply consider alternative configurations of the transmission line. Stated differently, the Purpose and Need Statement is so broad, it does not meaningfully justify limiting the alternatives analysis or provide a basis for eliminating any alternatives.	As described in section 2.9 of the Draft EIS, BLM and Western were aware of, and involved in, Southline's extensive pre-NEPA routing efforts and are knowledgeable regarding why other routes were eliminated. After further review of constraints and other routing possibilities, the agencies did not identify any viable major new routes that had not been previously reviewed by Southline; they did, however, identify local alternatives and route variations around particular resource issues. Chapter 1 in the EIS has been revised to clarify the BLM's multiple-use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need. BLM and Western developed alternatives in collaboration with the cooperating agencies listed in chapter 5. Alternatives were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback.
584	82	82.3	SunZia	Wray	9-NEPA	The Purpose and Need Statement for Western is misleading, as it implies the upgrades to the Saguaro–Tucson and Tucson–Apache 115 kV transmission lines under consideration will be identical whether Western participates in Southline or upgrades the lines themselves. If Western upgrades these lines it is likely that the nature of the upgrades will be starkly different than the upgrades proposed by the Southline Project. The Purpose and Need Statement should disclose that if Western does not participate in the Southline Project, the nature and extent of the upgrades to these lines will differ, including an identification as to how such upgrades will differ, as reflected by Western's "FY14 Ten-Year Appropriated Capital Program" (dated October 23, 2013).	Sections 1.2.2 and 2.5 have been revised in the EIS to indicate the difference in timing between the proposed Project and Western's plans in the FY14 Ten-Year Appropriated Capital Program. The no action alternative was analyzed in detail in chapter 4 of the Draft EIS.
585	82	82.4	SunZia	Wray	9-NEPA	Failure to Make the Resource Reports Readily Available for Review for the Entire Comment Period violates NEPA. Notably absent from the Draft EIS, and the appendices thereto, are the 20 resource reports completed by Southline's consultant, CH2M Hill. These resource reports were incorporated by reference in the introduction for each resource identified in Chapter 3, Affected Environment. For example, on page 189, Section 3.2 Air Quality, "The information provided in the following subsections is taken from a report titled 'Southline Transmission Project Resource Report 01: Air Quality and Climate Change' (CH2M Hill 2013a). The contents of that report are used herein without specific reference."	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Additionally, the reports are supporting information for the EIS, and are not part of the formal review of the EIS; therefore, the agencies were under no obligation to extend the comment period to accommodate review of these documents. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request. The literature cited style in the Draft EIS was based on Government Printing Office (GPO) publication standards.
586	82	82.5	SunZia	Wray	9-NEPA	If the BLM or Western references and relies upon materials outside the Draft EIS, it must do the following1: • Ensure that the analysis and assumptions in the materials are accurate and can be relied upon in the Draft EIS. Footnote: 1 See e.g., 43 C.F.R. § 46.135; 40 C.F.R. § 1502.21 ("No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment.")	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received. The literature cited style in the Draft EIS was based on Government Printing Office (GPO) publication standards.
588	82	82.7	SunZia	Wray	9-NEPA	Ensure that the materials are made readily available for public review.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
589	82	82.8	SunZia	Wray	9-NEPA	Accordingly, we request that BLM and Western correct the Draft EIS to meet these three criteria. The following 20 resource reports are not readily available for public review, notwithstanding the fact that their review is necessary for public vetting and to provide a complete evaluation and understanding of the analytical conclusions on the potential environmental impacts associated with the construction and operation of the Southline Project included in the Draft EIS: • CH2M Hill. 2013a. Southline Transmission Project Resource Report 01: Air Quality and Climate Change (V2 Report). April 22, 2013. • CH2M Hill. 2013b. Southline Transmission Project Resource Report 08: Noise (V2 Report). April 22, 2013. • CH2M Hill. 2013c. Southline Transmission Project Resource Report 04: Geology and Minerals (V2 Report). April 2, 2013. • CH2M Hill. 2013d. Southline Transmission Project Resource Report 12: Soils (V2 Report). March 28, 2013. • CH2M Hill. 2013e. Southline Transmission Project Resource Report 09: Paleontology (V2 Report). March 28, 2013. • CH2M Hill. 2013f. Southline Transmission Project Resource Report 17: Water Resources (V2 Report). March 28, 2013. • CH2M Hill. 2013g. Southline Transmission Project Resource Report 15: Vegetation (V2 Report). May 31, 2013. • CH2M Hill. 2013h. Southline Transmission Project Resource Report 18: Wildlife (V2 Report). June 3, 2013. • CH2M Hill. 2013i. Southline Transmission Project Resource Report 02: Cultural Resources (V2 Report). May 28, 2013. • CH2M Hill. 2013j. Draft Southline Transmission Project Resource Report 16: Visual Resources (V2 Report). May 17, 2013. • CH2M Hill. 2013k. Southline Transmission Project Resource Report 07: Land Use (V2 Report). March 28, 2013. • CH2M Hill. 2013l. Southline Transmission Project Resource Report 03: Farmlands and Rangeland. March 27, 2013. • CH2M Hill. 2013m. Southline Transmission Project Resource Report 19: Military Operations (V2 Report). March 28, 2013. • CH2M Hill. 2013n. Southline Transmission Project Resource Report 13: Special Designations. March 28, 2013. • CH2M Hill. 2013o. Southline Transmission Project Resource Report 10: Recreation (V2 Report). March 28, 2013. • CH2M Hill. 2013p. Southline Transmission Project Resource Report 11: Socioeconomics and Environmental Justice (V2 Report). April 22, 2013. • CH2M Hill. 2013q. Southline Transmission Project Resource Report 06: Health and Human Safety (V2 Report). May 16, 2013. • CH2M Hill. 2013r. Southline Transmission Project Resource Report 05: Hazardous Materials and Waste (V2 Report). March 28, 2013. • CH2M Hill. 2013s. Southline Transmission Project Resource Report 14: Transportation (V2 Report). April 2, 2013. • CH2M Hill. 2013t. Southline Transmission Project Resource Report 20: Cumulative (V2 Report). April 10, 2013.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received.
591	82	82.10	SunZia	Wray	9-NEPA	Additionally, there is serious doubt that the resource reports were appropriate documents to be “incorporated by reference,” and instead should have been included in the appendices. Because the resource reports are substantive documents prepared specifically by Southline for the Southline Draft EIS, and form the basis for the baseline upon which impacts are analyzed by the BLM and Western, they should have been included in the appendices. See e.g. Council for Environmental Quality (“CEQ”), Forty Most Asked Questions Concerning CEQ's NEPA Regulations, Question 25, 46 Fed.Reg. 18,026, 18,034 (Mar. 23, 1981)2; 40 C.F.R. § 1502.18 Footnote 2: Specifically, CEQ, in its Forty Most Frequently Asked Questions guidance states the following with respect to use of materials outside of the EIS, and inclusion of the materials in the appedices versus incorporation by referene.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data requested by the public were made readily available as soon as a data request was received.
592	82	82.11	SunZia	Wray	9-NEPA	Appendices were prepared and circulated with the Draft EIS, and since the resource reports are indisputably “material prepared in connection with an environmental impact statement,” they should have either been included in the appendices or have been readily available for “the full minimum public comment period,” i.e. the 90-day comment period. However, the resource reports were not readily available, as evidenced by the fact that it took SunZia nearly 2 weeks and several contacts with the agency to secure a complete set of the resource reports. Further, the complete set of resource reports were not received by SunZia until 3 days before the close of the comment period.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
593	82	82.12	SunZia	Wray	9-NEPA	The comment period should be re-opened, at the very least, and the resource reports be made readily available by placing all the resource reports in the Draft EIS appendices.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request.
594	82	82.13	SunZia	Wray	9-NEPA	Inclusion of the resource reports in the appendices, and provision of the same to the public for review during the entire comment period, is more than mere formality. The purpose of an EIS is to inform decision-makers and the general public of the environmental consequences of a proposed federal action. NEPA's purpose would be defeated if a critical part of the analysis is omitted from an EIS and its appendices.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request.
595	82	82.14	SunZia	Wray	9-NEPA	At the very least, if incorporation by reference of the resource reports were appropriate, the resource reports should have been described in the body of the EIS, pursuant to 40 C.F.R. § 1502.21, in sufficient detail. The cursory descriptions provided in the Draft EIS did not fulfill the purpose of the EIS because the substance of what was incorporated is an important part of the environmental analysis.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. The information in chapter 3 and analysis in chapter 4 of the EIS have been revised based on public comments on the Draft EIS. Sufficient detail is provided to disclose the potential effects of the proposed Project.
596	82	82.15	SunZia	Wray	9-NEPA	Summarily, the resource reports have not been made reasonably available for review, and thus the ability to review and comment on the Draft EIS, including the analysis it relies upon, has been unnecessarily constrained and the purpose of NEPA has been defeated. SunZia assumed, based on the language in the NOA, that these reports would be available on the Southline BLM Project website. After discovering the reports were not available on the project website, we contacted each of the BLM offices identified in the NOA as having a hardcopy of the Draft EIS. None of these offices had copies of the resource reports readily available for public review. Finally, we sent a written request for copies of these reports, and after considerable effort we were able to acquire 9 of the 20 resource reports from Galileo Project, LLC, a previously undisclosed BLM and Western contractor, on June 27, 2014. Attached are a series of email communications and a copy of a letter dated June 25, 2014 from Ryley Carlock & Applewhite documenting the extensive efforts required to acquire copies of these resource reports, demonstrating that these reports were not "readily available" for public review during the entire comment period. Because the comment period was scheduled to close on July 10, 2014 and we only received 9 of the 20 reports on June 27, 2014, we requested that the comment period be extended for another 30-day period and that all of the reports be made immediately available for public review. Both requests were denied. With the confirmation that the BLM refused to make the resource reports generally and readily available for public review, on July 3, 2014, we requested copies of the remaining 11 resource reports that we did not pick up from the Tempe, Arizona office of Galileo Project, LLC on June 27, 2014. Due to the BLM and Western's extensive reliance on the data found in the additional 11 resource reports prepared by Southline's consultant, it became critical for us to review this data in order to understand the affected environment and thus the Southline Project's potential environmental impacts described in the Draft EIS. As instructed by Senior National Project Manager Mark Mackiewicz on July 3, 2014, we picked up the additional 11 resource reports from Galileo Project, LLC. These reports were not made available for pick up until July 7, 2014, only 3 days before the comment deadline.	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request to the BLM or Western Project contacts listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Conclusions in the EIS are independent of data and conclusions in the Southline Transmission Line Resource Reports.
597	82	82.16	SunZia	Wray	9-NEPA	BLM's decision to not provide reasonable access to the resource reports, which describe methodologies, data and analyses specific to the Southline Project, for the entire length of the comment period has resulted in a Draft EIS that cannot be fully publicly reviewed and vetted pursuant to NEPA. BLM has declined to extend the comment period to allow additional time to review these otherwise unavailable resource reports, or post them on the BLM's publicly accessible website for review by potentially affected communities and interested stakeholders. We restate our request that was previously denied that all 20 resource reports be made immediately available for public review, and that the comment period be extended for 30 days to allow review and comment on the same. Despite our limited time to review the resource reports that were not readily available, we were able to draw some general conclusions about the data prepared by the Southline's consultant, CH2M Hill (see Section III. Southline Transmission Project Resource Reports of this letter).	The Southline Transmission Line Resource Reports cited in the draft EIS are some of many valuable reference documents used in the analysis. Data used in the draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request. The length of the public comment period was not extended beyond the original 90-day period.
598	82	82.17	SunZia	Wray	9-NEPA	Section 5.8 of the Draft EIS identifies technical support staff utilized in the preparation of the Draft EIS, but does not disclose their qualifications or specializations that are necessary to ensure a scientific rigor throughout the NEPA process.	Section 5.8 of the EIS includes additional information on the expertise, experience, and professional disciplines of the people primarily responsible for preparing the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
599	82	82.18	SunZia	Wray	9-NEPA	Furthermore, identification and qualifications of individuals responsible for the 20 resource reports3 that were heavily, and seemingly exclusively, relied upon for resource-specific descriptions of the affected environment (Chapter 3 of the Draft EIS), and their associated environmental consequences (Chapter 4 of the Draft EIS) were not provided. As discussed in the previous section of this letter, CH2M Hill, Southline's consultant, prepared all 20 resource reports that were used to establish the baselines in the Draft EIS. Therefore, CH2M Hill should have been disclosed in the list of preparers. See e.g. Id.; Sierra Club v. Marsh, 714 F. Supp. 539, 550 (D. Me. 1989) amended, 744 F. Supp. 352 (D. Me. 1989) aff'd, 976 F.2d 763 (1st Cir. 1992) ("The federal agencies' reliance on these Booz–Allen reports is a sufficient basis upon which to conclude that those reports are 'significant background papers' and that Booz–Allen should have been listed in section 9 of the EIS.").	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
600	82	82.19	SunZia	Wray	9-NEPA	The Draft EIS relies heavily upon these 20 resource reports. While the agency may consider materials provided by Southline and its consultants, it is under an obligation to independently evaluate the information prior to its use and inclusion in the Draft EIS. See e.g. 40 C.F.R. § 1506.5; Utahns for Better Transp. v. U.S. Dep't of Transp., 305 F.3d 1152 (10th Cir. 2002) as modified on reh'g, 319 F.3d 1207 (10th Cir.2003) (Specifically, the Corps' failure to verify the cost estimates supplied by the project Applicant was a violation of NEPA.); Van Abbema v. Fornell, 807 F.2d 633 (7th Cir. 1986).	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many valuable reference documents used in the analysis. Information on the independent review process is available in the Project Record. Chapter 5 of the EIS has been revised to include additional information on the authors of the Southline Transmission Line Resource Reports and the independent evaluation process used prior to referencing the reports in the Draft EIS.
601	82	82.20	SunZia	Wray	9-NEPA	Consequently, the list of preparers of each of the 20 resource reports should have been identified and such a list should have been included in the information required by 40 C.F.R. Sec. 1502.17.	Information on the independent review process is available in the Project Record. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
602	82	82.21	SunZia	Wray	9-NEPA	The Draft EIS likewise should have disclosed what "independent evaluation" the BLM and Western conducted with respect to each of these 20 resource reports. There is grave concern that given the BLM's refusal to make these reports readily available for public review, or to include them in the appendices of the Draft EIS, that a meaningful independent review of these reports was not conducted by BLM and Western.	Information on the independent review process is available in the Project Record. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS. Chapter 5 of the EIS has been revised to include the independent evaluation process used prior to referencing the reports in the Draft EIS. Data requested by the public were made readily available as soon as a data request was received.
603	82	82.22	SunZia	Wray	9-NEPA	Furthermore, the fact the Draft EIS did not identify which BLM and Western employees conducted an independent review calls into question what, if any, meaningful independent evaluation was conducted.	Information on the independent review process is available in the Project Record. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
604	82	82.23	SunZia	Wray	9-NEPA	We request that the Draft EIS be reissued with (1) an updated list of preparers of the resource reports, with the information outlined herein and (2) a description of the independent evaluation the BLM and Western conducted on all 20 resource reports.	Information on the independent review process is available in the Project Record. Chapter 5 of the EIS has been revised to describe the independent evaluation process used prior to referencing the reports in the Draft EIS. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
605	82	82.24	SunZia	Wray	9-NEPA	We also request that the public be afforded an additional 30 days to review and comment on the resource reports and the efficacy of BLM's and Western's independent evaluation of the information in these reports. This would satisfy the requirements of 40 C.F.R. Sec. 1502.17, and allow the public to understand if there has been a violation of 40 C.F.R. § 1506.5.	The length of the public comment period was not extended beyond the original 90-day period. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request to the BLM or Western Project contacts listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html).
606	82	82.25	SunZia	Wray	9-NEPA	The Analysis of Alternatives Does not Analyze a Reasonable Range of Alternatives. The range of alternatives for the Upgrade Section of the proposed Southline Project has been unnecessarily limited, which is inconsistent with CEQ and BLM regulations. The range of alternatives has been limited, in part, because the Purpose and Need Statement for Western impermissibly narrows the range of reasonable alternatives. Specifically, the Upgrade Section alternatives considered in the Draft EIS have been limited to new transmission lines that could be built adjacent to existing Western transmission lines. Other reasonable alternatives that would be technically feasible have not been addressed in the Draft EIS, and there is no supporting documentation or rationale to conclude that these alternatives should be eliminated.	As described in section 2.9 of the Draft EIS, BLM and Western were aware of, and involved in, Southline's extensive pre-NEPA routing efforts and are knowledgeable regarding why other routes were eliminated. After further review of constraints and other routing possibilities, the agencies did not identify any viable major new routes that had not been previously reviewed by Southline; they did, however, identify local alternatives and route variations around particular resource issues. Alternatives were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Alternatives analyzed in the Draft EIS represent a full range of reasonable alternatives. Local alternatives in the Upgrade Section considered in detail in the Draft EIS include alternative H near Benson, the Tumamoc Hill alternatives (TH1 and TH3), and MA1 (see sections 2.7.3 and 2.7.4 in the Draft EIS). A route variation is considered in Upgrade Section in the EIS (U3aPC). The purpose and need for Western (see section 1.2.2 in the Draft EIS) did not limit alternatives to new lines that would be built adjacent to existing Western lines.
607	82	82.26	SunZia	Wray	9-NEPA	In order to achieve full compliance with the CEQ and BLM regulations, we request additional analysis of a reasonable range of alternatives to be added to the Upgrade Section.	Alternatives analyzed in the Draft EIS represent a full range of reasonable alternatives. Additional route variations are being considered in the EIS (sections 2.6 and 2.7 of the EIS) in response to comments on the Draft EIS (P7a, P7b, P7c, P7d, and U3aPC).

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
608	82	82.27	SunZia	Wray	9-NEPA	As stated in Section 2.2.1 of the Draft EIS, the "Upgrade Section was designed as double-circuit 230 kV in order to maximize the existing ROW as much as possible." However, the project description requires that the ROW be expanded to 150 feet to accommodate the proposed new system, and would require construction of a new double-circuit 230 kV transmission line in an adjacent ROW that is 125 feet wide, providing a 25-foot-wide overlap. Clearly this plan would not maximize use of Western's existing 100-foot-wide ROW, but would require additional ROW that is larger than the existing ROW.	As described in chapter 2 of the Draft EIS, in locations where possible, the new 230-kV line would be built 50 feet away from the edge of the existing 100-foot ROW, parallel to the existing line, for a total of 150 feet. Only 50 feet of new ROW would be needed, where possible. See also figure 2-15b in the Draft EIS.
609	82	82.28	SunZia	Wray	9-NEPA	The additional ROW would require condemnation and removal of existing homes in the Tucson area (e.g., 30 single-family residences in the Drexel subdivision adjacent to the Western's 100- foot-wide ROW).	This comment is incorrect. Only 50 feet of new ROW would be needed, and that only where possible. It is likely that no additional ROW would be acquired between Del Bac and Rattlesnake substations. See also figure 2-15b in the Draft EIS. Additionally, no homes would be removed as a result of the proposed Project. The ROW easement acquisition process was described in section 1.9 of the Draft EIS. Potential impacts to residential property were analyzed in chapter 4 of the Draft EIS.
612	82	82.31	SunZia	Wray	9-NEPA	As described in Section 2.9 of the Draft EIS, the Routing Study conducted for the Southline Transmission Line Project was conducted by Southline, and thus required independent review by BLM and Western before it could be relied upon. There is no indication such review occurred, nor disclosure of which employees of BLM and Western conducted such independent analysis, as required by 40 C.F.R. § 1506.5. We request the Draft EIS be supplemented to correct this deficiency.	Information on the independent review process is available in the Project Record and described in section 2.6.1 of the Draft EIS (see Alternatives Developed by the Bureau of Land Management and Western Area Power Administration). Section 2.9 of the Draft EIS indicates that BLM and Western were involved in the process used to evaluate Southline's routing process. Specifically, "BLM and Western were aware of, and involved in, Southline's pre-NEPA routing efforts and are knowledgeable as to why other routes were eliminated. After further review of constraints and other routing possibilities, the agencies did not identify any viable major new routes that had not been previously reviewed by Southline; they did, however, identify local alternatives around particular resource issues."
613	82	82.32	SunZia	Wray	9-NEPA	As stated, "Southline's routing process (Southline 2012a) included an extensive screening of route options throughout the routing study area that were ultimately dropped from consideration. Although those routes are not described in this section (2.9) as they were part of Southline's pre- NEPA screening process, it is worth noting that those alternatives were considered and eliminated due to environmental and technical constraints, pre-NEPA stakeholder outreach, and early discussions with BLM and Western, detailed in the project routing report." In the Routing Study, it was noted that "because no additional existing transmission lines offered viable opportunities for upgrading between Apache and Saguaro substations, the study focused on the existing Western and SWTC lines."4 There is no supporting rationale in the Draft EIS to explain why the study area was constricted to exclude viable siting opportunities within the area located east of Tucson and north of Interstate 10 between the Apache and Saguaro substations. We request this supporting rationale be provided in a supplemented Draft EIS for public review. Footnote: 4 SWTC – Southwest Transmission Cooperative	Considering comments on the study area considered by Southline in their pre-NEPA routing efforts is out of the scope of this Project. Information on the independent review process is available in the Project Record and described in section 2.6.1 of the Draft EIS (see Alternatives Developed by the Bureau of Land Management and Western Area Power Administration). Route variations are being considered in the EIS in response to comments on the Draft EIS and to resolve specific concerns near Willcox Playa and south of Tucson International Airport (P7a, P7b, P7c, P7d, and U3aPC).
614	82	82.33	SunZia	Wray	9-NEPA	Other reasonable alternatives to Southline's proposed new transmission lines for the Upgrade Section include viable opportunities that would meet the purpose and need for the Southline Project, although they were not considered in the Draft EIS for the proposed double-circuit 230 kV line(s). Several other routes should be considered for the Southline Project as alternatives in the Upgrade Section, so that reviewers may evaluate their comparative merits. These include, but are not limited, to the following: • existing SWTC 115 kV transmission line corridor in Cochise and Pinal counties between the Apache Power Plant, Winchester Substation, San Manuel Substation, Oracle Substation, and Saguaro Substation	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. The alternative proposed here does not meet the objectives of the proposed Project, which is to connect to the existing substations along the Upgrade Section of the project; see section 2.9 of the EIS, which has been revised to clarify this.
615	82	82.34	SunZia	Wray	9-NEPA	Other reasonable alternatives to Southline's proposed new transmission lines for the Upgrade Section include viable opportunities that would meet the purpose and need for the Southline Project, although they were not considered in the Draft EIS for the proposed double-circuit 230 kV line(s). Several other routes should be considered for the Southline Project as alternatives in the Upgrade Section, so that reviewers may evaluate their comparative merits. These include, but are not limited, to the following: *existing Tucson Electric Power ("TEP") 138 kV and Western 230 kV lines located within the Pantano Wash and the Rillito River corridors in Tucson	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Information on the independent review process is available in the Project Record and described in section 2.6.1 of the Draft EIS (see Alternatives Developed by the Bureau of Land Management and Western Area Power Administration).

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
616	82	82.35	SunZia	Wray	9-NEPA	Other reasonable alternatives to Southline's proposed new transmission lines for the Upgrade Section include viable opportunities that would meet the purpose and need for the Southline Project, although they were not considered in the Draft EIS for the proposed double-circuit 230 kV line(s). Several other routes should be considered for the Southline Project as alternatives in the Upgrade Section, so that reviewers may evaluate their comparative merits. These include, but are not limited, to the following: *proposed SunZia Southwest Transmission Project corridor (BLM preferred alternative Subroute 4C2c) between the Winchester Substation and the Saguaro Substation in Cochise, Pima, and Pinal counties	As described in section 2.9 of the Draft EIS, BLM and Western were aware of, and involved in, Southline's extensive pre-NEPA routing efforts and are knowledgeable regarding why other routes were eliminated. After further review of constraints and other routing possibilities, the agencies did not identify any viable major new routes that had not been previously reviewed by Southline; they did, however, identify local alternatives and route variations around particular resource issues. Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to describe these proposed alternatives.
617	82	82.36	SunZia	Wray	9-NEPA	These transmission line corridors were not identified as alternatives considered in the Southline Draft EIS, and no rationale for eliminating these alternatives was documented in the Draft EIS.	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to describe the proposed alternatives.
618	82	82.37	SunZia	Wray	9-NEPA	The BLM and Western have an obligation to develop and evaluate a reasonable range of alternatives, and cannot simply rely upon information provided by Southline. See e.g. Van Abbema v. Fornell, 807 F.2d 633 (7th Cir. 1986) (holding that the agency violated NEPA because it failed to adequately consider economics of and alternatives to the proposed action before issuing a permit, and failed to meet its responsibility to verify in reasonable way data on which it relied). Because the Draft EIS is silent about the rationale for eliminating alternatives, one cannot meaningfully understand or react to this impermissible narrowing of the range of alternatives. The Draft EIS should be reissued with such an analysis, and a comment period should be allowed for reaction and comment on the same by the public.	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Alternatives analyzed in the Draft EIS represent a full range of reasonable alternatives, as described in section 2.7. Additional route variations are being considered in the EIS (see sections 2.6 and 2.7 of the EIS). Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to further describe these proposed alternatives and the rationale for dismissal.
619	82	82.38	SunZia	Wray	9-NEPA	New ROW will be required to accommodate the proposed 230 kV transmission lines parallel to the existing Western 115 kV line, although conflicts with residences or other sensitive land uses would likely occur along any of these alternative routes. No evidence of those alternatives being eliminated for environmental and technical constraints was included in the Draft EIS, and we request that this work be performed in a supplemented Draft EIS	The ROW easement acquisition process was described in section 1.9 of the Draft EIS. Potential impacts to the physical, human, and natural environment were analyzed in chapter 4 of the Draft EIS. Alternatives considered but eliminated from further analysis were described in section 2.9 of the Draft EIS.
620	82	82.39	SunZia	Wray	9-NEPA	The description of the proposed Southline Project component design is provided in Section 2.4.2 of the Draft EIS, and included in Table 2-2, Typical Design Characteristics for the Proposed Upgrade Section 230 kV Transmission Line. The Upgrade Section would require six conductors installed on new tubular steel poles, with typical span lengths between 700 and 1,000 feet, within a 150-foot-wide ROW. As shown in Figure 2-12 (below), the new 230 kV structures would be approximately 134 feet tall, nearly twice as tall as the existing 75-foot 115 kV H-frame wooden poles. The existing 115 kV poles and conductors would be removed following construction of the new 230 kV lines, and the future disposition and use of alternatives for the remaining 75-foot existing Western easement are not disclosed. This is a material omission to the analysis that we request be corrected.	The commenter misunderstands section 2.4.3 of the Draft EIS, which described the upgrade of the existing Western 115-kV line. As described in this section in the Draft EIS, only an additional 50 feet of ROW would be required. This section of the EIS has been revised for added clarity and to include details on the potential use of outages on the line.
621	82	82.40	SunZia	Wray	9-NEPA	The new double-circuit 230 kV transmission line project is defined as an "upgrade" to Western's existing 115 kV transmission line system in order to meet Western's need to adequately operate their electrical system and to qualify for federal funding under the Hoover Act. Yet, Western's "FY14 Ten-Year Appropriated Capital Program" (dated October 23, 2013) reported the dates when such "upgrades" would in fact be needed by Western to adequately operate their electrical system. Note that these segments comprise the proposed Southline Upgrade Section between Apache and Saguaro substations. The upgrade described by Western is a single 230 kV line: Saguaro-Tucson 115-kV Rebuild Phase 1 – FY18 Apache-Tucson 115-kV Rebuild Phase 1 – FY19 Apache-Tucson 115-kV Rebuild Phase 2 – FY20 Apache-Tucson 115-kV Rebuild Phase 4 – FY21 Southline proposes to place a double-circuit 230 kV transmission line in-service between Apache-Tucson-Saguaro substations (thereby replacing Western's existing 115 kV line) during 2016: fully five years in advance of Western's much less extensive upgrade to a single 230 kV line.	Section 2.5 (the no action alternative) has been revised in the EIS to indicate the difference in timing between the proposed Project and Western's plans in the FY14 Ten-Year Appropriated Capital Program.
622	82	82.41	SunZia	Wray	9-NEPA	However, for purposes of environmental analysis, the so-called "Upgrade Section" is a physically complete, separate, and new transmission line. It should not be defined as an "upgrade" of the existing 115 kV line. As evidenced by public comments, members of the public have been misled to interpret the Upgrade Section as a replacement of the existing 115 kV poles within the existing ROW, when in fact a separate and much larger double-circuit 230 kV transmission line project would be constructed using substantially larger and new ROWs.	As described in chapter 2 of the Draft EIS, in the Upgrade Section of the proposed Project, the new 230-kV line would be built 50 feet away from the edge of the existing 100-foot ROW, parallel to the existing line, for a total of 150 feet. Only 50 feet of new ROW would be needed, where possible. See also figure 2-15b of the Draft EIS. Section 1.1.1 of the EIS has been revised to clarify the additional requested ROW; however, please note that some areas would not need additional ROW (i.e., between the existing Del Bac and Rattlesnake substations). The term upgrade is correct for lines that increase voltage, use taller structures, and require more ROW.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
623	82	82.42	SunZia	Wray	9-NEPA	Understandably, there is confusion regarding the Upgrade Section of the Southline Project, and the impacts to property owners. These facts have not been fairly and adequately disclosed to the affected general public	The ROW easement acquisition process was described in section 1.9 of the Draft EIS. Section 1.1.1 of the EIS has been revised to clarify the additional requested ROW. As noted in section 2.4.1 of the EIS, no new ROW is anticipated between the Del Bac and Rattlesnake substations in the Upgrade Section of the proposed Project. Please note that on the whole, a review of the comments received on the Draft EIS did not indicate that commenters were having difficulty understanding the document or the proposed Project.
624	82	82.43	SunZia	Wray	9-NEPA	An alternative upgrade to Western's existing 115 kV transmission lines through the Tucson area could be achieved within the existing ROW, to some degree, in addition to building the new 230 kV lines in either separate, or adjacent ROWs. Separation between the two, 230 kV circuits would provide a higher level of reliability, allowing for the loss of only one of the two circuits in the event of a disruption, failure or corridor outage. We request that this alternative upgrade be analyzed in a supplemental Draft EIS.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to respond to these proposed alternatives.
625	82	82.44	SunZia	Wray	9-NEPA	Finally, alternatives to the construction of new transmission lines that could meet the Southline Project's objectives should be considered. These include, for example, (1) other existing system upgrades, (2) demand side management, and (3) distributed generation. No rationale to support eliminating these alternatives to the proposed installation of new transmission lines was documented in the Southline Draft EIS. We request that this omitted analysis be included in a supplemental Draft EIS.	Alternatives considered but eliminated from detailed analysis were discussed in section 2.9 of the Draft EIS. Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to describe these proposed alternatives and the rationale for dismissal, much like section 2.3.3 in the SunZia Final EIS.
626	82	82.45	SunZia	Wray	9-NEPA	Summarily, the alternatives analysis does not present a reasonable range of alternatives, nor does it provide justification or disclosure of the reasons for excluding from consideration the other reasonable alternatives outlined herein. As written, these deficiencies cannot be cured between a draft and final EIS. Consequently, the Draft EIS should be reissued as a supplemental Draft EIS, with these deficiencies addressed, followed by an additional public review opportunity and comment period. The failure to do so will likely lead to a fatally-flawed NEPA process.	Alternatives considered but eliminated from detailed analysis were discussed in section 2.9 of the Draft EIS. Chapter 2 of the EIS has been revised to consider additional minor route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis. The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
627	82	82.46	SunZia	Wray	9-NEPA	Evaluation and disclosure of environmental impacts are inadequate. The evaluation of impacts that could result from the construction and operation of the Southline Project are inadequate and do not meet the criteria established by the NEPA. The NEPA requires that agencies take a "hard look" at the impacts of the proposed action. A "hard look" is defined as a reasoned analysis containing quantitative or detailed qualitative information. The analyses must be at a level of detail sufficient to support reasoned conclusions by comparing the amount and degree of change (impact) caused by the proposed action and alternatives (40 CFR and BLM NEPA Handbook 2008).	Impacts described in chapter 4 of the Draft EIS are quantified, to the extent possible or where data were available. The impact analysis in Chapter 4 of the EIS has been revised to include more information, where appropriate, on the scale of potential impacts.
628	82	82.47	SunZia	Wray	9-NEPA	The Draft EIS discusses the levels or magnitudes of impacts in Section 4.1.3 Significance and Impact Indicators and "…uses the terms major, moderate, or minor/negligible in describing the intensity of effects." Additionally, the Draft EIS uses both short- and long-term durations to assist in quantifying the context of the proposed Southline Project in relation to the resources analyzed. However, in nearly every resource analysis section, the Draft EIS does not identify what magnitude, duration, or combination thereof, constitutes a Significant Impact5. Are the descriptions of major or high impacts and significant impacts similar? What sets apart major impacts from significant impacts? Footnote: 5 This fundamental problem with determination of significance is pervasive throughout all resource sections except for the Section 4.2 Air Quality where significant impacts are clearly defined.	Section 4.1.3 of the EIS has been revised to provide additional clarity deemed significant and how that is different from those potential impacts considered major.
629	82	82.48	SunZia	Wray	9-NEPA	Additionally, little-to-no information is presented in the form of relative intensity of impacts between alternatives, restricting the comparison of alternatives to only a comparison of acreages affected. We request that the Southline Draft EIS produce clarity on these issues.	Chapter 4 of the EIS provides additional clarity on impacts deemed significant and how that is different from those potential impacts considered major. However, please note that tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS (now tables 2-15, 2-16, 2-17, and 2-18 in the EIS) included the relative intensity of impacts for all resource topics.
630	82	82.49	SunZia	Wray	9-NEPA	In general, the conclusions of the Draft EIS are not adequately supported by the information presented. Insufficient information is available in the inventory of the affected environment to reasonably connect them to the potential impacts of the Southline Project. It is nearly impossible for someone reviewing the Draft EIS to understand the rationale behind the conclusory statements regarding impacts of the Southline Project on the environment.	Chapter 4 of the EIS has been revised to provide additional clarity on impacts deemed significant and how that is different from those potential impacts considered major. The impact analysis in chapter 4 of the EIS has been revised to include more information, where appropriate, on the scale of potential impacts.
631	82	82.50	SunZia	Wray	9-NEPA	There are no impact maps or data of appropriate scale to illustrate the resources that are impacted, or results showing the intensity or context of site-specific impacts. On the maps that are shown (e.g., Figures 3.8-1, and 4.9-2), the scale and resolution are insufficient to disclose the study corridor boundaries, resource data, specific locations and quantities of physical disturbance, and impacts specific to resources. The generally accepted practice in analysis of environmental resource data for representing resource mapping is to use a scale of 1:24,000. The Southline Draft EIS does not disclose the scale used, but it appears the approximate scale ranges from 1:500,000 to 1:1,000,000.	Maps in the EIS include more detailed locational information, as appropriate.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
632	82	82.51	SunZia	Wray	9-NEPA	The land use resource report prepared by CH2M Hill appears to utilize approximate scales ranging from 1:450,000 to 1:750,000. This does not constitute a “hard look” at potential environmental consequences, as required and described above. We request the mapping scale be modified to a scale that will allow the public an opportunity to fully review and understand the potential environmental impacts of the Southline Project.	The Southline Transmission Line Resource Reports cited in the draft EIS are some of many valuable reference documents used in the analysis. Data used in the draft EIS were available to the public, upon request to the BLM or Western Project points of contact listed on the BLM website (http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html). Though data and conclusions in the Southline Transmission Line Resource Reports contributed to the analysis, they were not determinative of the conclusions made in the EIS. While this supporting information is part of the Administrative Record and publicly available, the NEPA public comment process is focused on the Draft EIS itself.
633	82	82.52	SunZia	Wray	9-NEPA	The following are examples that demonstrate that the Draft EIS conclusions are not adequately supported by the data provided for public review in the document: In Section 3.8 Biology (Affected Environment), there is minimal information on species ranges, or geographic locations of vegetation types, while Section 4.8 Biology (Environmental Consequences) provides no species-specific and very little general information on the potential response of individuals and populations to construction and operation of the Southline Project; and	Chapters 2 and 4 of the EIS provide additional clarity on how potential impact conclusions were derived and the assumptions for the analysis, as appropriate.
636	82	82.55	SunZia	Wray	9-NEPA	We request that the Draft EIS be supplemented to include a meaningful analysis of impacts, including disclosure of what impacts are indeed significant.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
637	82	82.56	SunZia	Wray	9-NEPA	The levels of ground disturbance are underestimated. The description of the methodology used to estimate potential temporary and permanent ground disturbance resulting from construction and operation of the Southline Project are insufficient to adequately assess its accuracy. For example, Section 2.4.2– 2.4.3 and Table 2-8 of the Draft EIS discuss access road construction and associated disturbance. However, details regarding assumptions that greatly influence ground disturbance resulting from access road construction (i.e., slope) are not described.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS).
638	82	82.57	SunZia	Wray	9-NEPA	Additionally, in order to limit the amount of new road construction for the Southline Project, Access Level D should use existing roads within 600 feet of the Southline Project alternative centerlines, instead of the estimated 700 feet as stated in Section 2.4.2. If the typical span of the New Build section is 1,200 feet, then it would require an equal amount of ground disturbance to build two spur roads at 600 feet. Beyond 600 feet from a Southline Project alternative centerline, construction of a new road from structure-to-structure would typically result in less ground disturbance than building spur roads from existing roads to each structure work area. We request the methodology used to estimate ground disturbance be modified to better estimate the potential temporary and permanent ground disturbance impacts during the construction and operation phases of the Southline Project.	Minimizing impacts from the establishment of new access roads is an important consideration. However, impacts go beyond the single consideration of area of disturbance. The stated 700 feet offset from existing roads is used to be inclusive of other factors in establishment of roads.
686	82	82.105	SunZia	Wray	9-NEPA	The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
691	82	82.110	SunZia	Wray	9-NEPA	Initial Impacts, Mitigation Planning, standard and selective mitigation, and residual impacts are used sporadically through all the resources and have no context. This section should be revised using terminology that is consistent with the other sections of the Draft EIS.	Chapters 2 and 4 of the EIS provide additional clarity on how potential impact conclusions were derived and the assumptions for the analysis, as well as the difference between committed vs. proposed mitigation, and potential residual impacts.
692	82	82.111	SunZia	Wray	9-NEPA	The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
695	82	82.114	SunZia	Wray	9-NEPA	The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
703	82	82.122	SunZia	Wray	9-NEPA	In general, the conclusions of the Draft EIS are not adequately supported by the information presented. Insufficient information is available in the inventory to connect affected habitat to the possible impacts on species.	Chapters 2 and 4 of the EIS provide additional clarity on how potential impact conclusions were derived and the assumptions for the analysis. Additional information on consultation with the FWS has been included in the EIS in section 4.8 and in chapter 5.
705	82	82.124	SunZia	Wray	9-NEPA	Little or no discussion is provided on potential off-site impacts of the Southline Project. We request that this deficiency be corrected. The Draft EIS should be supplemented to address the unclear nature of these impacts by actually disclosing impacts and the rationale for the conclusions. Then, the Draft EIS should be republished and an additional 30-day comment period be provided to allow public review and comment on the same.	Potential direct and indirect impacts, including offsite impacts, of the proposed Project, were analyzed in the Draft EIS. The commenter does not provide additional information for consideration of offsite impacts beyond those described in the Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
714	82	82.133	SunZia	Wray	9-NEPA	The Draft EIS is silent with respect to whether the Southline Project's owner has begun soliciting potential generation customers that will express their interests or requests for interconnection to the Southline Project. Ostensibly, Southline will, at some point, begin soliciting customers, and have knowledge of the potential interconnections. This is particularly likely given the fact the Southline's eastern terminus begins at substations located adjacent to the Afton natural gas combined-cycle power plant in New Mexico, its midpoint interconnects with the Apache Generating Station in Arizona and terminus at the Saguaro power plant in Arizona. At this time, it is unclear what the make-up of transmission customers for the Southline Project may look like, but sometime between now and before the issuance of the Record of Decision, Southline, and/or Western, will likely become aware of the identity, location, and source of at least some of the transmission customers of the Southline Project. While a transmission project such as Southline does not necessarily have to engage in a "crystal ball inquiry" into identifying the impacts of future interconnections, such projects are required to disclose the types of impacts that are likely to occur as a result of their own proposed project. There is a NEPA regulation that provides guidance on what to do if certain information is unavailable or incomplete, such as the information needed to analyze the effects of the type of generation future customers of the Southline Project may seek to transfer over the Southline Project transmission lines. It is reasonable to assume that Southline will eventually have transmission customers, which could include generation projects with environmental impacts, resulting in cumulative impacts on the total environment. If Southline does not currently have information available regarding these generation interconnectors, then it should comply with 40 C.F.R. § 1502.22 by providing such information in the Draft EIS	Southline has not yet determined how it would solicit transmission customers. When Southline makes that determination, it will make an appropriate filing with the Federal Energy Regulatory Commission. As discussed in section 1.10.3 in the Draft EIS, no proposed generation sources have been identified that would intend to connect to the proposed Project.
715	82	82.134	SunZia	Wray	9-NEPA	One method to do so, which is frequently used by the BLM for oil and gas leasing where the exact location of wells is unknown at the ROW application phase for the pipeline, is through the use of Reasonably Foreseeable Development Scenarios. A "Reasonably Foreseeable Development Scenario" ("RFD") provides the mechanism to analyze basic information in the NEPA document under various alternatives. However, as written, the Southline Project EIS fails to disclose any potential impacts from future generation interconnections, thereby leading to a groundless assumption that there is no potential for cumulative impacts exists that may be associated with future interconnections. Recall, cumulative impacts require the analysis of impacts "on the environment which results from the incremental impact of the action when added to other… reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 CFR § 1508.7	Section 4.21 of the Draft EIS described the cumulative effects of the proposed Project that would result when combined with other past, present, and reasonably foreseeable actions. Speculative future energy projects are not considered in the analysis, either individually or via an RFD. As discussed in section 4.21.2 of the Draft EIS, "reasonably foreseeable" actions are considered where there is an existing decision (i.e., ROD or issued permit), a commitment of resources or funding, or a formal proposal (i.e., a permit request). Actions that are highly probable based on known opportunities or trends (i.e., residential development in urban areas) are also considered. Speculative future developments (i.e., enabling access to unknown renewable energy projects) are not considered.
716	82	82.135	SunZia	Wray	9-NEPA	As written, if the Southline Project identifies an interconnection prior to the issuance of the Record of Decision, and the interconnection is not currently disclosed or identified in the Draft EIS, it would have to prepare a Supplemental EIS as there would be analyzable cumulative impacts not previously considered. If this Draft EIS utilized an RFD, this future duty to supplement such cumulative impacts would have been previously disclosed and analyzed. The Draft EIS should be supplemented to include a form of compliance with 40 C.F.R. § 1502.22, whether through the use of RFDs or another means. This failure cannot be cured in the Final EIS, and warrants re-publication of a supplemental Draft EIS.	Section 4.21 of the Draft EIS described the cumulative effects of the proposed Project that would result when combined with other past, present, and reasonably foreseeable actions. Speculative future energy projects are not considered in the analysis, either individually or via an RFD. As discussed in section 4.21.2 of the Draft EIS, "reasonably foreseeable" actions are considered where there is an existing decision (i.e., ROD or issued permit), a commitment of resources or funding, or a formal proposal (i.e., a permit request). Actions that are highly probable based on known opportunities or trends (i.e., residential development in urban areas) are also considered. Speculative future developments (i.e., enabling access to unknown renewable energy projects) are not considered. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Comments on the Draft EIS have been addressed in the EIS.
717	82	82.136	SunZia	Wray	9-NEPA	The Analysis of the Upgrade Section Alternatives fails to consistently disclose and analyze the impacts associated with the expansion of the 12 substations connected with the Upgrade Section of the Southline Project.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses. These potential impacts were accounted for in the Draft EIS.
718	82	82.137	SunZia	Wray	9-NEPA	For each substation upgrade, there will be additional temporary and permanent ground disturbances. See Id. Consequently, there will be additional impacts to the environment. The Draft EIS fails to analyze the impacts of the substation expansions for the following resources: • Geology and Mineral Resources • Soil Resources • Biological Resources • Cultural Resources • Socioeconomics and Environmental Justice • Public Health and Safety	Section 2.4.2 of the EIS includes additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
719	82	82.138	SunZia	Wray	9-NEPA	Failure to analyze direct, indirect, and cumulative impacts from a proposed action, which includes the substation expansion associated with the Upgrade Section of the Southline Project, is a NEPA flaw. Consequently, the Draft EIS must be supplemented to include an analysis of the impacts associated with the expansion of the substations on the resources, and re-published for additional public comment.	Section 2.4.2 of the EIS includes additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses. These potential impacts were accounted for in the Draft EIS.
720	82	82.139	SunZia	Wray	9-NEPA	The Impacts Analysis is insufficient because it fails to disclose and analyze the impacts of the Southline Project with sufficient specificity as to the location of the impacts. An agency that fails to take a “hard look” at the impacts of a project, and violates NEPA, if that agency fails to examine, consider, and disclose site-specific factual information regarding the baseline and direct, indirect, and cumulative impacts of the each resource potentially affected by the project. New Mexico ex rel. Richardson v. Bureau of Land Mgmt., 565 F.3d 683, 704 (10th Cir. 2009) citing Citizens' Comm. to Save Our Canyons v. Krueger, 513 F.3d 1169, 1178 (10th Cir. 2008).	Chapter 4 of the EIS provides additional clarity on potential site-specific impacts, as appropriate. Maps in the EIS include more detailed locational information. The commenter has not provided any examples of areas where impact analysis is deficient, or suggested any means to improve the analysis specifically.
721	82	82.140	SunZia	Wray	9-NEPA	The EIS must, in and of itself, meet the requisite level of specificity in terms of geographic scope and unique environmental factors within that geographic scope, depending on the particular project and its stage of development. An agency’s failure to conduct an analysis that takes location or site-specific environmental factors into account when considering and disclosing potential environmental impacts of the proposed action results in a fatal NEPA flaw. Here, the impacts analysis for each resource merely identifies the impacts that could occur along the entire segment of each Route Group. The length of each alternative in each Route Group is between approximately 48 and 145 miles long. Consequently, the Draft EIS does not identify where along a 48 to 145 mile segment a particular impact occurs. This renders the impacts analysis almost meaningless, as local stakeholders cannot appreciate if a particular resource is impacted in a particular way in an area which they are concerned about. For example, the Draft EIS represents that the impacts would be less severe with respect to the Upgrade Section, as compared to the new build section of the project, because the right-of-way has been “previously disturbed.” See e.g. Draft EIS at pp. 780, 783, 784, 787, 788, 789, and 795. This representation ignores the fact that the Upgrade Section would require a new 150 ROW and likely impact resources that are not currently disturbed by Western’s existing line.	Chapter 4 of the EIS provides additional clarity on potential site-specific impacts, as appropriate. Maps in the EIS include more detailed locational information. The commenter has not provided any examples of areas where impact analysis is deficient, or suggested any means to improve the analysis specifically.
722	82	82.141	SunZia	Wray	9-NEPA	Likewise, this representation ignores the fact that the Upgrade Section requires the expansion of 12 substations onto lands previously undisturbed by the existing substations, thereby impacting resources that are currently undisturbed.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses.
723	82	82.142	SunZia	Wray	9-NEPA	Without the ability to understand the physical location of the impacts described in the Draft EIS, it is impossible to know whether it includes an analysis of previously undisturbed resources. Consequently, the Draft EIS should be supplemented to include a disclosure of where impacts occur along each Route Group’s segment, thereby disclosing to the public, and the decision- maker, the location, nature, and severity of potential impacts.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
724	82	82.143	SunZia	Wray	9-NEPA	The supplement could include additional text disclosing the location of the impacts, or it could include the use of maps which depict the location of impacts along each segment within a Route Group, thereby allowing one reviewing the EIS to understand where each type of impact is likely to occur. This is particularly important, where, as here, the Draft EIS has failed to analyze the impacts associated with the proposed expansion of 12 substations for six categories of resources.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
725	82	82.144	SunZia	Wray	9-NEPA	Southline Transmission Project Routing Report (CH2M Hill 2012). As noted in the comments for the Draft EIS, examination of the routing report fails to adequately consider a reasonable range of alternatives, specifically in the Upgrade Section for the proposed Southline Project (see Section I. C.).	The Southline Transmission Line Routing Report cited in the Draft EIS were one of many reference documents used in the analysis. Conclusions in the EIS are independent of data and conclusions in the Southline Transmission Line Routing Reports.
726	82	82.145	SunZia	Wray	9-NEPA	The Purpose and Need from the Agencies as noted in this comment letter, likewise does not preclude the evaluation of other reasonable alternatives. The only rationale given for restricting the evaluation of alternatives to upgraded sections through the Tucson urban area is stated in Section 1.1.5 Project Siting-Development of the Upgrade Section,	Alternatives in the Draft EIS were developed to meet regional electrical and system needs and Southline’s goals and objectives. They were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Chapter 2 of the EIS has been revised to consider additional route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis). The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work.
727	82	82.146	SunZia	Wray	9-NEPA	As discussed in detail in the discussion on “Alternatives” in this letter, the alternatives to the Upgrade Section do not constitute an evaluation of a reasonable range of alternatives in comparative form, which is considered the “heart of the environmental impact statement” as noted in the CEQ Regulations Section 1502.14. The Southline Draft EIS unnecessarily limits the alternatives identified to those that only met the narrow “technical needs of the project.”	Alternatives in the Draft EIS were developed to meet regional electrical and system needs and Southline’s goals and objectives. They were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Chapter 2 of the EIS has been revised to consider additional route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis. The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
734	82	82.153	SunZia	Wray	9-NEPA	It is noted in the Draft EIS (Section 2.4.3 Project Construction Activities) that removal and replacement of Western's existing 115 kV facilities and associated line outages would be necessary in dense urban areas, but these locations, or quantifiable impacts associated with these system outages are not discussed or disclosed.	Section 2.4.3 and section 4.1.1 of the EIS have been revised to clarify the lack of potential impacts on resources covered in the EIS from system outages.
735	82	82.154	SunZia	Wray	9-NEPA	In addition, it appears certain locations of existing transmission facilities through Tucson are constrained by residential, commercial and governmental facilities (e.g., schools, community centers and parks) that would require land acquisition through condemnation. Specifics regarding these impacts should be evaluated with regard to context and intensity, as they may represent significant impacts that have not been disclosed. Site-specific analysis should have been completed in the Draft EIS. Having failed to do so, the BLM and Western are now required to supplement the Draft EIS and re-publish it for public review and comment. The lack of sufficient site-specific analysis of impacts cannot be cured between the Draft and Final EIS.	Section 1.1.1 of the EIS has been revised to clarify the additional requested ROW; however, please note that some areas would not need additional ROW (i.e., between the existing Del Bac and Rattlesnake substations). The ROW easement acquisition process was described in section 1.9 of the Draft EIS. Potential impacts to the physical, human, and natural environment were analyzed in chapter 4 of the Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
741	82	82.160	SunZia	Wray	9-NEPA	For the reasons provided in these comments, the Draft EIS does not adequately disclose or analyze the potentially significant environmental impacts of the proposed action.	The EIS addresses comments received on the Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
742	82	82.161	SunZia	Wray	9-NEPA	These comments also illustrate that there are new, reasonably-available alternatives that are outside the spectrum of alternatives analyzed in the Draft EIS, which should be analyzed in order to reduce potentially significant environmental impacts.	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Chapter 2 of the EIS considers additional route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis. The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work.
743	82	82.162	SunZia	Wray	9-NEPA	The identification of additional information, apparent lack of data, and inadequate establishment of meaningful criteria for analyses are of such a magnitude that they should have full public review at a draft stage. Respectfully, these conclusions indicate that the Draft EIS does not meet the purposes of NEPA, and thus should be formally revised and made available for public review and comment in a supplemental or revised Draft EIS.	The EIS addresses comments received on the public Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
744	82	82.163	SunZia	Wray	9-NEPA	This Draft EIS is deficient in several key areas of investigation. These shortcomings are sufficiently significant to mislead the public attempting to understand, comment on, and react to Southline's proposed project on federal lands,	The Final EIS addresses comments received on the public Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
745	82	82.164	SunZia	Wray	9-NEPA	BLM and Western Purpose and Need statements are too vague, and impermissibly narrow the scope of alternatives analyzed with respect to the Upgrade Section.	The agency purpose and need statements, as described in sections 1.21 and 1.2.2 of the Draft EIS, accurately describe the agency's objectives. The purpose and need statement is intended to be a statement of the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed Project, per 40 CFR 1502.3. The purpose and need of each agency (BLM and Western), as articulated in the Draft EIS, are determined based on the Federal actions requested. Please note that there is a difference between the agencies' purpose and need statements and the objectives of the applicant (see section 1.3 of the Draft EIS). Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Chapter 2 of the EIS has been revised to consider additional minor route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis. The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work.
746	82	82.165	SunZia	Wray	9-NEPA	Agency reliance on data prepared by Southline and its consultants without evidencing that review, independent verification, and approval of such data was conducted.	Information on the independent review process is available in the Project Record. Chapter 5 of the EIS describes the independent evaluation process used prior to referencing them in the Draft EIS. Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
747	82	82.166	SunZia	Wray	9-NEPA	Resource reports that were prepared by Southline's consultant, relied upon in the Draft EIS as the exclusive source of information prepared in connection with the EIS for establishing the baseline of resources, were not made available for stakeholder review and comment for the entire comment period.	The commenter is incorrect. The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request.
748	82	82.167	SunZia	Wray	9-NEPA	The analysis of reasonable and feasible alternatives to the proposed action was deficient.	Statement of opinion.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
749	82	82.168	SunZia	Wray	9-NEPA	Evaluation and disclosure of environmental impacts are inadequate because they lack sufficient physical location specificity and fail to, for several resources, include an analysis of impacts associated with the substation expansions connected with the Upgrade Section of the proposed action.	Chapter 4 of the EIS provides additional clarity on potential site-specific impacts, as appropriate. Maps in the EIS include more detailed locational information.
750	82	82.169	SunZia	Wray	9-NEPA	The resource reports provided by Southline's consultant are flawed because they failed to apply the appropriate methods for identifying baselines for each resource, and were not verified through site-specific field observations	The Southline Transmission Line Resource Reports cited in the Draft EIS were one of many valuable reference documents used in the analysis. Data used in the Draft EIS were available for the full 90-day comment period, upon proper request. A field review of data is not required to disclose the potential impacts of the proposed Project.
751	82	82.170	SunZia	Wray	9-NEPA	The resource reports were prepared through a "desktop" level literature review, and lack sufficient safeguards to ensure they accurately reflect the affected environment. If the affected environment is, as it is here, inaccurately characterized, the impacts analysis is inaccurate.	Potential impacts in the Draft EIS have been evaluated based on best available current data, in collaboration with cooperating agencies listed in chapter 5 of the Draft EIS. Information on the independent review process is available in the Project Record. Chapter 5 of the EIS describes the independent evaluation process used prior to referencing them in the Draft EIS. A field review of data is not required to disclose the potential impacts of the proposed Project. The commenter provides no additional data or specific instances where data were incorrect or where better data were available for use in the EIS.
752	82	82.171	SunZia	Wray	9-NEPA	Correcting the deficiencies in the Southline Draft EIS identified in this letter is the duty of the BLM and Western, who are the decision-makers conducting this EIS. In addition to the requested actions detailed in this letter, specific actions include the following as part of a supplemental Draft EIS, as these deficiencies cannot be "cured" between the Draft and Final EIS: • Expand BLM's Purpose and Need that will be addressed by the Southline Project, other than BLM's general obligations under FLMPA.	See chapter 1 of the Draft EIS. The purpose and need of each agency (BLM and Western) are articulated in section 1.2, and are determined based on the Federal actions requested. Please note that there is a difference between the agencies' purpose and need statements and the objectives of the applicant (see section 1.3 of the Draft EIS). The EIS addresses comments received on the public Draft EIS. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
753	82	82.172	SunZia	Wray	9-NEPA	Explain Western's Purpose and Need that will be addressed by the Southline Project and clarify the discrepancies between Western's described needs to upgrade the Apache-Tucson-Saguaro 115 kV line in Western's "FY14 Ten-Year Appropriated Capital Program" (dated October 23, 2013) and the proposed action submitted by Southline.	Section 2.5 (the no action alternative) has been revised in the EIS to describe the difference in timing between the proposed Project and Western's plans in the FY14 Ten-Year Appropriated Capital Program.
754	82	82.173	SunZia	Wray	9-NEPA	Describe the BLM's and Western's method of reviewing and verifying the accuracy of any data or reports provided by Southline.	Information on the independent review process is available in the Project Record. Chapter 5 of the EIS has been revised to describe the independent evaluation process used prior to referencing the reports in the Draft EIS.
755	82	82.174	SunZia	Wray	9-NEPA	Identify and disclose Southline's consultants and their role in the preparation of the Draft EIS.	Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
756	82	82.175	SunZia	Wray	9-NEPA	This action should include a listing of the preparers of the 20 resource reports, including their name, organization and qualifications for preparing this data upon which the Draft EIS heavily relies,	Although the authors of the Southline Resource Reports are not the preparers of the EIS, the authors of those reports are included in chapter 5 of the EIS.
757	82	82.176	SunZia	Wray	9-NEPA	An identification of the BLM and Western personnel that independently verified the accuracy of the reports.	Information on the independent review process is available in the Project Record. Chapter 5 of the EIS has been revised to describe the independent evaluation process used prior to referencing the reports in the Draft EIS. Agency staff listed in section 5.7 of the Draft EIS was involved in verifying the accuracy of the data and analysis in the Draft EIS, as stated in section 5.7.
758	82	82.177	SunZia	Wray	9-NEPA	Make the resource reports available on the BLM website for public review. BLM's efforts to provide the resource reports on an as-requested basis does not satisfy the BLM's duty to make this information reasonably available for the public, as the resource reports were not "readily" available or accessible for the entire public comment period on the Draft EIS.	The Southline Transmission Line Resource Reports cited in the Draft EIS are one of many valuable reference documents used in the analysis and were made available during the comment period on the Draft EIS by contacting the Project Manager, Mark Mackiewicz. Conclusions in the EIS are independent of data and conclusions in the Southline Transmission Line Resource Reports.
759	82	82.178	SunZia	Wray	9-NEPA	Expand the alternatives studied for the Upgrade Section to include a reasonable range of alternatives, including those identified herein.	Alternatives in the Draft EIS were derived based on the issues presented during scoping, as well as on internal agency (BLM and Western) and cooperating agency feedback. Chapter 2 of the EIS considers additional minor route variations (see sections 2.6 and 2.7 of the EIS), as well as additional alternatives considered but eliminated from detailed analysis. The commenter has not raised any reasonable, viable alternatives that accomplish the substation interconnections that make this proposed Project work.
760	82	82.179	SunZia	Wray	9-NEPA	Additionally, the alternatives' analysis must include a description of all alternatives considered but eliminated from detailed consideration, including a rationale behind the elimination for each alternative.	Alternatives considered but eliminated from detailed analysis were discussed in section 2.9 of the Draft EIS.
761	82	82.180	SunZia	Wray	9-NEPA	Address the specific resource concerns detailed in this letter.	Chapter 4 of the EIS provides additional clarity on potential site-specific impacts, as appropriate. Maps in the EIS include more detailed locational information.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
762	82	82.181	SunZia	Wray	9-NEPA	Perform field verification of the all data that was used in each resource report prepared by Southline.	Potential impacts in the Draft EIS have been evaluated based on best available current data, in collaboration with cooperating agencies listed in chapter 5 of the Draft EIS. Information on the independent review process is available in the Project Record. Chapter 5 of the EIS has been revised to describe the independent evaluation process used prior to referencing the reports in the Draft EIS. A field review of data is not required to disclose the potential impacts of the proposed Project. The commenter provides no additional data or specific instances where data were incorrect or where better data were available for use in the EIS.
763	82	82.182	SunZia	Wray	9-NEPA	Revise the analysis to cover the additional area required for the expansion of the 12 existing Western substations.	Section 2.4.3 of the EIS has been revised to include additional information on the estimates for disturbance presented in table 2-7 (previously table 2-8 in the Draft EIS), including how potential substation expansion impacts are considered in the analyses. These potential impacts were accounted for in the Draft EIS.
764	82	82.183	SunZia	Wray	9-NEPA	Evaluate impacts from acquiring an additional 125-foot ROW for the Upgrade Section.	As described in chapter 2 of the Draft EIS, in locations where possible, the new 230-kV line would be built 50 feet away from the edge of the existing 100-foot ROW, parallel to the existing line, for a total of 150 feet. Only 50 feet of new ROW would be needed, where possible. See also figure 2-15b in the Draft EIS.
765	82	82.184	SunZia	Wray	9-NEPA	Develop an RFD for future generation related to potential interconnection requests.	Section 4.21 of the Draft EIS describes the cumulative effects of the proposed Project that would result when combined with other past, present, and reasonably foreseeable actions. Speculative future energy projects are not considered in the analysis, either individually or via an RFD. Section 4.21 of the EIS has been revised to clarify which future actions are considered speculative and why.
766	82	82.185	SunZia	Wray	9-NEPA	Reevaluate the environmental impacts and disclose this new information in a supplemental Draft EIS for public review and comment	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
767	82	82.186	SunZia	Wray	9-NEPA	In order to avoid a fatally-flawed NEPA document , this Draft EIS requires supplementation and republishing for an opportunity for infonned review and comment by the public.	Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.
781	84	84.1		Kestler	9-NEPA	I'm very pleased you will go around Tumacoc and have less environmental impact than existing lines.	Thank you for your comment. The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally.
782	84	84.2		Kestler	9-NEPA	Also glad access lines are only 150 feet wide – far superior to Sunzia with I pray will not be approved. Please find the least invasive way to impact Benson and the many miles of conservation easements worth of it.	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally.
784	85	85.1	Fort Sill Apache Tribe	Thompson	9-NEPA	As you may or may not be aware, the proposed route and several substation locations for the Southline are located close to the Fort Sill Apache Tribe's Akela Flats Reservation in Luna County, New Mexico and the Tribe's fee and trust lands in Cochise County, Arizona .	The Fort Sill Apache Tribe's Akela Flats Reservation was discussed in sections 3.11 and 4.11 of the Draft EIS.
785	85	85.2	Fort Sill Apache Tribe	Thompson	9-NEPA	First I want to say that the Tribe did receive appropriate notices during the NEPA and planning process and did participate and attend meetings regarding this proposed project. Unfortunately, at that time of the NEPA reviews and planning meetings, the actual development of the project and selected route of the Southline were in question. As a result, our review was based more on a potential, rather than an actual project. Thus, some of the questions we had regarding the project were not raised by the Tribe.	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally. The proposed Project and alternatives were described in chapter 2 of the Draft EIS.
786	85	85.3	Fort Sill Apache Tribe	Thompson	9-NEPA	In addition, because the Tribe was never formally invited to participate as a cooperating agency and had other matters, including its own NEPA compliance issues on its proposed projects in New Mexico and Arizona, the Tribe has not provided comprehensive comments to the BLM on this proposed project. However, the Tribe has been told by several well connected sources that the project's viability is more certain and that this information, along with the issuance of the "Final EIS" leads us to the conclusion that the project will be moving forward .	As discussed in section 5.4 of the Draft EIS, the Fort Sill Apache were invited to be a cooperating agency. Chapter 5 of the EIS has been revised to indicate that additional outreach with the tribe was completed prior to the publication of the EIS.
787	85	85.4	Fort Sill Apache Tribe	Thompson	9-NEPA	As a result, the Tribe would like to obtain more detailed and concrete information on the actual route footprint of the Southline and the site footprints of the Proposed Midpoint Substation in New Mexico and the Apache Substation in Arizona. From the maps we have reviewed, both of these sites are located close to the Tribe's trust and/or fee lands in New Mexico and Arizona.	BLM sent a letter to the tribe on August 7, 2014 asking for more information on the trust and fee lands in Arizona, and coordination is ongoing.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
788	85	85.5	Fort Sill Apache Tribe	Thompson	9-NEPA	In that regard, we would like to setup a meeting to review the Southline route footprint and the location of the two substations. Please let us know when a meeting can be arranged with the Tribe.	BLM sent a letter to the tribe on August 7, 2014 asking for more information on the trust and fee lands in Arizona, and coordination is ongoing.
789	86	86.1	New Mexico Department of Game and Fish	Wunder	9-NEPA	Our comments pertain only to portions of the new build section located in New Mexico.	Noted.
793	86	86.5	New Mexico Department of Game and Fish	Wunder	9-NEPA	The Department strongly supports the northern Agency Preferred Alternative (Subroute 1.1 and 2.1), and does not support implementation of the southern Proponent Alternative (Subroute 1.2 and 2.2). Within Route Group 2, the Department strongly recommends the selection of Local Alternative LD-3a, which entirely avoids the Lordsburg Playa. When it holds water, Lordsburg Playa is an important wintering area for sandhill cranes and siting of a large transmission line near the playa would cause additional crane mortality.	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in Section 2.6 of the EIS are considered equally. The proposed Project and alternatives were described in chapter 2 of the Draft EIS. The biological importance of the Lordsburg Playa is discussed in sections 3.8 and 4.8 in the EIS. The segment referred to in the comment (a portion of LD3a) was included as part of the Agency Preferred Alternative in the Draft EIS (see section 2.10.5). Local alternative LD3a is part of the revised Agency Preferred Alternative in the EIS (see section 2.10.5).
796	86	86.8	New Mexico Department of Game and Fish	Wunder	9-NEPA	The Department also supports selecting Local Alternative DN-1 if SunZia transmission line is approved, because it would allow co-location.	The Final EIS includes the Agency Preferred Alternative. While the preferred alternative is presented, the final route will be determined in the ROD. Until that decision document is signed, any alternative segment could be selected in the ROD. Until that time, all action alternatives described in section 2.6 of the EIS are considered equally.
574	80	80.12		Magruder	9-NEPA	a. Rights-of-Way. The SunZia proposal does not use existing ROW corridors for most of its options, thus it follows the “Last Law of Transmission Line Siting”, that is, to use new ROWs and create new environmental impacts. The ROW corridors for Southline varies between 150 and 200 feet while that for SunZia are proposed to be up to 1,700 feet and includes two power line systems instead of one for Southline.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline’s request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western’s evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western’s Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter’s concerns were best directed at that process for appropriate consideration.
579	80	80.17		Magruder	9-NEPA	The SunZia Alternative including its environmental impacts must be included and compared with the Southline project in the either a Supplemental or the Final EIS.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline’s request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western’s evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western’s Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter’s concerns were best directed at that process for appropriate consideration. Though portions of the EIS have been revised in response to public and agency comments on the Draft EIS, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
572	80	80.10		Magruder	8-MISC	4. New Alternative: The Southline Project can significantly reduce GHG from the Apache Power Plant. Comment 10. This critical issue was not discussed in the Draft EIS; however, by having the siting approved for the Bowie Generation Plant changed to be close to the existing Apache. The Apache Power Plant is one of the ten most polluting power plant in the country This coal-fueled power plant has been a major target of the EPA with significant cost impacts necessary to meet the EPA mandates for clean air. To meet this mandate, the present plans are to convert one of the two Apache generators to natural gas while continuing to keep the other Apache generator- using coal at great expense for pollution equipment changes its various primary cooperative customers. e remains some opposition to the approved “greenfield” siting at Bowie that was initially proposed to use coal. After receiving significant criticism this plant was approved by the Arizona Corporation Commission as a natural gas fueled plant in Bowie, Arizona. Unfortunately, there is no transmission infrastructure to support the Bowie location. If it was re-sited in the general vicinity of the existing Apache Power Plant and Substation, then there would be no reason to install expensive pollution control equipment on a coal-fueled generator as a relocated “Bowie” plant at the Apache site where existing transmission exists and will be significantly improved by the Southline Project. This will save Southern Arizona rural cooperative customers from having to pay for this pollution control equipment for a very old generator. A new natural gas generator (e.g., “Bowie”) can easily meet the EPA mandated GHG requirements for the Apache Power Plant. This Alternative including its environmental impacts must be included in the either a Supplemental or the Final EIS.	The BLM and Western developed alternatives to the proposed route in order to address issues raised by Federal land management, State and local agencies, and the public. This alternative is outside the scope of the Southline EIS.
56	20	20.1	–	Christensen	8-MISC	I oppose ALL new construction of more of these dammed unsightly power lines that mar our landscapes and vistas. I ask that you not allow more of these ugly dammed things – No Mas! We need to make do with what is already here!	Statement of preference.
152	31	31.1	Wild Heart Ranch	Lannon	8-MISC	Southline is to be commended for taking an environmentally responsible approach to its transmission line project, especially the portion from Willcox west where they will replace existing power lines with new ones. This avoids tearing up pristine desert with roads and construction and resulting threats to wildlife, archaeology sites, communities, and the Avra Valley.	Thank you for your comment.
154	31	31.2	Wild Heart Ranch	Lannon	8-MISC	The SunZia transmission line project can take a lesson from Southline. Their misrepresentations, political lobbying, and plans for desert destruction are nothing less than shameful.	A comparison of the potential impacts from the not yet constructed SunZia project is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS, and the commenter’s concerns were best directed at that process for appropriate consideration.
181	36	36.3	Hearing-State of New Mexico, Military	Scott	8-MISC	I'm the director of the office of Military Base Planning and Support for the State of New Mexico. And there's another transmission project I've been involved in, and they're doing a lot of staff work at the state level. I wanted to compliment the Bureau of Land Management and Southline, particularly Mr. Bill Kipp and Doug Patterson, for their leadership and their effort in working with everyone as they put their plan together. I have not read the Draft EIS, but I know it will be a great product. I want to compliment Bill Childress from the BLM district here in working with the installations in the southern part of the state to support their mission. I think this process is an outstanding manifestation of that.	Thank you for your comment.
182	37	37.1	Hearing	Darr	8-MISC	I would like to state that the Southline project is a tool for nothing but money. The Southline people want what we have in Hidalgo County. They can't get it where they're from; so they're going to ruin what we have here. We have beauty, pristine, clean, open spaces, untouched frontier, and the true meaning of purple mountain majesty. I tell that Southline group go make your money in your own state. Hidalgo County has had plenty of foreigners come in here to do their great plans and their illustrious ideas, and then they leave, and they leave us with the ruination of their consequences. They don't care about this state or this county like the people who live and survive here. And many of us don't want them here or their power line here, including myself. They're going to destroy our eco-culture of the Southwest by adding their disgusting power line to our landscape. It's a perfect target for terrorists because if SunZia comes through, that's just that many more that someone could throw a bomb on, and then you're out of luck. We're just a tool for them to make money. I will not sell them one grain of sand of my land which is right in the middle of the Hidalgo County area of their project. They will have to do everything they can to keep me out. I will not allow them to trespass in any way or form, and I will get whatever law enforcement is needed to keep them off.	Potential impacts to visual resources, land use, special designations, and social and economic conditions were considered in chapter 4 of the Draft EIS.
183	37	37.2	Hearing	Darr	8-MISC	I would like to enforce and request from the BLM that they reconsider this project in general. Do they want there to be a last frontier left which is Hidalgo County in New Mexico, or do they want the ruination of us to be just like everything else with power lines going everywhere for the world to see instead of the beauty that we have right now? And that's all I have to say.	The no action alternative was an alternative considered in detail in the Draft EIS. As stated in section 2.5 in the Draft EIS, under the no action alternative, the BLM would not grant the ROW for construction and operation of the proposed Project. Western would not provide Hoover Act funding, and Western would not participate in the proposed Project.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
202	38	38.19	Hearing	Lindberg	8-MISC	I own property that has the easement on my side of the line for the existing power line. And I agree with the last gentleman that spoke that to double the electrical transmission right through J-6 and/or actually through Mescal area and through Benson seems silly when there are a lot less people living north of the area. And I do believe there was a proposed alternate route that went north of the airport and I'd like everybody to support that and fight for it because it will be far less of an eyesore way off in the distance and far less environmentally hazardous to us .	As discussed in chapter 2 (see section 2.7) of the Draft EIS, alternative H would go north of the town of Benson, north of the airport. The potential visual impacts of alternative H, as well as other alternatives considered in detail in the Draft EIS can be found in section 4.10.
284	59	59.1	International Brotherhood of Electrical Workers	McBride	8-MISC	BLM's stewardship and protection of our environment is commendable. Those who erect powerlines for a living are aware of their effect on the environment when they build lines. In their training they are taught to minimize their "footprint" while working.	Thank you for your comment.
285	59	59.2	International Brotherhood of Electrical Workers	McBride	8-MISC	One point that may be lost here is that once built, a powerline has little traffic around it and mother nature reclaims her land within a year. The land will not become "virgin" again but minimizing the damage brought by progress is not only a noble aim but it is achievable. Infrastructure work in the US is necessary, help our industry make everyone aware that environmental awareness is necessary also.	Thank you for your comment.
371	68	68.48	Pima County	Bernal/Connolly	8-MISC	Section 3.9.2 formatting errors obscure lines 8-16. Is this an electronic artifact?	No errors noted upon review.
479	75	75.1		Sheehan	8-MISC	I am writing to express my opposition of the proposed routing of the Southline Transmission Project, which will run through and/or near several very important bird habitats: The San Pedro River Valley, Tumamoc Hill, Cienega Creek, and the Willcox Playa. Please advocate for the avoidance of these very impotant areas for birds as part of the power lines placement.	The potential impacts to Important Bird Areas were analyzed in section 4.8 of the Draft EIS. As noted in chapter 2 (see section 2.7 of the Draft EIS), BLM and Western developed alternatives designed to avoid or minimize impacts to sensitive resources such as Tumamoc Hill and Willcox Playa.
546	78	78.19	Coalition For Sonoran Desert Protection	Campbell	8-MISC	Lack of Support for Any Action Alternative Given the overarching lack of adequate mitigation measures proposed for impacts to Pima County's Conservation Lands System and Arizona's wildlife linkages, along with a shallow analysis of impacts to Arizona's wildlife linkages, we cannot support any alternative at this time.	Statement of preference. Additional information on impacts to Pima County CLS has been included in sections 3.11 and 4.11 of the EIS. AGFD is a cooperating agency on the proposed Project, and in addition to consulting with AGFD (see section 5.4 of the Draft EIS), impacts to wildlife linkages were considered in section 4.8.2 of the Draft EIS.
551	79	79.4	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	8-MISC	The draft EIS/draft RMPA was also hard to follow because of the exhaustive amount of information that was presented. The BLM should re-examine whether some information is needless detail or whether it is critical information.	The EIS has been revised based on all substantive public comments on the Draft EIS. Narrative in the executive summary has been shortened, as appropriate.
552	79	79.5	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	8-MISC	The draft EIS/draft RMPA could use also some additional editing to eliminate some of the redundancy. In particular, the Executive Summary is too long and some of the information presented on the Purpose and Need is could be shortened since it is discussed in more detail in Chapter 1.	The EIS has been revised based on all substantive public comments on the Draft EIS. Narrative in the executive summary has been shortened, as appropriate.
553	79	79.6	New Mexico Department of Cultural Affairs Historic Preservation Division	Ensey	8-MISC	At this point in time, the NMSHPO does not support one alterative over the other as it was very difficult to evaluate the alternatives as they relate to the identification and assessment of effects to historic properties. It is my understanding that the Agency Preferred Alternative is a combination of the proponent preferred and proponent alternative segments Pl, P2, P3, P4a, P& and local alternatives LD3a, LD4, and LD4-option 5	As discussed in section 2.10.5 of the Draft EIS, the Agency Preferred Alternative for the New Build Section would include Proponent Preferred segments P1, P2, P3, P4a, and P7 in combination with local alternatives LD3a, LD4, and LD4-Option 5 for a total of 244 miles. The Agency Preferred Alternative for the Upgrade Section would include Proponent Preferred segments U1a, U1b, U2, U3a, U3b, U3c, U3d, U3f, U3g, U3h, U3i, U3k, U3l, U3m, and U4, in combination with local alternatives TH1a and TH1-Option around Tumamoc Hill, and MA1 near the Marana Regional Airport. Tables 2-15, 2-16, 2-17, and 2-18 (previously tables 2-11, 2-12, 2-13, and 2-14 in the Draft EIS) have been revised in the EIS to include additional detail on anticipated impacts to cultural resources. Please note that as discussed in the EIS, the Agency Preferred Alternative for route groups 1 and 2 avoids any impact to the El Paso and Southwestern "Southline" Railroad, which runs along several segments of potential southern routes.
563	80	80.1		Magruder	8-MISC	I strongly recommended approval of the Southline Project. I propose changes at the Apache Generation Station.	Statement of preference.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
564	80	80.2		Magruder	8-MISC	I do NOT recommend its competitor, the SunZia Project be constructed, as Southline has vastly superior capabilities. These two significant issues should be in either a Supplemental EIS or the Final EIS.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. The not yet constructed SunZia project is considered as a reasonably foreseeable action, and the potential impacts of both SunZia Southwest Transmission Line and the Southline Project are considered in section 4.21.
565	80	80.3		Magruder	8-MISC	Since 2000, Santa Cruz County, Arizona, has been had its power constrained due to limitations on the existing Western Area Power Administration (WAPA) transmission line that serve my county. The Southline system removes this issue, provides greatly improved reliability and will be very beneficial for all in Southern Arizona, including customers for every electric utility including all the rural electric cooperatives, Tucson Electric Power Company (TEP), and the Arizona Public Service Company (APS). Our grid will be much stronger and robust. A similar transmission line proposal by SunZia does not provide any of these benefits. Further, this project also provides a cost- effective solution to meet the Environmental Protection Agency (EPA) green house gas (GHG) mandates for the Apache Power Plant, near Willcox, Arizona.	This is a statement of preference. This alternative is outside the scope of the Southline EIS.
566	80	80.4		Magruder	8-MISC	Unfortunately, this version of the Draft EIS for the Southline Transmission Project did not include such an alternative to reduce the GHG impacts from the Apache Power Plant or compare this project with a competing proposed transmission project, the SunZia Transmission Project, also being evaluated by the same BLM Office. Both of these omissions are serious and must be corrected in either a Supplemental EIS or in the Final EIS for the Southline Project.	The BLM and Western developed alternatives to the proposed route in order to address issues raised by Federal land management, State and local agencies, and the public. This alternative is outside the scope of the Southline EIS.
568	80	80.6		Magruder	8-MISC	Increased Power Availability. This project resolves the power requirements that have existed for several decades for those living in Southern Arizona and New Mexico/El Paso because of the reuse and upgrading of the existing substations. These eleven substations are all vital customer interconnections with the Southline Project.	The comment accurately reflects the objectives of Southline Transmission, LLC, as described in section 1.3 of the Draft EIS.
569	80	80.7		Magruder	8-MISC	Increased Reliability. One important feature of this project is the new short interconnection with the TEP Vail Substation, one of the three major substations for the Tucson metropolitan area. This interconnection will permit TEP to use power from the Southline whenever TEP's other transmission lines are having difficulties. Due to the increased forest fires that frequently impact TEP's power sources, this system will provide a much-needed "second" line for this region. In addition, this is a double-circuit system that also increases reliability by having redundant circuits in case one of the circuits has a fault.	The comment accurately characterizes one of the objectives of Southline Transmission, LLC (Improve Reliability of the Electric Transmission Grid in Southern New Mexico and Arizona), as described in section 1.3 of the Draft EIS.
570	80	80.8		Magruder	8-MISC	Resolving the EPA Mandate for the Apache Generation Station. If the ACC-approved and permitted Bowie natural gas power plant was located near the existing coal-fueled Apache Power Plant and upgraded Apache Substation near Willcox, then this issue can easily be resolved, since one of the two generators in planned to be converted to natural gas then the "Bowie" plant could easily replace the other half of the Apache plant and greatly reduce the existing GHG issues that involve this plant. This issue did not appear to be discussed in the Draft EIS.	This alternative is outside the scope of the Southline EIS.
571	80	80.9		Magruder	8-MISC	Removal of a Possible El Paso Constraint. There has been reported by the Federal Energy Regulatory Commission (FERC) that there are a possible constraints on the transmission lines that connect El Paso to the Western Interconnection (some doubt if this really exists) to the west. If so, then Southline has the necessary additional capacity and reserve to eliminate any such constraint.	The BLM and Western developed alternatives to the proposed route in order to address issues raised by Federal, State and local agencies, and the public. This alternative is outside the scope of the Southline EIS.
587	82	82.6	SunZia	Wray	8-MISC	Cite specific page numbers or relevant identifying information to each piece of material referenced and relied upon in the Draft EIS.	The literature cited style in the Draft EIS is based on Government Printing Office (GPO) publication standards and meets requirements of the Code of Federal Regulations. Specific page numbers are included when referencing report pages specifically.
590	82	82.9	SunZia	Wray	8-MISC	The Draft EIS does not contain citations with sufficient specificity to the resource reports. See e.g. 43 C.F.R. § 46.135 (b) ("Citations of specific information or analysis from other source documents should include the pertinent page numbers or other relevant identifying information.") Instead, all BLM and Western stated with respect to these resource reports, which form the basis for the baseline upon which the analysis is conducted in the Draft EIS, is that "[t]he contents of that report are used herein without specific reference." This is a specific statement acknowledging the failure and refusal to comply with the requirements of 43 C.F.R. § 46.135. While a NEPA document may rely upon materials incorporated by reference, it can only do so by complying with the regulations governing incorporating materials by reference.	The literature cited style in the Draft EIS is based on Government Printing Office (GPO) publication standards and meets requirements of the Code of Federal Regulations. Specific page numbers are included when referencing any CH2M Hill resource reports specifically. Otherwise, the CH2M Hill resource reports are treated as any other source material in the Draft EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
575	80	80.13		Magruder	8-MISC	b. Increased Power Availability. The SunZia proposal bypasses all existing substations (except Apache), including by passing all the substations near and serving Tucson, a known power sink up to 750 MW in the summer. TEP needs additional power resources to meet these load requirements. SunZia does not serve any southern Arizona or New Mexico/El Paso customers.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. The not yet constructed SunZia project is considered as a reasonably foreseeable action, and the potential impacts of both SunZia Southwest Transmission Line and the Southline Project are considered in section 4.21.
576	80	80.14		Magruder	8-MISC	c. Increased Reliability. The SunZia proposal does not improve reliability for any customers in Southern Arizona or New Mexico/El Paso.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. As discussed in section 1.2 of the Draft EIS, BLM must respond to Southline's request for ROW, per FLMPA (per 43 U.S.C. 176(a)(5)). Western's evaluation of whether the Southline Project is in the public interest is part of the process whereby Western determines whether the Project is eligible to receive funding from Western's Borrowing Authority under Section 402 of the American Recovery and Reinvestment Act of 2009 (PL 111-5). Western has not made a decision on whether to provide funding to the Southline Project. The not yet constructed SunZia project is considered as a reasonably foreseeable action, and the potential impacts of both SunZia Southwest Transmission Line and the Southline Project are considered in section 4.21.
30	13	13.1	San Carlos Apache Tribe		8-MISC	Concurrence with Report findings & thank you. Additional Information – We agree with project as long as the work stays within ROW & Doesn't destroy non-disturbed areas & cultural material.	Thank you for your comment. Comment noted.
577	80	80.15		Magruder	8-MISC	d. Resolving the EPA Mandate for the Apache Power Plant. The SunZia proposal does not assist in resolving this issue at the Apache Substation.	The BLM and Western developed alternatives to the proposed route in order to address issues raised by Federal land management, State and local agencies, and the public. This alternative is outside the scope of the Southline EIS. The SunZia project was subject to its own detailed EIS, and the commenter's concerns were best directed at that process for appropriate consideration.
578	80	80.16		Magruder	8-MISC	e. Removal of a Possible El Paso Constraint. The SunZia does not assist in resolving this issue.	Noted.
797	87	87.1	Department of Defense (DOD) Siting Clearinghouse	Aimone	9-NEPA	The Department of Defense (DoD), in coordination with its Military Departments does not object to the agency preferred alternative route specified in the Southline Transmission Project draft Environmental Impact Statement. However, to preserve DoD's mission capabilities into the foreseeable future at the Buffalo Soldier Electronic Test Range (BSETR) at Fort Huachuca, Arizona, we request that any Right-of-Way (R/W) agreement between the applicant and the Bureau of Land Management incorporate the attached stipulations.	Thank you for your comment. Comment noted.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
798	87	87.2	Department of Defense (DOD) Siting Clearinghouse	Aimone	9-NEPA	However, to preserve DoD's mission capabilities into the foreseeable future at the Buffalo Soldier Electronic Test Range (BSETR) at Fort Huachuca, Arizona, we request that any Right-of-Way (R/W) agreement between the applicant and the Bureau of Land Management incorporate the attached stipulations. The Department of Defense request that any Right-of-Way agreement between the applicant and the Bureau of Land Management on the Southline Transmission Project incorporate the following stipulations: • Prohibit connections of any type to the transmission line on any portion of its route crossing BSETR and out to a distance of one mile from the range boundary. Such connections include substations , transformers and converter stations; • Opportunity to "micro-site the transmission line and associated towers to shield BSETR test sites from Electromagnetic Effects (EME); • Utilize electromagnetic interference reducing construction techniques and/or special construction to minimize EME; • Cooperate with BSETR to measure and establish an EME "floor value," including the cumulative effects of any existing transmission lines in the utility corridor ; • Develop and implement an enhanced transmission line maintenance program to correct material conditions when EME is detected above the mutually agreeable "floor value," and • Provide curtailment of transmission line operations during a specified period of time each year or as required by the BSETR of Fort Huachuca to implement short suspense critical testing, with total outage time and coordination measures to be developed in a balanced manner to meet both DoD and developer requirements.	Thank you for your comment. These stipulations were included in table 2-7 in the Draft EIS (now table 2-8 in the EIS) as design features for Military Operations. The stipulations are considered PCEMs that would be complied with in full (they are not selective); see section 2.4.6 of the EIS.
799	88	88.1	Liberty Land and Cattle; Y Cross Management Group	Way	7-LAND USE	I own a tract of land at the southern tip pf the Wilcox Playa in southern Arizona and have received an undated letter with maps regarding a route variation for the “Southline Transmission Line EIS”. I would like to know how this variation may impact my property and/or rights. Please advise.	BLM responded with a map showing Project location in relation to Mr. Way’s property In February 2015. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize impacts to wildlife at the Willcox Playa. Route variation P7a is not a part of the Agency Preferred Alternative, as described in section 2.10.5 of the EIS. Segment P7a would intersect Mr. Way’s property south of Willcox Playa. A discussion of potential impacts on property values and rights is included in the EIS in section 4.15.
800	89	89.1		Ottens	9-NEPA	At least four alternate routes are shown on the map you enclosed. Assuming the route labeled P7a is under consideration, the following objections apply: The route does not, as stated, avoid impacts upon migratory Sandhill Cranes, since they routinely feed in fields and other areas traversed by the proposed line. This behavior is similarly important to the nesting area since it provides sustenance for the cranes during the nesting season.	BLM responded in February 2015. Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize (not avoid), impacts to wildlife at the Willcox Playa. All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS. Per Draft EIS comment letters from the FWS (letter # 71) and AGFD (letter #67), route variations P7a through P7d would be farther away from known roost sites and would likely be at a location within the crane’s flight paths where the birds are of sufficient altitude that a strike would be very unlikely. The AGFD has provided additional mitigation measures to offset impacts to wildlife habitat along segment P7 in the Willcox Playa area, which have been added to the EIS as PCEMs in table 2.8.
801	89	89.2		Ottens	9-NEPA	The modified route, in any of the variations, does not follow an active pipeline as stated. Indeed, it does cross the only active gas line in at least two places, coming close to an existing compressor plant at the eastern end of Arzberger road. If a pipeline is assumed to follow or lie beneath Narita Lane, I am advised that this gas pipeline is abandoned from a tap serving Willcox (lying north of State Route 186) southward to the vicinity of the compressor plant and that the right-of-way has reverted to the adjacent property owners. I note also that Narita Lane is the only access to the western properties within Chiricahua Trails Ranches subdivision to the east of the Land. Should the lane be blocked, we will not have access to our home.	The letter you received indicated that the route variation P7a follows an existing gas line, not necessarily an active gas line. As noted in table 2-8, prior to the start of construction, Southline and its construction contractor would 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.
802	89	89.3		Ottens	9-NEPA	Your letter indicates that the route skirts the eastern edge of the agricultural area. This is in error; the lines pass through the areas now used and planned for expansion of viticulture, the growing of wine grapes. The area of the Willcox Step is prime agricultural land for this use, presently accounts for approximately 70 percent of the high-quality wines produced in Arizona, and will continue to expand for the foreseeable future. Please note that the growing number of tasting rooms and two annual wine festivals have become major income generating events Willcox.	Error noted. Sections 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations) in this EIS include a discussion of potential impacts to farm and rangelands, including vineyards.
803	89	89.4		Ottens	9-NEPA	Choosing a route that circumnavigates the Playa seems an inelegant solution to your problem. Either following the existing power line across the Playa or following I-10 to AZ191 to the Apache Power Plant would seem the most reasonable route. The cranes are already used to the lines across the Playa.	The EIS considers alternatives paralleling the existing transmission line across the playa (see P7), as well as along I-10 (see local alternative WC1). Statement of preference noted.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
804	90	90.1	Tucson Airport Authority	Coyle	9-NEPA	Thank you for the opportunity to comment on the proposed route variation for the Southline Transmission Line EIS. At this time, the TAA supports the proposed relocation of the transmission route. It should be noted that FAA Form 7460-1 will need to be filed before physical construction can occur within the Tucson International Airport Obstacle Free Zone.	Statement of preference noted. Information regarding FAA Form 7460-1 has been added to section 3.18 of the EIS.
805	91	91.1	Rhumb Line Vineyard	Myers	9-NEPA	I just became aware of the proposed power line project that's less than 1,400 ft from my property. We are located south of Willcox off of Robbs Road. I found a presentation on the BLM website which stated that comments will be received until July 10, 2014. Is this the most up to date information on the project? I was hoping to make comments.	BLM responded with a map showing Project location in relation to Mr. Myer's property In February 2015. Segment P7a would be located just east of, and along S. Wayward Wind Road (east of Rhumb Line Vineyard). Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. Sections 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations) in this EIS include a discussion of potential impacts to farm and rangelands, including vineyards.
806	92	92.1		Arnaud	7-LAND USE	I am owning the parcel APN 205-12-186 between the Apache Power Station and Sandal Street (see attachment), Does your project is going to touch my land? I plan to plant trees there! so I would like you avoid you put anything on that parcel. Could you please confirm and eventually to send a more detailed map from that specific area?	BLM responded with a map showing Project location in relation to Mr. Arnaud's property In February 2015. Mr. Arnaud's property is located south of segment U1a and west of route variation P7a. The proposed Project would not touch his land. The potential impacts of all project alternatives (including the route variations) are considered in chapter 4 of the EIS.
807	93	93.1	Questa Mine, Chevron Mining, Inc.	Schoenbacher	9-NEPA	Can I get the shapefiles that affect or come near Parcel 205 11 061. I received the letter and would like to know what is the next step and where my voice comes into play as a property owner.	No shapefiles were provided; however, a detailed map was offered to the landowner. Mr. Schoenbacher's land is located west of the existing Apache Substation; the proposed Project would not intersect his property. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
808	94	94.1	Copper State Plastering	DesRochers	9-NEPA	I just received the letter from Bill Childress regarding a Proposed route variation and the BLM EIS for the Southline Transmission Line. It appears that this new route will go through my property located at 9035-9049 South Eisenhower Road. If this indeed goes through my property what will this mean to me?	BLM responded with a map showing Project location in relation to Mr. DesRochers's property In February 2015. Segment U3a (the existing Western line) is located south of Mr. DesRochers's property. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
809	95	95.1	Chase Farms, LLC	Jantz	9-NEPA	This letter is in response to notification – 1793 (L000). I wish to urge you to reconsider the proposed new "route variation" marked as "P7a".	Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. Statement of preference noted.
810	95	95.2	Chase Farms, LLC	Jantz	16-PHS	As a manager of a large pecan orchard adjoining the new proposed route of a major electrical transmission line, I am concerned for the safety of my workers, as the route appears to be located on, or very near, a major portion of the farm (P7a, P7c, & P7d). We have employees performing manual pruning of trees & other work that we are unable to do with equipment. A second but equally valid concern is the helipad & hanger which has recently been constructed & finished at the north east corner of the farm. The current landing approach is from the east. A large transmission line would compromise the safety of landing a helicopter at this location. Thirdly, there has also been a new residence constructed at the same north east corner of farm. I am concerned about health issues of living so near a major electric transmission line.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential public health and safety impacts are considered in sections 3.16 and 4.16.
811	97	97.1		Robbs	7-LAND	I own a rental property at a location in the Kansas Settlement near the proposed route variation of the Southline Transmission Line. My property is at the intersection of Arzberger Road and Wayward Winds Road and it appears from the map that it is located directly on the path of the proposed line. I live near Seattle, WA but may like to retire at this house in a few years. It is currently being rented to Doug Meyer so you may have sent him information about this proposed route . I just learned about this from my neighbors at Zapara Vineyards. This is very concerning because I would like to have a wine tasting room on my property there when I retire.	BLM responded with a map showing Project location in relation to Mr. Robb's property In February 2015. Mr. Robb's property is located just west of segment P7b. Route variation P7b is not included in the Agency Preferred Alternative in the EIS. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
812	97	97.2		Robbs	16-PHS	In addition there are negative health effects being near a high voltage transmission line.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential public health and safety impacts are considered in sections 3.16 and 4.16.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
813	98	98.1		Young	9-NEPA	Call from Mr. Young indicating that links to the web site did not work. Where the line is coming in relation to his property	BLM verified that the project website was working, and responded with a map showing project location in relation to Mr. Young's property In February 2015. Segment U3a (the existing Western line) and route variation U3aPC are located north of Mr. Young's property.
814	99	99.1		Walker	9-NEPA	Call from Mr. Walker regarding the letter he received on the proposed Southline local routing options. Where is the line in relation to his property.	BLM responded requesting an address in order to provide a project map. No response.
815	100	100.1		Gabriele/ Neely	9-NEPA	I received the letter regarding the Southline Transmission Line. Several years ago I had a similar situation with a Pipeline. I am curious, what is the protocol for the land owners? I live in New York but do visit the property on a yearly basis to check on it. I am aware (or it was the last time I visited it) that there is not much of an investment or future as a retirement property for me. This property was passed down to me from my parents who purchased it while stationed overseas with the Army during the 1970's. I hold onto it thinking someday during my lifetime it will have some value. If the Transmission Line does go through it what will that do to the future of the land? Does it help or hurt it?	BLM responded with a map showing Project location in relation to Ms. Neely's property In February 2015. Ms. Neely's property would be located just south of route variation P7a. Please note that P7a is not included in the Agency Preferred Alternative in the EIS. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
816	101	101.1		Carbonneau	9-NEPA	This is the first we have heard of this potential invasion of our property. We have never been asked, involved or contacted regarding use of our property lots. we find your letter stamped 12/16/14 to be offensive, rude and assuming. The only fact in your letter is-IT IS OUR LAND.	BLM responded in February 2015 requesting an address in order to provide a project map. No address provided. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
817	101	101.2		Carbonneau	8-MISC	We do not grant permission for your project either on, through, near under or above our building lots	Comment noted. As described in section 2.9.1 of the EIS, landowners would be contacted to obtain right-of-entry, as needed.
818	101	101.3		Carbonneau	13-SOCI	Your project defaces, devalues and destroys our property as well as disrupting our property views. You have no right of way from us. We purchased these 3 joined building lots for our family's future, not yours.	The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1, in terms of visual impacts in section 4.10, and in terms of property value in section 4.15 of the EIS.
819	102	102.1	Zarpara Vineyard	Jorve	9-NEPA	Since the modified route does not appear to be one of those originally presented to the public or considered during public hearings, will there be another round of public comments and/or hearings so that impacted people and businesses can benefit from an in-person presentation and comments can be gathered on the modified route? What is the process at this point?	BLM responded In February 2015. Mr. Jorve's property is located west of route variation P7b; please note that P7b is not included in the Agency Preferred Alternative in the EIS. There will not be any additional public meetings hosted by the BLM and/or Western. Public comments are accepted anytime in the EIS process. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record. The potential impact of the proposed transmission line on property in terms of land use is described in section 4.11.1 and in terms of property value in section 4.15 of the EIS.
820	102	102.2	Zarpara Vineyard	Jorve	7-LAND	The letter states that the modified route "skirts the edge of the agricultural area", which is true in terms of farm crops such as corn or cotton, but you may not be aware that the modified route cuts through an area that has been developing in recent years with wine grape vineyards and tasting rooms. This area is locally known as the Willcox Bench. This area begins roughly at the 2 mile marker east from Kansas Settlement Road on either Robbs Road or Arzberger Road, where the elevation reaches about 4200 feet, and follows the alluvial slope up towards the foothills of the Dos Cabezas Mountains. There are currently 11 vineyards in the area, 3 of which operate tasting rooms. Our vineyard, Zarpara Vineyard, was planted in 2010, and was the seventh vineyard on the Bench at the time. More vineyards are planned, and hopefully, more tasting rooms as well. We are concerned that the transmission line will detract from the natural aesthetics that we think are important to our wine tasting room business. This may sound superficial, but we think the aesthetics of this area play an important role in our business. We are also concerned that the transmission line might chill further development of vineyards and tasting rooms in this area. The development of the wine industry in this area is important to us personally because we think we need more vineyards and tasting rooms on the Willcox Bench to draw in more tourists, and it is also important to the Willcox region because it brings in needed tourist dollars and provides employment.	Error noted. Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
821	104	104.1		Sakellarakis	8-MISC	Thank you for the noce about the proposed power line routs. I've shared the info with my nieghbours, and we unanimously conclude that it would be best for everyone that lives here if the "NEW route variation" is used, the one that goes north of the residences on the north side of Old Vail Connection Rd. That variation/route is simply more logical, just simply from our perspective as residents here. Hopefully the NEW route might help, perhaps from a maintenence perspective, its easier to access away from residential areas, I dont know but I hope there is enough incentive for you to just take the simple and better route north of Old Vail Connection.	Thank you for your comment. Statement of preference noted.
822	105	105.1	Deep Sky Vineyard	Asmundson	9-NEPA	I received a copy of letter 1793(L0000) from my neighbor Mark Jorve. We own 20 acres of vineyards between Robbs Road and Arzberger Road to the East of Kansas Settlement Road. We were not notified of the modified route of the transmission line.	BLM responded in February 2015. Letters were mailed to potentially affected property owners with parcels located within 0.5 mile of the proposed Project route variations.
823	105	105.2	Deep Sky Vineyard	Asmundson	19-VIS	This new route would be extremely detrimental to the local vineyards. There are 11 vineyards in the area and 3 of them have tasting rooms. We also plan to build a tasting room in the next few years. These businesses bring tourists and jobs to the Willcox area. They support the restaurants, hotels, shops and gas stations in the southeastern section of Arizona. The transmission line would detract from the natural beauty of the area and would limit future vineyard development. Your letter states that it skirts the edge of the agricultural area. It may not matter to a cotton farmer, but it would be visible from our vineyard and would severely impact our decision to build a tasting room. It may not matter to a cotton farmer, but it would be visible from our vineyard and would severely impact our decision to build a tasting room.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
824	105	105.3	Deep Sky Vineyard	Asmundson	9-NEPA	Will there be further hearings on this matter due to the route variation?	There will not be any additional public meetings hosted by the BLM and/or Western. Public comments are accepted anytime in the EIS process. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record.
825	106	106.1	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	As I understand it, the presently favored route takes these new lines right through the heart of Arizona's wine country. While grape vines may not care where the power lines are routed, tourists sure do, and they are the primary source of revenue in this business.	BLM responded with a map showing Project location in relation to Mr. Gonnerman's property in February 2015. Mr. Gonnerman's property is located east of route variation P7a. This segment is not included as a part of the Agency Preferred Alternative in the EIS. Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
826	106	106.2	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	Naturally those of us with vineyards in the area would like the power lines to follow the originally proposed route which went very near the playa.	Thank you for your comment; statement of preference noted.
827	106	106.3	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	Now that new routes are being proposed, will there be a comment period?	There will not be any additional public meetings hosted by the BLM and/or Western. Public comments are accepted anytime in the EIS Process. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record.
828	107	107.1	Chiricahua Ranch Vineyards	Carbonneau	8-MISC	For the record: my e-mail was sent on 12/23/14-not on 1/13/15. It took almost a month and a half for a response.	Discrepancy noted here and in the Project Record.
829	107	107.2	Chiricahua Ranch Vineyards	Carbonneau	8-MISC	I suggest you check your maps to insure you do not trespass on my property.	As described in section 2.9.1 of the EIS, landowners would be contacted to obtain right-of-entry, as needed.
830	107	107.3	Chiricahua Ranch Vineyards	Carbonneau	19-VIS	I have no intention of you destroying my families future housing lots, interfering with property views, and the cause of loss of use and value of the three connecting lots. How would you like to look out your window and see lines/structures on the property that you own and pay taxes on--- let alone the environmental impact on people that it will have	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
831	108	108.1	Rhumb Line Vineyard	Myers	9-NEPA	Thanks for taking my call today regarding the Southline Transmission Project. If you could send me any current maps and timelines on the project, that would be great.	BLM responded with a map showing Project location in relation to Mr. Myer's property In February 2015. Segment P7a would be located just east of, and along S. Wayward Wind Road (east of Rhumb Line Vineyard). Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
832	108	108.2	Rhumb Line Vineyard	Myers	19-VIS	My wife and I own 40 acres off of Robbs Rd and Wayward Winds. We bought the land almost three years ago. We've planted 10 acres of grapevines and had plans to open a winery and tasting room. We are definitely rethinking this decision if, in fact, we'll have high voltage lines running next to our property. This could be a big set back for the AZ Wine and tourism industry. A majority of the wine grapes grown in AZ come from this small area of the state and many wineries have seen increases in traffic to their vineyards over the last 5 years. Most of this increased traffic has come from the attention that these unique wines have be given nationally; Food & Wine Magazine San Francisco Chronicle, Today Show (CBS tomorrow morning), etc. I'm sure that everyone has a concern about how unsightly the power lines can be. I believe this could have a drastic impact on our developing wine and tourism industry, especially in a part of the state that hasn't seen much positive economic possibilities in quite some time.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
833	109	109.1	Zarpara Vineyard	Jorve	9-NEPA	Either Wayward Winds or Narita Lane is bad news for the wine industry on the Willcox Bench, so I will be opposing this route, and will be encouraging other stakeholders to bring pressure to bear to hopefully prevent this transmission line coming through the Willcox Bench or anywhere else that places it between the Willcox Bench and the mountain views. This matter is of very dire concern to my own business and the other businesses close by, but I think the implications go much further, and I will try to explain that in this email.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
834	109	109.2	Zarpara Vineyard	Jorve	13-SOCI	Executive summary: Aesthetics play a large role in the vineyard and tasting room business, and a power transmission line such as Southline would be an obvious detriment to those aesthetics, but I am concerned that the transmission line will deliver an economic calamity that will stall the growth of the wine industry in Cochise County, and not only on the Willcox Bench. I think Cochise County knows that the growing wine industry is a key component of the economic development of the county, and that the Willcox Bench is an essential part of that economic development. The power line will cut through the Willcox Bench, and to my mind, threaten the further growth of the wine industry in this particular area, and because of the unique position of the Willcox Bench in Cochise County, this could stall the wine industry in Cochise County as a whole. The Willcox Bench is a sure thing. It's the goose that lays the golden egg! The power line will force a roll of the dice to see if the wine industry will want to stay on the Willcox Bench or abandon it, as I think is very likely, and try to find a different location to continue growing.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
835	109	109.3	Zarpara Vineyard	Jorve	13-SOCI	But I am not aware of any other location in all of Cochise County that will do the same job as the Willcox Bench (further details on this below). **This is why this is so critical** The wine industry can't just pick up and move down the road. The Willcox Bench is "where it is happening", and for clear reasons, and there is no place else in Cochise County like it. First, let's define the Willcox Bench. It is roughly the strip of land starting on a line 2 miles east of KS Road (where Zarpara Vineyard is), and extending for a few miles to the east along either side of Robbs Road and Arzberger Road. It is bounded by state trust land on the north, and by land that is too low in elevation to grow grapes to the west and south. On the east side, lack of electricity and rougher terrain are the limiting factors. If the Willcox Bench is allowed to grow, we will see vineyards, tasting rooms, B&Bs, resorts, restaurants, etc, take over this area. Zarpara Vineyard was the first tasting room on the Willcox Bench when it opened in 2012. Now there are three. Another vineyard wants to open a tasting room and a bistro. Yet another vineyard wants to open a resort. A B&B has been proposed for Wayward Winds. When Zarpara Vineyard planted its vines in 2010, we were the 7th vineyard on the Bench. Now there are eleven vineyards on the Bench. Two more vineyards, at least one with a tasting room, are in the planning stages. So, I think I have shown that the Willcox Bench is an economic growth area, and has huge potential. The Willcox Bench is unique in Cochise County. There is no other place like it in terms of wine industry growth potential. It has the right elevation for wine grapes, a slope that reduces frost damage in the spring, good soil, close proximity to I-10 and Willcox to draw in tourists, access to electricity, and a good water supply. Let's try to find another place in Cochise County with similar potential: 1. North of Willcox. The two vineyards there (far north, one actually in Graham County) now frequently lose significant crop to frost in the spring, and are too far away anyway to have tasting rooms. The flat farm land between Willcox and those vineyards is too cold for vineyards. 2. San Pedro valley. Texas root rot. That's why you don't see vineyards there now (other than Tombstone). 3. South Sulpher Springs Valley. Controlled by an INA (irrigation non-expansion area), which means no new farming acreage can go under irrigation beyond 2 acres supplied by a domestic well (i.e. no serious vineyards). 4. West side of the Sulpher Springs Valley. Has potential, but is further away from I-10 and lacks close-by amenities like hotels, restaurants, and destinations like the Chiricahua National Monument. 5. East side of the Dos Cabezas Mountains. Too far away for customers, who mostly come from Tucson and Phoenix.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
836	109	109.4	Zarpara Vineyard	Jorve	13-SOCI	From our vantage point here at Zarpara, I'm worried that the transmission line will appear taller than Mount Bowie, so it will block out that view. It will occlude much of Dos Cabezas, so that view will be scarred and unattractive. For any future vineyards/tasting rooms positioned east of the transmission line, the view to the west (which is quite amazing!) will be blocked and dominated by the transmission line. Who would want to open a tasting room close to or under the transmission line? If the transmission line comes through the Willcox Bench: 1. Property values will likely go down. Not such a bad thing if you want to buy some land and plant a vineyard. 2. So let's say a buyer plants a vineyard, but they won't open a tasting room there because of the ugly, eyesore transmission line. It's a more difficult and costly proposition to put a tasting room somewhere other than the vineyard. I think buyers will be discouraged. 3. So, you have three tasting rooms on the Willcox Bench now, and maybe not any more in the future. And you have eleven vineyards on the Willcox Bench now, and maybe not any more in the future. The Willcox Bench needs more vineyards and tasting rooms! More vineyards and tasting rooms means more customers for everyone here. What about the B&Bs and resorts? Would you open a B&B under a transmission line? And if there are only a limited number of tasting rooms on the Willcox Bench, then there is no market for a restaurant. Conclusion: By routing the transmission line through the Willcox Bench, my own business is threatened, and more, the growth of the entire wine industry on the Willcox Bench could stall and come to an end. Due to the uniqueness of the Willcox Bench in Cochise County, this could stall the growth of the wine industry in the county as a whole	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
837	110	110.1		Robbs	8-MISC	Thank you for sending me the map of the proposed corridor of the Southline 345 kilovolt transmission line which runs along Wayward Winds road in the Kansas Settlement near Willcox, AZ. Since I don't know how much the county is aware of this issue I have cc'd the Cochise County Board of Supervisors, the Cochise County Recorder and the Cochise County planning and zoning department.	BLM responded with a map showing Project location in relation to Mr. Robb's property In February 2015. Mr. Robb's property is located just west of segment P7b. Route variation P7b is not included in the Agency Preferred Alternative in the EIS. Cochise County is a cooperating agency, as noted in the executive summary, chapter 1, and chapter 5 of the EIS.
838	110	110.2		Robbs	8-MISC	I am opposed to this high voltage line running along Wayward Winds road and Narita lane for many reasons:	Thank you for your comment; statement of preference noted.
839	110	110.3		Robbs	16-PHS	1. The route along Wayward Winds Road makes a detour between my house at 4915 E .Arzberger road and my uncle's and aunt's home, RL and Sally Robbs at 4995 E. Arzberger Road. This cuts directly through my father's property, Floyd Robbs and RL Robbs' property. Have you made any effort to contact them? I never would have known about your plans unless one of the other property owners had told me about this. Shouldn't you contact the county recorder to determine who lives along this route before you make a decision to take over their property for a high voltage transmission line? 2. This high a voltage is not healthy to people living nearby despite what studies you may cite. There are long term negative effects of living organisms near this high of an electric voltage 3. This line isn't even necessary and it is being constructed only to benefit a billionaire business man, Ray L. Hunt. How would Mr. Hunt feel if a high voltage line was being planned near his house? 4. The Kansas Settlement has recently been discovered to be one of the premiere wine growing areas of the state and the country. The number of vineyards and wineries in that area has been growing each year. Most of the people putting in these wineries are retirees who have worked and saved their entire lives for this dream. Now if that line goes in those visions will be destroyed. It is a known fact that transmission lines will decrease property values tremendously.	Cochise County is a cooperating agency, as noted in the executive summary, chapter 1, and chapter 5 of the EIS. Letters were mailed to potentially affected property owners with parcels located within 0.5 mile of the proposed Project route variations. Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential public health and safety impacts are considered in sections 3.16 and 4.16.
840	110	110.9		Robbs	19-VIS	Additionally the high towers and wires will create a hideous eyesore of disastrous proportions marring the beautiful vistas of the Dos Cabezas mountains.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources). Three visual simulations from area vineyards have also been added to appendix K of the EIS.
841	110	110.10		Robbs	7-LAND	The wine industry of small boutique owners depends heavily on tourism with people visiting local wineries. Most of the wine tourists are from urban areas seeking an escape from their industrialized wired cities.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
842	110	110.11		Robbs	9-NEPA	Please let me know what can be done to stop these lines being built through the Kansas Settlement and better yet to stop this project entirely.	Thank you for your comment; statement of preference noted. Public comments are accepted anytime in the EIS process. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
843	111	111.1	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	May I assume that when comments are added to the project record, they have no impact on the discussion?	Public comments are accepted anytime in the EIS Process. Comments received as a result of outreach regarding the route variations are considered here in the Final EIS and are included in the Project Record.
844	111	111.2	Chiricahua Ranch Vineyards	Gonnerman	8-MISC	I've included my property address and mailing address below. I'd definitely like to be informed	Thank you; you have been added to the project mailing list.
845	111	111.3	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	It's proven difficult to find information about how this project has developed thus far, and how it's ended up along the current proposed corridor.	The Draft EIS was published in April 2014, is available online, and describes the proposed Project and alternatives, as well as the potential impacts. As indicated in the letter to you in December 2014, the route variations new to the EIS are being considered based on comments from the AGFD and public regarding potential impacts to migratory birds at Willcox Playa.
846	111	111.4	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	First, I understand that the first proposed route went north of Willcox. Why was that route removed from consideration?	The EIS considers alternatives paralleling the existing transmission line across the playa (see P7), as well as along I-10 (see local alternative WC1). These alternatives are analyzed in detail in the Draft EIS and are still being considered as routing options.
847	111	111.5	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	Second, I understand that the route between Kansas Settlement Road and the Playa was taken out of consideration due to concerns that AZ Fish & Game had about the Sandhill Cranes. What evidence did Fish & Game present that these power lines would pose a risk to the birds?	As indicated in the letter to you in December 2014, the route variations new to the EIS are being considered based on comments from the AGFD and public regarding potential impacts to migratory birds at Willcox Playa. The Draft EIS includes an analysis of the potential impacts to migratory birds, including sandhill cranes. Additionally, AGFD has developed additional mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
848	111	111.6	Chiricahua Ranch Vineyards	Gonnerman	7-LAND	The current proposed routes are far enough from my property so as not to have a direct impact on my business plans, but they could have a devastating impact on the fledgling wine industry in the area and the business plans of many of my friends and neighbors. It's actually very hard to make a living in this industry, especially as a small producer just starting up. The only way that many survive is by selling wine directly to consumers out of their vineyard tasting rooms, and the best way to do that is to host events.	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
849	111	111.7	Chiricahua Ranch Vineyards	Gonnerman	19-VIS	Tourists just won't be interested in attending events at properties near large power lines. They not only impact the aesthetics	Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
850	111	111.8	Chiricahua Ranch Vineyards	Gonnerman	16-PHS	but many people still believe that proximity to power lines carries health risks. Now I know that studies long ago refuted such claims, but that doesn't change the way people think. Many tourists will simply avoid spending time at vineyards bounded by these huge power lines. Most of Arizona's wine grapes are grown in the Kansas Settlement area because it has the right elevation and soil to be a good place to grow grapes, and water is plentiful. There just isn't any place else for us to go. Any higher and it's too cold, any lower and it's too warm (or conversely too cold, due to temperature inversion). Even if there was another area we could move to, no one could afford to. Average costs for starting a vineyard run $25,000 per acre. No one can afford to simply walk away from that kind of investment and start over somewhere else.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential public health and safety impacts are considered in sections 3.16 and 4.16. Based on this and other similar comments from area landowners the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry.
851	112	112.1		Siegel	9-NEPA	the proposed transmission lines are just steps from my front door and my future vineyard property which is up for sale. As a senior citizen on a fixed income, I beg you to find another route for this lines in Willcox or surrounding grazing areas.	BLM responded with a map showing Project location in relation to MS. Siegel's property In February 2015. Ms. Siegel's property is located just west of route variation P7a. Thank you for your comment. Statement of preference noted.
852	113	113.1	Pillsbury Wines Vineyard & Winery	Pillsbury	3-CUL	This is land that was legendary, from the early Chiricahua Apaches, the Coronado Trail forged by the Conquistadores, Cochise's own continual outwitting of the US Cavalry, and his having the last laugh when he retreated to Cochise Stronghold across the valley in the Dragoons. Never caught, never photographed, still in an unknown burial site. Just over the hill past the ghost town of Dos Cabezas is Fort Bowie and the Chiricahua National Monument. Nestled closer to the Dragoons are the ghost towns of Pearce and Cochise.	Thank you for your comment. The EIS discusses the cultural history of the area (see section 3.9) and specially designated lands such as national monuments (see section 3.14).
853	113	113.2	Pillsbury Wines Vineyard & Winery	Pillsbury	7-LAND	More importantly, this distant and still undiscovered valley was blessed with the most perfect soil, water, and climate for growing wine grapes, one of the most eco- friendly crops possible to grow. Wine grapes use one-seventh of the water and produce up to 10 times the income per acre of other crops.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential impacts to soils, water and climate are considered in sections 4.2, 4.5, and 4.7. The EIS also includes a discussion of viticulture as a land use in this region – see section 3.11.1.
854	113	113.3	Pillsbury Wines Vineyard & Winery	Pillsbury	13-SOCI	And this all translates into jobs in one of the most impoverished regions of the State.	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
855	113	113.4	Pillsbury Wines Vineyard & Winery	Pillsbury	7-LAND	Apart from its history and the economics, this fantastic discovery has the precious attraction, in its isolated and ancient way, of being unspoiled For most of us on the Willcox Bench, the pristine nature of this place, as yet isolated from the ravages of the industrialized world, is the essence of what our wines are showcasing to the rest of the State, and indeed the Country and the World. Pure air. Pure water. Soils as yet unpolluted. Most vineyards, like ours, organic. Vines managed and fruit harvested by hand. Fermented on-site with native wild yeasts. Talk about sustainable! In a world drowning in mass-produced, over-refined food and drink, we have an almost magical power in what we produce, and that's how we market what we do. Our Pillsbury Wine letterhead is our wine label featuring Cochise County, wild and unspoiled. Like the wines.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential impacts to soils, water and climate are considered in sections 4.2, 4.5, and 4.7. The EIS also includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.
856	113	113.5	Pillsbury Wines Vineyard & Winery	Pillsbury	7-LAND	15 years ago there were two tiny vineyards here. Now there are over 500 acres of vines, producing 74% of the grapes used in making authentic Arizona Wine. And we have barely scratched the surface. Look what wine did for Napa Valley. Staggering. And our land is perhaps 4% the cost of Napa land, labor half the price, and 10 times more plentiful. The sky's the limit. Unless of course, the sky is crossed with the massive Southline Transmission Line	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.
857	113	113.6	Pillsbury Wines Vineyard & Winery	Pillsbury	19-VIS	Imagine just the visual impact of these lines in trying to market the virginal quality of this valley. It will drive a knife into the very heart of this fairytale image, exchanging our tiny wooden poles for the massive Transmission Line.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, potential visual impacts are considered in sections 3.10 and 4.10.
858	113	113.7	Pillsbury Wines Vineyard & Winery	Pillsbury	16-PHS	Then consider the physical effect—including the electromagnetic-field-generated impact on the health of all the workers and residents nearby, plus the effect on the quality and likely quantity of our fruit.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically potential public health and safety impacts are considered in sections 3.16 and 4.16. There is no evidence to suggest that fruit in the region would be impacted by a proposed transmission line.
859	113	113.8	Pillsbury Wines Vineyard & Winery	Pillsbury	1-AIR	The line will impact the Equinoxial winds of the Spring, and the Monsoon storm cells in the late Summer.	The potential impacts of all Project alternatives (including the route variations) are considered in the EIS – specifically, air quality and climate impacts are considered in sections 3.2 and 4.2. There is no evidence to suggest that weather patterns would be impacted by a proposed transmission line.
860	113	113.9	Pillsbury Wines Vineyard & Winery	Pillsbury	13-SOCI	The Southline Transmission Line would make a devastating far-reaching difference in the Willcox Bench, the future economy of Willcox and surrounding towns, and the future of the Arizona wine industry. This line will destroy the vines, the dreams, and the livelihood of so many Arizona winegrowers who have literally hewn the Garden of Eden from these desert soils to bring this region and our State to the attention of the International community it deserves. Vines, not lines.	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15. Your opposition is noted here and in the record.
861	114	114.1		Cotignola	9-NEPA	we would love to know if you are still going to build your transmission line since Sunzia is building there	The approved SunZia project and the proposed Southline Transmission Line Project are separate ROW requests and are both being considered by the BLM.
862	114	114.2		Cotignola	9-NEPA	Are you building a brand new elic powerline project or is your project being built to replace an old elic powerline that already there.	For more Project information, see chapter 2 of the EIS. There is a New Build Section that would be new construction of a 345-kV line between the Afton substation in New Mexico and the Apache Substation in Arizona. The proposed Project would also include an upgrade of two of Western's existing 115-kV lines to a 230-kV line between the Apache Substation and the Saguaro Substation in Arizona.
863	114	114.3		Cotignola	9-NEPA	How will your project or the Sunzia project create and bring elic power poles and power lines to the very southern part of Luna County New Mexico about 30 miles south of Deming.	The not yet constructed SunZia project and Southline Transmission Line Project are separate ROW requests. A comparison of the potential impacts from these two projects is beyond the scope of analysis for this EIS, except where addressed as a reasonably foreseeable action in the cumulative effects analysis (see section 4.21). The SunZia project was subject to its own detailed EIS and the project was approved in January 2015. See chapter 2 of the EIS for a description of the Project – segment P2 of subroute 1.1 following an existing transmission line just north of Deming, New Mexico.
864	114	114.4		Cotignola	9-NEPA	Right now are there Elic Power poles & Elic Power lines along the Southern New Mexico border line	See chapter 2 of the EIS for a description of the project – large portions of the proposed Project follow existing transmission lines and other linear infrastructure in Arizona and New Mexico.
865	114	114.5		Cotignola	9-NEPA	Are you building the main Elic power pole lines, next, and will it take local Elic power companies to run & bring new Elc power lines to area right now where there is no Elic power lines right now. (for example) in our opinion South Luna County New Mexico in the future is going to see a large building boom in our opinion. So the question is this, how will the Southern end of Luna County New Mexico get it/must needed new Elic powerlines to the future ok Can you explain it to us	As stated in section 1.3.1 of this Final EIS, the proposed Project would be a transmission-only project. Southline would not purchase power from generators or sell power to others. The proposed Project, as described in chapter 2 of the Draft EIS, would interconnect with up to 14 existing stations where new or existing power generation resources could interconnect to and utilize the capacity Southline would add to the system.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
866	114	114.6		Cotignola	9-NEPA	Do you think that you can please mail us some kind of color map showing us the location more or less showing where your transmission line project will run & be built	BLM responded with a map showing Project location in relation to Mr. Cotignola's property in April 2015.
867	114	114.7		Cotignola	8-MISC	Can you keep us on a mailing list so we can get any new updates or your project being built, ok Also, oh by the way we don't own a computer so we need your time and help with this ok	Added to the mailing list.
868	114	114.8		Cotignola	8-MISC	When do you expect to being construction of your transmission line project do you know	According the Southline's WECC Phase 2 report (WECC 2015), the proposed Project is anticipated to be in service in 2017, with construction occurring prior to that.
869	114	114.9		Cotignola	9-NEPA	do you have plans to bring Elic power pole & line to Upham New Mexico where space port America is located about 90 miles north of Deming New Mexico	See chapter 2 of the EIS for a description of the Project – the Project does not extend that far north.
870	114	114.10		Cotignola	9-NEPA	are you building your project because like myself we expect a boom in New growth and new development in these new areas we would love to know ok	As discussed in sections 1.1.1 and 1.3 of the Draft EIS, the purpose of the Project is to improve reliability in southern New Mexico and southern Arizona, mitigate existing congestion, increase the ability to meet the increasing demand for electricity, and facilitate generation and public policy goals by increasing the capacity of the existing electric transmission grid. As discussed in section 4.15, the proposed alternatives could provide significant long-term benefits by increasing the ability of the grid to meet demand growth in the region.
871	115	115.1	Chiricahua Ranch Vineyards	Gonnerman	13-SOCI	Those of us involved in the wine industry in the Willcox area are very concerned about the new proposed route. No one responded during the official comment period because few were aware of this project and those that were aware were unconcerned. This is because the north route was far from the Willcox Bench and the south route was just far enough away so as not to be problematic. But, as you know, following closure of the official comment period the route moved several miles to the east going straight through the Willcox Bench where it now poses a threat to Arizona's fledgling wine industry. Arizona's wine makers depend on tourism to sell wine. Few distributors or retailers are interested in buying wine from small wineries just starting out. It's for this reason that selling direct to consumers is so vital. This requires getting tourists into the vineyard and winery, and the best way to do that is to host events. Tourists just aren't going to be interested in attending events at vineyards with these power lines nearby. This is both for obvious aesthetic reasons	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15. The potential visual impacts of the Project are discussed in section 3.10 and 4.10.
872	115	115.2	Chiricahua Ranch Vineyards	Gonnerman	13-SOCI	Tourists just aren't going to be interested in attending events at vineyards with these power lines nearby. This is both for obvious aesthetic reasons and due to the persistent belief that electromagnetic emissions are bad for one's health. That the health effects are unsubstantiated is irrelevant; it's what many believe and they will refrain from spending time near these large power lines.	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15. Potential impacts to public health and safety are considered in sections 3.16 and 4.16 of the EIS.
873	115	115.3	Chiricahua Ranch Vineyards	Gonnerman	19-VIS	Also, regarding the first point, aesthetics, would you want power lines in the background of your wedding pictures? Most would not.	The potential visual impacts of the project are discussed in sections 3.10 and 4.10 of the EIS.
874	115	115.4	Chiricahua Ranch Vineyards	Gonnerman	7-LAND	Sure, grapes can be grown right under the power lines, but selling the resulting wine would require having a second location. Few could afford that, and no one can afford to move. Starting a vineyard costs around $25,000 per acre, and no one I know can afford to walk away from that kind of investment and start over elsewhere. Even if they could, where would they go? There's a reason why the majority of Arizona's wine grapes are grown on the Willcox Bench.	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.
875	115	115.5	Chiricahua Ranch Vineyards	Gonnerman	7-LAND	There's a reason why the majority of Arizona's wine grapes are grown on the Willcox Bench. It has adequate water reserves and the right soil and climate, making it the best place in the state.	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15. The potential visual impacts of the Project are discussed in sections 3.10 and 4.10.
876	115	115.6	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	I understand that the south route was modified due to concerns about the impact on the Sandhill Cranes. This is puzzling though, considering how they fly through the area. At my property, two miles east of the new proposed (Narita Ln.) route, the cranes fly overhead at 25 to 50 feet on their migratory route. I know that they fly much higher at some points en route, but for whatever reason they don't achieve those altitudes in the Willcox area	Based on feedback from the public and cooperating agencies on the Draft EIS, new route variations (P7a, P7b, P7c, and P7d) have been included in the EIS to minimize (not avoid), impacts to wildlife at the Willcox Playa. All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS. Per Draft EIS comment letters from the USFWS (letter # 71) and AGFD (letter #67),route variations P7a through P7d would be farther away from known roost sites and would likely be at a location within the crane's flight paths where the birds are of sufficient altitude that a strike would be very unlikely. AGFD has developed additional mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
877	115	115.7	Chiricahua Ranch Vineyards	Gonnerman	9-NEPA	Please consider alternative routes. If the south route must be taken, I believe a route just west of Kansas Settlement Road would have little impact on tourism in the area and be no better or worse for the cranes	Alternatives considered in detail in the EIS are described in section 2.7. No decision on the proposed Project would be made by BLM or Western until at least 30 days after publication of the NOA for the Final EIS. Statement of preference noted.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
878	116	116.1	Merkin Vineyards	Noble	9-NEPA	Call from Mr. Noble regarding the letter he received on the proposed Southline local routing options. Concerned about health impacts and impacts to area vineyards. Caller asked if a decision had been made yet.	All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS. The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15. Potential impacts to public health and safety are considered in sections 3.16 and 4.16 of the EIS. Alternatives considered in detail in the EIS are described in section 2.7. No decision on the proposed Project would be made by BLM or Western until at least 30 days after publication of the NOA for the Final EIS.
879	117	117.1		Verris	9-NEPA	Call from Mr. Verris regarding the letter he received on the proposed Southline local routing options. Concerned about location of new route variations.	All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS.
880	118	118.1		Lynch	9-NEPA	Call from Mr. Lynch asking about the status of the EIS.	Final EIS expected to be published in 2015.
881	119	119.1		Chelenza	9-NEPA	Call from Ms. Chelenza regarding the letter she received on the proposed Southline local routing options. Concerned about location of new route variations.	All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS.
882	120	120.1		Jarvey	9-NEPA	Call from Mr. Jarvey asking about information for project.	Directed to BLM website for more information.
883	121	121.1		Gerth	9-NEPA	Call from Mr. Gerth expressing concerns about location of new route variations.	All route variations are described in section 2.7, and analyzed in chapters 3 and 4 of this EIS.
884	122	122.1	Zarpara Vineyard	Jorve	13-SOCI	1. Three more tasting rooms are on hold, making six total, pending disposition of the power line. Also, two vineyards and two homes are on hold. The tasting rooms on hold: Caduceus Cellars, Deep Sky, Kief-Joshua, Rhumbline, Send-Reckoner, and Gerths. Vineyards on hold: Kief-Joshua and Gerths. Homes on hold: Rhumbline and Gerths. (There are currently 11 vineyards on the Willcox Bench and 3 tasting rooms).	The EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.
885	122	122.2	Zarpara Vineyard	Jorve	9-NEPA	2. AZ G&F and BLM did not know about the vineyards. They have been looking at outdated Google Earth pictures, which do not show all of the vineyards. A simple drive out to the area would have shown them how the power line would be plowing through vineyards in a key economic development area. Further, there are landowners adjacent to the power line through the bench that say they didn't receive the December letter from the BLM that announced that a new route was under consideration. It may be that only those landowners in the direct path of the new route received those letters. This just goes more to the point that our community on the Willcox Bench has been denied the same process of vetting that the other routes were subjected to.	Representatives from BLM, Western, and AGFD conducted site visits to the Willcox Playa and Willcox Bench area in July 2014, January 2015, and May 2015. The May 2015 visit included a tour of 11 vineyards/landowner properties. In December 2014, letters were mailed to potentially affected property owners with parcels located within 0.5 mile of the proposed Project route variations. As noted in chapters 1 and 5 of the EIS, 35 comments have been received in response to the outreach letters. These comments have been addressed in the same manner as all public comments that were received on the Draft EIS. Based on comments received from the outreach letters and other similar comments from area landowners, the EIS includes a discussion and analysis of the Willcox Bench and vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry. The potential environmental impacts of the proposed Project and alternatives are described in chapter 4 of the EIS. Three visual simulations from area vineyards have also been added to appendix K of the EIS.
886	122	122.3	Zarpara Vineyard	Jorve	2-BIO	3. AZ G&F may think their job is done, but we need to get them back to the table. Black Forest Partners has ideas that the BLM and Western could use to work with AZ G&F to make the Proponent Preferred route acceptable to everyone involved. This is the route that follows an existing power line, and skirts the east and south banks of the Willcox Playa (and completely avoids the Willcox Bench). AZ G&F has an objection to just one specific point along that route, the place on the southwest edge of the Willcox Playa where they pump water to create a pond to attract the cranes. Black Forest suggested that the pond could be relocated. Also, we would like to see the reports which we were told AZ G&F has available which would serve to clarify their position on the P7 segment, e.g., detail numbers of birds killed by the existing power lines, number of sandhill cranes roosting at their pond, and the number of sandhill cranes present at the other roosting areas on the Willcox Playa. We would also like to see any analysis AZ G&F has of the Willcox Bench area.	BLM and Western met with representatives from AGFD and FWS in May and June 2015 to discuss their concerns regarding Project alternatives in the vicinity of the Willcox Playa Wildlife Area. AGFD has developed additional mitigation measures to offset impacts to wildlife habitat in the Willcox Playa area, specifically segment P7. AGFD mitigation measures, which include relocating Crane Lake, have been incorporated into the EIS as PCEMs in table 2-8. Additionally, the potential impacts of all Project alternatives (including the route variations) are considered in the EIS; specifically, potential impacts to sandhill cranes and their roosting sites are considered in sections 4.8.2 of the EIS.
887	122	122.4	Zarpara Vineyard	Jorve	9-NEPA	4. It's still not clear what the objections are to the northern route - the Proponent Alternative route, also known as the Environmentally Preferred Route. AZ G&F said they have no objections to the northern route.	The commenter is correct; the AGFD does not have objections to the northern route. As discussed in sections 3.11.3 and 4.11.3 of the EIS (Military Operations), there are military sensitivities to the northern route, specifically segments Ga, Gb, Gc.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
888	122	122.5	Zarpara Vineyard	Jorve	8-MISC	Again, we would like to host another tour, this time for the politicians representing this area, so that we can show you how devastating the power line would be to the wine industry on the Willcox Bench. Thank you for your time and attention to this matter.	Representatives from both Southline and BLM have attended a tour of the Willcox Bench and vineyards on separate occasions. Additionally, the EIS includes a discussion of viticulture as a land use in this region as well as a discussion of the potential economic impacts of and to the wine industry – see sections 3.11.1, 4.11.1, 3.15, and 4.15.
889	123	123.1	Robert S. Lynch & Associates	Lynch	8-MISC	This office represents the Arizona Wine Growers' Association. We are writing to you concerning a proposal first put forth last December to change the route of part of the proposed Southline Transmission Line to go through the Willcox Bench, the prime winegrowing area of Cochise County and the State of Arizona.	Thank you for your comment.
890	123	123.2	Robert S. Lynch & Associates	Lynch	9-NEPA	The Bureau of Land Management (BLM) and the Western Area Power Administration (Western) published your Notice of Intent to Prepare the Environmental Impact Statement (EIS) for this project on April 4, 2012. 77 Fed.Reg. 20411, et seq. You then published your Notice of Availability of your joint Draft Environmental Impact Statement (DEIS) on April 11, 2014. 79 Fed.Reg. 20224, et seq. The comment period closed on July 20, 2014. On December 15, 2014, you sent some landowners on and near the Willcox Bench letters advising them that the agencies had proposed a new route segment (P7a, P7b, P7c & P7d) not included in the DEIS proposals and alternatives and through an area not even evaluated for environmental and other impacts in the DEIS. It is our information that only landowners in the possible direct path of the new route were notified and adjacent owners were not.	Segments P7a, P7b, P7c, and P7d are considered variations of routes that were presented and analyzed in the Draft EIS. These minor route variations are further analyzed in detail in chapter 4 of the Final EIS. As noted by the commenter, letters were mailed on December 15, 2014 to landowners on and near the Willcox Bench. These outreach letters were mailed to potentially affected property owners with parcels located within 0.5 mile of the proposed Project route variations. As noted in chapters 1 and 5 of the EIS, 35 comments have been received in response to the outreach letters. These comments have been addressed in the same manner in which all public comments received on the Draft EIS were addressed; they are considered in the analysis presented in chapter 4 of the Final EIS and are included in the Project Record. Further, the potential impact of the proposed transmission line (including route variations) on property is described in chapter 4 of the EIS.
891	123	123.3	Robert S. Lynch & Associates	Lynch	9-NEPA	As you know, the Responsible Official cannot consider alternatives not discussed in the relevant environmental documents. Department of the Interior NEPA Regulations, 43 C.F.R. § 46.420. And BLM must solicit comments from affected persons. 43 C.F.R. § 46.435. Those solicitations must allow affected persons to provide comments "on the record", i.e., during the comment period. *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017 (9th Cir. 1980). When that does not happen, the BLM NEPA Handbook dictates that the agency prepare a Supplemental Draft EIS. Handbook H-1790-1, Subsection 5.3.1, p. 29.	Segments P7a, P7b, P7c, and P7d are considered variations of routes that were presented and analyzed in the Draft EIS. These minor route variations are further analyzed in detail in chapter 4 of the Final EIS. Additionally, outreach letters were mailed on December 15, 2014 to potentially affected landowners with parcels located on and near the Willcox Bench within 0.5 mile of the proposed Project route variations. As noted in chapters 1 and 5 of the EIS, 35 comments have been received in response to the outreach letters. These comments have been addressed in the same manner in which all public comments received on the Draft EIS were addressed; they are considered in the analysis presented in chapter 4 of the Final EIS and are included in the Project Record. Further, the potential impact of the proposed transmission line (including route variations) on property is described in chapter 4 of the EIS. Though portions of the EIS have been revised to include route variations, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Further, even though additional reroutes were considered, ultimately the Agency Preferred Alternative includes the route identified and analyzed in the Draft EIS, and there was no need to prepare a supplemental EIS.
892	123	123.4	Robert S. Lynch & Associates	Lynch	9-NEPA	Supplemental EIS's and Supplemental Draft EIS's are often used by federal agencies, especially where a new alternative is to be considered. *Sierra Forest Legacy v. Sherman*, 646 F.3d 1161, 1169 (9th Cir. 2011); *Dubois v. U.S. Dept. of* Agriculture, 102 F3d 1273, 1292 (1st Cir. 1996); *State of Cal. v. Block*, 690 F.2d 753, 770 (9th Cir. 1982); NEPA Regulations, 40 C.F.R. § 1502.9(c)(1). Supplemental DEIS's or EIS's are mandated when either "(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Id. *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55, 72 (2004); *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 372 (1989); *People of the State of Cal. V. U.S. D.O.I.*, 9th Cir., No. 12-55856, May 19, 2014, Slip Op. 21; *Westlands Water Dist. V. U.S. Dep't of Interior*, 376 F.3d 853, 873 (9th Cir. 2004).	Segments P7a, P7b, P7c, and P7d are considered variations of routes that were presented and analyzed in the Draft EIS. These minor route variations are further analyzed in detail in chapter 4 of the Final EIS. Though portions of the EIS have been revised to include route variations, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Further, even though additional reroutes were considered, ultimately the Agency Preferred Alternative includes the route identified and analyzed in the Draft EIS, and there was no need to prepare a supplemental EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
893	123	123.5	Robert S. Lynch & Associates	Lynch	9-NEPA	In this case, both conditions have been met and both standards apply. The new route is a significant change in the only portion of the proposed line that is new construction and not a rebuild. It is a substantial change in the very portion of the line that has the significant impacts that have been the focus of the DEIS. This new area was not analyzed in the DEIS, let alone available for comment as an alternative. This is aptly demonstrated by the discussion of eliminating Local Alternative DC1, the discussion of which is totally lacking any discussion of the Willcox Bench which it would have impacted.	The addition of segments P7a, P7b, P7c, and P7d is not considered a substantial change; they are variations of routes that were presented and analyzed in the Draft EIS. The potential impacts of these minor route variations are further analyzed in detail in chapter 4 of the Final EIS. Additionally, outreach letters were mailed on December 15, 2014 to potentially affected landowners with parcels located on and near the Willcox Bench within 0.5 mile of the proposed Project route variations. As noted in chapters 1 and 5 of the EIS, 35 comments have been received in response to the outreach letters. These comments have been addressed in the same manner in which all public comments received on the Draft EIS were addressed; they are considered in the analysis presented in chapter 4 of the Final EIS and are included in the Project Record. Though portions of the EIS have been revised to include route variations, none of these revisions describe significant new circumstances or significant new information relevant to environmental concerns; therefore, no supplemental EIS has been prepared. Further, even though additional reroutes were considered, ultimately the Agency Preferred Alternative includes the route identified and analyzed in the Draft EIS, and there was no need to prepare a supplemental EIS.
894	123	123.6	Robert S. Lynch & Associates	Lynch	9-NEPA	Additionally, there is significant new relevant information. The Sun Zia Southwest Transmission Project has been approved by the Department of the Interior. Thus, the prior analysis discounting using a path parallel to Sun Zia (DN1, DEIS, p. 123; LD4, DEIS, p. 126) or purchasing line capacity in lieu of constructing a portion of the Southline EHV line (DEIS, p. 137-9) because of the uncertainty of that line's future (DEIS, p. 138) is no longer valid.	The SunZia project may have been approved by the Department of the Interior but as of publication of this EIS the project remains on hold.
895	123	123.7	Robert S. Lynch & Associates	Lynch	9-NEPA	We were curious how such a significant portion of the only segment of this line constituting new construction could be proposed *post hoc* for such a radical change without any recognition of the current development of the Willcox Bench.	The addition of segments P7a, P7b, P7c, and P7d is not considered a radical change; they are variations of routes that were presented and analyzed in the Draft EIS. Further, based on comments received from landowners in the Willcox Bench area, the EIS includes a discussion and analysis of the area's vineyards; see sections 3.10 and 4.10 (Visual Resources), 3.11 and 4.11 (Land Use, Including Farm and Range Resources and Military Operations), and 3.15 and 4.15 (Socioeconomics) for a discussion of the potential impacts to the area wine industry.
896	123	123.8	Robert S. Lynch & Associates	Lynch	8-MISC	One of our members reached out to the Arizona Game and Fish Department and Black Forest Partners, the project manager for Southline, and invited them for a tour. They came. Specifically, William Kipp and Doug Patterson of Black Forest Partners and Robert Fink, the Arizona Game and Fish Department Regional Wildlife Program Manager, and Gilbert Gonzales of the local Arizona Game and Fish Department office. Another of our members and a local couple joined the group.	Noted. BLM attended a similar but separate tour of the Willcox Bench area in May 2015.
897	123	123.9	Robert S. Lynch & Associates	Lynch	8-MISC	The group toured seven (7) of the vineyards, visited three (3) tasting rooms and saw two future vineyard locations. Apparently, neither the Arizona Game and Fish Department representatives nor the Black Forest Partners representatives had ever been there before. As it turns out, Arizona Game and Fish had been using outdated Google Earth pictures and it appears that BLM officials were accepting and relying on this erroneous information to the detriment of the EIS process.	Satellite imagery data used in the EIS analysis are the most current publicly available data. These were further supplemented with data collected during the May 2015 BLM field visit to the Willcox Bench and winery tour.
898	123	123.10	Robert S. Lynch & Associates	Lynch	8-MISC	Segment P7 was discussed. It was the Arizona Game and Fish Department's objection to it that caused BLM to propose, *post hoc*, the line segment directly through the most productive wine grape growing area of the state. As it turns out, the objection was only to a very small piece of that route that, as it parallels an existing power line, goes by, as does the existing line, an artificial pond that the Arizona Game and Fish Department maintains for the sandhill crane. Except for this, the Department had no objection to the rest of the P7 segment.	Per Draft EIS comment letters from the FWS (letter # 71) and AGFD (letter #67),route variations P7a through P7d would be farther away from known roost sites than P7 and would likely be at a location within the crane's flight paths where the birds are of sufficient altitude that a strike would be very unlikely. As a result of comments received from landowners in the Willcox Bench area, BLM and Western worked in coordination with AGFD and FWS regarding their concerns with segment P7. Meetings were conducted with AGFD in May and June 2015. Ultimately, the AGFD developed additional mitigation measures for segment P7 to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
899	123	123.11	Robert S. Lynch & Associates	Lynch	2-BIO	Discussion that day immediately turned to attaching devices to the line so that the birds could see and avoid it, Southline moving the pond for the Arizona Game and Fish Department, Southline constructing viewing platforms and paths, etc. In other words, they discussed the mitigation strategy to fix this single problem with P7, another subject missing from the DEIS. It is crystal clear that BLM has a path forward that can keep the EIS process on track. It is our understanding that Black Forest Partners and the Arizona Game and Fish Department will meet soon with BLM and Western to design an acceptable mitigation strategy for the pond, allowing a consensus return to P7 as the preferred segment for the line in this area. We applaud that effort and encourage quick development of the mitigation plan.	BLM and Western have indeed worked in coordination with AGFD and FWS regarding their concerns with segment P7. Meetings were conducted in May and June 2015 to discuss mitigation strategy. AGFD has developed additional mitigation measures for segment P7 to offset impacts to wildlife habitat in the Willcox Playa area, including relocation of Crane Lake. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8. Additionally, line marking devices attached to the line so birds could see and avoid it are included as a PCEM in table 2-8 and discussed in section 4.8.2 of the EIS.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
900	123	123.12	Robert S. Lynch & Associates	Lynch	13-SOCI	Once you have the mitigation plan agreed to so it can be included in the Final EIS, we ask that you notify those contacted in December and other nearby landowners that the December proposal is off the table. Then the six tasting rooms on hold can start construction. The two new vineyards can be planted. Two new homes currently on hold can be built and an important economic engine for Cochise County can continue to grow. And our concerns about the Southline Project will have been resolved.	The AGFD has developed additional mitigation measures for segment P7 to offset impacts to wildlife habitat in the Willcox Playa area. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8. Landowners in the Willcox Bench area who were contacted via the outreach letter are on the Project mailing list and will be notified when the EIS will be available and how to obtain copies.
901	123	123.13	Robert S. Lynch & Associates	Lynch	8-MISC	But let me be just as crystal clear that, if BLM continues to pursue this ill thought out line segment through the Willcox Bench, we will sue before we let you damage the livelihoods of Arizona Wine Growers' Association members like this. Please keep us advised of further developments.	Noted.
902	124[1]	124.1	Arizona Game and Fish Department	deVos	9-NEPA	As we discussed, the various alternatives for the Southline transmission line all have conflicts with existing interests and management activities; in the case of P7, the Department's concern is associated with impacts to Crane Lake and wildlife that use that area. That said, there appears to be a reasonable solution that offsets these impacts to the Arizona Game and Fish Commission-owned land when these mitigation projects are fully implemented. With this accomplished, the Department can support the proposed P7 alignment.	Noted; potential impacts to Crane Lake and the wildlife that use it are considered in sections 3.8.2 and 4.8.2 of the EIS. AGFD mitigation measures have been incorporated as Project PCEMs in table 2-8 of the EIS.
903	124[1]	124.2	Arizona Game and Fish Department	deVos	9_NEPA	This letter summarizes what we discussed regarding potential mitigation for impacts to the Departments Willcox Playa Wildlife Area (WPWA). I wanted to follow up with you and identify those mitigative measures that the Department staff developed based on resource needs in the area.	Thank you.
904	124[1]	124.3	Arizona Game and Fish Department	deVos	9_NEPA	The WPWA meets Resource Category 1 designation under the Department's habitat compensation policy (I2.3) with a compensation goal of no loss of existing in-kind habitat value, and a guideline recommending that all potential losses of existing habitat values be prevented. However, since WPWA is a wholly artificial habitat, it could be reconstructed elsewhere without permanent loss. Therefore, if reconstructed, and if the loss of temporal and associated impacts are mitigated with further enhancements to the wildlife area throught the life of the project, the Commission's intent in policies A2.16 and A2.13 will have been met and possibly exceeded.	Habitat compensation policy information has been incorporated into section 3.8.2 of the EIS.
904	124[1]	124.4	Arizona Game and Fish Department	deVos	9_NEPA	The Department proposes that Southline work with our staff and the BLM to implement a plan to achieve the following proposed objectives on WPWA: • Relocation of Crane Lake: Find a suitable location and, if necessary, acquier land for the reconstructed Crane Lake; fund the construction of the lake and associated infrastructure, revegetation, visitor facilityies, and fund operation and maintenance costs of the new lake and associated infrastructure for the life of the Southline Project, with renewal of that commitment upon future renewal of the project permit. • Pond renovation: Improve or prvide funding to improve riparian emergent wetlands on three historic ponds near Kansas Settlement Road. Wetlands will be constructed to Department specifications and adequately equipped with pumps, liners, and drains to ensure that wildlife values are maintained. • Vegetation management: Fund the removal of non-native flora and revegetation with native flora on WPWA. Mitigation implementation costs associated with the three catagories avove will include operation, maintenance, analysis, monitoring, cultural and environmental clearances.	Southline has agreed in principle to these mitigation measures developed by AGFD, and the measures have been incorporated as part of the Project PCEMs in table 2-8 of the EIS. Further, analysis in section 4.8.2 of the EIS has been revised to consider the application of AGFD mitigation measures.
905	125	125.1		Wenrick, B.	2-BIO	I am extremely upset that the BLM's preferred alternative would allow Southline to be routed directly adjacent to the Willcox Playa/ Cochise Lakes Globally Important Bird Area and the wintering grounds for Sandhills Cranes in Whitewater Draw, which draws upwards of 20,000 cranes every year. Willcox Playa and Crane Lake, within the northern portion of the Sulphur Springs Valley of Southeast Arizona, supports the second largest over-wintering concentration of Sandhill Cranes in Arizona, typically 4,000 to 9,000 birds. Cochise Lakes and an area of nearby alkaline lakes, also provide important habitat for a great number of bird species.. I have photographed Sandhills Cranes in the Valley for the past 23 years, and I have submitted Photos and Videos to many Groups across the country. Please do not ruin the habitat so important to keep the Sandhills returning to the valley. This area is as important a winter feeding ground as is Bosque del Apache NWR in New Mexico.	Chapter 2 of the EIS includes more information on how the Agency Preferred Alternative was selected. BLM and Western have worked in coordination with AGFD on development of mitigation measures to offset impacts to wildlife habitat in their Willcox Playa area including relocation of Crane Lake. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.

[1] Letter received on June 24, 2015 in response to coordination with AGFD during May and June 2015 as discussed in chapter 5, section 5.3.

Table 8-1. Comments on the Draft EIS and Agency Response (Continued)

Comment ID	Submittal No.	Comment No.	Organization	Commenter Last Name	Comment Subject	Comment on Draft EIS	Agency Response to Comments
905	125	125.2		Wenrick, B.	2-BIO	Collisions with utility lines and fences are a primary threat to populations of Sandhill Cranes wherever these lines infringe on airspace the cranes use in migration and their daily feeding forays.	As stated in chapter 2 and section 3.8 in the Draft EIS, an Avian Protection Plan would be a Project-tailored plan designed to reduce avian collision mortality that results from avian interactions with electric utility facilities. Mitigation measures proposed, including use of avian flight diverters, were included in table 2-7 (now table 2-8 in the EIS) and section 4.8 of the Draft EIS.
905	125	125.3		Wenrick, B.	9_NEPA	The Final EIS should analyze a new alternative route north of I-10 and avoid the Globally Important Bird Area of Willcox Playa and Cochise Lakes altogether.	As described in chapter 2 of the Draft EIS, alternatives around the Willcox Playa were analyzed. Additionally, local route variations have been included in the Final EIS (P7a, P7b, P7c, and P7d) in response to public and agency comments and concerns about impacts near the Willcox Playa. The potential environmental impacts of all alternatives considered in detail were described in chapter 4 of the Draft EIS.
905	125	125.4		Wenrick, B.	9-NEPA	Also, the FEIS should analyze burying the line for any alternative that crosses open water or flight paths from roosting areas to feeding areas.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to include a section on alternative construction methods, such as burying the proposed transmission line.
906	126	126.1		Wenrick, P.	2-BIO	I am dismayed that the BLM's preferred alternative would allow Southline to be routed directly adjacent to the Willcox Playa/ Cochise Lakes Globally Important Bird Area. This Globally Important Bird Area is not an appropriate location to site a new transmission line. Willcox Playa and Crane Lake, within the northern portion of the Sulphur Springs Valley of Southeast Arizona, supports the second largest over-wintering concentration of Sandhill Cranes in Arizona, typically 4,000 to 9,000 birds. Cochise Lakes and an area of nearby alkaline lakes, also provide important habitat for a great number of bird species..	Chapter 2 of the EIS includes information on how the Agency Preferred Alternative was selected. BLM and Western have worked in coordination with AGFD on development of mitigation measures to offset impacts to wildlife habitat in their Willcox Playa area including relocation of Crane Lake. AGFD mitigation measures have been incorporated into the EIS as PCEMs in table 2-8.
906	126	126.2		Wenrick, P.	2-BIO	Collisions with utility lines and fences are a primary threat to populations of Sandhill Cranes wherever these lines infringe on airspace the cranes use in migration and their daily feeding forays.	As stated in chapter 2 and section 3.8 in the Draft EIS, an Avian Protection Plan would be a Project-tailored plan designed to reduce avian collision mortality that results from avian interactions with electric utility facilities. Mitigation measures proposed, including use of avian flight diverters, were included in table 2-7 (now table 2-8 in the EIS) and section 4.8 of the Draft EIS.
906	126	126.3		Wenrick, P.	9-NEPA	The Final EIS should analyze a new alternative route north of I-10 and avoid the Globally Important Bird Area of Willcox Playa and Cochise Lakes altogether.	As described in chapter 2 of the Draft EIS, alternatives around the Willcox Playa were analyzed. Additionally, local route variations have been included in the Final EIS (P7a, P7b, P7c, and P7d) in response to public and agency comments and concerns about impacts near the Willcox Playa. The potential environmental impacts of all alternatives considered in detail were described in chapter 4 of the Draft EIS.
906	126	126.4		Wenrick, P.	9-NEPA	Also, the FEIS should analyze burying the line for any alternative that crosses open water or flight paths from roosting areas to feeding areas.	Section 2.9 (Alternatives Considered but Eliminated from Further Analysis) of the EIS has been revised to include a section on alternative construction methods, such as burying the proposed transmission line.