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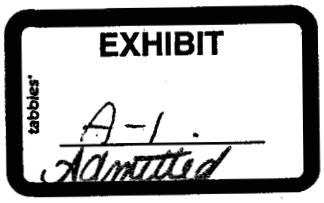

EXHIBIT B-1

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

October 1988

U.S. Department of the Interior
Bureau of Land Management

FINAL
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

Southern California Edison Company's

DEVERS - PALO VERDE No. 2
500 kV TRANSMISSION LINE PROJECT

Prepared by:
Western Ecological Services Company, Inc. (WESCO)

OCTOBER 1988

Final Supplemental Environmental Impact Statement (SEIS) For the Devers-Palo Verde No. 2 Transmission Line Project Riverside County, California and Yuma and Maricopa Counties, Arizona

Prepared by:

Western Ecological Services Company, Inc. (WESCO)

for

the Bureau of Land Management

Southern California Edison Company, in concert with several other western utility companies, proposes to construct a 500 kV transmission line from the Devers Substation near Palm Springs, California to the vicinity of the Palo Verde Nuclear Generating Station about 40 miles west of Phoenix, Arizona. A Draft Supplemental Environmental Impact Statement, published in May of 1987, described and evaluated four routing alternatives and the no-action alternative with respect to the proposed transmission line. This Final Supplemental Environmental Impact Statement includes all comments received during the public review period for the Draft SEIS, and provides the BLM's responses and required mitigation measures. Southern California Edison Company's proposed route, parallel to the existing Devers-Palo Verde #1 500 kV transmission line, is the preferred alternative of the Bureau of Land Management.

Ed Hastey

STATE DIRECTOR
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FINAL SEIS USER'S GUIDE

The Final Supplemental Environmental Impact Statement (Final SEIS) for the Devers-Palo Verde #2 500 kV Transmission Line Project has been prepared in an abbreviated format under Council on Environmental Quality regulations (40 CFR 1503.4 (3)(c). This document should be used in conjunction with, rather than in place of, the Draft SEIS that was released for public review on May 15, 1987.

The Final SEIS contains three chapters. The first chapter (Summary) is a summary of the transmission line project that briefly describes the project, areas of controversy, major impact conclusions, and the Federal preferred alternative.

The second chapter (Consultation and Coordination) presents the results of agency and public review of the Draft SEIS. Comments received at public hearings and by letter, and responses to those comments, are presented.

The third chapter (Modifications and Corrections) includes changes made to the text of the Draft SEIS. These have been made in response to public comments and are referenced to the appropriate page number in the Draft SEIS.

The appendices discuss a variety of topics. Appendix A contains an updated and modified set of the mitigation measures and agency stipulations from those presented in the Draft SEIS. Appendix B is a summary of bighorn sheep studies that have been conducted in some areas of concern. Appendix C contains information concerning consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act.

Copies of the Draft SEIS can be obtained by writing to the following address:

District Manager
Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

GLOSSARY OF ACRONYMS AND ABBREVIATIONS USED IN THE FINAL SEIS

ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
APS	Arizona Public Services Company
ASAE	American Society of Agricultural Engineers
BLM	U.S. Dept. of the Interior, Bureau of Land Management
CAAA	California Agricultural Aircraft Association
CDCA	California Desert Conservation Area
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers
CPCN	Certificate of Present and Future Public Convenience and Necessity
CPUC	California Public Utilities Commission
CRC	Cultural Resource Contractor
CRIT	Colorado River Indian Tribes
CVP	Coachella Valley Preserve
dB	decibals
Edison	Southern California Edison Company
EIR	Environmental Impact Report
FSEIS	Final Supplemental Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FWS	U.S. Dept. of the Interior, Fish and Wildlife Service
HCP	Habitat Conservation Plan
LTVA	Long-term Visitor Area
M-S-R	Modesto-Santa Clara-Redding Public Power Agency
MW	megawatts
NWR	National Wildlife Refuge
PEA	Proponent's Environmental Assessment
PVNGS	Palo Verde Nuclear Generating Station
ROW	right-of-way
RMP	Resource Management Plan
SCE	Southern California Edison Company
SCPPA	Southern California Public Power Authority
SDG&E	San Diego Gas and Electric Company
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
WSA	Wilderness Study Area

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1.0 SUMMARY AND BLM PREFERRED ALTERNATIVE

1.0 SUMMARY AND BLM PREFERRED ALTERNATIVE

1.1 INTRODUCTION

Southern California Edison Company (SCE or Edison) has applied to the U.S. Department of the Interior, Bureau of Land Management (BLM) for a right-of-way grant and to the California Public Utilities Commission (CPUC) for a Certificate of Present and Future Public Convenience and Necessity (CPCN) to construct and operate a 500 kV transmission line that originates from the existing Palo Verde Nuclear Generating Station (PVNGS) switchyard in Maricopa County, Arizona and extends to the existing Devers Substation near Palm Springs, California (BLM Application No. CA-17905 and CPUC Application No. 85-12-012).

The Draft Supplemental Environmental Impact Statement (SEIS) addressed the potential impacts of the project, provided an analysis of alternative routes to the project, and recommended measures to mitigate adverse impacts. The focus of the SEIS is on the potential environmental consequences of the portions of the project in Arizona, although potentially significant effects/ issues in the California portions of the project are discussed. A more detailed analysis of the California portion is presented in the CPUC's Environmental Impact Report (EIR) for the project. A copy of Volume 1 of the CPUC EIR which addresses the project specific impacts of the Devers-Palo Verde #2 transmission line is included as an accompanying report to the Draft SEIS. The Final EIR was published by the CPUC on August 5, 1987.

1.2 PURPOSE AND NEED FOR THE PROJECT

The proposed Devers-Palo Verde #2 500 kV transmission line is a joint participation project that includes Edison, members of the Southern California Public Power Authority (SCPPA) and the Modesto-Santa Clara-Redding Public Power Agency (M-S-R). The SCPPA participants have 442 megawatts (MW) of firm entitlements in the PVNGS, and M-S-R has 150 MW of firm entitlements in San Juan Unit 4, located in New Mexico. Both SCPPA and M-S-R need transmission from the Phoenix area to California to deliver power from these committed resources.

The existing Devers-Palo Verde #1 transmission line does not have sufficient firm transfer capability to accommodate SCPPA's and M-S-R's firm resource entitlements in addition to Edison's Palo Verde share. Edison is

proposing to build the Devers-Palo Verde #2 project to meet these regional transmission needs. Edison also states that the proposed project provides the most cost-effective solution for its customers in terms of short- and long-term energy needs.

1.3 ALTERNATIVES

Five alternatives are evaluated in the SEIS and include the project as proposed by SCE, three additional alternative routes, and a no-action alternative. Alternatives were developed considering several issues including prime farmland, BLM-designated utility corridors, routing around the Kofa National Wildlife Refuge, visual effects, land use, biological resources, Native American lands, and cultural resources. Following are brief descriptions of the alternative routes.

1.3.1 Proposed Project

The proposed transmission line is similar to other 500 kV transmission lines in the United States. The transmission line would consist of overhead wires (conductors). These conductors would be supported by lattice steel structures and would be electrically isolated from the structures by insulators. In addition to the conductors, structures, and insulators, the proposed transmission line would contain hardware and overhead groundwires.

The proposed transmission line is designated as a "500 kV" line, a designation consistent with the present standards in the United States. The line is designed to operate at a nominal voltage of 525 kV phase to phase and a maximum voltage of 550 kV phase to phase. The line would be capable of transferring nominally 1,200 MW of power on a continuous basis and 2,000 MW under emergency conditions.

The total project includes 238 miles of new transmission line between PVNGS, located about 40 miles west of Phoenix in Arizona, and the Devers Substation near Palm Springs in California. The proposed route would parallel SCE's existing 238-mile 500kV Devers-Palo Verde #1 line, of which 112 miles is located in Arizona and 126 miles is located in California.

The proposed transmission line would terminate at two existing facilities, the Devers Substation in California and the PVNGS switchyard in Arizona. In addition, the line would connect to two series compensation banks, which would be located along the transmission line route. One facility would be

located in Arizona, 61 miles west of the Palo Verde Switchyard, and the second would be in California about 64 miles east of the Devers Substation. The facilities would be located adjacent to the approved locations for the Devers-Palo Verde #1 series compensation banks. They would be located under the proposed Devers-Palo Verde #2 line and generally within the right-of-way. They would require a 221 x 320-foot area.

The proposed Devers-Palo Verde #2 transmission line would also require modification or reinforcement of Edison's existing 220 kV transmission system west of the Devers Substation. The existing system west of Devers includes four 220 kV transmission circuits connecting the Devers and Vista substations and the San Bernardino Generating Station. The reinforcement required for the 220 kV system includes reconductoring some of the existing circuits and rearranging the circuits (Figure 2.4-4). As planned, seven towers of the approximate 370 existing structures may be replaced in close proximity to the existing towers, two towers may be removed, and three towers may be added. The final placement of the towers, if any, will be defined after final engineering is complete. However, it is expected that the major work will take place in the vicinity of Cottonwood Canyon, near Break Estates, and immediately west of Banning.

No new telecommunications sites or structures would be required in conjunction with the Devers-Palo Verde #2 transmission line. It will only be necessary to install additional channels in the existing system to meet requirements for the new line.

Major issues with respect to the proposed route are the potential effects of the alignment through the Kofa National Wildlife Refuge (NWR) (wildlife, vegetation, visual, land use and planning) and agricultural lands in the Palo Verde Valley south of Blythe (agricultural land use, safety). This route is entirely within a BLM-designated utility corridor and generally avoids sensitive cultural resource areas.

1.3.2 Northern Alternative 1

The total length of the Northern Alternative 1 route is 243 miles. This alternative shares common segments with the proposed route, parallel to the Devers-Palo Verde #1 line, for the first 51 miles in Arizona (PVNGS to the eastern edge of the Ranegras Plain) and 118 miles in California (eastern edge of the Chuckwalla Valley to Devers Substation). This alternative route turns northwesterly from the proposed route (about 12 miles east of the Kofa NWR)

toward the town of Brenda. The route crosses I-10 near Brenda and continues northwesterly towards the Lazarus Tanks-Climax Mines area of the Plomosa Mountains. Once through the mountains, the route turns westerly and crosses the La Posa Plain (approximately 5 miles north of Quartzite), the northern end of the Dome Rock Mountains, the southern portions of the Colorado Indian Reservation, and the Colorado River about 9 linear miles north of Blythe. The route skirts the northern edge of the Palo Verde Valley and rejoins the proposed route 12 miles west of Blythe. This route would require approximately 74 miles of new transmission line right-of-way and (ROW) considerable upgrading and construction of new roads.

Most of the alternative route segments would not be within a BLM-designated utility corridor. In designating these corridors, the BLM conducted an extensive evaluation of environmental and socioeconomic/cultural factors, and a public involvement program. These corridors, therefore, are the result of a thorough planning process, and right-of-way planned outside of them would represent a contradiction to the intent of that process.

Major issues with respect to this alternative are potential conflicts with BLM land use and planning (by being outside of an existing BLM-designated corridor, additional planning analysis would be required), potentially significant adverse impacts to biological resources in the Plomosa Mountains (bighorn sheep in particular), and crossing of Native American reservation lands. This alternative would avoid impacts to agricultural interests in the Palo Verde Valley and would not cross the Kofa NWR; however, this alternative would have greater impact to resources such as bighorn sheep.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.3 Northern Alternative 2

This alternative would have a total length of 243 miles and would also share common segments with the proposed route in portions of Arizona and all of California. The Northern Alternative 2 route departs the proposed alignment about 12 miles east of the Kofa NWR and proceeds northwesterly towards Brenda. About 3.5 miles southeast of Brenda, the Northern Alternative 2 route parallels I-10 and several existing gas pipeline and underground communication lines through Plomosa Pass (subalternative alignments north and south of the

highway are evaluated). Once through the pass, this alternative turns southwesterly along the edge of the mountains toward a point about 9 miles southwest of Quartzite where it rejoins the proposed route.

This alternative would require approximately 47 miles of new ROW, of which 20 percent would be within a BLM-designated utility corridor.

This route was evaluated as an alternative to crossing the Kofa NWR and is similar to the Brenda Route analyzed in the original EIS for the Devers-Palo Verde #1 project. Major issues with respect to this alternative are new and cumulative visual effects along I-10 and La Posa Recreation Area, potential adverse impacts to bighorn sheep, cultural resources, and land use and BLM planning. This alternative avoids farmland in Palo Verde Valley and avoids the Kofa NWR. Although the portion of the Northern Alternative 2 route through Plomosa Pass follows a designated utility corridor, the use of this alternative would be inconsistent with existing BLM policy. Portions of the subalternative route south of the highway cross the New Water Mountains Wilderness Study Area and proposed extension of the Kofa NWR. The subalternative route north of the highway would also utilize an existing utility corridor; but, the corridor is considered to be "at capacity" and there are overhead restrictions (for visual and wildlife considerations) placed on the corridor which would preclude use of this corridor for the transmission line without amendment of existing Resource Management Plans and further environmental review.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.4 Southern Alternative

This alternate leaves the proposed route just east of the Colorado River, heads southwest and crosses the river and lower Palo Verde Valley approximately 15 miles southwest of Blythe, then heads northwest and rejoins the proposed alignment at a point approximately 15 miles west of Blythe. Total distance of this route is 251 miles, of which all but 32 miles is shared with the proposed route. As with Northern Alternative 2, the primary reason for considering this alternative would be to avoid the agricultural lands already affected by the Devers-Palo Verde #1 line. This route would require 32 miles of new right-of-way, none of which would be within a utility corridor.

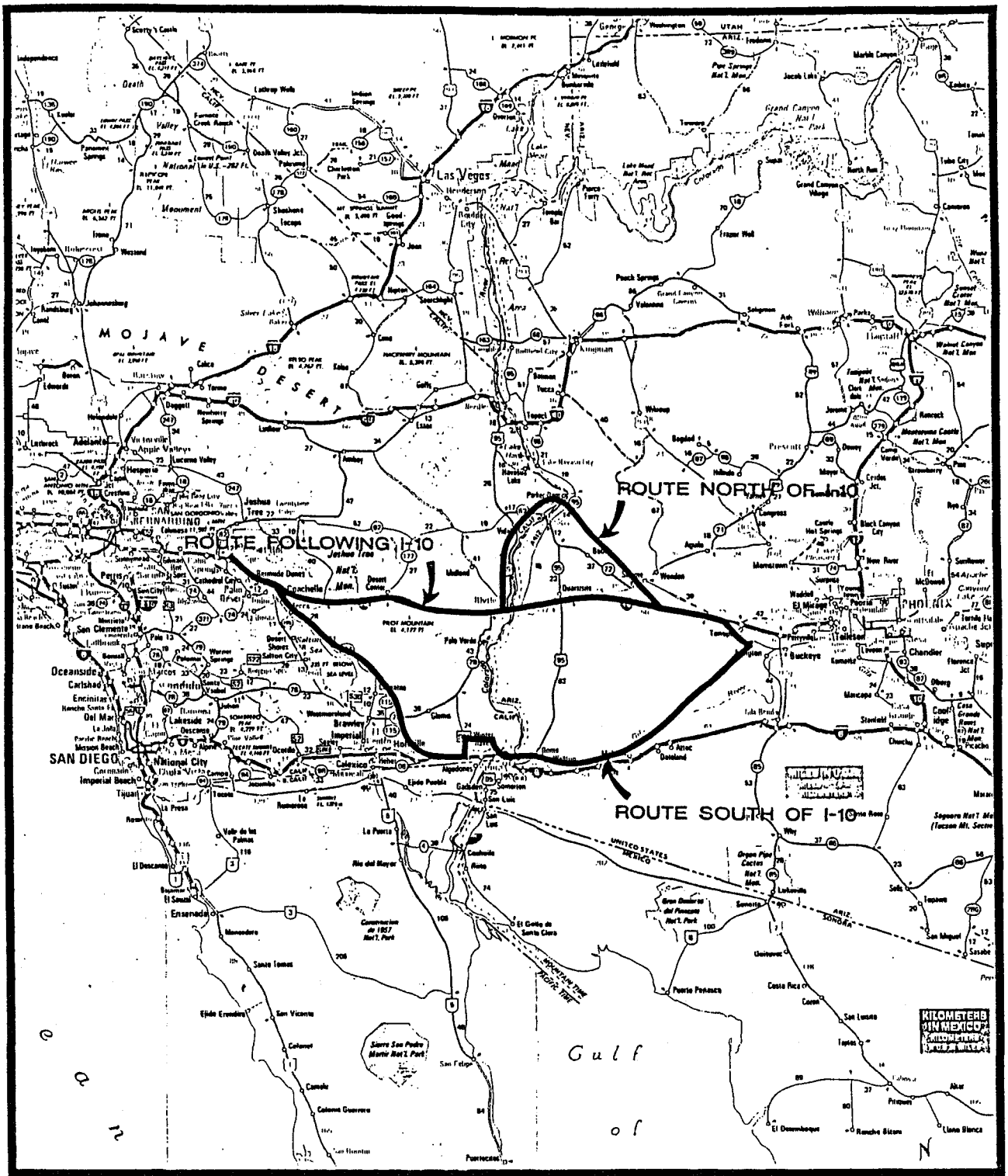
Selection of the southern alternative would be inconsistent with BLM and affected counties' plans and policies (i.e., not in a designated utility corridor). The route would also cross the Kofa NWR, have significant visual effects from high human use areas along the Colorado River, cross areas of high cultural resource sensitivity (primarily uplands/terraces on the Arizona side of the river), and would be within 1.5 miles of high waterfowl use areas on the Cibola National Wildlife Refuge. The route would also cross approximately 4 miles of agricultural land.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.5 Alternatives Considered but Eliminated from Detailed Study

In the process of evaluating SCE's proposed project, BLM considered several potential alternative routes in addition to the three that were evaluated in detail in the Draft SEIS. These alternatives were screened from further consideration because of several major disadvantages that made them infeasible. The BLM has studied these and many other possible corridor combinations over the past several years for their suitability for utility routings. The following describes those routes that were screened from further consideration, and Figure 1.3.1 shows their location:

- Route Following Interstate 10. This proposed corridor parallels I-10 just to the north. The Federal Land Policy and Management Act of 1976 (section 503) requires that existing utility corridors be used to the extent practicable. The eastern portion of the I-10 route does not contain existing utilities. Although the western portion of this corridor does contain some facilities (pipelines), each project must be evaluated individually to determine if it is compatible with existing facilities (above ground or underground), corridor capacity, and environmental factors. A 500 kV transmission line was not considered suitable for this corridor because of very high visual impacts. In addition, there are overhead restrictions on link UC-10 because of resource concerns. For these reasons, no further consideration of this route as a viable alternative was deemed warranted. This route would be about 15 miles shorter than the proposed route and cost approximately the same.



ALTERNATIVES CONSIDERED,
BUT ELIMINATED FROM DETAILED STUDY

DEVERS-PALO VERDE #2 TRANSMISSION LINE

FIGURE 1.3-1

NORTH

Base Map: AAA Western States and Provinces

WESCO
WESTERN ECOLOGICAL SERVICES COMPANY

- Route South of I-10. The most southerly route follows the Lower Gila corridor 3 (proposed), Yuma corridor UC-9, and California Desert Conservation Area (CDCA) plan corridors CC, L, and M. Major problems which resulted in BLM not considering this route further included rough terrain in Arizona; Wilderness Study Areas (WSAs) in Arizona that would require the powerline to cross the Arizona Public Service (APS) 500 kV line several times; conflicts with archaeological resources along the old Lake Cahuilla shoreline in Imperial County, California; conflicts with the East Mesa crucial habitat of the flat-tailed horned lizard; and conflicts with military overflights in the East Mesa area of Imperial County. This route would be approximately 52 miles longer than the proposed route and would cost approximately twenty percent more.

- Route North of I-10. This route follows the proposed Lower Gila corridor 1 (along a spur of the El Paso natural gas pipeline and a powerline), Yuma corridor UC-5, and CDCA plan corridor J. The major problem with this route is that corridor J is completely blocked by two non-suitable WSAs just north of Blythe. This route would be approximately 22 miles longer than the proposed route and would cost about 10 percent more.

1.4 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

1.4.1 Impact Summary of Proposed and Alternative Routes

Table 1.4-A presents a comparative summary of impacts and miscellaneous data for the proposed and alternative routes.

1.4.2 Comparative Evaluation of Proposed and Alternative Routes

A comparative evaluation of the proposed and alternative routes is presented in Table 1.4-B. Relative impact ratings used in the table were:

- High (potential for major significant impact)
- Moderate (potential for significant, but not major impact)
- Low (little or no potential for significant impact)

Also indicated in the table for some environmental considerations and alternatives are "(P)" for a preferred choice among alternatives, and "(L)" for a least preferred choice among alternatives. If potential impacts between

Table 1.4-A

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Geology	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in the western 45 miles. Hazards much less significant for east 1/3 route from Blythe to the PVNGS. Cumulative miles of sensitive landforms and hazardous features crossed: active fault zones, 12.5; duneland, 7.2; badland, 22.5; hardpan soils 24.2; unstable slopes, 28.5; total miles of hazards, 94.9. Impacts are largely mitigable through proper engineering and construction practices.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles. Impacts are more significant and less easily mitigable for portions or route without existing ROW where new access roads would be required. Cumulative miles of sensitive landforms and hazardous features crossed: active fault zones, 12.5; duneland, 7.2; badland, 28.7, hardpan soils, 19.3; unstable slopes 28.5; total miles of hazards, 94.9.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles. Would require significant new road construction resulting in more impacts than proposed route. Would transverse slightly fewer miles of potentially unstable slopes, but more miles of badlands and hardpan soils as detailed below: active fault zones, 12.5; duneland, 7.2; badland, 23.5; hardpan soils, 22.4; unstable slopes, 26.2; total miles of hazards, 91.8.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles and all are mitigable. New access road requirements make this alternative less desirable. Avoids some potentially unstable slopes, but crosses more miles of badlands and hardpan soils near Blythe: active fault zones, 12.5; duneland, 7.2; badland, 33.5; hardpan soils, 27.6; unstable slopes, 25.2; total miles of hazards 106.0.
Soils	Traverses several areas of sensitive and highly erosive soils, primarily in Indio and Mecca hills NE of Palm Springs and adjacent to Colorado River near Blythe. Prime farmland soils (Class I and II) are also traversed in the Coachella and Palo Verde valleys. Cumulative miles of sensitive soils traversed: highly erosive soils, 14; prime farmland, 11.5. Potential impacts are largely mitigable through adequate erosion control plans.	Traverses slightly more miles of highly erosive soils near Blythe, but less prime farmland. Cumulative miles of sensitive soils traversed highly erosive soils, 12.8; prime farmland, 6.5.	Not significantly different from proposed project in terms of soils and land features crossed. The greater number of miles of new access roads makes this route less desirable. Cumulative miles of sensitive soils traversed: highly erosive soils, 15.8, prime farmland, 6.5.	Traverses the most miles of highly erosive soils requiring new road construction, and most miles of prime farmland: highly erosive soils, 19.8; prime farmland, 15.6.
Hydrology	Route crosses flood prone areas. Flood hazards can be mitigated with properly engineered structures.	Flood hazards and impacts not significantly different from proposed route.	Flood hazards and impacts not significantly different from proposed route.	Flood hazards and impacts not significantly different from proposed route.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Biological Resources	Loss or disturbance of approximately 91.4 ac of habitat. Includes 15.9 ac of medium and high sensitivity habitats. Route crosses Kofa NWR; 17 miles of high density bighorn sheep habitat and (within 0.5 miles of an important lambing area); 77 miles of desert tortoise habitat; 29 miles of Coachella Valley fringe-toed lizard habitat; 0.6 miles of Colorado River riparian habitat; and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. Potential for bird collision impacts is the lowest of all alternatives since the route parallels the existing Devers-Palo Verde #1 line.	Loss or disturbance of approximately 294 ac of habitat. Includes 47 ac of medium and high sensitivity habitats. Route crosses or is adjacent to less than 5 miles of high density bighorn sheep habitat; 73 miles of desert tortoise habitat; 1.9 miles of Colorado River riparian habitat; and 3.0 miles of Coachella Valley Dune Thicket ACEC. The Climax Mines-Lazarus Tanks area is particularly sensitive since the area currently has limited road access for the general public. Significant effects could occur to bighorn sheep populations if this alternative is selected. Bird transmission line collision potential would be higher than the proposed route.	Loss or disturbance of approximately 180 ac of habitat. Includes 39 ac of medium and high sensitivity habitats. Route crosses through or is adjacent to 10.6 miles of high density bighorn sheep habitat (within 0.5 and 1.5 miles of an important lambing area); 29 miles of Coachella Valley fringe-toed lizard habitat; 0.6 miles of Colorado River riparian habitat; and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. This alternative has a greater potential for impacts to bighorns by increasing road access into the western edges of the Scaddan Mountain area.	Loss or disturbance of approximately 14.6 ac of habitat. Includes 24 ac of medium and high sensitivity habitats. Route crosses through or is adjacent to 2.9 miles of Colorado River riparian habitat and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. The line would cross within 1.25 miles of the Cibola NWR and would have the highest potential for bird transmission line collision. Other significant resource considerations are the same as the proposed route.
Land Use and Planning	Consistent with relevant BLM RMP's and County general plans and policies; however, the U.S. Fish and Wildlife Service is opposed to the selection of this route which crosses the Kofa NWR. Results in the loss of one commercial/industrial use and a single-family dwelling. Crosses two transmission lines (0.2 miles total), one railroad (0,1 mile), and an interstate highway (I-10). Crosses 10.1 miles of agricultural land, temporarily disrupts agricultural land. Increases an existing safety	Inconsistent with relevant BLM RMP's and County general plans and policies. Results in the loss of 6 dwell-units. Crosses 3.1 miles of agricultural land, temporarily modifying 13.4 ac and permanently occupying 0.09 ac. Crosses 0.3 ac of Statewide Important Farmland on the CRIR. New access would be required for the entire alternative, resulting in additional disruption of agricultural land. Crosses 1 mile of the Big Maria Mountains WSA and provides new access into the area. Crosses two golf courses and Colorado	Inconsistent with relevant BLM RMP's, 4 miles of a heavily used LTVA; would cross a dwelling unit requiring its removal. Also crosses 3 miles of priority wildlife habitat in the Dome Rock Mountains and 0.3 mile of the proposed Kofa NWR addition. There is no room within this subalternate to accommodate a new utility ROW. The subalternative south of I-10 crosses an additional mile of the LTVA, 5 miles of the proposed Kofa NWR addition, and a mineral extraction operation requiring its removal.	Inconsistent with all BLM RMPs and County general plans and policies. Crosses 4 miles of agricultural land and would temporarily disrupt agricultural production and permanently occupy 0.2 ac of prime agricultural land. New access would be required for the entire alternative, resulting in an additional equivalent amount of agricultural land disturbed. Crosses 1 mile of the Mule Mountains ACEC and provides new access into the area. Crosses two Riverside County Parks, two campgrounds, and two proposed recreational facilities near the Colorado River.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Land Use and Planning (cnt.)	ities, particularly agricultural aircraft. Crosses one airport interference zone.			
Socio-economics	No significant impacts to population, housing, income, and employment or property values would occur. Increase in local sales, property, and income tax revenues as a result of construction and operation.	Same as proposed project, with possible slight increase in County revenues and because of slightly greater length and associated costs.	Same as proposed project, with possible slight increase in County revenues and because of slightly greater length and associated costs.	Essentially same as proposed project, but would generate additional County tax revenues over the life of the project.
Visual	Potential significant effects to the following features of high visual sensitivity: Interstate 10, Kofa NWR, U.S. Highway 95, La Posa Recreation Area, Colorado River, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts include 3 crossings and 75.5 paralleled miles in foreground/middleground view. Cumulative effects at the Colorado River (1.0 mile), Kofa NWR (27.2 miles), Interstate 10 (25.0 miles), and Dillon Road (1.0 mile).	Potentially significant effects to the features of high visual sensitivity: Interstate 10, U.S. Highways 60 and 95, Colorado River, rural residences, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts include 5 crossings and 87 paralleled miles in foreground view. Cumulative effects on Interstate 10 (28.5 miles) and Dillon Road (1.0 mile).	Potentially significant effects to features of high visual sensitivity: Interstate 10, U.S. Highway 95, Colorado River, La Posa Recreation Area, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts same as proposed route. Cumulative effects at the Colorado River (1.0 mile), Interstate 10 (35 miles, and Dillon Road (1.0 mile).	Essentially the same as proposed project. Additional features of high visual sensitivity potential effected include Palo Verde County Park and BLM Oxbow Recreation Area.
Native American Resources	Crosses 2 miles of the Aqua Caliente Indian Reservation.	Crosses 2 miles of the Aqua Caliente Indian Reservation plus 12 miles of the southern portion of the Colorado Indian Reservation, most of which is located in Arizona.	Same as proposed project.	Same as proposed project.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Acoustic	Construction noise as high as 95 dB could be experienced within 50 feet of the project. Addition of a second line would be expected to increase existing noise levels by only 1 or 2 dB.	Construction noise is the same as proposed route. Operational noise (corona discharge) would generally 33-36 dB. Noise level could increase by 50 percent.	Same as Northern Alternative 1.	Same as Northern Alternative 1.
Cultural Resources	Route passes through 25 miles of high density zone. Impacts are expected to be low if existing access roads are used and towers are placed in zones that have been avoided or where data recovery has been completed. Cultural resource maps should be referenced to avoid impacts when positioning new access roads or any tower locations. Additional inventory evaluations and mitigations will be necessary in previously unimpacted areas.	Route passes through 19 miles of highly sensitive areas (high densities of cultural resources); intensive surveys and resource recovery operations may be required to construct this alternative in alternative Links 3, 5, and 11.	Route passes through 13 miles of highly sensitive areas (high densities of cultural resources); intensive surveys and resource/ recovery operations may be required to construct this alternative in Links 3, 4a, 4b, or 17c, and 4c.	Route passes through 11 miles of Colorado River terrace area; the most sensitive of all topographic zones in project area (Link 7). Intensive surveys and resource recovery may be required in Link 7.

Table 1.4-B

Comparative Evaluation of Impact Potential for the
Devers-Palo Verde #2 500 kV Transmission Line Route Alternative

Environmental Consideration	Transmission Line Routes			
	Proposed	Northern Alt. 1	Northern Alt. 2	Southern Alt.
Total Length	238 mi.	243 mi.	243 mi.	251 mi. (L)
New ROW Required	0 mi.(P)	74 mi.(L)	47 mi.	32 mi.
Geology	Low	Mod.	Mod.	Mod.
Soils	Mod.	Mod.	Mod.	Mod.
Hydrology	Low	Low	Low	Low
Biological Resources	Low	High(L)	Mod.	Mod.
Land Use	High(P)	High	High	High
Socioeconomic	Low	Low	Low	Low
Visual	High	High	High	High
Acoustic	Low	Low	Low	Low
Cultural and Historical Resources	Low(P)	Mod.	Mod.	High
Nat. Amer. Resources	High	High(L)	High	High
TOTALS				
No. High & Mod.	4	7	7	7
No. Pref. (P)	3	0	0	0
No. Least Pref. (L)	0	3	0	1

NOTES: Impact Potential Ratings are High, Moderate, or Low*
(P) - the preferred choice*
(L) - the least preferred choice*
If no (P) or (L) is indicated among the range of alternatives, no clear advantage or disadvantage could be identified.
All ratings are based on the potential for impacts and represent professional judgements of the SEIS team.

*See Section 1.4.2 for explanation.

alternatives were judged to have no significant differences, then no preferred or least preferred choice was identified. In some cases, only one or the other was determined to be applicable. These ratings are based on the impact projections previously described in this report.

As can be seen from the summary at the bottom of the table, the proposed route is clearly the preferred choice from an overall environmental/planning perspective. It has the fewest High and Moderate impact potential ratings; is the "clearly preferred" choice in three of the resource areas, while the three alternatives each had no preferred ratings; and had no "clearly least preferred" ratings, while the alternates had from zero to three such ratings.

The proposed route does have three High impact ratings of note in the areas of Land Use, Visual Resources, and Native American Resources. This reflects the high sensitivity of and concerns for the impact to agricultural land near Blythe; the visual impact of adding another line through the Kofa NWR and across the Colorado River; and the fact that the proposed line would cross the Agua Caliente Indian Reservation. The category of Native American Resources is given a "High" impact rating in light of uncertainty as to the actual impact and potential for significance in the context of cumulative changes that have occurred to Native American lands and resources as a result of projects initiated by non-Natives.

1.4.3 BLM Preferred Alternative

Based on a comparative environmental analysis of the proposed and alternative routes in the SEIS, the Applicant's proposed route for the project is the preferred alternative of the BLM. This conclusion is based on the following general considerations:

- Since 1950, the proposed route has repeatedly been used for interstate pipelines and transmission lines. These have been constructed both prior to and after the designation of the Kofa National Wildlife Refuge. There are currently three natural gas pipelines and one transmission line running along the proposed route through the Kofa NWR. Therefore, impacts of the proposed project would be confined to an established utility corridor where environmental disturbances have already taken place.

- The Northern Alternative 1, Northern Alternative 2, and Southern Alternative routes would require an additional 74 miles, 47 miles, and 32 miles, respectively, of new rights-of-way and associated ground disturbance (access roads). New rights-of-way on these routes would involve greater environmental impacts than the proposed route, particularly in soil disturbance, biological resources, visual quality, cultural resources, Native American cultural values, and land use. The greater impact results form more land area being affected, and higher resource values in those areas. The majority of these new rights-of-way would not be within BLM-proposed utility corridors or, in the case of the Northern Alternative 2 route, would utilize approved corridors which are currently considered "at capacity."

- The alternative routes, because of their greater length, would result in higher costs of construction and operation.

The significant areas of concern for the proposed route are potential impacts to agricultural lands and operations in Blythe, and the fact that the proposed line would cross the Agua Caliente Indian Reservation and the Kofa NWR, and potential impacts to endangered species and related section 7 consultation.

The original decision to route the Devers-Palo Verde #1 transmission line (which the #2 line would parallel) through the Kofa NWR was based in large part on the greater potential for significant impacts to bighorn sheep by the construction of the project along any of the alternative routes analyzed. Alternative routes considered in the Devers-Palo Verde #1 EIS included the Northern Alternative 2 route or, as it was referred to in the Devers-Palo Verde #1 EIS, the Brenda Route. This decision was supported by the Arizona Department of Game and Fish and the Desert Bighorn Sheep Society. These agencies/organizations also support the selection of the Devers-Palo Verde #2 project through the Kofa NWR as the preferred alternative. Detailed studies conducted before, during, and after construction of the #1 line have not identified any significant adverse effects to bighorn sheep in the Kofa NWR or other areas studied as a result of the project. The #2 project is expected to result in similar negligible effects.

1.5 POTENTIAL SIGNIFICANT IMPACTS OF THE PREFERRED ROUTE

Although many impacts are identified in the SEIS, few were found to be significant, and most of these will be reduced or eliminated by required mitigation. Potentially significant impacts are summarized below.

1.5.1 Geology, Soils, and Hydrology

Impact: Water and wind erosion of unstable soils.

1.5.2 Biological Resources

Impact: Potential loss or disturbance of valuable palo verde ironwood wash habitat, palo verde-cactus ecotone habitat, riparian habitat, and sand dune habitat.

Impact: Loss of habitat and/or individual rare, threatened, endangered, or otherwise sensitive species including desert tortoise, Coachella Valley fringe-toed lizard, Arizona Bell's vireo, Yuma clapper rail, and several rare plant species.

Impact: Increased bird mortality resulting from collisions with the powerline.

1.5.3 Land Use and Planning

Impact: Disrupt or impair agricultural production; permanently occupy prime agricultural land; increase existing safety hazard to agricultural activities, particularly agricultural aircraft; and increased operational expenses for affected farmers.

Impact: Proposed route traverses several Areas of Critical Environmental Concern (ACEC), an endangered species preserve, and two National Wildlife Refuges.

1.5.4 Visual

Impact: Potential significant cumulative effects to features of visual sensitivity including Interstate 10, Kofa NWR, U.S. Highway 95, La Posa Recreation Area, Colorado River, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road (eligible scenic highway).

1.5.5 Acoustic

Impact: Potential short-term construction noise to 5 to 7 residences.

1.5.6 Native American Resources

Impact: Crosses Indian allotment lands.

2.0 CONSULTATION AND COORDINATION

2.0 CONSULTATION AND COORDINATION

2.1 DRAFT SEIS REVIEW

In the course of preparation and review of the Draft and Final SEIS for the Devers-Palo Verde #2 transmission line, the BLM has communicated with and received input from several federal, state, and local agencies; environmental and citizens groups; industries; and individuals. Several of these people participated in the public scoping meetings and subsequent public hearings that were held in the vicinity of the transmission line route. Scoping meetings were conducted in April 1986 in the following cities: Riverside and Desert Hot Springs, California, and Tonopah, Arizona.

The Draft SEIS was released for public review in May 1987. During the public comment period (which ended July 8, 1987), 3 formal public hearings were held to solicit comments on the Draft SEIS. These hearings were held in Palm Springs and Blythe, California, and Phoenix, Arizona.

The public hearing transcripts have not been reprinted in this Final SEIS as they are part of the public record and are available for review at the following locations:

- Bureau of Land Management
  1695 Spruce Street
  Riverside, CA 92507

- Bureau of Land Management
  2015 W. Deer Valley Road
  Phoenix, AZ 85027

Section 2.2 contains the hearing comments and BLM's responses. In addition to the public hearing comments, 23 written comment letters were received during the comment period. These comments and BLM's responses to them can be found in Section 2.3 of this SEIS. The following agencies, organizations, and industries have provided input to and/or received copies of the Draft SEIS:

California City Government

Office of the Mayor
City Hall
892 N. 10th Street
Blythe, CA 92225

Office of the Mayor
City Hall
11711 West Drive
Desert Hot Springs, CA 92240

Office of the Mayor
P.O. Drawer 1788
45-250 Towne Street
Indio, CA 92201

Office of the Mayor
P.O. Box 1785
3200 Tahquitz-McCallum Way
Palm Springs, CA 92262

Office of the Mayor
City Hall
68625 Perez Road
Cathedral City, CA 92234

Office of the Mayor
City Hall
4515 Sixth Street
Coachella, CA 92236

Office of the Mayor
City Hall
45300 Club Drive
Indian Wells, CA 92260

Office of the Mayor
City Hall
45-275 Prickley Pear Lane
Palm Desert, CA 92260

Office of the Mayor
City Hall
69-825 Highway 111
Rancho Mirage, CA 93555

Department of the Interior Agencies

Chief, Division of Environmental Coordination
Fish and Wildlife Service
Department of the Interior
Washington D.C. 20240

Division of Environmental Compliance (762)
National Park Service
Department of the Interior
Washington, D.C. 20240

Office of Mineral Data

Division of Environmental Affairs
Bureau of Reclamation
Department of the Interior
Washington D.C. 20240

Environmental Affairs Program
U.S. Geological Survey
National Center (423)
Department of the Interior
Reston, VA 22092
U.S. Department of Interior

Analysis Program (MS-5000)
U.S. Geological Survey
National Center (423)
Department of the Interior
Washington D.C. 20240

Bureau of Indian Affairs
3600 Lime Street, #722
Riverside, CA 92501-2871

U.S. Department of Interior
Bureau of Reclamation
Lower Colorado Reg'l Office
P.O. Box 427
Boulder City, NV 89005

U.S. Department of Interior
Bureau of Reclamation
Suite 2200, Valley Center
201 North Central
Phoenix, AZ 85073

U.S. Department of Interior
Fish and Wildlife Service
2800 Cottage Way, Room 1823
Sacramento, CA 95825

U.S. Department of Interior
Office of Endangered Species
Washington, D.C. 20240
Attn: Steven Chambers

W. Powell White
U.S. National Park Service
450 Golden Gate Avenue
Box 36063
San Francisco, CA 94102

Rich Anderson
Joshua Tree National Monument
74485 Nat'l Monument Drive
Twenty-nine Palms, CA 92277

Office of Environmental
Project Rev.
Attn: Lillian K. Stone
Department of the Interior
Main Interior Bldg., Room 4251
18th & C Street
Washington D.C. 20240

Milton Haderlie
KOFA National Wildlife
356 West First Street
Yuma, AZ 85364

U.S. Fish & Wildlife Service
Art Kinskey (AHR)
P.O. Box 1306
Albuquerque, NM 87103

Federal Agencies

Regional Forester
U.S. Forest Service, USDA
630 Sansome Street
San Francisco, CA 94111

Supervisor (Ralph Cisco)
Cleveland National Forest
880 Front Street
San Diego, CA 92188

Supervisor
San Bernardino National Forest
144 N. Mountain View Avenue
San Bernardino, CA 92408

U.S. Department of ARmy,
Los Angeles District
Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053

Environmental Review
Coordinator
EPA Region IX
215 Fremont Street
San Francisco, CA 94105

Chief, Planning Division
South Pacific Division
Army Corps of Engineers
630 Sepsone Street, Room 1216
San Francisco, CA 94111

Assistant Secretary of the
Air Force
Installation, Environment &
Safety Pentagon
Admiralty, VA 20330

Chief, Environmental Hydrologic
& Engineering Branch
Division of Engineering
7920 Norfolk Avenue, Room P-312
Nuclear Regulatory Commission
Bethesda, MD 20014

Office of Env. Coordination
P.O. Box 2417, Room South Bldg.
Forest Service, 1204
Department of Agriculture
Washington D.C. 20013

Office of Environmental Planning
Headquarters, U.S. LEVX
Bolling Air Force Base
Washington D.C. 20332

Ms. Carol Borgstrom
Office of Environmental
Compliance (EH-23)
1000 Independence Avenue, S.W.
Department of Energy
Washington D.C. 20585

Office of Environmental Review
(A-104)
Environmental Protection Agency
2119 Waterside Mall
401 M. Street, S.W.
Washington D.C. 20460

Bureau of Indian Affairs
1951 Constitution Ave., N.W.
Mail Stop 4520 MIB
Environmental REview Staff
Washington, D.C. 20002

Bureau of Indian Affairs
1 North First Street
P.O. Box 10
Phoenix, AZ 85001

California State Agencies

California Energy Commission
Siting & Environmental Division
1516 9th Street, MS-44
Sacramento, CA 95814

Reg'l Water Quality Control Board
Colorado River Basin
73271 Highway 111, Suite 21
Palm Desert, CA 92260

Linda Ulmer
California Dept. Fish & Game
P.O. Box B-P
Blythe, CA 92225

Fred Worthley
California Dept. Fish & Game
Region 5
245 W. Broadway, Suite 350
Long Beach, CA 90802

CA State Land Commission
1807 13th Street, Room 101
Sacramento, CA 95814
Attn: Mary Griggs

Office of Environmental Affairs
CALTRANS
1120 N Street
Sacramento, CA 95814

Arizona State Agencies

Arizona Game & Fish Department
2222 W. Greenway Road
Phoenix, AZ 85023

Arizona State Historic Society
949 W. Second
Tuscon, AZ 94719

Commissioner
Arizona State Land Department
1624 W. Adams
Phoenix, AZ 85007

Governor of Arizona
Phoenix, AZ 85007

Indian Affairs Commission
1645 W. Jefferson Street
Phoenix, AZ 85007

W.A. Ordway
Director
Arizona Dept. of Transportation
206 S. 17th Avenue
Phoenix, AZ 85007

Michael A Ramnes
Director
Arizona State Parks
1688 W. Adams
Phoenix, AZ 85007

Supervisor
Arizona State Clearinghouse
1700 W. Washington, 505
Phoenix, AZ 85007

Donna Schober
State Historic Preservation Officer
Arizona State Parks
800 West Washington, Suite 415
Phoenix, AZ 85007

California Local Agencies

Chairman Board of Supervisors
Riverside County
4080 Lemon Street
Riverside, CA 92501

Coachella Valley Association
of Government
74-133 El Paseo, Suite 4
Palm Desert, CA 92260

Phillip E. Hitchcock
Metropolitan Water District
P.O. Box 54153
Los Angeles, CA 90054

John Jaquess, Director
San Bernardino Co. Planning
385 N. Arrowhead Avenue
San Bernardino, CA 92415

Roger J. Streeter, Director
Riverside County Planning Dept.
4080 Lemon Street, 9th Floor
Riverside, CA 92501

South Coast AQMD
9150 Flair Drive
El Monte, CA 91731

Native Americans

Anthony Drennan
Colorado River Indian Tribes
Route 1
Box 23-B
Parker, AZ 85344

Minerva Jenkins
Fort Mojave Indian Reservation
500 Merriman Avenue
Needles, CA 92363

Native American Heritage
Commission
Executive Secretary
1400 Tenth Street, Room 109
Sacramento, CA 95814

Donna Schober
State Historic Preserv. Officer
Arizona State Parks
800 West Washington, Suite 415
Phoenix, AZ 85007

Tribal Chair
Aqua Caliente Reservation
P.O. Box 2245
Palm Springs, CA 92262

Tribal Chair
Morongo Reservation
11555 Potrero Route
Banning, CA 92220

Libraries

Buckeye Library
310 N. 6th Street
Buckeye, AZ 85326

California State Library
Regional Depository
Document Section
P.O. Box 203
Sacramento, CA 95809

Coachella Valley Reg. Library
200 Civic Center Mall
Indio, CA 92201

Dept. of Library and Archives
3rd Floor, State Capitol
Phoenix, AZ 85001

Desert Hot Springs Public
Library
11691 West Drive
Desert Hot Springs, CA 92240

Long Beach State University
Library Documents Department
6101 E. Seventh Street
Long Beach, CA 90801

Los Angles Public Library
Documents Department
361 S. Anderson St.
Los Angeles, CA 90033

Palm Springs Library Center
300 S. Sunrise Way
Palm Springs, CA 92262

Palo Verde Valley District
Library
125 Chanslor Way
Blythe, CA 92225

Phoenix Public Library
12 East McDowell Rd.
Phoenix, AZ 85004

Quartzite Public Library
P.O. Box 426
Quartzite, AZ 95346

Riverside Central Library
Government Documents Section
3581 Seventh Street
Riverside, CA 92501

San Bernardino Public Library
401 Arrowhead Avenue
San Bernardino, CA 92401

San Francisco Public Library
Government Documents Dept.
Civic Center
San Francisco, CA 94102

Yuma City - County Library
350 Third Avenue
Yuma, AZ 85364

2.2 PUBLIC HEARING COMMENTS AND RESPONSES

Table 2.2-A contains a summary of the comments and questions raised at the public hearings on the Draft SEIS for the Devers-Palo Verde transmission line. Formal responses have been prepared for only those comments/questions that address the adequacy and/or accuracy of the Draft SEIS. However, all comments and opinions will be considered by the BLM in the final decision-making process.

2.3 WRITTEN COMMENTS RECEIVED AND RESPONSES

The BLM received 25 letters addressing the Draft SEIS during the public comment period. All letters received were reviewed. Substantive comments (those that presented new data, questions, or issues bearing directly on the effects of the proposed Devers-Palo Verde #2 Transmission Line and Alternatives) were responded to, and where appropriate, Draft SEIS sections were revised. Table 2.3-A lists each comment letter and identifies its assigned reference number. Individual substantive comments within each letter were identified and responses were prepared for these comments. The responses, which accompany each letter, are keyed to the appropriate comment by the reference numbers that appear on the comment letter.

All comment letters have been reprinted verbatim, and all substantive comments have been addressed in this Final SEIS. Letters that did not address environmental issues but presented an opinion are acknowledged by their inclu-

TABLE 2.2-A

PUBLIC HEARING COMMENTS AND RESPONSES

June 16, 1987
Palm Springs, CA
7:00 p.m.

No comments on the Draft SEIS were received.

June 17, 1987
Blythe, CA
7:00 p.m.

No comments on the Draft SEIS were received.

June 18, 1987
Phoenix, AZ
7:00 p.m.

1. Mr. Smith, Sierra Club

   Concerned about transmission line routing through the Kofa National Wildlife Refuge. Primarily concerned with bighorn sheep.

   Prefers to have visually impacting facilities located in areas already significantly affected; therefore, would prefer to see the line located to the north of the Kofa NWR.

2. Mr. Zinsli, Arizona Wilderness Coalition

   Opposes routing the transmission line through the Kofa NWR and favors routing it along I-10.

3. Ms. Barnett

   Opposes routing the transmission line through the Kofa NWR.

4. Mr. Schmit

   Opposes routing the transmission line through the Kofa NWR and is concerned about potential impacts to bighorn sheep.

1. Mr. Smith

   Your concerns are noted. We believe that these concerns have been given full evaluation in the Draft SEIS and in response to other comments to this Final SEIS (e.g., response 22-11).

   Your preference regarding routing the transmission line to the north of Kofa NWR is noted.

2. Mr. Zinsli

   Your preferences are noted.

3. Ms. Barnett

   Your preference is noted.

4. Mr. Schmit

   Your preferences and concern are noted.

TABLE 2.2-A Continued

5. Mr. Norton, The Wilderness Society The Wilderness Society is opposed to the applicant's proposal through the Kofa NWR. Primary objection is that, in their view, it is not compatible with the Refuge Administration Act which guides the management of wildlife refuges. The Refuge Administration Act requires that other activities in refuges be compatible with the original purposes for which the refuge was established, namely wildlife, particularly the desert bighorn sheep. Also favors routing the existing Devers-Palo Verde #1 line out of the refuge at some point.	5. Mr. Norton The Draft SEIS concluded that impacts to wildlife resources of the Kofa NWR would not be significant. The Kofa NWR was established to protect the bighorn sheep. In preparing the SEIS, the BLM found no evidence that bighorn sheep would be affected.
6. Mr. Witzeman, Maricopa County Audubon Society Favors routing the proposed transmission line to the north of Highway I-10. Also concerned about the cumulative effects of transmission lines in the National Wildlife Refuge. Also concerned about the visual impacts in the Kofa NWR.	6. Mr. Witzeman Your preference and concerns are noted.
7. Mrs. Witzeman Opposes routing the transmission line through the Kofa NWR.	7. Mrs. Witzeman Your opposition to routing the transmission line through the Kofa NWR is noted.
8. Mr. Burge Favors routing the transmission line along the I-10 freeway.	8. Mr. Burge Your preference for routing the transmission line along the I-10 freeway is noted.

Several letters have expressed opinions or concerns regarding the routing of the proposed transmission line through the Kofa National Wildlife Refuge or along one of the alternative routes. The BLM will take these concerns into consideration in the decision making process. Please see Section 1.4.3, "Preferred Alternative," for a further discussion of how these concerns were addressed.

Table 2.3-A

List of Comment Letters

Letter Number	Source of Letter
1	William Cochran, United States Bureau of Mines
2	Kathryn Gualtieri, Office of Historic Preservation, California Department of Parks and Recreation
3	Stephen M. Williams, Arizona Desert Bighorn Sheep Society, Inc.
4	Michael Harrod, Riverside County Planning Department
5	Teresa L. Hoffman, State Historic Preservation Office, Arizona State Parks
6	John Pamperin
7	Bobbie Holaday
8	William E. Rime, United States Bureau of Reclamation
9	Dale S. Turner, Sierra Club
10	Barry A. Horst, Medical Care Clinic Ltd.
11	Gabriel Zinsh
12	Russell D. Butcher, National Parks & Conservation Association
13	Glenn Stewart, The Desert Tortoise Council
14	Huston T. Carlyle, Jr., State of California Office of Planning and Research
15	Anthony Drennan, Sr., Chairman, Colorado River Indian Tribal Council
16	Tucson Rod and Gun Club
17	James Kahle, Southern California Edison Company
18	E. Linwood Smith, Ph.D
19	Temple A. Reynolds, Director, Arizona Game & Fish Department
20	Jim Cain, President, Arizona Outdoor Coalition
21	Robert Moore
22	David F. Riley, Assistant Regional Director, U.S. Fish and Wildlife Service
23	Jim Rorabaugh, Yuma Audubon Society
24	Cary W. Meister, Yuma Audubon Society
25	Deanna M. Wiemar, U.S. Environmental Protection Agency, Region IX

LETTER 1

United States Department of the Interior
BUREAU OF MINES
P. O. BOX 25086
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Intermountain Field Operations Center

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN -4 PM 12: 21
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 2, 1987

Memorandum

To: William Haigh, Bureau of Land Management, California Desert District, 1695 Spruce Street, Riverside, California 92507

From: Chief, Intermountain Field Operations Center

Subject: Review of Supplemental Draft Environmental Impact Statement for the proposed Devers-Palo Verde No. 2 500-kV Transmission Line Project, Riverside County, California, and Yuma and Maricopa Counties, Arizona

Personnel of the Bureau of Mines have reviewed the subject document to determine whether possible impacts to mineral resources and producing facilities are adequately discussed.

The proposed Devers-Palo Verde No. 2 Transmission Line Project follows the same route as, and would be located parallel to, the existing Devers-Palo Verde No. 1 Transmission Line. Bureau of Mines personnel previously reviewed documents pertaining to the Devers-Palo Verde No. 1 Transmission Line on Dec. 13, 1978 (copy attached). Our earlier comments remain valid.

William Cochran

Attachment

2-13

United States Department of the Interior
BUREAU OF MINES
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Office of Chief
Intermountain Field Operations Center

December 13, 1978

Your reference:
5100(911)
A9878

Memorandum

To: Arizona State Director (911), Bureau of Land Management, 2400 Valley Bank Center, Phoenix, Ariz. 85073

From: Acting Chief, Intermountain Field Operations Center

Subject: Draft Environmental Statement for the Proposed Palo Verde-Devers 500 kV Transmission Line, Arizona and California

The subject document—prepared by the Bureau of Land Management and the U.S. Nuclear Regulatory Commission—has been reviewed by personnel of this office as requested by Mr. Hal Pilkington of your district office in Yuma, Ariz., in a telephone conversation on December 8.

The project provides for the construction of a single-circuit 500 kV transmission line from the Palo Verde Nuclear Generating Station near Buckeye, Ariz., to the Southern California Edison Substation near Palm Springs, Calif. The length of the transmission line would vary between 235 and 265 miles, depending on the route selected.

The document gives excellent coverage of the mineral resources in the study area. The major metallic and nonmetallic minerals are listed in table 2-2, and the Land Use Areal Map 2-4 shows the location of the deposits. In addition, a map prepared by the U.S. Geological Survey (USGS) that shows supplemental minerals data is included in the appendix of the report; and a list of mineral localities by section, range, and township is given. Both active and potential mining areas were included in the USGS study. There are no known deposits of oil and gas or coal within the area.

We agree with the statement on page 3-8 that "Construction of the transmission line would have little impact on known mineral values or on current mining activity." We do, however, believe it is misleading to imply that the sand and gravel operations near Coachella Valley would be affected adversely if a certain one of the proposed corridors were selected. Our understanding is that none of the proposed transmission lines would have an adverse effect on the exploitation of mineral occurrences. In fact, the project conceivably could help mineral development by providing readily available electrical power.

1-1

We appreciate the opportunity to review an extremely well-prepared document.

Russell R. McLellan

2-15

1-1 At one time, the proposed route had a potential conflict between a tower location and an existing gravel pit within the right-of-way. This conflict has been resolved through negotiations between the gravel pit operator/owner and SCE. The gravel pit operator will make changes to the pit's configuration to allow SCE to site its tower as originally planned (adjacent to the existing tower).

LETTER 2

STATE OF CALIFORNIA – THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN -8 PM 1:29
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

REPLY TO: BLM:870519A

June 4, 1987

Gerald E. Hillier, District Manager
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: 1792 DEV2 (CA-063.03) Southern California Edison (SCE) Company's Devers-Palo Verde No. 2 500 kv Transmission Line Project.

Dear Mr. Hillier,

The Office of Historic Preservation (OHP) has received the updated March 1987 Draft Environmental Impact Report (EIS) and accompanying documents relating to the Devers-Palo Verde Transmission Line Project.

The OHP finds that the documents very adequately describe the project area and nature of undertaking with clear maps and accompanying prefield historic, ethnographic, and prehistoric research information. The field reconnaissance methods and results are satisfactory in identifying cultural resources within the project area which are or may be eligible for inclusion on the National Register of Historic Places. The OHP understands that SCE is still in the process of project design. Areas of Potential Effect (APE's) have not been finalized. Changes in the transmission line route could result in stub roads and tower sites being placed outside the surveyed areas and involve property not yet inventoried. If such should eventuate, we understand that the 106 process will be followed and further information provided for review and comment.

The OHP reiterates our support of previous determinations as to site eligibility and non-eligibility as well as with your management and treatment recommendations. We look forward to additional and continued consultation as the Devers-Palo Verde Transmission Line Project proceeds. We would like to thank you for your continued concern for and protection of important cultural resources. If you have any questions, please contact Mr. Robert Jackson of our staff at (916) 322-9602.

Sincerely,

Kathryn Gualtieri

Kathryn Gualtieri,
State Historic Preservation Officer

KG/RJ:mg

Routing	Date	Initials
TO:		
DM		
ADM	6/9	K
SC		
PA		
ADMIN		
PMS		
RES		
FIN		
AMS		
ESCON		

Action By:
Return To:

2-18

LETTER 3

ARIZONA DESERT BIGHORN SHEEP SOCIETY, INC.

P.O. Box 524
Phoenix, Arizona 85010

RECEIVED
BUREAU OF LAND MANAGEMENT
JUN 15 PM 2:47
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 9, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Re: Devers-Palo Verde #2 500 KV Transmission Line Project

Dear Mr. Haigh:

The Arizona Desert Bighorn Sheep Society, Inc.(ADBSS) has reviewed the Draft Supplemental Environmental Impact Statement and the Environmental Assessment for the above referenced project. Please accept the following comments as part of the public record on this project.

2-17 The ADBSS supports the routing of this proposed project as outlined in the Preferred Alternative. Even though this route passes through the Kofa National Wildlife Refuge, it would follow a Bureau of Land Management approved utility corridor and use existing access roads. Construction along this route would cause less bighorn sheep habitat loss than construction along any of the three subalternate routes.

3-1 Although construction following the preferred route may cause less habitat damage than construction along the subalternate routes, it still has the potential for creating disruption to movements of desert bighorn sheep. It also has to potential for causing stress at important times in their life cycle, such as the lambing season. Construction should be scheduled so as to avoid disturbance in bighorn sheep habitat during the times of the year most likely to adversely affect bighorn sheep natality and survivesability.

3-2 The ADBSS requests bighorn sheep habitat disturbance and stress-related construction activities be minimized in the Dome Rock Mountains, as well as the Kofa National Wildlife Refuge.

Thank you for the opportunity to comment on this proposed project.

Sincerely,

Stephen M Williams

Stephen M. Williams
Chairman, Legislative Committee

3-1 A new mitigation measure has been added which prohibits construction in bighorn sheep lambing areas from January 1 to March 31. For further discussion of anticipated impacts to bighorn sheep, see response 22-6. Also, Appendix B is a summary report of the detailed studies conducted to assess the impacts of the Devers-Palo Verde #1 line on bighorn sheep. This study basically concluded that the Devers-Palo Verde #1 transmission line has not affected the behavior of bighorn sheep.

3-2 Please see response 3-1.

LETTER 4

RIVERSIDE COUNTY PLANNING DEPARTMENT

MH:3890
June 17, 1987

William Haigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh:

We appreciate the opportunity to review the Supplemental Draft Environmental Impact Statement on the Devers-Palo Verde #2 500 KV Transmission Line Project. We offer the following comments.

4-1 On July 2, 1985 and December 31, 1985, the Riverside County Board of Supervisors amended the Comprehensive General Plan to include the Eastern Coachella Valley Plan and the Western Coachella Valley Plan, respectively. The Final Environmental Impact Statement should evaluate the proposed project in light of these new policies.

2-18

4-2 The County's Comprehensive General Plan designates Interstate 10 as an "Eligible County Scenic Highway". The proposed project should, therefore, be evaluated against the policies contained in the Scenic Highway Section of the Comprehensive General Plan.

Riverside County recently completed a study on the visual impacts of transmission lines entitled "San Gorgonio Pass Master Transmission Network Program". A copy is enclosed for your information as the subject matter relates to the proposed project.

If you have any additional questions regarding these matters, please contact me at (714) 787-1358.

Very truly yours,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Roger S. Streeter, Planning Director

Michael Harrod
Michael Harrod, Associate Planner

MH:sjc

4080 LEMON STREET, 9TH FLOOR
RIVERSIDE, CALIFORNIA 92501
(714) 787-6181

46-209 OASIS STREET, ROOM 304
INDIO, CALIFORNIA 92201
(619) 342-8277

4-1 As noted in Section 4.6.2 (Relevant Plans and Policies) of the CPUC's Draft EIR (included by reference in the Draft EIS), the proposed project was evaluated against policies of the amended Riverside County Comprehensive General Plan (1985) which included both the Eastern Coachella Valley Plan and the Western Coachella Valley Plan. Since the proposed project does not cross any lands under the jurisdiction of the Eastern Coachella Valley Plan, the discussion of impacts relevant to land use policies was limited to impacts within the Western Coachella Valley Plan and the Chuckwalla Land Use Planning Area. For a detailed discussion of these impacts, the reader is referred to Section 5.5.1 of the CPUC Draft EIR.

4-2 The Scenic Highway Section of the Comprehensive General Plan contains two policies which are relevant to construction of transmission lines along scenic corridors. These are:

c. Earth moving operations which expose soil surfaces shall be required to re-establish vegetation to bind the soil, prevent water or wind erosion, and re-establish a natural vegetative appearance.

g. The design and appearance for new structures and/or equipment within Scenic Corridors shall be compatible with the scenic setting or environment.

4-2 CONT. In regard to policy c, there will be no significant construction-related earth moving along the scenic corridor portion of the proposed route. There has been little success with revegetation in non-irrigated areas; hence, no specific landscaping or revegetation of disturbed areas other than that recommended for sensitive species is proposed for the area.

Mitigation measures that address policy g are contained in Section 5.7.3 of the Draft EIR. The project was routed and designed to minimize visual impacts.

LETTER 5

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 19 PM 1:15
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

ARIZONA STATE PARKS

800 W. WASHINGTON
SUITE 415
PHOENIX, ARIZONA 85007
TELEPHONE 602-255-4174

EVAN MECHAM
GOVERNOR

STATE PARKS
BOARD MEMBERS

ELIZABETH A. DRAKE
CHAIR
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REESE G. WOODLING
TUCSON

RONALD PIES
TEMPE

M. JEAN HASSELL
STATE LAND COMMISSIONER

KENNETH E. TRAVOUS
EXECUTIVE DIRECTOR

12 June 1987

Mr. Bill Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, CA 92507

RE: Devers-Palo Verde #2 500 kV Transmission Line Project, Draft SEIS, DOI-BLM

Dear Mr. Haigh:

We have reviewed the Draft Supplemental Environmental Impact Statement for the above project and offer the following comments pursuant to 36 CFR Part 800.

This document appears to sufficiently address the issue of cultural resources for this stage of the undertaking. I note that the proposed alternative lies within the corridor which was surveyed for cultural resources prior to construction of the Devers-Palo Verde #1 transmission line. I further note that any projected areas of impact not previously surveyed (such as new access roads) will be inventoried in consultation with our office, and that cultural resources will be avoided were practical in siting the new transmission towers. Any mitigation measures will be developed in consultation with our office in accordance with the PMOA between the BLM and SHPO.

We appreciate your continuing consultation with this office regarding the historic preservation requirements for federal undertakings. Please contact me if you have any questions.

Sincerely,

Teresa L. Hoffman
Archaeologist

for Shereen Lerner, Ph.D.
State Historic Preservation Officer

LETTER 6

Dear Mr. Haigh:

I am writing to you concerning the Blyth to LA 500,000 Volt powerline.

First of all I think the BLM should study the route that completely follows their I-10 utility corridor, since this was not done in the EIS.

6-1

This powerline should not be routed through the Kofa Refuge. As you admitted you made a mistake in 1979 in deciding to put a line through the refuge. By putting a second powerline through the compound it would only compound an already bad situation.

By putting the line through the Kofa Refuge it would affect more sensitive plants, cross more high density Bighorn Sheep habitat, and a larger area of mountainous land that would be subject to erosion than if paralled along I-10.

Since the F.W.S. has already made a formal determination that the powerline would be incompatible with refuge purposes, the powerline could go north or south of I-10 where the New Water WSA adjoins I-10. Two recent crude oil pipelines were routed along I-10 by the BLM, not through the Kofa Refuge.

6-1 Study of a route entirely following I-10 was not conducted for several reasons. First, the Federal Land Policy and Management Act of 1976 (section 503) requires that existing utility corridors be used to the extent practicable. I-10 is only a proposed corridor, and most of it has no existing utilities in it.

Second, where existing facilities do parallel Interstate 10 (e.g., links 4b and 17), there are other environmental problems. On page 124 of the Draft SEIS (in the Environmental Consequences section), the text indicates that the corridor has reached capacity (links 4b and 17, approximately mileposts 5.0 to 10.0) and that further development could have significant adverse impacts to visual and wildlife resources. In addition, there are overhead restrictions on link UC-10 because of visual resource concerns.

Therefore, additional study was not considered to be warranted.

I hope you will reconsider your proposal on the routing of the powerline. The Kofa Refuge is a very important part of the AZ Wilderness Plan And should not be marred by a bad placement of this powerline

Thank you,

Sincerely

John Pompa

LETTER 7

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 22 PM 2:21
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 19, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

I regret that I was unable to attend last night's hearing on the KOFA Powerline, but the hearing was scheduled on the same night as our local Sierra Club's general meeting. I sincerely hope that in scheduling such hearings, the BLM will keep in the mind that the 3rd Thursday of the month has always been the night of our regular meeting.

I would heartily recommend that the powerline be *kept out* of the Kofa National Wildlife Refuge and further recommend that you use the corridor existing outside of the refuge, north along I-10.

7-1 Putting the line through the Kofa Refuge would affect sensitive plants, cross more high density Bighorn Sheep habitat, and subject a larger area of mountainous land to erosion that would paralleling I-10.

I appreciate your consideration of my recommendations.

Sincerely yours,

Bobbie Holaday

Bobbie Holaday

1413 East Dobbins Rd.
Phoenix, AZ 85040

7-1 Please see response 22-6 for discussion of the potential impacts and comparison of the proposed and Northern Alternative 2 routes with respect to bighorn sheep. The Northern Alternative 2 route could also impact rare plants listed by the State. This route crosses more suitable habitat for Cercus greggi than the proposed route (23.2 miles compared to 20.5 miles respectively). Although additional rare plant species/locations are identified along the proposed route that do not appear on the other alternatives, the alternative routes have not been studied as extensively in the field, therefore; less is known about the specific occurrences and locations of other plant species. The proposed route would have the least erosion potential of the alternatives because of the existing access and reduced clearing requirements for construction (Draft SEIS, p. 111).

LETTER 8

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CALIF. DESERT DISTRICT
LC-159 RIVERSIDE, CA.

BUREAU OF RECLAMATION
LOWER COLORADO REGIONAL OFFICE
P.O. BOX 427
BOULDER CITY, NEVADA 89005

RECEIVED
1987 JUN 26 PM 2 58

IN REPLY REFER TO:

JUN 23 1987

Memorandum

To: Mr. William Haigh, District Manager, California Desert District, Bureau of Land Management, 1695 Spruce Street, Riverside, California 92507

From: Regional Environmental Officer

Subject: Review of Draft Supplemental Environmental Impact Statement (EIS) for the Devers to Palo Verde No. 2 500-KV Transmission Line Project

We have reviewed the subject EIS and have no comments to offer. Thank you for the opportunity to review the document.

William E. Rinne

2-24

LETTER 9

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 26 PM 3:04
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

SIERRA CLUB

23 June 1987
117 N. 2nd Avenue
Tucson, AZ 85705
602-792-2690

William Haigh
California Desert District
Bureau of Land Management

Dear Mr. Haigh:

The "Devers-Palo Verde No. 2 500 kV Transmission Line Project" should NOT go through the Kofa Wildlife Refuge. That would be an inappropriate and unnecessary use of public land in the Kofa, as it would affect sensitive plants and wildlife along with recreational users.

9-1 The utility corridor along Interstate 10 would be far more appropriate, and should be given primary consideration in the siting process. In particular, BLM should study a route that follows I-10 as far as possible through Arizona.

The presence on one powerline through the Kofa Refuge is no justification for adding a second. Indeed, given the effects of the first that are now evident, it should be removed and rerouted around the refuge.

Yours,

Dale S. Turner
Conservation Chair
Rincon Group

9-1 Please see response 6-1 and section 1.3.5 of this Final SEIS for a discussion of the I-10 route.

LETTER 10

Medical Care Clinic Ltd.

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 2:42
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 23, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

Re: Kofa Wildlife Refuge

Dear Mr. Haigh:

It is inconceivable that another power line should be built through this incredibly beautiful wilderness area. Please understand that I am absolutely opposed to its construction anywhere except along I-10.

2-28

Respectfully,

Barry A. Horst
Clinic Administrator

Enclosure

13000 North 103rd Avenue, Suite 99, Sun City, Arizona 85351 (602) 974-5845

LETTER 11

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 3:08
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 26, 87

Mr William Haigh
California Desert District
BLM
1695 Spruce Street
RIVERSIDE, Ca 92507

Dear Mr Haigh,

I am writing regarding the proposed S.C. Edison powerline through the Kofa Nat. Wildlife Refuge.

I think it is an outroge that a line was built there in 1979 and I am very much opposed to building a second one.

A wildlife refuge like Kofa is designed to protect wild plants and animals, not as a conduit for a powerline.

11-1 I suggest that the powerline be routed along I-17, preferably on the North side and that it not run right through the two ACEC's in California.

Again please remember what a wildlife refuge is designed to do.

Thank you for your consideration.

Sincerely

Gabriel Zinsli
8425 N. 56th Ave
Glendale, Az 85302

2-27

11-1 It is assumed that the reference to I-17 in this comment was intended to be I-10, since I-17 runs north-south. Please see response 6-1 and section 1.3.5 of this Final SEIS which addresses this issue. Where the transmission line crosses the Chuckwalla Bench ACEC, SCE will be required to purchase lands to compensate for habitat impacts (see Appendix A, wildlife mitigation measure 3). In both ACECs and other sensitive areas the applicant will also be required to site towers and roads in a manner to avoid direct disturbance to sensitive features (see vegetation mitigation measures 3, 4, 7, and 8, and wildlife measures 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, and 14 in Appendix A).

LETTER 12

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 3:10
CA-DIV. DESERT DISTRICT
RIVERSIDE, CA.

National Parks & Conservation Association

1701 Eighteenth Street, N.W. • Washington, D.C. 20009

(202) 265-2717

RUSSELL D. BUTCHER
Regional Representative
SOUTHWEST & CALIFORNIA
Box 67
Cottonwood, AZ 86326
(602) 634-5758

June 25, 1987

RE: PROPOSED PALO VERDE-TO-DEVERS #2 500kV TRANSMISSION LINE

Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

Dear Sirs:

National Parks and Conservation Association, a private nonprofit membership organization founded 68 years ago to promote the protection, enhancement, and public understanding of national parks and other public lands, appreciates this opportunity to offer some comments regarding Southern California Edison's proposed Palo Verde-to-Devers #2 500kV transmission line. We shall limit our response to the western Arizona segment of the line that would either pass across a broad plain or valley in the Kofa National Wildlife Refuge; or, alternatively, would run to the north in the vicinity of Interstate highway 10.

In response to the question: should this second 500kV be placed alongside the existing 500kV powerline within the Kofa refuge from a wildlife refuge management point of view, we normally would vigorously oppose construction of commercial facilities within special land management areas such as a national wildlife refuge. Regarding the Preferred Route (Links 1, 2, 6, 8), it cannot be denied that a second 500kV running parallel to the existing line would create some degree of increased visual impact upon the landscape within Kofa.

We believe there are some additional relevant factors, however, that deserve careful evaluation. We suggest, for example, that the refuge should not necessarily be viewed in a vacuum--without seriously considering other public land values. In other words, given the reality that the first 500kV exists within the refuge, would it be environmentally less impairing to public land values overall (1) to place the second line across the refuge closely paralleling the existing line; or (2) to run the new line across another

2-28

scenic area that so far contains no powerlines?

The question of bypassing the refuge by utilizing the I-10 Plomosa Pass area raises further issues:

(1) For the powerline to follow the most logical, most direct, and visually least objectionable route through Plomosa Pass, it would be necessary for Congress to legislate a change in the northern boundary of the BLM's New Water Mountains Wilderness Study Area (WSA), since there is presently no space available for a utilities corridor between the freeway right-of-way and the WSA. Is there time in which Congress could act to adjust this boundary? We have been told that such a specific legislative effort would likely require more time than is available for the powerline project to remain reasonably on schedule. However, even if there would be time for this particular legislative measure to be acted upon, we understand that some members of Congress, their staffs, and others oppose singling out this one BLM wilderness issue; but favor instead that Congress act at one time on a whole package of Arizona statewide BLM and national wildlife refuge wilderness proposals. The time required for this broad legislative effort would obviously be enormously greater.

(2) For the powerline to approximately parallel the buried crude oil pipeline facility of All American Pipeline Company, the 500kV would have to cross over to the north side of I-10 in the Plomosa Pass vicinity, be placed high up on the steep south slopes of the Plomosa Mountains, and then cross back over the freeway. While we actively supported the "Brenda" alternative for the buried pipeline (a visual impact that will essentially heal over in time), we believe this route for a major above-ground powerline would create a significant and unsightly permanent visual impact upon the high scenic quality of the Plomosa Pass stretch of I-10. Were it possible to avoid this northward jog across the freeway, the visual impact, while still considerable, would be far less objectionable, from our viewpoint.

Another argument that has been raised by the Fish & Wildlife Service and several interested groups concerns the welfare of the desert bighorn sheep. Will a second 500kV possibly cause the bighorns to cease seasonally migrating back and forth from the New Water Mountains, across a broad plain and beneath the powerline facilities, to the Livingston Hills? At some undeterminable point, might an additional powerline make the difference and for some reason suddenly constitute a barrier to the bighorns?

We note that the document, Studies of Desert Bighorn Sheep in Western Arizona: Impacts of the Palo Verde to Devers 500kV Transmission Line: Final Report - Volume II, dated August 1, 1986, and prepared for Southern California Edison Company by E. Linwood Smith & Associates, of Tucson, states (p. 9) that

> "Sheep did cross the line...apparently without hesitation, and from the few observations we were able to obtain did forage directly beneath the energized line without paying any overt, obvious attention to the associated structures or line noise."

There are similar reports of undeterred bighorn migrations back and forth beneath a 500kV line between the South and North Providence mountains in the BLM's East Mojave National Scenic Area in California.

Desert bighorns regularly migrate back and forth through an underpass beneath I-15 in Arizona's Virgin River Gorge and are from time to time observed by the BLM and others on the rugged slopes close to the freeway. Elsewhere, bighorns are seen in close proximity to mining operations--even apparently evidencing curiosity.

What is of even greater interest regarding the present issue is the fact that small herds of desert bighorns are undeterred in their migrations back and forth between the Clark and Mesquite mountains in eastern California, passing beneath four closely paralleling powerlines (3-500kV's and 1-287kV) that span a quarter-mile width through Keany Pass. This situation especially offers compelling, helpful evidence that suggests that the addition of a second powerline through the Kofa refuge will not deter the migration habits of the bighorns in that area. Were there even some evidence to the contrary, we would certainly raise at least a question on this issue. But we are forced to conclude--given no available contrary information--that the desert bighorn migration issue is really not a relevant concern. (We should add, though, that our Association strongly supports all proposed measures dsigned to avoid construction phase impacts upon migrating and lambing bighorns in Kofa refuge and elsewhere.)

In our view, then, this leaves only the basic question of whether the new line is overall less environmentally/visually impairing of the Kofa refuge values or the BLM public land values to the north. While admitting that it is generally inappropriate to place strictly commercial developments within special conservation lands such as a national wildlife refuge, it is our feeling in this instance that less overall visual/aesthetic impairment to public land values would occur if the

second Palo Verde-to-Devers line closely parallels the existing line across Kofa refuge.

Were it possible to promptly clear up the WSA problem and site this new line along the south side of I-10 through Plomosa Pass, we believe there could be a stronger argument for avoiding the refuge. In fact, we urge that once the New Water Mountains Wilderness issue is resolved by Congress that a careful study be made to evaluate the possibility of allowing no additional utilities facilities (buried or above ground) through the Kofa route.

At the same time, we suggest that yet another idea be placed on the table for evaluation for resolving the utilities corridor-versus-refuge issue. This problem could conceivably be resolved for the long-term by deleting the utilities corridor from the refuge. This could be accomplished by redrawing the refuge boundary so that Kofa's northern edge would coincide with the southern edge of the utilities corridor. The narrow strip of present refuge land to the north of the utilities corridor could then be added to the BLM's proposed New Water Mountains Wilderness. To offset the loss of refuge land, certain mountainous habitat to the west and east of the refuge could be added, thus ending an arbitrary north-side section line boundary situation.

12-1

We are also aware that the Fish & Wildlife Service and others adamantly oppose redrawing the boundaries as suggested above; and would instead prefer to enlarge the refuge northward to bring in all of the New Water Mountains. The merits of this option also should be studied.

We suggest the idea of modifying the refuge boundaries to exclude the utilities corridor is worthy of evaluation not because we are actually prepared to support such a plan at this time, but to simply offer it as a possible solution to what some persons are strenuously arguing is an unacceptable conflict between a commercial enterprise and a national wildlife refuge.

In summary, particularly since it appears likely that the New Water Mountains WSA boundary problem will not be resolved in the near-term, we support placing the Palo Verde-to-Devers #2 500kV transmission line closely parallel to the existing line across the Kofa National Wildlife Refuge. We view this alternative as the overall least impairing of public land values.

Sincerely,

Russell D. Butcher

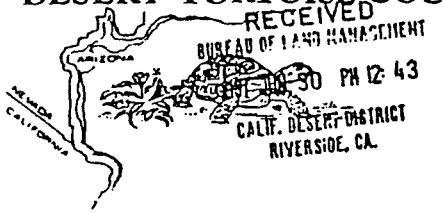
cc: D. Dean Bibles
James W. Kahle

Russell D. Butcher
Southwest-6-California Representative
Box 67, Cottonwood, AZ 86326

12-1 The boundary change would require an act of Congress and therefore is beyond the scope of this SEIS.

LETTER 13

THE DESERT TORTOISE COUNCIL



5319 Cerritos Avenue
Long Beach, California 90805

June 29, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, CA 92507

Mr. Haigh:

We have reviewed the Draft EIR Devers-Palo Verde #2 Power Transmission Line Project and recommend the preferred alternative be selected. Although the project will have adverse impacts to desert habitat, these impacts would be reduced with the preferred alternative in the utilization of existing roads and in following the existing powerline.

2-32

13-1 Clarification is needed on where the three construction yards will be located, the amount of acreage impacted and the number of additional roads for access to these areas.

As desert habitat continues to be adversely impacted, the decline of native desert wildlife accelerates. Evidence of this is demonstrated in the decline of the desert tortoise, considered an indicator species for all desert wildlife. The U.S. Fish and Wildlife Service has determined the desert tortoise is warranted for listing, the Bureau of Land Management has the species listed as a Sensitive Species, and it is being proposed for California State listing.

The proposed project will have a direct adverse impact to the desert tortoise as the result of loss of habitat, additional population fragmentation resulting from addition of roads, and direct loss of individuals due to increased vehicle traffic. To minimize these impacts, the following mitigation is needed:

13-2

1. A desert tortoise orientation and awareness training class be given to all employees involved in the project prior to construction. This needs to be conducted by a qualified tortoise biologist.

2. Continuous removal of tortoises by a qualified biologist on the project site until completion of the project. This would include pre-survey work to locate and flag tortoise burrows so they can be avoided during construction.

3. An enforced speed limit of a maximum of 20 mph on all roads involved in the project, with travel limited to designated roads.

13-1 SCE has not yet identified specific sites for its construction yard. It intends to use as many of the sites that were used for construction of the first Devers-Palo Verde line as are available. These sites have existing access roads. Should new sites be necessary, SCE intends to select a site with existing access, if possible.

There will be six construction yards. Each will cover 6 to 8 acres. Likely locations include Palo Verde, Blythe, Desert Center, and Vicksburg. SCE's first priority would be lands owned by the Arizona Power System, Edison, or lands leased from the Federal Government. At the time a site is selected, an environmental assessment will be prepared and other regulatory requirements will be met (e.g., compliance with Endangered Species Act and the National Historic Preservation Act).

4. Where the transmission line involves tortoise habitat, construction needs to be limited to the period of November 1 through March 15 to coincide with minimal tortoise activity.

5. It has recently been documented that ravens are having a serious impact on young tortoises, particularly where suitable perch structures are available such as transmission towers. To determine the degree of raven predation resulting from this project, it is necessary that a pre and post study be conducted and appropriate mitigation follow, if needed.

13-2 CONT.

6. To mitigate for the loss of tortoise habitat, acquisition of appropriate land in the Chuckwalla Bench area is needed; the land acquired to be transferred to the California Department of Fish and Game or the Desert Tortoise Council.

Please contact us if you have questions or if we can be of assistance.

Sincerely,

Glenn Stewart

Glenn Stewart
Co-Chairman

cc: DTC Board

2-33

13-2 See response 14-6 for a discussion of similar measures recommended by the California Department of Fish and Game.

Recommended measure #4 requiring a 4.5-month construction closure places undue hardship on the applicant when the measure is not clearly beneficial. Construction during the winter hibernation means that some animals may have to be removed from overwintering burrows and maintained in artificial hibernacula for later release. This procedure has met with limited success. It may be preferable to construct during the active tortoise season, thereby allowing tortoises to be moved off of construction sites to a place of safety, but within its presumed range. Other measures incorporated (see response 14-6 and wildlife mitigation measures 3-9) should provide adequate protection for individual tortoises.

LETTER 14

State of California
GOVERNOR'S OFFICE
OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814
916/323-7480

GEORGE DEUKMEJIAN
GOVERNOR

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -6 PM 1:22
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

DATE: July 2, 1987

TO: Mr. William Paigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

FROM: Office of Planning and Research
State Clearinghouse

RE: SCH 86072810 --- Draft Supplemental EIR, Devers - Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties.

2-34

As the designated California Single Point of Contact, pursuant to Executive Order 12372, the Office of Planning and Research transmits attached comments as the State Process Recommendation.

This recommendation is a consensus; no opposing comments have been received. Initiation of the "accommodate or explain" response by your agency is, therefore, in effect.

Sincerely,

Huston T. Carlyle, Jr.
Director, Office of Planning and Research

Attachment

cc: Applicant

Resources Building
1416 Ninth Street
95814
(916) 445-5656
TDD (916) 324-0604

California Conservation Corps
Department of Boating and Waterways
Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Tahoe Conservancy
California Waste Management Board
Colorado River Board
Energy Resources Conservation and Development Commission
San Francisco Bay Conservation and Development Commission
State Coastal Conservancy
State Lands Division
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards

Mr. William Paigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

July 2, 1987

Dear Mr. Paigh:

The State has reviewed the Draft Supplemental EIR, Devers-Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties, submitted through the Office of Planning and Research. Review was coordinated with the Colorado River Board, Public Utilities Commission, and Departments of Conservation, Fish and Game, Parks and Recreation, Transportation, and Water Resources.

2-35

Attached for your consideration are comments received from the Departments of Conservation and Fish and Game.

The Department of Transportation, Aeronautics Division, concurs in the report's proposal to submit a Notice of Proposed Construction or Alteration, informing the Federal Aviation Administration of the "intent to construct within any interference zones and to comply with any applicable siting, lighting, or marking requirements."

The Department also recommends that future documents provide the names of any airports that the project may affect.

Thank you for providing an opportunity to review this document.

Sincerely,

Gordon F. Snow, Ph.D
Assistant Secretary for Resources

Attachments (2)

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 86072810)

State of California THE RESOURCES AGENCY OF CALIFORNIA

Memorandum

To : Dr. Gordon F. Snow
Assistant Secretary for Resources

Mr. William Haigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Date : JUN 24 1987

Subject: Draft Environmental Impact Statement (DEIS) for Devers-Palo Verde II 500 kV Transmission Line SCH# 86072810

From : Department of Conservation—Office of the Director

The Department of Conservation is responsible for monitoring farmland conversion on a statewide basis. The Department also administers the California Land Conservation (Williamson) Act. We have reviewed the Bureau of Land Management's DEIS for the project referenced above, and have noted that the proposal may involve the conversion of valuable farmland. The Department, therefore, offers the following comments.

The project would involve the construction of a 500 kV transmission line from the Devers Substation near Palm Springs, California to the vicinity of the Palo Verde Nuclear Generating Station about 40 miles west of Phoenix, Arizona.

The Final Environmental Impact Statement (FEIS) should provide information on the number of acres of agricultural land to be developed, the potential agricultural value of the proposed development sites, the impacts of the conversion of that land and the possible mitigation actions which would reduce the significant residual impact on prime agricultural land. We recommend the FEIS contain the following information to ensure the adequate assessment of the project's impacts in these areas.

14-1

- o The agricultural character of the area covered by the project and of nearby or surrounding lands which may be affected by the project.
  - Identify agricultural preserves and number of acres of land, type of land, (i.e. prime/non-prime) and location.
  - Types and relative yields of crops grown.
  - Agricultural potential, based on the U. S. Department of Agriculture's Land Capability Classifications and the State of California, Department of Conservation's Important Farmland Series map designations.
  - The impact upon current and future agricultural operations.

14-2

- o The impacts of any required cancellations of Williamson Act contract(s) affecting the property, as well as any of the following data. (The Williamson Act is a State of California program generally administered by the Department of Conservation and directly administered by participating counties and cities.)

2-38

14-1 A characterization of the agricultural quality of the soils in the project area is discussed on pages 139 to 140 of CPUC's Draft EIR (WESCO 1987) included by reference in the Draft SEIS. The tables below better summarize the land types, location, and acreages affected by the proposed project:

Land Type Impacted	Location*
Agricultural Preserve	
- Proposed Project	Link 14, milepost 17.5 - 18.0 Link 10, milepost 6.2 - 7.0
- Northern Alternative 1	No impact
- Northern Alternative 2	No impact
- Southern Alternative	No impact
Prime Farmland	
- Proposed Project	Link 10, milepost 0 - 10.1
- Northern Alternative 1	Link 5, milepost 34.6 - 35.6; Link 11, milepost 0 - 1.1; route skirts the edges of prime irrigated farmland; Link 11 mileposts 1.1 - 7.8 and 8.8 - 9.2
- Northern Alternative 2	No impact
- Southern Alternative	Link 7, mileposts 11.7 - 15.1 and 15.3 - 15.8; Link 9, milepost 0 - 1.1

14-1 CONT.

Non-prime Farmland

- Proposed Project and	All cultivated lands within the project corridor appear to meet the criteria for prime farmland or lands of statewide importance. In addition, there is an extensive area of uncultivated non-prime farmland (which is more properly considered rangeland) that may be occasionally grazed. Virtually all of the irrigated agricultural land in the Coachella Valley, along the cnt. Colorado River in the Palo Verde Valley of California and Arizona, and a small tract of land southwest of the Palo Verde Nuclear Generating Station, is considered prime farmland.

Alternatives	No. of Acres Impacted
- Proposed Project	Temporarily disrupts agricultural production on 47 ac.; permanently occupies 0.03 ac. prime farmland.
- Northern Alternative 1	Temporarily modifies 13.4 ac.; permanently occupies 0.09 ac. prime farmland; new access required for entire alternative resulting in additional disruption of agriculture.
- Northern Alternative 2	No impact
- Southern Alternative	Temporarily disrupts agricultural production through 4 mi. of farmland; permanently occupies 0.02 ac. prime farmland; new access required for entire alternative resulting in additional disruption of agriculture.

14-1 CONT. Less than 0.1 acre of prime agricultural farmland would be removed from production by tower placement for all alternatives (the proposed project would only occupy 0.03 acres). The preferred alternative parallels the existing Devers-Palo Verde #1 transmission line and would not require any additional access roads. Agricultural operations would be temporarily disrupted during construction; however, mitigation measures have been recommended to minimize impacts (see response 14-4).

The types of crops grown in the study area are listed in Section 4.6.3 (p. 91) of the Draft EIR. The primary crops include alfalfa, citrus fruits, and grains.

A series of public meetings and a special workshop were held to facilitate public participation and identify potential impacts to current and future agricultural operations during the environmental review process. The results of the workshop (key points raised by the public participants and suggested mitigation measures) are included as Appendix A in the CPUC EIR. A detailed discussion of concerns raised during the review process regarding agricultural impacts, including those relating to aerial spraying, are discussed in Section 5.6.3 of the EIR.

In summary, agricultural impacts can generally be defined as effects upon agricultural production, operations, and farmland. Agricultural land use impacts occur on both a short- and long-term basis. Short-term effects occur during project construction, while long-term effects occur over the life of the project. Short-term impacts from the proposed project and alternatives include the loss of cropland and reduced agricultural production resulting from soil compaction in construction areas (staging areas, wire pulling and splicing sites, tower assembly and erection areas). Irrigation operations and applications of fertilizers, pesticides, and herbicides can also be disrupted by transmission line construction, thereby reducing crop yields further. Construction vehicles passing through agricultural areas can aggravate this situation by transporting weed seeds and increasing their dispersion.

- The location of Williamson Act contracts on land within and adjacent to the project area.
- A discussion of the effects that cancellation of Williamson Act contracts would have on nearby properties also under contract.

14-2 CONT.

o Farmland Impacts

- Assess cumulative impacts of possible future development that may occur as a result of additional power sources.
- The type and amount of farmland conversion, if any, that would result from implementation of the project.
- The growth inducing impact of the project on other farmland in the path of the transmission line.
- The possible curtailment of aerial spraying of farmland near transmission lines.

14-3

o Mitigation measures and alternatives that would lessen the farmland conversion impact of this project. Some possibilities are:

- The preferred alternative would be to align towers along roads, field edges and property boundaries if the siting paralleling the present transmission line is not chosen.
- Protection of other, existing farmland through the use of Williamson Act contracts in Riverside County.

14-4

The Department appreciates the opportunity to comment on the DEIS. We hope that the farmland conversion impact and the Williamson Act contract issues are given adequate consideration in the FEIS. If I can be of further assistance, please feel free to call me at (916) 322-5873.

Dennis J. O'Bryant
Environmental Program Coordinator

cc: Stephen Oliva, Chief
Office of Land Conservation

14-1 CONT. Project construction would temporarily disrupt approximately 47 acres of prime farmland. In agricultural areas, long-term effects upon agricultural production occur as a result of a loss of productive farmland and disruption or interference with farming activities. Long-term impacts include loss of cropland and reduced agricultural production in and around tower sites. Reduced crop yields may result from soil compaction and reduced maneuverability of farming equipment, and may also occur as a result of reduced or incomplete application of pesticides, herbicides, and fertilizers. The proposed project would permanently occupy 0.03 acres of prime farmland (tower footpad sites).

14-2 It is unlikely that the project would require cancellation of Williamson Act Contracts (California state legislation). See response 14-1 for the locations of prime farmlands under Williamson Act Contracts.

14-3 The proposed project transmits power to the regional service area of SCE, as opposed to being a distribution line which might bring power to a new geographic area or expand power supplies in a given area; therefore, it is not possible to identify where or what type of development might result. The project will not provide additional power sources for the Palo Verde Valley, so no cumulative impacts will occur there.

The amount and type of farmland conversion resulting from project implementation is discussed in response 14-1.

As noted in response 14-1 (the discussion of impacts to current and future agricultural operations) the possible curtailment of aerial spraying was considered during preparation of the Draft SEIS and adequate mitigation measures have been recommended as part of the applicant's proposed project. For the reader's convenience, portions of the Draft SEIS concerning impacts to aerial spraying (pp. 168-170) are reproduced below:

14-3 CONT. "The proposed project would result in an increased risk to aerial application by expanding the existing transmission corridor from approximately 200 to 800 feet. The actual area affected will depend upon actual tower locations and the separation between existing and proposed towers. This modification could result in reduced spray coverage; reduction of crop yields, increased safety risks to applicators; increased need for ground applications of pesticides, cnt. herbicides, and fertilizers; increased costs to aerial applicators; and increased production costs to growers.

"Most of the spraying of fertilizers, pesticides, and herbicides is accomplished by aerial application, and approximately 75 percent of all spraying in the Palo Verde Valley occurs in the evening (J. Cyr, pers. comm.; L. Eed, pers. comm.; C.H. Tuomela, pers. comm.). Hazards to aerial applicators were identified as a primary local concern of the agricultural community at a California Public Utilities Commission (CPUC) public workshop held in Blythe on June 16, 1986. (Refer to Appendix A for a summary of this workshop.) Hazards to aerial applicators are created by the presence of the transmission towers and conductors and as a result of the nature of the aircraft operation. Of greatest concern to aerial applicators are the conductors (wires) which are extremely difficult to see, particularly during evening flights. Construction of a second line in the existing corridor would increase this risk because of the increased number and area of additional lines and towers to be avoided.

"A high voltage transmission line reduces the dispersion efficiency for spraying of fertilizer, pesticides, and herbicides as a consequence of the aerial applicator maneuvering to avoid the transmission line conductors and towers. In order to compensate for this problem, aerial applicators normally fly additional passes over areas near and beneath the transmission line. The additional passes increase the operation costs of aerial application and, depending upon how these costs are assigned, can increase production costs to the farmer and operating costs to the applicator. In addition, these passes may result in the application of excessive fertilizer or chemicals, again adversely affecting crop yields (California Energy Commission [CEC] 1984; J. Cyr, pers. comm.)."

14-4 The proposed project is sited along an existing transmission line corridor to reduce potential impacts to agriculture and farmland conversion. The alternative routes considered appear to be the least environmentally damaging options and follow roads, field edges, and property boundaries to the extent possible. The siting and design of the proposed transmission line meets all California Agricultural Aircraft Association (CAAA) and Agricultural Society of Agricultural Engineers (ASAE) recommended criteria excluding the use of reflective devices or specular conductors to increase the visibility of the line in agricultural areas. However, the use of such materials has been recommended in the SEIS. The recommended agricultural land use mitigation measures are summarized in Section 3.5.6 of the Draft SEIS and are reproduced below for the reader's convenience:

To minimize reductions in crop productivity SCE should:

- Coordinate with landowners and farmers to time construction activities prior to normal planting periods or after normal harvest periods where possible.

- Limit construction areas to minimize ground disturbance, soil compaction, and reduced crop production.

- Locate staging areas and wire-pulling and splicing areas in non-productive agricultural areas to the greatest extent possible.

14-4 CONT. To minimize agricultural aircraft safety hazards posed by the proposed transmission line, the following measures are recommended:

- Reflectors on towers and specular conductors should be used to increase the visibility of transmission line towers and wires. Reflectors should be placed at different heights and sides of the towers. (The suggested placement of reflectors on transmission towers, required by the CPUC for the San Diego Gas and Electric (SDG&E) Southwest Powerlink project, is at three locations: at 10 feet, at approximately 40 feet [corresponding to the height of the lowest conductor], and at the top of the poles tilted upward at 20 degree angles.) Edison should work with aerial applicators to identify the most appropriate number and placement of reflective devices. In addition, lighting currently in place for the Devers-Palo Verde #1 line should be expanded by Southern California Edison, in consultation with aerial applicators, to ensure adequate lighting of both transmission lines and facilities during nighttime aerial application activities.

- Any future reconductoring of the proposed or existing transmission line should use specular conductors in the Blythe farmland area."

State of California — The Resources Agency

Memorandum

To : Honorable Gordon K. Van Vleck
Secretary for Resources
1416 Ninth Street
Sacramento, CA 95814

Attn: Gordon F. Snow, Ph.D.
Projects Coordinator

Date June 29, 1987

From : Department of Fish and Game

Subject: Draft Supplemental EIR: Devers-Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties - SCH 86072810

The Department of Fish and Game (Department) biologists have reviewed the Draft Supplemental EIR describing potential environmental impacts from Southern California Edison's proposal to construct a second 500 KV transmission line from the Devers Substation (near Palm Springs) to the Palo Verde Nuclear Generating Station located in Arizona. The line would be the second in an existing corridor and would be identical to the existing line.

The Department generally supports the preferred alternative of the project because the new powerline would follow the existing service road, thus avoiding impacts to desert resources that would result from new service road construction. However, we request additional information regarding potential impacts to desert tortoise. The document states that three construction yards will be established in California for equipment storage, vehicle parking, and for a temporary office for supervisory personnel. To fully evaluate the impacts of this project we must know the total size of these yards and their locations in relation to sensitive species habitat. Also, if any new access roads are required, we would have the same concerns about their location.

The document proposes several mitigation measures to offset project impacts. However, we do not believe the proposed measures will adequately protect desert tortoise populations within the project area. We recommend that the following measures be included in any final approval:

1. Since the project would impact 77 miles of medium- to high-density tortoise habitat and would disturb 0.4 acre per mile, the project sponsor must compensate for the acreage lost due to disturbance. A total of 30.8 acres would be lost due to the various construction activities; to compensate for this loss, the project sponsor should purchase 308 acres of high-density tortoise habitat within the Chuckwalla Bench Area of Critical Environmental Concern (ACEC). Given information on additional impacts due to construction yards and any access roads, this number of acres should be increased. The rate of 10:1 in compensation acreage is currently being applied to other projects which are impacting medium-density tortoise habitat in southern California. The spur roads that are

2-43

14-5

14-6

14-5 SCE has not yet identified specific sites for its construction yard. It intends to use as many of the sites that were used for construction of the first Devers-Palo Verde line as are available. These sites have existing access roads. Should new sites be necessary, SCE intends to select a site with existing access if possible.

There will be six construction yards. Each will cover 6 to 8 acres. Likely locations include Palo Verde, Blythe, Desert Center, and Vicksburg. SCE's first priority would be lands owned by the Arizona Power System, Edison, or lands leased from the Federal Government. At the time a site is selected, an environmental assessment will be prepared and other regulatory requirements will be met (e.g., compliance with Endangered Species Act and the National Historic Preservation Act).

14-6 Most of the recommended measures have been added with modification (see Appendix A, wildlife mitigation measures 3 to 9). Recommended measures #7, requiring a raven predation study, and #8, requiring a performance bond, have not been added.

required for this project would cause additional fragmentation of the tortoise population and would increase the decline of this population. Therefore, the protection of these large population areas is essential. Once the land has been purchased, it shall be turned over to the Department or the Desert Tortoise Council for management and restoration.

2. The project sponsor shall hire qualified tortoise biologists to conduct daily tortoise sweeps on the roads within tortoise habitat and remove any tortoises which are found. These sweeps will be conducted prior to use of the roads by any construction vehicles.

3. Once spur road locations have been determined, the area shall be evaluated by the tortoise biologists and all burrows will be clearly marked and the route shall then be realigned to avoid impacting the burrows.

4. Any tortoise found on site will be removed by the biologists and placed back in the appropriate habitat or held to be released after the construction is complete. The project sponsor will provide an enclosure to hold any tortoises which cannot be released immediately.

2-44 14-6 CONT.

5. The project sponsor shall restrict the speed on all roads to a maximum of 25 miles per hour. All roads shall be posted with this limit and the project sponsor will be responsible for ensuring compliance with this limit by their employees.

6. Prior to construction activities, the project sponsor will have a tortoise biologist present a class to all workers in the handling of tortoises and their sensitivity to human disturbance.

7. For six months prior to the initiation of construction, the project sponsor will have a qualified biologist conduct raven counts on a daily basis for the length of the powerline which passes through tortoise habitat to evaluate tortoise predation by ravens. These counts will continue through construction and for one year after construction is ended so that any increase in raven numbers and predation can be documented. This biologist should also evaluate tortoise predation by checking under the bases of the existing power poles for the remains of tortoises. These inspections will be conducted on a weekly basis for the same period as the counts. If evidence of increased predation is found, the project sponsor shall develop additional mitigation measures to offset these additional impacts.

14-6 CONT. Recommended measure #1 has been added, but the compensation rate will be determined after further discussions among BLM, California Department of Fish and Game, the Desert Tortoise Council, and the applicant. The BLM is currently developing compensation policy for tortoise habitat loss. Since the BLM is the sole conservation agency administering lands on Chuckwalla Bench and the Bench is a BLM-designated Area of Critical Environmental Concern, it would seem appropriate that compensation lands be added to BLM holdings there.

Recommended measure #7 has been modified to reduce the number of surveys to bring the study into a more cost-effective scope. Study design will be refined later by discussions among biologists of BLM, California Department of Fish and Game, the Desert Tortoise Council, and the applicant.

8. A performance bond shall be required to ensure the project sponsor's completion of all mitigation measures. For this project, the performance bond should be a minimum of $250,000.

14-6 CONT.

If these conditions are included in the final project design, the impacts of this project on the desert tortoise and its habitat may be reduced to a level that is acceptable.

The project will also potentially impact the endangered Coachella Valley fringe-toed lizard. Although the Coachella Valley fringe-toed Lizard Habitat Conservation Plan (HCP) identifies utility right-of-way as a compatible use of land, it does not exempt utility companies from fees charged to developers within the fee assessment area in the Coachella Valley as delineated in the HCP. Therefore, the amount of disturbance on private land within the fee assessment area needs to be delineated. The fee schedule, as presented in the HCP of $600.00 per disturbed acre, should aid The Nature Conservancy for the purchase of land within the Coachella Valley Preserve.

14-7

Diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream, or lake will require notification to the Department as called for in the Fish and Game Code. This notification (with fee) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency.

14-8

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Fred Worthley, Regional Manager of Reign 5, at 245 W. Broadway, Suite 350, Long Beach, CA 90802-4467 or by telephone at (213) 590-5113.

Pete Bontadelli
Acting Director

14-7 The amount of disturbance on private land in the fee assessment area will be delineated before final approval by BLM, and SCE will be required to pay all applicable fees.

14-8 No diversions or obstructions of the natural flow of any watercourse are planned. Therefore, notification will not be necessary. Should any such structures become necessary, SCE will notify the Department and arrange for payment of the appropriate fees.

LETTER 15

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -6 PM 4:40
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

COLORADO RIVER INDIAN TRIBES
Colorado River Indian Reservation
ROUTE 1 BOX 23 B
TELEPHONE (602) 669 9211
PARKER, ARIZONA 85344

In reply, refer to _____

June 30, 1987

William Haigh
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: Devers - Palo Verde No. 2 500 kV Transmission Line
Supplemental EIS

Dear Mr. Haigh:

The Colorado River Indian Tribes make the following comments on the Devers - Palo Verde No. 2 500 kV Transmission Line Supplemental EIS.

2-46

15-1 First, the Tribes reiterate their position set forth in Tribal Council Resolution R-85-79 (enclosed herewith) requesting that we be consulted whenever any utility company proposes or prepares any preliminary studies in connection with a proposed transmission line crossing Reservation land. One of the alternative routes proposed in the supplemental EIS crosses Reservation land, yet the Tribes have not been consulted regarding this route by the utility company or the BLM or anyone else. The Tribes believe that we should be consulted at the earliest possible stage when such a proposal is being considered and discussed in an EIS, so that we may have input before important decisions are made.

15-2 Second, the Supplemental EIS apparently indicates that no changes will be made to the communications facilities at Black Peak, near the Reservation boundary. The Tribes wish to make certain that that is the case, and that no new facilities will be placed at that location.

Because it was impossible to discern from the EIS on the first Palo Verde - Devers transmission line that new facilities were contemplated at Black Peak, the Tribes never had the chance to comment on that action. With that experience in mind, the Tribes wish to make certain that the same problem will not reoccur, leaving us without the opportunity to make our position on such activity clear. Because the area surrounding Black Peak is of strong religious and cultural significance for the Tribes, we hereby state our opposition to any increase or upgrading of the communications facilities at that location.

15-1 The Tribal Chairperson was notified by letter dated July 9, 1985 that Southern California Edison was planning to construct a second 500 kV transmission line from its Devers, California substation to the Palo Verde Nuclear Generating Plant in Arizona. This letter indicated that an alternative route that crossed Colorado River Indian Tribes (CRIT) tribal lands was being considered. No response to this initial contact was received. In addition, informal calls were made to Mr. Ron Moore on July 16, 1985 and August 6, 1985.

Please note that the route preferred by BLM does not cross tribal lands. Only an alternative route does, and it is not BLM's proposed alternative or the Applicant' proposed route. However, should this alternative receive further consideration, the BLM and the applicant will contact CRIT to determine its concerns. Also, should this alternative ultimately be chosen for the proposed project, then appropriate permits would have to be obtained from the Bureau of Indian Affairs.

If CRIT has major concerns, however, please let us know as soon as possible so that our decision can reflect them. Should you desire a meeting, we will be more than happy to arrange one.

Thank very much for the opportunity to comment on the Supplemental EIS.

Very truly yours,

COLORADO RIVER INDIAN TRIBES

Anthony Drennan, Sr.
Chairman, Tribal Council

Enclosure

cc: Charles Lamb
Alletta d'A Belin

15-2 SCE has indicated that no new communications facilities would be required for the proposed project (Draft SEIS, page 23). If this should change at any time, the BLM would require appropriate environmental review and consultation with the Tribes.

Resolution No. R-85-79

RESOLUTION

COLORADO RIVER TRIBAL COUNCIL

A Resolution to Take a position concerning transmission lines and other utilities crossing Indian Lands and/or lands adjacent to Indian Lands

Be it resolved by the Tribal Council of the Colorado River Indian Tribes, in ~~XXXXX~~ special meeting assembled on December 7, 1979

WHEREAS, the Colorado River Indian Tribes exercise sovereign jurisdiction over lands of the Colorado River Indian Reservation, and

WHEREAS, these lands are the ancestral homelands of the Mohave Tribe and use areas of other tribes of the Colorado River Indian Tribes of this reservation, and

WHEREAS, utility companies have proposed from time to time the construction of transmission lines and other utility corridors crossing Indian lands in order to transmit power through Indian lands, and

WHEREAS, the Tribes of the Colorado River Indian Reservation were not adequately consulted prior to any discussion of these proposals, and

WHEREAS, the construction of these transmission lines if permitted will markedly interfere with the full development of reservation lands, and

WHEREAS, the tribes will not receive any direct power benefit from transmission lines crossing the reservation, and

The foregoing resolution was on December 7, 1979 duly approved by a vote of 5 for and 1 against, by the Tribal Council of the Colorado River Indian Tribes, pursuant to authority vested in it by Section 1(e), Article VI of the Constitution and By-laws of the Tribes, ratified by the Tribes on March 1, 1975 and approved by the Secretary of the Interior on May 29, 1975, pursuant to Section 16 of the Act of June 18, 1934, (48 Stat. 984). This resolution is effective as of the date of its adoption.

COLORADO RIVER TRIBAL COUNCIL

By

WHEREAS, there are known potentials for safety hazards associated with such lines, and

WHEREAS, it is within the powers of the Tribes to make the final decision concerning any activity on the reservation,

BE IT RESOLVED, that no preliminary studies on the Colorado River Indian Reservation be undertaken without the prior knowledge and the consent of the Tribes,

BE IT FURTHER RESOLVED that the Tribes be consulted whenever any utility company proposes any activity on, near, or crossing reservation lands,

BE IT FINALLY RESOLVED that copies of this Resolution be sent to all the President, Senator Kennedy, State Delegations, Governors of Arizona and California, Bureau of Indian Affairs and its sub-agencies, Arizona and California reservations, Bureau of Land Management, California Heritage Commission, Native American Museums Association, National Congress of American Indians, National Tribal Chairmen's Association.

LETTER 16

Tucson Rod and Gun Club

P.O. BOX 12921
TUCSON, ARIZONA 85732

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -7 PM 1:09
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

July 5, 1987

Bill Haigh
B.L.M. California Desert Distric
1695 Spruce st.
Riverside California 92507

Dear: Mr. Haigh

Thank you in advance for reading my comments.
On behalf of my self and the 3700 members of
the Tucson Rod and Gun Club we want to go
on record of putting the Southern California
Edison Company's Devers-Palo Verde second
500 K.V Tramission Line in the same power
corridor as the first one was built
through the K.O.A National Wild Life Refuge.
We Feel This route will have Less impact
on the wild Life.

2-50

Thank you
Albert R Hurt
President
Tucson Rod and Gun Club

LETTER 17

Southern California Edison Company

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

July 8, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Subject: Draft Supplement Environmental Impact Statement (SEIS) for the Devers-Palo Verde No. 2 500 kV Transmission Line Project

Dear Mr. Haigh:

Enclosed are Southern California Edison Company's comments on the subject Draft SEIS.

Please contact me at (818) 302-8547 or Gary Dudley at (714) 891-1500 should you have any questions regarding the enclosure.

Sincerely,

James Kahle

James Kahle
Project Manager

2-51

RECEIVED
1987 JUL -9 PM 2:40

ENCLOSURE 1

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT (SEIS) FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

	PAGE	COMMENT
17-1	44	Fifth paragraph, "Helicopter construction should be considered...": In general, helicopter construction in areas which were originally constructed utilizing normal techniques is unwarranted. Good engineering practice and erosion control measures can mitigate erosion or slope stability sensitivities. Based on both air and ground reconnaissance of the project area, there is no evidence of significant erosion above the natural rate, or slope instability along the #1 line. Thus it is not expected that there will be problems for the #2 line. In addition, limiting access to tower sites by aircraft is extremely expensive, creates extended repair outages when bad weather or nighttime work schedules occur, and creates added safety risks to personnel. Aircraft access does not resolve the need to position cranes and wire stringing equipment should line repairs be necessary. The spur roads would be required for these activities.
17-2	45	First paragraph, "Construction of new access roads and soil disturbance should be avoided or minimized on slopes over 35 percent..." A 35 percent slope is about 19.3°. Based on Edison design standards, this is too shallow to be considered for not building access roads. Edison requests changing 35 percent to 60 percent which is in line with standard Edison design allowances that have been used previously in Edison construction activities without resulting in erosion problems.

17-1 This mitigation measure has been revised; please see Section 3.1.

17-2 This mitigation measure has been revised; please see Section 3.1.

ENCLOSURE 1 (Continued)

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SEIS FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

PAGE	COMMENT
50	First paragraph, "Reflectors on towers... In addition, lighting currently in place for the Devers-Palo Verde #1 line should be expanded." The reason given for the suggested marking and lighting is to "minimize agricultural safety hazards posed by the proposed transmission line." Edison has approximately 11,5000 circuit miles of overhead transmission lines and approximately 45,000 circuit miles of overhead distribution lines. California Public utilities Code Section 21658 requires Edison to comply with Federal Aviation Regulation (FAR) Part 77 and to insure that its structures do not constitute a "hazard to air navigation" within the meaning of the FAR's. FAA criteria (FAR Part 77) established standards for determination of obstructions to air navigation. Edison's overhead lines are designed in compliance with all applicable FAA rules and regulations and should not be considered a hazard. The "marking" and "lighting" discussed in the SEIS is not required by the FAA. The subject of marking and lighting of overhead lines has been evaluated for many years. Edison believes the FAA requirements are adequate and there is no need for any further requirements. Any evaluation of marking or lighting requirements should include consideration of the following: 1. Most methods of marking involve difficult problems of installation as well as an increase in the effects of high winds. 2. Reflective markings are used as objects for target practice with the resultant increase in risk of damage to major transmission lines.

2-53

17-3

17-3 The BLM does not have specific authority to require the visual mitigation on private lands in Palo Verde Valley, the area of concern. This issue has been addressed by the CPUC in its Final EIR for the project. The applicant will have to comply with all mitigation requirements of the CPUC, which does have authority over these matters under the California Environmental Quality Act (CEQA).

ENCLOSURE 1 (Continued)

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SEIS FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

	PAGE	COMMENT
17-3 CONT.	50 (cont.)	3. There are substantial differences of opinion as to the effectiveness of any particular method of marking and as to the specific locations where such markings should be utilized. Despite extensive studies of a number of alternative marking schemes and devices, major problems relating to the effectiveness and feasibility are still unresolved.
17-4	117	Fourth paragraph, "It is interesting to note, however, that the original selection of the Devers-Palo Verde #1 route through the Kofa NWR was based on the assumed potential for significant adverse impacts to bighorn sheep along the Brenda Route (Northern Alternative 2 in this SEIS), particularly the Scadden Mountains lambing area. Results of the detailed studies conducted after the Devers-Palo Verde #1 project indicate that the proposed route through the Kofa actually crosses more high density bighorn sheep habitat and known movement corridors than the Brenda Route (17 miles compared to 10.6 miles, respectively). The proposed route also lies as close to a known lambing area in the Livingston Hills." Without placing this statement in context, it is misleading. A statement such as the following should be added for completeness: It is important to note, however, that the extensive studies of bighorn sheep performed for the Devers-Palo Verde #1 Project indicate no adverse impacts to bighorn sheep in the Kowa NWR as a result of that project. Of more concern to bighorn sheep would be creating new access into previously inaccessible areas as would occur along the Northern Alternative 2 (see page 122 of SEIS).
17-5	Appendix D	Column 2, paragraph 2, line 6. It should be noted that compensation will be paid according to normal Eminent Domain procedures.

17-4 The preceding paragraph on page 117 of the Draft SEIS indicates that the referenced studies have not identified any adverse impacts to bighorn sheep. The comparison of the impacts between the preferred and Northern Alternative 2 route is stated on page 122 of the Draft SEIS. Also please see response 22-6 for more information.

17-5 Comment noted.

LETTER 18

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -8 AM 10 40
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

Mr. Bill Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

6 July 1987

Dear Mr. Haigh:

I am writing, as a private citizen, in support of the proposed Kofa Route for the Devers-Palo Verde #2 transmission line. I state at the outset that I am philosophically opposed to placing any kind of utility structures, roads, microwave facilities, etc. within national wildlife refuges. However, since there is an existing corridor with a natural gas pipeline, transmission line, and access road across the Kofa NWR, I would prefer to see the second line placed in that corridor rather than creating an entirely new corridor.

The major issue swirling about the two alternatives appears to be impact to local populations of desert bighorn sheep. As the principal investigator in Southern California Edison Company's recently completed study of desert bighorn in relation to the original Devers - Palo Verde transmission line, I feel qualified to make several comments on this issue. Our study, which lasted for nearly seven years and involved more than 10,000 relocations of radio-collared bighorn, clearly showed that the original line had no identifiable adverse effects on sheep. The most obvious response by sheep to the line was that several of our Dome Rock animals actually spent significantly more time in the transmission line corridor during construction of the line than they had during the preconstruction period or than they did after construction was completed. We have some evidence that construction in the area between the New Water Mountains and Kofa Mountains/Livington Hills complex may have hindered movements of radio-collared rams between these areas. This may be misleading, however, as we only had five radio-collared rams with any potential of making the crossing and two of the five never made the crossing in almost four years of preconstruction monitoring. Postconstruction movement of rams between the new Waters and the Kofas occurred at a higher rate than during the preconstruction period - it appears quite clear that the presence of Devers to Palo Verde Line #1 is not hindering ram movements at all (ewes very, very rarely travel between the two ranges - we have a single such record over the course of our study).

2-55

I have some minor problems with the concept of "lambing areas". The term connotes an area where ewes "go" to have their lambs, rather like the mythical elephant graveyard. Ewes and ewes with lambs tend to restrict their home areas to higher elevations, usually near one of the major water sources. These areas are often called "lambing areas" because that is where one sees larger numbers of ewes and lambs. I would certainly not suggest that building a transmission line through such an area would be benign, but I see no real, biological problem with placing a line on the

18-1

18-1 On page 117, paragraph 3 of the Draft SEIS it states: "A second parallel line as proposed is not expected to pose a significant barrier to sheep movements or have significant disturbance effects during construction." This statement is intended to include any potential impacts to lambing activity in the Livingston Hills. Also please see response 22-6 for more information.

desert floor within a mile of a lamb-ewe use area. The presence of a "lambing area" in the Livingston Hills is not, in my opinion, a valid reason to oppose the Kofa Route. The Livingston Hills "lambing area" is small, occupied by a small number of resident ewes, and is largely located more than a mile from the proposed transmission centerline. I have a very difficult time envisioning how a second line could have any effect, whatever, on the sheep residing in the Livingston Hills.

18-1 CONT.

My principal objection to the Brenda Route is that construction on this route would create access where none exists today, not just in the Scadden Mountain area, but all along the north face of the New Water Mountains. In the long term I think the creation of new access would have far more deleterious effects on desert bighorn than would construction of a second line along the existing access road across the Kofa NWR.

Finally, in the SEIS prepared by WESCO, the point is made that the original line and, therefore, the second proposed line across the Kofa actually cross more high density bighorn sheep habitat and movement corridors than the Brenda Route (17 miles versus 10.6 miles). While this is true, I do not believe it is a strong point in favor of the Brenda Route. Most of the 17 miles is situated in areas that are known movement corridors as opposed to being permanently occupied sheep habitat, and it has been demonstrated that the presence of a transmission line does not stop sheep movements. There are no movement corridors on the Brenda Route due to the presence of Interstate Highway 10 which has effectively isolated the Plomosa Mountain and New Water Mountain herds. Again, it is my opinion that the creation of new access resulting from construction of the second line on the Brenda Route would be more deleterious to bighorn than construction of a second line on the Kofa Route.

2-56

Thank you for allowing me the opportunity to express my opinion in this matter.

Sincerely Yours,

E. Linwood Smith, Ph.D.

LETTER 19

EVAN MECHAM, Governor
Commissioners
FRED S. BAKER Eagar Chairman
LARRY D. ADAMS Bullhead City
FRANCES W. WERNER Tucson
THOMAS G. WOODS, JR. Phoenix
PHILLIP W. ASHCROFT Eagar
Director
TEMPLE A. REYNOLDS
Assistant Director
DUANE L. SHROUFE

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -8 PM 1:02
CALIFORNIA DESERT DISTRICT
RIVERSIDE, CA.

ARIZONA GAME & FISH DEPARTMENT
2222 West Greenway Road Phoenix Arizona 85023 942-3000

June 29, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: Draft Supplemental EIS
Devers-Palo Verde No. 2
500 kV Transmission Line Project

2-57

Dear Mr. Haigh:

The Arizona Game and Fish Department has reviewed the referenced draft Supplemental Environmental Impact Statement (SEIS), and we respectfully submit the following comments/recommendations for your consideration.

Overall, we view the draft SEIS as accurately and adequately disclosing the biotic environmental setting in Arizona, and the potential impacts on same by the proposed construction of a second 500 kV transmission line, from the Palo Verde Nuclear Generating Station in Arizona to the Devers Substation in California, along several alternative alignments. We do offer specific comments on the draft document in a separate attachment to this letter which relate to mitigation and mitigative measures that we believe are justified and that should be incorporated into the project.

The Department has evaluated the alternative alignments for this second 500 kV transmission line, similarly to the Devers-Palo Verde No. 1 transmission line, and supports the proposed project (preferred alternative), as the alternative which would produce the fewest new direct and indirect impacts on the biological resources within the project area.

An Equal Opportunity Agency

We appreciate the opportunity to review and to offer our comments/recommendations on this draft SEIS.

Sincerely,

Temple A. Reynolds
Director

TAR:RKW:lkl

Attachment

cc: Field Operations Division
Wildlife Management Division

Attachment

Arizona Game & Fish Department
Draft SEIS
Devers-Palo Verde No. 2
500 kV Transmission Line Project

General Comments (East to West, along Arizona alignment)

The proposed power line will pass very near to water catchment #660, between Burnt Mountain and the main body of the Bighorn Mountains. On page 4-7 of the Final Environmental Statement, "Palo Verde-Devers 500 kV Transmission Line", the following statement appears:

> "The applicant or its contractors will construct one additional big game watering facility for each existing one within 300 yards (274m) of construction activities in bighorn sheep habitat."

19-1

The Burnt Mountain - Bighorn Mountain area was identified as "Bighorn Sheep Range" on Map 2-7 in that Final Environmental Statement. On Map 11-AZ in the draft SEIS, the Bighorn Mountains are again identified as an area with "Low Density Desert Bighorn Sheep Populations".

Impacts to this existing water need to be mitigated with the construction of the *second* transmission line.

Also, the Department recommends no construction in the area from mile 20 to where the power line crosses the Granite Reef Aqueduct, because such activity would limit the usefulness of catchment #660. That catchment is receiving heavier use than ever before from desert mule deer, which traditionally crossed the alignment of the Granite Reef Aqueduct and which can no longer do so. Waters on the upstream side of the aqueduct are an important part of the Department's program to keep deer out of the canal, with subsequent drowning losses. Deer drownings are a sensitive public issue, therefore, this catchment should not be jeopardized.

19-2

Kofa vs. Alternative Routes

The proposed and preferred alternative alignment of the second power line, parallel to the existing Palo Verde-Devers line, appears to have the least impact to bighorn sheep, as is indicated on page 117 of the draft SEIS. Northern Alternative 1

19-1 The BLM believes that the impacts to catchment #660 are a direct result of increased vehicular traffic to the catchment. This increased traffic was created by the road that was constructed for the first transmission line. The BLM and SCE have been working together to mitigate impacts to the catchment and a new catchment will be developed. This is being done because of impacts created by the *first transmission* line, and it is believed that the second line will have no additional impacts, and no additional mitigation is necessary.

19-2 The recommendation for "no construction in the area *from* mile 20 (link 1) to where the power line crosses the Granite Reef Aqueduct (link 1, milepost 23)" would in effect require denial of the proposed action. Not allowing construction through this area would force the development of a new alternative entirely. The BLM will work with the Arizona Game & Fish Department to try to minimize the temporary construction disturbance to catchment #660.

is simply not acceptable to the Department because of impacts it would create in the Plomosa Mountains. Northern Alternative 2 is less acceptable than the Preferred Alternative, because of its close proximity to a desert bighorn lambing ground on Scadden Mountain, and because it would create new access and subsequent long-term disturbance and impacts.

Further, Northern Alternative 2 would deviate from the approved Utility Corridor as identified in the "Final Yuma District Resource Management Plan and Environmental Impact Statement" and in the "Final Lower Gila South Resource Management Plan".

Our Department took the position, in commenting on those plans, that utilities must be restricted to existing corridors. Because of these reasons and those summarized in the first paragraph on page 122 of the draft SEIS, our Department believes that the Preferred Alternative would result in less impact, overall, than Northern Alternative 2.

Dome Rock Mountains

19-3 We believe that construction activity in the Dome Rock Mountains should not take place during the months of January, February, and March. This is specified on page 4-7 of the "Final Environmental Statement, Palo Verde-Devers 500 kV Transmission Line", and on page 7-6 of the "Devers - Palo Verde #2, 500 kV Transmission Line Project, Proponents Environmental Assessment-December 1985", but not specifically mentioned in the SEIS.

2-60

Colorado River Crossing

Again, we believe that specular, rather than non-specular, conductors should be used at the Colorado River crossing. Additionally, we believe that the stake lines should be marked to increase their visibility, such as by sleeving them in grey, UV

19-4 resistant PVC pipe. These measures should help to reduce bird collisions with the line. The Colorado River is an important movement corridor for ducks, geese, and many nongame species of birds, and everything possible should be done to reduce long-term impacts to these resources.

The proposed route is preferable to the Southern Alternative, in that it is the shortest possible crossing and would be adjacent to the existing line, which should help to reduce bird collisions by the clustering effect. The Southern Alternative is likely to result in significant bird mortality, because of movement from resting to feeding areas and, as birds veer left while moving south along the river towards the Cibola National Wildlife Refuge. Also, bird collisions would be increased with the Southern Alternative, if the northern part of the Cibola Valley becomes part of the Cibola National Wildlife Refuge, and is developed and managed for ducks and geese.

19-3 Also please see response 22-6. Your recommended seasonal construction restrictions have been incorporated (see Appendix A, wildlife mitigation measure 14).

19-4 Because the Colorado River crossing is not on BLM land, the BLM cannot require the recommended mitigation. However, the Army Corps of Engineers will be issuing a Section 10 permit for the crossing. SCE is expected to file an application for the crossing soon, and the Corps will prepare an environmental assessment for that application prior to issuing a permit. That document will develop necessary mitigation measures for the crossing. Since the Corps has the necessary jurisdiction to require and enforce a measure such as you propose, we suggest you contact the District Engineer of the Corps' Los Angeles District regarding the need for such a measure.

Specific Comments By Page

Page x, 5th paragraph

19-5 "... Arizona Department of Game and Fish...." should be Arizona Game and Fish Department.

Page 52, 3.4.8 Visual Resources

19-6 We believe that the use of specular, rather than non-specular, conductors at the Colorado River crossing would help to minimize bird collision with the transmission line. This would also be a consideration for the Southern Alternative.

Map 11 - AZ, Sensitive Biological Resources

19-7 To be consistant, this map should show arrows for "Known Desert Bighorn Sheep Movement Areas", where Northern Alternative 2 (link 5) passes through the Plomosa Mountains. There is also movement across Interstate 10, through the pass in the Plomosa Mountains, which is facilitated by highway culverts specifically designed for that purpose, as mitigation for the highway construction.

19-5 Correction noted. This correction is also made in Section 3.1 of this document.

19-6 Please see the response to comment 19-4.

19-7 The information mentioned in this comment does not change the analysis or conclusions in the Draft SEIS, and a revised map is therefore not necessary. Although there has been some documented use of these highway culverts by bighorns, the BLM Phoenix District wildlife biologists agree that the highway has created a significant barrier to bighorn movement.

LETTER 20

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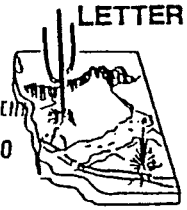
BUREAU OF LAND MANAGEMENT
1987 JUL 10 PM 1:40
CALIF. DESERT DISTRICT
RIVERSIDE, CA.



Arizona Outdoor Coalition
P.O. Box 31917
Tucson, AZ 85751-1917
July 3, 1987

Bill Haigh
BLM-California Desert District
1695 Spruce St.
Riverside, CA 92507

Dear Mr. Haigh,

Concerning the proposed southern California Edison Company's Devers-Palo Verde #2 500 KV transmission line. We would like to go on record supporting the preferred alternative. This corridor was established approximately ten years ago to handle existing and future needs. It would be a terrible waste of land to set aside another corridor a few miles to the north when the new line could parralel an existing one.

We are against any expansion of the KOFA boundries. These lands should remain in BLM ownership.

We believe Mike Spears is trying another back door expansion. That is why he has withheld the mineral survey for one year; and not allowed it released for public review.

Sincerely,

Jim Cain
President

2-82

LETTER 21

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 10 PM 1:44
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

July 7, 1987

William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

I am writing this letter to protest the plans to put the Devers-Palo Verde No. 2 Transmission Line throgh the Kofa Game Range. As a friend and frequent visitor to the Kofas I think this would be a bad decision, especially when the nearby I-10 corridor is available. I have traveled New Water Road and seen the damage caused by the existing powerline and I don't think it needs to be compounded with another one. On the other hand, I-10, which is full of traffic and pollution, would seem the logical place to clutter up with another manmade intrusion.

Thank you for considering my comments. I would like a copy of the EIS when it is available.

Sincerely,

Robert Moore

Robert Moore
6622 W. Fillmore
Phoenix, AZ 85043

LETTER 22

United States Department of the Interior

Fish and Wildlife Service
Lloyd 500 Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232

In Reply Refer To: Your Reference:

RECEIVED
BUREAU OF
1987 JUL 13 PM 1:07
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

EC 87/18

Memorandum July 8, 1987

To: State Director, Bureau of Land Management, Sacramento, California

From: Assistant Regional Director - Fish and Wildlife Enhancement, Fish and Wildlife Service, Portland, Oregon

Subject: Review of Draft Supplemental Environmental Impact Statement (SEIS) for the Devers-Palo Verde No. 2 Transmission Project, Riverside County, California, and Yuma and Maricopa Counties, Arizona

2-84

Fish and Wildlife Service (Service) offices in both Regions 1 and 2 have reviewed the subject document. The following comments are provided for your use and consideration when preparing the final document.

General Comments

The Service has concerns with the completeness of the SEIS and the adequacy of the discussion regarding the preferred alternative as related to Service National Wildlife Refuge lands and other resources, especially threatened and endangered species, under our legal responsibility.

22-1

Page 75, paragraph 2, last sentence of the SEIS refers to a Biological Assessment developed by the Bureau of Land Management (Bureau) as part of the Endangered Species Act Section 7 consultation process. Neither of the two responsible Service Field Offices (Phoenix and Laguna Niguel) have any record of consultation being initiated by the Bureau on Southern California Edison's proposed second 500 kV transmission line. We recommend that the Bureau immediately contact the involved offices regarding Endangered Species Act responsibilities. We further recommend that a Biological Assessment for Devers-Palo Verde No. 2 and a Biological Opinion, if warranted, be appended to the final SEIS.

22-1 A formal section 7 consultation was initiated with the U.S. Fish and Wildlife Service in early August 1987. The Biological Opinion is included in the Final SEIS (see Appendix C).

California Segment

22-2 The SEIS does not acknowledge that construction of the preferred alternative is being proposed within the boundary of the Coachella Valley National Wildlife Refuge established on August 28, 1985 (map attached). The SEIS also lacks a detailed description of proposed activities that could potentially result in adverse impacts to the refuge, the Coachella Valley Preserve, designated Critical Habitat for the federally threatened Coachella Valley fringe-toed lizard, and Mitigation Fee Lands. The Service recommends that a meeting be expeditiously scheduled for all involved parties to discuss proposed site-specific actions, need for possible permits, need for mitigation, need for Section 7 consultation, and responsibilities to pay mitigation fees. The decisions resulting from the meeting should be discussed in detail in the final SEIS.

Page 46-47. 3.4.5 Biological Resources. Vegetation. We recommend that the following measures be added to this section in the final SEIS:

22-3 1. Identify the location, or at least the criteria for selection, of the transplantation areas for Ferocactus and Coryphantha.

22-4 2. Review preconstruction surveys of sensitive plant locations and facility placement with the Service and California Department of Fish and Game (CDFG) biologists.

22-5 3. Develop plans for revegetation of any woody wash, riparian, and palm oasis vegetation disturbed by project related activities and review these plans with Service and CDFG biologists.

2-85

Arizona Segment

General Comments

As stated in Albuquerque Regional Director Spear's May 27, 1987, letter (copy attached) to Southern California Edison Company (SCE), the Service strongly urged the elimination of the Kofa route as the preferred alternative at the inception of the planning stages of this proposal. We have not altered our objections and again must state that the proposed routing is incompatible with the purposes for which the Kofa National Wildlife Refuge (NWR) was established.

22-2 Although the Draft SEIS does not specifically mention the National Wildlife Refuge (NWR) by name, it does discuss the Coachella Valley Preserve (CVP). (See map attached to Letter 22 for location.) The CVP, which encompasses the NWR and of which the refuge is an integral part, is discussed in depth in the June 1985 Coachella Valley Fringe-toed Lizard Habitat Conservation Plan (HCP). This plan was prepared by the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan steering committee, a committee composed of representatives from federal and state agencies (among others). The Fish and Wildlife Service was one of the federal representatives.

In the HCP, it was noted under section IVB2a that utility rights-of-way, including transmission line and pipeline rights-of-way, are compatible with lizard habitat. Again under section VI (Plan Units--District 1, Roads and Utilities), the plan states that "utility easements...cross the District below the base of the Indio Hills. These include...up to 300-foot right-of-ways for the Southern California Edison Devers-Palo Verde 500kV... . SCE has purchased acreage...in the preserve as mitigation." The construction of additional utility lines, pipelines, and attendant roads are acceptable uses under the HCP.

A formal section 7 consultation was initiated with the U.S. Fish and Wildlife Service in early August 1987. The Biological Opinion is included in the Final SEIS (see Appendix C).

The BLM is willing to meet with the Fish and Wildlife Service and other parties to discuss any aspect of this proposal, its relation to the Coachella Valley National Wildlife Refuge and the designated critical habitat for the Coachella Valley fringe-toed lizard, or other points the Service believes may be pertinent. Such a meeting could be held anytime prior to BLM's final decision concerning whether to issue a right-of-way grant. That decision will not be made earlier than 30 days after the publication of this Final SEIS.

Less environmentally damaging alternatives to the preferred route through Kofa NWR exist and should be utilized. The Northern Alternative 2 Route (Brenda) crosses through or near less high density bighorn sheep habitat and movement areas than the proposed Kofa route. The major deleterious impact to the bighorn sheep thought to have been avoided by not selecting the Brenda route during routing considerations for the first transmission line (Devers-Palo Verde No. 1) was the known sheep lambing area on Scadden Mountain lying within 0.5 miles of the Brenda route. Selection of the Kofa route did avoid this lambing area but infringed upon the then unknown lambing area of the Livingston Hills. A slight modification to the Brenda route would have avoided impacting Scadden Mountain and would still, if implemented, render the northern route much less damaging to bighorn sheep than the Kofa route. This modification consists of extending link 4b at its northern most point near Scadden Mountain directly west to a connection with link 17, some 2 miles northwest of the lambing area. Concomitantly with this realignment, human access to the Brenda transmission line route and to the Scadden Mountain lambing area could be administratively controlled through road closures or placement of the access roads in a manner not conducive to unauthorized access.

22-6

To date, the Service's Region 2 office has received no request for a right-of-way (ROW) permit for the proposed alternative to cross the Kofa NWR. Because consideration of such a ROW would entail analyses of the compatibility of the proposal with the purposes for which the Kofa NWR was established, and because the results of those analyses may result in significant alterations of any consideration of the Kofa route as a preferred alternative, we strongly recommend the expeditious submittal of an application for a ROW permit.

2-66

22-7

The discussions of utility corridors and the desirability of any particular route or link based on its presence in or near a utility corridor are confusing. The essence of any such discussion should lie in whether or not boundaries of land management units such as the proposed Kofa wilderness addition or the Bureau's Wilderness Study Area (WSA) can be redrawn to accommodate the necessary utility corridor while still protecting the resource values of wilderness. In the case of the New Water Mountains WSA, this has been accomplished as discussed in the Bureau's Lower Gila South Final Wilderness Environmental Impact Statement. Such boundary modifications would also be accomplished for the Kofa proposed addition, drawing back the proposed addition's northern boundary by 0.5 miles and thereby allowing a utility corridor to be placed south of I-10.

22-8

22-3 Basic criteria for selecting transplant sites would include considerations for soil types, hydrologic conditions, slopes, and aspect similar to those at the impacted areas. Since precise impacts are not known at this time and appropriate mitigation requirements for the project would require development of detailed plans for transplantation sites prior to construction, the BLM would require that these plans be reviewed and accepted by appropriate agencies before affected plants would be removed.

22-4 Survey and inventory data will be transmitted upon request. A mitigation measure requiring transmission of this data is not necessary.

22-5 Disturbance to woody wash vegetation will be minimized by careful tower placement and spanning and by use of existing access roads. Disturbance to riparian habitat will be minimized to the greatest extent possible. No palm trees will be disturbed. (See measures for protection of vegetation in Appendix A.)

22-6 As described in Sections 4.5.2 (pp. 72-73) and 4.5.3 (pp. 77-78) of the Draft SEIS and in Chapter 2 (pp. 2-28) of the Final EIS for the Devers-Palo Verde #1 project, bighorn sheep resources and potential impacts of the proposed route through the Kofa NWR and the Northern Alternative 2 (Brenda) route are similar. The proposed route crosses through or near more high density bighorn sheep habitat and known movement areas (approximately 17.0 miles compared to 10.6 miles [see Map II-AZ in the Draft SEIS]) but, it has better access. Total habitat disturbance or loss would be considerably greater along the Northern Alternative 2 route (106.8 acres compared to 17.4 acres) between the same points (AC to E) because of increased access road requirements. The majority of this habitat disturbance (approximately 71 percent or

22-8 CONT. 77 acres), however, would not be in or adjacent to identified bighorn sheep habitat. Both alternatives also pass within 1.5 miles of known lambing areas: Scadden Mountain along the Northern Alternative 2 route and Livingston Hills along the proposed route. As discussed in Section 4.5.3 (pp. 77-78) of the Draft SEIS, concerns over the proximity of the Scadden Mountain lambing area to the Northern Alternative 2 (or Brenda route as it was called in the original EIS for the Devers-Palo Verde #1 project) and the perceived greater potential for significant adverse impacts were the primary considerations in rejecting this route and selecting the route through the Kofa NWR. The Livingston Hills lambing area was not identified until subsequent detailed studies designed to assess the impacts of the first project on bighorns were conducted.

Although there are some differences, the basic conclusion expressed in the Draft SEIS in Section 3.2 (p. 38), and described in more detail in Sections 5.5.1 (proposed route) and 5.5.2 (Northern Alternative 2), is that bighorn sheep are unlikely to be significantly impacted by construction or operation of the proposed transmission line along either of these alternative routes. One route is not clearly superior to the other, at least with respect to concerns for bighorn sheep.

The primary basis for this conclusion is the result of the detailed multi-year studies funded by Southern California Edison (SCE) and Arizona Public Service (APS) on bighorn sheep in the Dome Rock Mountains and New Water Mountains/Kofa NWR complex. This study, conducted by E. Linwood Smith and Associates, was initiated in 1977 and was designed to assess the impact of construction, operation, and maintenance of the Devers-Palo Verde #1 500 kV transmission line on bighorn sheep. The studies in the Dome Rock Mountains involved detailed radio telemetry and observational studies before, during, and after construction of the Devers-Palo Verde #1 project. In 1981, studies were expanded to include the Kofa NWR and New Water/Plomosa Mountains south of I-10. Pertinent conclusions of these studies are presented in Sections 4.5.2 (pp. 72-73), 4.5.3 (pp. 77-88), 5.5.1 (pp. 117-118, and 5.5.2 (pp. 121-122) of the Draft SEIS. A more detailed summary of these studies prepared by E. Linwood SMith (1987) is also provided in Appendix B of this document.

22-6 CONT. The original decision to route the Devers-Palo Verde #1 line through the valley in the northern portion of the Kofa NWR, rather than along the Brenda Route, was based in large part on the perceived greater potential to significantly impact bighorn sheep in the New Water/Plomosa Mountains. The major area of concern was known lambing grounds and watering sites in the Scadden Mountain area of the Plomosa Mountains. Please see pages 3-18 to 3-24 and Figures 3-1 and 3-2 of the Devers-Palo Verde #1 Final EIS (BLM 1979) for further information and comparison of the two routes. The original decision was supported by the Arizona Game and Fish Department and Arizona Desert Bighorn Sheep Society. Both also support selection of the #2 project parallel to the #1 line along the proposed route.

A key conclusion of the study was that bighorns appeared to be unaffected by construction of the #1 project through Copper Bottom Pass in the Dome Rock Mountains. The only change noted in the behavior of "Copper Bottom Pass resident" bighorns was that radio-collared animals tended to spend more time closer to the centerline during construction than the same individuals had prior to construction (Smith 1987, pp. 16-19, 24-27 [Appendix B]). Of four radio-collared sheep (with home ranges within 5 km of the centerline) that were monitored before and during construction, three (one ram and two ewes) shifted their activity toward the area of transmission line construction. These three bighorns also crossed the transmission line corridor more often during construction than they had prior to construction, possibly indicating that the animals may have been attracted to construction activity (Smith 1987 [Appendix B]). The fourth bighorn, another ram, showed no response to construction. Three other bighorns were also monitored during this period, but they rarely traveled to the vicinity of Copper Bottom Pass and provided little real data for analyzing construction period impacts (Smith 1987, p. 16 [Appendix B]). Data and discussion for each of these animals is presented in Appendix B, a detailed summary of Smith's earlier studies.

22-6 CONT. This explanation for the apparent crossing rate discrepancies appears reasonable based on the results of other studies conducted on bighorn sheep. Hicks and Elder (1979, p. 12) cite that bighorns in their study were less concerned or disturbed by human recreational activity that occurred below/downslope of the sheep. When a disturbance occurred upslope of the sheep, the animals invariably ran away from the disturbance and sought escape to terrain above where the disturbance originated (i.e., the bighorns natural tendency was to flee upslope and be above potential danger). Watts and Schemnitz (1985, p. 95) also noted a rise in heart rate (a sign of anxiety or heightened awareness) as the distance to escape terrain increased.

Concerns for potential disturbance impacts to bighorns are not unfounded. Numerous studies including Smith (1987 [Appendix B]), Hicks and Elder (1979), Leslie and Douglas (1980), and Campbell and Remington (1981) have documented significant reactions or shifts in normal activity patterns in response to high levels of human disturbance. What also is apparent, particularly based on the results of the multi-year studies conducted by Smith in relation to the Devers-Palo Verde #1 22-6 project, is that bighorns readily habituate to physical features such cnt. as transmission lines and are unaffected by the presence of such features. There is no evidence to suggest that the presence of a second operational line parallel to the #1 line would have any significant cumulative effect.

Similarly, there is no evidence to suggest that use of the Northern Alternative 2 route would have any significant long-term effects on bighorn sheep in the New Water/Plomosa Mountains. The major concern for this route would be the potential for increased public access into or near the Scadden Mountain lambing area. There is existing access into this area, but the roads are in generally poor, unimproved condition and usable only by four-wheel drive or other off-road vehicles. A typical construction access road would be suitable for use by a wider range of vehicles; however, modifications to the Northern Alternative 2 route (such as the one suggested in the Draft SEIS on p. 49) to move the centerline away from the lambing area or other measures such as roadless construction or gating would be used to minimize increases in long-term recreational access.

22-6 CONT. Construction of the project along the proposed route would not increase or alter existing access into or adjacent to lambing areas in the Livingston Hills. Also, as previously described in this response, construction and operation of the Devers-Palo Verde #1 project has not had any apparent adverse effects on bighorn sheep use in this area.

The suggestion that the Northern Alternative 2 route be modified by extending link 4b "at its northern most point near Scadden Mountain directly west to a connection with link 17" does not recognize the fact that link 4b was considered but rejected because of the WSA issue.

As the DEIS states on page 125, "link 4b, south of I-10, would involve crossing approximately 5 miles of the New Water Mountains WSA, which is inconsistent with the Federal Land Policy and Management Act which precludes permanent development within a WSA prior to a final decision by Congress as to the selection of these lands as permanent wilderness areas." Therefore, since use of link 4b is precluded by the existence of the WSA, it is not reasonable to consider "extending" that link.

In addition, we are aware that all of the new routes that are suggested in the letter would involve serious impacts. New roads would be required, additional visual impacts along I-10 and in the La Posa Long-Term Visitor area would occur, and (as per the comment) places that may be far more critical to bighorn sheep would be opened to human access.

22-7 SCE filed an application for a right-of-way grant across Kofa NWR with the Albuquerque Regional office of the Fish & Wildlife Service on October 17, 1985. The Fish and Wildlife Service acknowledged receipt of the application on November 4, 1985.

22-9 All maps should be modified to accurately depict the northern, western, and eastern boundaries of the Kofa NWR, and the boundaries of both the proposed addition to the refuge and the New Waters WSA. As they stand, the maps give the mistaken impression that the LaPaz/Yuma County lines form the refuge boundaries.

Specific Comments

We request that the Bureau make the following corrections or modifications in the final SEIS:

22-10 Page X. Para. 1. There is no designated utility corridor through Kofa NWR. The Bureau does not designate utility corridors on National Wildlife Refuges.

22-11 Page X. Para. 5. The Kofa route has a greater potential to adversely impact sheep. (See page 117-118).

22-12 Pages 35, 36. Link follows an existing oil pipeline route which could provide access.

22-13 Page 38. Table 3.2-A Soils Northern Alternative 2 follows an existing oil pipeline route which could provide access.

22-14 Page 42. Table 3.2-B. Based on the information in this report, the biological resources for the proposed route should be high and clearly the least preferred. The land use for the proposed route should be high and clearly the least preferred based on information in this project.

22-15 Page 73. Para. 2. The presence of the Livingston Hills lambing area should be reflected on Map 11.

22-16 Page 81. Para. 4. The utility corridors are not shown on the map.

22-17 Page 82. Para. 3. While development of wildlife waters has been one of the refuge's main development activities, protection of all native plants and animals within the refuge is a major refuge objective.

22-18 Page 83. Para. 1. Compatibility for Devers-Palo Verde No. 1 was based on erroneous data as indicated elsewhere in this report (page 117-118).

22-19 Page 132. Para. 1. Based on the narrative, all of the proposed route through Kofa NWR should be listed as High Impact for visual resources.

22-8 The Lower Gila South Final Wilderness Environmental Impact Statement does not "redraw" the New Waters WSA boundary. In the proposed action, the recommendation consists of a modification of the suitable boundaries. This recommendation is based on topographic features to exclude areas with mining claims and mineral potential. The modifications would also allow a one-half mile wide utility corridor south of Interstate 10.

Wilderness Study Area boundaries cannot be redrawn by BLM action. Until Congress designates wilderness or releases a WSA from further study, no action can be taken by BLM that might impair the WSA's suitability for designation.

Permitting a corridor to cross the WSA would constitute an impairment prohibited by Section 603(c) of the Federal Land Policy and Management Act (FLPMA).

22-9 Map 1, pages 9-10 of the Draft SEIS, depicts the boundaries mentioned. Readers of the Draft SEIS can extrapolate the information to the other maps from Map 1.

22-10 Your comment is correct. The BLM does not have the jurisdiction to designate utility corridors on National Wildlife Refuges. The Fish and Wildlife Service is the only agency that can grant permits for rights-of-way across National Wildlife Refuges.

22-20 Map 2. The section of land shown as owned by the state (in western Kofa NWR) now belongs to the Federal Government.

22-21 Map 5. The Celeron/All American Line is in, not proposed. What is the dashed blue line through Kofa NWR?

22-22 Map 7. While a wilderness proposal has been prepared for the refuge, no action has been taken by Congress. This means that the entire refuge must be managed to protect whatever wilderness characteristics it has. This is similar to Buresu's WSAs.

22-23 Map 8. This map is not consistent with the narrative (page 98) which indicates link 3 has low cultural resource sensitivity.

22-24 Map 11. Proposed route should show desert bighorn sheep lambing habitat at Livingston Hills, link 2: MP 29.6-33.8.

22-25 The location of the line could be placed further away from Scadden Mountain, as suggested by the Service to reduce even further the possibility of adverse impacts to bighorn sheep. This map alone could lead the decision-maker to select the route north of the refuge.

22-26 Map 12. We would like to see the refuge returned to Class I in the area of the existing powerline.

2-73

Summary Comments

As indicated above, the Service recommends that a modified Brenda route be selected in Arizona to avoid an unacceptable level of impact to resources and the Kofa NWR.

We recommend that the Buresu immediately initiate informal Section 7 consultation with our Phoenix and Laguna Niguel Field Offices for Devers-Palo Verde No. 2.

We also recommend that the Buresu meet with involved parties to resolve unaddressed issues related to the proposed crossing of the Coachella Valley NWR, the Coachella Valley Preserve, and Mitigation Fee Lands.

If the crossing of the Colorado River should require an Army Corps of Engineer's permit, we suggest that the Buresu coordinate with our Phoenix Field Office to determine potential site-specific impacts and possible need for site-specific mitigation.

In summary, the Service believes that the SEIS does not adequately identify or discuss potential direct, indirect, or

22-11 The Northern Alternative 1 Route has the greatest potential to impact bighorn sheep. The Northern Alternative 2, or Brenda Route, also has a greater potential to impact bighorns because of road building requirements in the New Water Mountains and near Scadden Mountain (p. 122 of the Draft SEIS). However, suggested route modifications in the Draft SEIS or by the FWS in comment 22-6 would greatly reduce potential impacts to levels comparable to the preferred route through the Kofa National Wildlife Refuge. Although the preferred route crosses more high density bighorn sheep habitat and movement corridors (see pp. 117-118 of the Draft SEIS), the studies by SCE and others in the Kofa National Wildlife Refuge and Dome Rock Mountains indicate that the construction and operation of Devers-Palo Verde #1 has not had an adverse impact on bighorn sheep. Thus, the differences in the amount of habitat crossed by the two alternatives is not an appropriate criteria for describing differences in impact levels between these two alternatives. Please see response 22-6 for further information on this issue.

22-12 Comment noted.

22-13 This factor was considered in the referenced Table 3.2-A.

22-14 Table 3.2-A (p. 39 of the Draft SEIS) provides a comparative summary of impacts to biological resources of the proposed and alternative routes. Based on the information in Table 3.2-A and in response 22-11, the BLM believes that the ratings presented in Table 3.2-B for biological resources are appropriate.

The land use rating of "preferred" on Table 3.2-B for the proposed route is based on the fact that the alternatives would involve impacting land uses in areas that are presently unaffected by transmission lines.

cumulative effects on resources under the Service's legal responsibility that could result from the implementation of the preferred alternative. We recommend that the final SEIS contain a detailed Impact Assessment, especially addressing the cumulative impacts on these resources from the recent proliferation of proposed ROWs and other collectively significant actions proposed across refuge lands and threatened/endangered species habitat.

We would appreciate the opportunity to work with the Bureau and the applicant to: 1) develop an environmentally acceptable project, and 2) develop mitigative measures necessary to offset impacts identified in the Impact Assessment covering direct, indirect, and cumulative effects.

If you have any specific questions, please contact the following people:

Ray Bransfield, Laguna Niguel Field Office, FTS 796-4270

Gary Kramer, Coachella NWR Manager, (619) 348-5278

Cameron Barrows, Coachella Valley Preserve, (619) 343-1234

Ron McKinstry, Phoenix Field Office, FTS 261-4720

Milton Haderlie, Kofa NWR Manager, FTS 764-6633

The Service appreciates this opportunity to provide input into the Bureau's planning process.

David E. Riley

Attachments

cc: William Haigh, Calif. Desert District, BLM
R-1, Refuges (Fields)
Laguna Niguel FO (Bransfield)
Sac SE (Kobetich)
Salton Sea NWR (Kramer)
Coachella Valley Preserve (Barrows)
Phoenix FO, (McKinstry)
Kofa NWR (Haderlie)
R-2, Refuges (Fowler)
R-2, FWE/REC
WDC/BEC
REO, PSW Region

JFowler,RBransfield,JCampbell:plm

22-15 Comment noted. We believe that adding this information to the map would not change the conclusions reached in the SEIS.

22-16 The reference to Map 5-AZ on page 81 is incorrect. BLM Utility Corridors are shown on Map 6-AZ.

22-17 Comment noted.

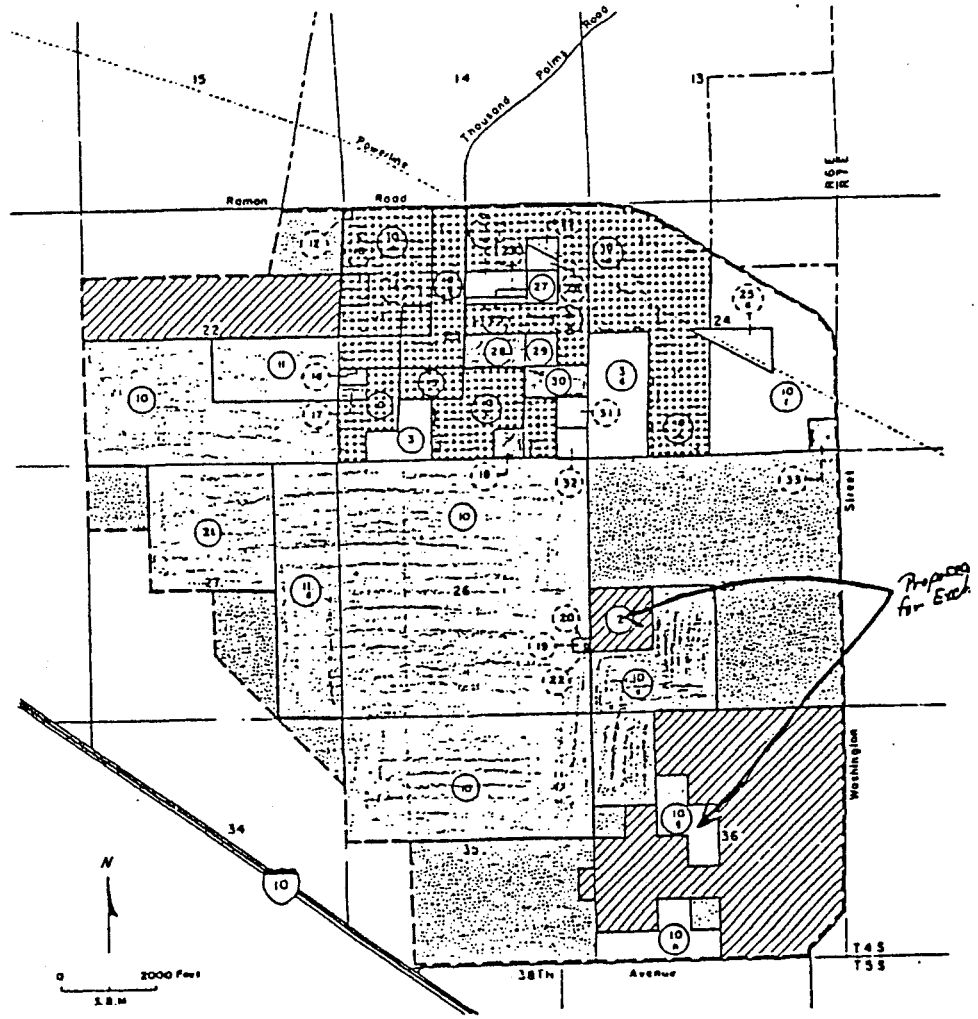
22-18 Comment noted. It may be more accurate, however, to say that the compatibility analysis for the Devers-Palo Verde #1 line through the Kofa National Wildlife Refuge was based more on incomplete or non-specific data rather than erroneous data. Please see response 3-1 for a detailed discussion on this issue.

22-19 The assessment of visual impacts is based on physical features of the landscape. The proposed route through the Kofa is described as high impact for visual resources for all but the first 2 miles from the eastern refuge boundary. This 2-mile section was not rated as high impact because it is a very similar landform to the adjacent area outside of the refuge boundary.

22-20 Correction noted.

22-21 Correction noted. The dashed blue line through the Kofa NWR was an alternative route originally considered for the Celeron/All American pipeline.

ATTACHMENT 1. Map of Coachella Valley National Wildlife Refuge, California



Refuge Boundary

(10) Tract Numbers per Table I

C.D.F.B.G. Lands

Mitigation Fee Lands

9/26/86

Purchased (FWS) - as of 10/14/86 (Colored areas in involved sections only)

Purchase Agreement in hand - as of 10/14/86

22-22 Comment noted.

22-23 Westec's original evaluation of high sensitivity for the Ranegras Plain is based on known high site densities that are limited to the Alamo Wash area and near the bases of mountain ranges. Some sites may also be non-randomly concentrated along Bouse Wash as well, although previous surveys have not identified such sites. Almost all previously recorded sites documented by Westec in the open Ranegras Plain are rock rings and small lithic scatters of low significance. About 90 percent of Link 3 is made up of this open environment. Only 10 percent is made up of concentrated riparian wash or mountain foothill zones. Therefore, a low sensitivity rating is appropriate for Link 3 as a whole but with the acknowledgment that specific higher sensitivity areas do exist within the link.

22-24 Please see response 22-15.

22-25 Please see response 22-6.

22-26 Please see response 22-19.

ATTACHMENT 2. May 27, 1987, Letter from Regional Director Spear
to Southern California Edison Company

In Reply Refer To:
Region 2: RF

May 27, 1987

Mr. James W. Kahle
Southern California Edison Co.
P.O. Box 800
Rosemead, California 91770

Dear Mr. Kahle:

This will respond to your April 29, 1987, letter requesting information or comments on the proposed Devers-Palo Verde #2 500kV Transmission Line Project. There are several incorrect, or at least, speculative assumptions with which the U.S. Fish and Wildlife Service (Service) does not agree, contained in your reasons for selection of the preferred alternative routing of the transmission line.

Your letter states that "the preferred route is within a Bureau of Land Management (BLM) approved utility corridor and would impose no major land use conflicts." The Service has the sole authority to approve utility corridors on the Kofa National Wildlife Refuge (NWR). Your assumption that this route across the Kofa NWR would impose no major land use conflicts is not shared by the Service. We believe that the verdict is still out on the impacts to sheep management that the initial Devers-Palo Verde line is having, and we are certainly not in agreement with you that a second line with its additional width and tower requirements will not cause any major land use conflicts. The visual impact of the first line is quite apparent. A second line will certainly not lessen visual impacts related to construction of the proposed Devers-Palo Verde #2 as is suggested in your letter. It is speculation on your part that sensitive biological resources existing along the right-of-way will not be significantly impacted by the project. We believe that sheep, other wildlife resources, and their habitat may very well be significantly impacted by the project. Subalternate Routes 1 or 2 would not impact the refuge. Cultural resource assessments have been accomplished along these routes as well.

The concerns we have expressed in this letter are not new. We have relayed to Southern California Edison Company and the Riverside Office of the U.S. Bureau of Land Management that the Service is adamantly opposed to any route of this line that crosses the Kofa NWR. There are environmentally and economically acceptable alternatives.

The recently received supplementary environmental impact statement (SEIS) prepared by the Riverside, California, office of the Bureau of Land Management (page 21) states:

> The Arenda Northern Alternative 2 route actually crosses through or near less high density bighorn sheep habitat and movement areas than the proposed (Kofa) route.

The major point of adverse impact to the bighorn sheep thought to have been avoided by not selecting the Brenda route was the known sheep lambing area on Scadden Mountain, lying within 0.5 miles of the Brenda route. Selection of the Kofa route did avoid this lambing area but infringed upon the then unknown lambing area of the Livingston Hills. A slight modification to the Brenda (Northern Alternative 2) route would have avoided impacting Scadden Mountain and would still, if implemented, render the northern route much less damaging to bighorn sheep than the Kofa route. Concommitantly with this realignment, human access to the Brenda transmission line route and to the Scadden Mountain lambing area can be administratively controlled through road closures or placement of the access roads in a manner not conductive to unauthorized access.

Availability and use of utility corridors have been major factors in determining not only the alternative routes under consideration for this transmission line, but also proposed routes for any future lines. In supplying the major use markets of Southern California with electricity from developed energy sources in Arizona, the area of south-western Arizona is the most likely site to carry the east-west transmission lines from source to market. We anticipate the need for coordinated use of adequately sized corridors. In the recently published Final Lower Gila South Wilderness Environmental Impact Statement prepared by the BLM, a 1/2 mile wide corridor capable of carrying two interstate pipelines and two ultra-high voltage (500 kV) transmission lines have been designated along portions of Interstate Highway 10. The BLM's wilderness proposal for the New Water Mountains (encompassing portions of the Service's proposed Kofa wilderness addition) has been delineated to accomodate the presence of such a corridor. Such accomodation was accomplished by drawing back the northern boundary of the wilderness proposal to allow passage of the corridor between wilderness lands and the highway.

Such accommodation can also be provided along the northern boundary of the Kofa wilderness addition proposal which extends further west along Interstate 10 than the BLM's New Water Mountains area. By pulling back our recommended northern boundary of the proposed Kofa addition south from Interstate 10, sufficient room for a corridor would be provided and the transmission line could pass through leaving the refuge without further impacts.

This office strongly urged the elimination of the Kofa route as the preferred alternative at the inception of the planning stages of this proposal. We have not altered our objections and again must state that the proposed routing is incompatible with the purpose for which the Kofa NWR was established. The preferred alternative for the Devers-Palo Verde #2 500kV Transmission Line should be the Brenda (Northern Alternative 2) route with slight modifications to protect the Scadden Mountain lambing area. The environmental impacts of the Kofa NWR alternative should be fully detailed in the SEIS analysis.

Sincerely,

/s/ Michael J. Spear

Regional Director

LETTER 23

YUMA AUDUBON SOCIETY

YUMA, ARIZONA 85364

1987 JUL 20 PM 2:14

July 8, 1987

CALIF. DESERT DISTRICT
RIVERSIDE, CA.

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

In 1979, the first Southern California Edison powerline gouged a path across the most wild and scenic expanse of Sonoran Desert in western Arizona: the Kofa National Wildlife Refuge. Even though in retrospect this route was obviously a very poor choice, Edison and BLM are now proposing a second powerline through the refuge. The Kofa route is being proposed even though alternative routes are available with fewer impacts to biotic resources and much less impact to visual resources. After reading the EIS, the only possible reason to select the Kofa Route is cost. The Kofa Route would cost 2% of the project cost less than the Northern Alternative #2 (Brenda Route). Saving money for your customers is important, but it is not fair to ask me or other users of Kofa Refuge to pay a price in terms of visual quality, recreation, and sensitive resources so that power can be delivered to people in Southern California at a 2% savings (and by the way, how much of that savings would the consumer really see?).

2-78

There are several inconsistencies in the EIS which lead us to believe that the only real reason to select the Kofa Route is cost:

23-1 1. The EIS downplays land management considerations. Much is said about conflicts between the northern alternatives and the BLM management plan for the area, but conflicts with refuge management are downplayed. The Fish and Wildlife Service has made a formal determination of noncompatibility for the powerline. This is not even mentioned. This determination cannot be changed without changing the project. On the other hand, BLM management plans can and often are amended to accomodate changing resource needs; and this is appropriate because BLM lands are, generally speaking, managed for multiple use. But, Fish and Wildlife Service refuge lands are not managed for multiple use; they are managed primarily for biotic resources. Given this setting of land management objectives, the EIS should have given more emphasis to conflicts with land use on Kofa Refuge, and the amendment process should have been pursued early on for alternative routes which conflict with BLM plans.

23-2 One other observation. There is an existing utility corridor along I10, approved for use by BLM. This corridor was not even considered in the EIS, even though it avoids conflicts with both BLM and Refuge management plans and objectives. Why was it not considered?

23-3 2. The existing power line road through the refuge is rough in places and must

23-1 The U.S. Fish and Wildlife Service has recommended against routing the powerline across the Kofa NWR, but no formal determination of noncompatibility or compatibility has been made. Section 4.6, p. 82, and Section 5.6, pp. 123-125 of the Draft SEIS discusses Land Use Planning considerations on the Kofa NWR and BLM lands.

23-2 Please see Section 1.3.5 of this Final SEIS for a discussion of why the I-10 corridor was eliminated from detailed study.

23-3 CONT. be travelled slowly and cautiously. Upgrading this road so that it will be passable for your equipment would make some rather remote areas easily accessible. We are afraid this road could become heavily used, especially since it is so close to Quartzite, a very popular spot for winter visitors, most of whom would love a good road to explore.

23-4 3. We do not feel the Brenda Route poses any real or new threats to the lambing area on the northwest edge of the New Water Mountains, as claimed by the EIS. This general area is already accessible by several mining roads, some of which come closer to the lambing area than the powerline road would. Also, it is most definitely possible to close roads if needed. Discing a road so that it is, in effect, as rough as the surrounding terrain would not encourage any more vehicular use than the area now receives. There may even be places where effective barriers could be installed. The BLM has used a number of techniques to successfully close roads in the McCain Valley area of San Diego County (an area of much greater off-road vehicle use than the New Water Mountains), and no doubt in other areas as well. The technology exists, but once again, Edison chose not to pursue this idea.

23-5 4. The Kofa Route appears to be the most costly to biotic resources when compared to the Brenda Route. More quality bighorn habitat is traversed, and more sensitive plant species would be affected.

23-6 5. In case of a disaster, such as a plane crashing into the power line, parallel powerlines should be seperated by considerable distance. If a second line were strung alongside the first in the Kofa Refuge, a plane crash, or similar disaster, could take both of them out.

23-7 6. People drive Interstate 10 to get from one place to another. People drive roads in Kofa Refuge for recreation, for the scenery, and for enjoyment. We would argue that, even though many more people drive I10, the visual resources are much more valuable, much more appreciated, and much more sensitive through Kofa Refuge. One powerline is one too many, a second powerline doubles the problem.

23-8 7. The last 2 utilities to construct facilities through the project area (All American-Celeron, Pacific-Texas pipelines) selected routes north of the refuge. All American considered the Kofa Route, but selected the Brenda Route because of greater environmental impacts through Kofa Refuge. They made this decision even though routing the pipeline along I10 was more expensive. Edison's decision to save money and construct along the Kofa Route could set a precedent for future action and trigger considerable cumulative impact on the sensitive resources of Kofa Refuge in the long-term. This issue was not addressed in the EIS.

23-9 In summary, we feel the EIS gives a skewed perspective of the environmental consequences of the various alternatives, particularly the preferred route and the Brenda alternative. As a result, the least expensive alternative- the preferred route- appears to be the most desirable route. We feel Edison needs to take a closer look at all costs and benefits, both monetary and non-monetary, of the Kofa and Brenda Routes. From our perspective, costs are

23-3 No significant upgrading of the main access road through the Kofa NWR is anticipated. It is also considered unlikely that the presence of an additional transmission line would increase recreational use of this area.

23-4 Please see response 22-6 for a complete discussion of bighorn sheep issues relative to route selection.

23-5 Please see response 22-6 and Appendix B of this document for information on anticipated impacts to bighorn sheep. For Ceres greggii, a plant species of concern for this project, comparison of available suitable habitat actually indicates that the Northern Alternative 2 route crosses 23.2 to 27.3 miles of suitable habitat (depending on the use of link 4b or 17 [Draft SEIS, p. 77]) compared to 20.5 miles along the proposed route (Draft SEIS, Map II-AZ). More detailed field studies conducted by SCE since publication of the Draft SEIS have identified only two Cereuc greggii plants in the Kofa NWR that may be impacted by the project (E. Linwood Smith and Associates 1987, p. 24).

23-6 The BLM acknowledges that a completely separate line would reduce the possibility of a catastrophic outage of both lines. However, the BLM believes that the probability of such an outage is so remote that it should not be a major factor in route selection. The separation distances proposed by SCE are in compliance with CPUC and BLM requirements.

23-7 The Draft SEIS (p. 132) states that the presence of a second parallel line through the Kofa NWR represents a significant cumulative impact. The Draft SEIS (p. 135) is also in general agreement with the stated assessment of the comparison between the expectations or perceptions of people visiting the Kofa NWR and those using I-10.

23-9 CONT. much higher along the Kofa Route.

On another issue, construction through any occupied or potentially occupied Coachella Valley fringe-toed lizard habitat should be carried out when the lizards are active (surface temperature of about 30-55°C). Most active lizards in the path of vehicular equipment will move out of the way. If construction is done while the lizards are inactive, especially if temperatures are low, they will most likely be killed as burrows are collapsed and blowsand is excavated or driven over.

23-10

Sincerely,

Jim Rorabaugh
Conservation Committee

23-8 The proposed project would follow a corridor through the Kofa NWR that is presently occupied by three pipelines and a 500 kV transmission line. Each project is evaluated as it is proposed for cumulative impacts with other past, present, and reasonably foreseeable future projects. The BLM does not believe, therefore, that construction of the #2 line through the Kofa NWR would be setting a precedent or that it would necessarily trigger significant long-term cumulative impacts. Also, the utilities routed around the northern boundary of the Kofa NWR were buried pipelines, not transmission lines which have much different impacts.

23-9 The BLM believes that a very thorough and objective evaluation of the environmental benefits and costs of the proposed route and its alternatives was accomplished by its interdisciplinary team. This analysis has led the BLM to select the proposed Devers-Palo Verde #2 route as its preferred alternative. Your opinion, however, that the proposed route through the Kofa NWR has much higher costs is acknowledged.

23-10 Specific mitigation requirements and construction procedures in Coachella Valley fringe-toed lizard habitat will be determined in consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Game. Your comment is noted and will be considered in this process.

RECEIVED
BUREAU OF LAND MANAGEMENT
1997 JUL 13 PM 1:32
CALIFORNIA DESERT DISTRICT
RIVERSIDE, CA

LETTER 24

YUMA AUDUBON SOCIETY
P.O. BOX 6345
YUMA, ARIZONA 85364

July 7, 1997

William Haigh
California Desert District
U.S. Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh:

The following are Yuma Audubon's comments on the Devers-Palo Verde No. 2 500 kV Transmission Line Project Supplemental Draft Environmental Impact Statement.

The two major problems with the Draft EIS are 1) failure to "explore and objectively evaluate all reasonable alternatives" as required by the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) implementing regulations (40 CFR 1502.14(a)) and 2) failure to assess cumulative impacts, as required by the CEQ NEPA implementing regulations (40 CFR 1508.25, 1508.27(b)(7)).

2-81

FAILURE TO EXPLORE AND EVALUATE ALL REASONABLE ALTERNATIVES

24-1 The EIS emphasizes how important it is to stay within BLM's designated utility corridors. We, of course, agree that it is best to designate widely accepted corridors and then stick to them rather than handle each utility line on an individual basis. However, the DEIS did not consider the only acceptable route totally within a BLM utility corridor: follow the existing Palo Verde-Devers route to where it either first crosses I-10 (about 7 miles west of Tonopah) or where it crosses I-10 for the second time (with the CAP Canal), and then follow I-10 to the Colorado River. This is utility corridor 10 in the Lower Gila South Resource Management Plan (RMP) (shown on p. 5) and utility corridor UC-7 in the Yuma District RMP (shown on Map 8). The EIS even omits this BLM-approved utility corridor from the maps in the pockets in the back of the EIS! (and it should be on Map 6-AZ, not 5-AZ as the text states on p. 81). Why was this information suppressed? Surely BLM knows where its utility corridors are.

24-2 The Preferred Alternative (the existing PV-D #1 route) follows designated utility corridors only part of the way because BLM's corridors run up to the Kofa Refuge but do not cross the refuge since BLM has no authority to designate utility

24-1 A discussion of alternative routes that were considered by BLM but eliminated from further consideration (including the referenced I-10 corridor) is presented in section 1.3.5 of this Final SEIS.

24-2 The I-10 route alternative was considered by BLM but eliminated from detailed study for the # 2 project Draft SEIS because of major visual impacts (see section 1.3.5 of this Final SEIS).

corridors in a National Wildlife Refuge. Thus, if staying within designated utility corridors is a (or the) major criterion governing route selection, utility corridors 10 (Lower Gila South) and 7 (Yuma District) are vastly superior. These utility corridors have been established since the PV-D #1 Final EIS, and therefore even if an all I-10 route was considered in that EIS (and we don't find any evidence it was), it must be considered in the Supplemental EIS, which is supposed to update what has happened since the Final EIS for PV-D #1.

24-2 CONT.

Objection to the Northern Alternative 2 (which we favor among the alternatives presented in the EIS) as being (but only in part) outside a BLM-designated utility corridor is a ruse on BLM's part to supposedly make that route look inferior to the existing powerline route (EIS, p. 124). BLM never considered their own designated utility corridor along I-10! Why bother to designate utility corridors if they will not even be evaluated in an EIS? And the most controversial part of the Northern Alternative 2, through Plomosa Pass, IS within a BLM-designated utility corridor. BLM had ample opportunity to reject I-10 as a utility corridor in the RMP process but did not. This means it is a suitable corridor to BLM and BLM should live by its decision.

24-3

Similarly, the La Posa Long Term Vehicle Area (LTVA) and high density archaeological sites in the same area (EIS, p. 128) could be avoided by following BLM utility corridors in the Yuma District if BLM wants to route the second line through Copper Bottom Pass in the Dome Rock Mountains rather than along I-10: at Quartzsite, where the line is in utility corridor (UC) 7, turn south and follow UC-9 along US 95, then turn northwest at the existing Edison line and follow UC-8 through Copper Bottom Pass.

2-82

24-4

We also note that BLM easily and rapidly approved construction of the All American crude oil pipeline outside an approved utility corridor in the California Desert Conservation Area (CDCA). The Yuma District already has considered at least one amendment to their RMP. We have seen how fast BLM plans can be changed when BLM feels the necessity and doubt that approving Northern Alternative 2 would involve a significant delay--unless BLM dragged its feet.

FAILURE TO ASSESS CUMULATIVE IMPACTS

BLM must recognize that whichever route is selected, impacts will come not only from this single power line but from future utility lines (above and below ground) from central Arizona to the Los Angeles area, the Gulf of Mexico to the Pacific Ocean, and southern transcontinental routes. Unfortunately, this EIS takes a narrow view of impacts, limiting their assessment to only this specific power line. Again, this gives a distorted

24-5

24-2 CONT. Although staying in designated utility corridors is an objective in BLM's planning process for utilities, minimizing environmental impacts is also a major factor. BLM's environmental analysis of all reasonable alternatives, including those referenced in this comment, has shown that the existing Devers-Palo Verde #1 route, including the portion through Kofa NWR, would have less overall impact to the environment.

24-3 Please see section 1.3.5 of this Final SEIS for a discussion of the I-10 alternative and why BLM did not consider it to be a feasible alternative for the Devers-Palo Verde #2 project. A comparison of potential impacts of Northern Alternative 2 and the proposed project (Draft SEIS, section 3.2, pp. 37-42) shows that the proposed route would have fewer significant impacts.

24-4 The alternative you suggest (US 95) would not avoid the La Posa LTVA and would have high visual impacts by placing a 500 kV transmission line in areas that presently contain only underground pipelines or 161 kV lines. The BLM believes that this route is not environmentally preferable to the proposed route.

24-5 Each utility project is thoroughly evaluated by BLM when it is proposed for cumulative impacts in relation to existing facilities and planned future projects, as was the Devers-Palo Verde #2 project in relation to the #1 project. CEQ guidelines specify that "reasonably foreseeable" future projects be considered.

24-5 CONT. picture which BLM uses to claim superiority of the PV-D #1 route, and fails to conform to CEQ requirements on EISs.

24-6 The Northern Alternative 2 (or perhaps an all I-10 route, but we don't know since it was never analyzed) is clearly superior to the proposed route when cumulative impacts are considered. It is true that Northern Alternative 2 would involve establishing some new right-of-way, but once established, future lines (including underground gas, petroleum, and telephone) would then follow an established right-of-way.

Why is Northern Alternative 2 superior to the Kofa route? Because the proposed Kofa route involves more adverse impacts:

24-7 —> It crosses more high density Bighorn Sheep habitat and known movement corridors (Kofa--17 miles; N. Alt. 2--10.6 miles; pp. 118, 121-122 in EIS).

24-8 —> It crosses more sensitive plant habitat involving four species: Cereus greggii (Arizona Queen-of-the-Night Cactus), Opuntia wigginsii (Wiggins' Cholla), Colubrina california (California Snake Bush), and Tetracoccus fasciculatus var. acanthodes).

24-9 —> It crosses more miles adjacent to Wilderness Study areas in the BLM Lower Gila Resource Area and the Kofa National Wildlife Refuge (this can be seen just by looking at the maps; Kofa--21 miles; N. Alt 2--6.8 miles; EIS, p. 88).

24-10 —> It crosses more miles of sensitive visual resource areas, namely those of Class A Scenic Quality (Kofa--15.2 miles, N. Alt. 2--2.8 miles; VRM Class II (Kofa--29.1 miles, N. Alt. 2--21.2 miles) and fewer miles in visual resource areas where "major modification" is allowed (Kofa--11.5 miles, N. Alt. 2--21.5 miles; EIS, p. 88).

24-11 —> It crosses more mountainous topography with moderate to high soil erosion hazards (EIS, pp. 64, 110).

24-12 In this light, Table 4-2B on p. 42 of the EIS, which claims that the proposed route is environmentally preferable, is clearly biased and overgeneralized. According to the EIS, the proposed route through the Kofa Refuge is clearly preferred over the alternatives on only three grounds: new right-of-way required, land use, and cultural-historical resources. The Northern Alternative 2 is never the least preferred route.

24-13 We have already shown that the purported right-of-way advantage of the proposed route vanishes when cumulative utility lines are considered. The preferability of the proposed alternative as regards land use is highly questionable. The incompatability decision of the Kofa Refuge negates this supposed advantage of the Kofa route. Finally, concern about cultural resources largely centers on the area of the La Posa LTVA. BLM has shown the regard it has for this sensitive cultural resource area by locating a Long Term Visitor Area there. This LTVA goes right to the east side of

24-6 The BLM does not believe that the Northern Alternative 2 route or the I-10 route is superior to the preferred route. The BLM believes that the analyses presented in section 1.3.5 of this Final SEIS and section 3.2 (pp. 37-42) of the Draft SEIS clearly show that the preferred route would have less environmental impact, including the consideration of cumulative effects.

24-7 The basic comparison of miles of bighorn sheep habitat crossed is correct; however, as described in sections 5.5.1 and 5.5.2 of the Draft SEIS, and in further detail in response 22-6, the potential for impacts to bighorn sheep along both alternatives is similar and neither route is clearly superior.

24-8 In comparing the potential impacts of the two alternatives, it should be noted that there is a greater level of existing information on rare plants along the proposed route. Therefore, the occurrence of different or more rare plants and potential impacts may appear greater for the proposed route. A direct comparison of suitable habitat for Cereus greggii (Map II-AZ) indicates more miles of habitat would be crossed along the Northern Alternative 2 route (23.2 to 27.3 miles, depending on the use of links 4b or 17, Draft SEIS, p. 77) than along the proposed route (20.5 miles, Map II-AZ).

24-9 The basic comparison is from Table 4.8-A, Summary of Affected Visual Resources, on p. 88 of the Draft SEIS. The key comparison between the two alternatives that directly affects land use decisions is that the Northern Alternative 2 route in link 4b crosses 4.8 miles of a WSA. (The proposed route does not cross any WSAs.) The Federal Land Policy and Management Act precludes permanent development within a WSA prior to a final decision by Congress as to the selection of these lands as a permanent wilderness area (Draft SEIS, p. 125).

Tyson Wash where "one particular area of high density is where the route crosses Tyson Wash" (EIS, p. 99). We think the impact of thousands of winter visitors taking walks to the wash and poking around to see what they can find is a much more significant impact than a powerline, especially when it can be located within the right-of-way so as to avoid sensitive cultural resource areas. If this area is so sensitive culturally, why is it an LTVA? Why isn't it an Area of Critical Environmental Concern (ACEC)?

24-13 CONT.

IMPACTS TO BIGHORN SHEEP

BLM's main concern about using the Northern Alternative 2 focuses on impacts to the Bighorn Sheep lambing area at Scaddan Mountain. However, the concern is not the effects of the powerline itself on the sheep, but rather that there may be increased access which may lead to greater human impacts on the sheep (EIS, p. 73).

Once again, this is a counterfeit issue. First, there already is considerable access into Scaddan Mountain. The east side is accessed by Gold Nugget Road, which ends at the Belle of Arizona mine. The north side of the mountain is accessed by a road or way to a gravel pit in Sec. 23, T. 4 N., R. 18 W. The south side (in Sec. 34, T. 4 N., R. 18 W.) is accessed by a jeep trail which branches from the road to Plomosa. The area southwest of Scaddan Mountain is riddled with mines and tailings, making it attractive to prospectors, rockhounds, mining buffs, and general curiosity seekers. Thus it appears there is already an access "problem" at Scaddan Mountain. By contrast, there is much less access to the Livingston Hills, which also contain a Bighorn Sheep lambing area. The Livingston Hills are about the same distance (or less) from the PV-D #1 line as Scaddan Mountain would be from the PV-D #2 line.

24-14

However, as the EIS admits (p. 122), moving the centerline of Link 4b would increase the distance from the line to Scaddan Mountain and limit access. Fencing and gating could also be used if necessary to prevent new access into the area. We recommend that BLM do this. Moreover, if Scaddan Mountain is a critical Bighorn Sheep lambing site, we recommend that BLM designate it an ACEC. Why hasn't this been done already?

We object to the weight given to comments by the Arizona Desert Bighorn Sheep Society in BLM's decision to use the Kofa route (EIS, pp. 121, 126). We urge that other private organizations with an interest and expertise in wildlife be given equal weight. These would include the Wilderness Society, Sierra Club, and Audubon Society. What was the effect of PV-D #1 on access to the Livingston Hills lambing area? Surely the road was upgraded to provide access for construction of the line. These impacts were never

24-10 The resource comparisons in this comment are from Table 4.8-A, p.88, in the Draft SEIS and represent accurate depictions of visual resource categories that would be impacted by the project. The Draft SEIS (page 132) concludes that the addition of a second line through the Kofa NWR would significantly impact the quality of the visual experiance. The Draft SEIS (p. 135) also describes the potential visual impacts along the Northern Alternative 2 route as significant, but the impacts are modified by visual contrast and competition from the highway and pipeline rights-of-way. The linearity and dominance of these features on the desert landscape tend to reduce the contrast the transmission line would have.

24-11 Although the Northern Alternative 2 route crosses less mountainous topography with moderate to high soil erosion hazards, potential impacts to soils (increased erosion) would be less along the proposed 24-11 route (Draft SEIS, p. 111). The primary difference is that less road cnt. grading or vegetation clearing would be required (approximately 3.0 acres per mile of transmission line along the Northern Alternative 2 route compared to 0.4 acres per mile along the proposed route).

24-12 Table 3.2-B (not 4-2B) on p. 42 of the Draft SEIS shows that the proposed route has 4 "high" and "moderate" impact ratings compared to 7 for Northern Alternative 2, and has 3 "preferred" ratings compared to 0 for Northern Alternative 2. This table was prepared by an interdisciplinary team of natural resource and other specialists; therefore, the BLM does not believe that the information presented in Table 3.2-B is biased or overgeneralized, and that it is well supported by the detailed analysis presented in the remainder of the Draft SEIS.

24-14 CONT. assessed because the Livingston Hills lambing area was not known at the time of the PV-D #1 EIS. However, these impacts should be evaluated as cumulative as part of the present PV-D #2 EIS. We find no such assessment.

24-15 Finally, the impacts of I-10 on Bighorn Sheep in the Plomosa Mountains should be assessed in this EIS. It seems likely that an Interstate Highway would have tremendous impacts on Bighorn Sheep movement, with its fenced right-of-way, speeding cars and large trucks, and blinding lights at night.

VISUAL RESOURCES

24-16 The present EIS admits that the PV-D #1 EIS seriously underestimated the visual impact of building a powerline across a National Wildlife Refuge with the Kofa's scenic grandeur (p. 132) and notes that in Plomosa Pass there are many visual distractions, such as the Interstate Highway itself, one (and eventually two) crude oil pipeline rights-of-way, and heavy vehicle traffic, including many large trucks (p. 135). Map 18-AZ should be changed to reflect this assessment.

2-85

24-17 Adding more towers to the Kofa Refuge WILL make a significant impact. Most people traveling the Kofa Refuge drive more slowly than those on I-10. They also come to see the refuge, while most travelers on I-10 don't drive it to see the Plomosa Mountains—their interest is to get from Phoenix (or farther east) to Los Angeles (or the opposite direction) as fast as they can. Given the speed of travel and the distance the powerline will parallel I-10 in Northern Alternative 2, people on I-10 will see a lot less powerline than will travelers to the Kofa Refuge. By the time they get to Blythe or Tonopah, I-10 travelers will have put the powerline in the back of their memories, if not forgotten it entirely. But travelers to the Kofa Refuge will remember colossi that loomed over them all across the refuge. Another set of towers would further compound the visual impact.

WILDERNESS

24-18 While we would prefer that Link 17 of the Northern Alternative 2 be used, which would put the powerline north of I-10 and avoid crossing a Wilderness Study Area, we could support release of enough of the New Water Mountains WSA to provide a powerline right-of-way if wilderness were also designated as part of the process. This need not be a long, drawn-out process. The entire Arizona Congressional Delegation is ready to work on a wilderness bill (see attached letter). Once Congress decides to move on an issue, progress can occur very fast. Thus we urge Southern California Edison and BLM to work with us to resolve this issue concerning the New Water Mountains WSA and wilderness. The powerline itself could well

24-13 The Tyson Wash area is about 2.5 miles south of Quartzite and approximately 1/4 to 1/2 mile west of the La Posa LTVA. It is currently designated as a "Special Management Area" which means it receives management attention similar to that of an ACEC. The BLM does not believe there are any conflicts with the LTVA; in fact, there has been no documented change in the condition of the resource over the past 10 years.

24-14 Your comments are noted. Please see response 22-6 and Appendix B for further discussions on the effects of the Davers-Palo Verde #1 project on bighorn sheep and anticipated impacts of the #2 project along the Northern Alternative 2 route and proposed route.

24-15 E. Linwood Smith (pers. comm.) and other biologists in the region believe that I-10 has created a significant barrier to north-south movement across Plomosa Pass.

24-16 The Draft SEIS (p. 132) notes the difference between Map 18-AZ and the anticipated high visual impact level that would be expected. Since a high impact rating was used in the analysis, the information does not change the conclusions in the Draft SEIS and a revised map is therefore not necessary.

24-17 The Draft SEIS on p. 132 notes that a significant cumulative impact would occur with a second set of parallel towers.

24-18 The BLM welcomes the opportunity to discuss options for the New Water Mountains WSA with members of the public. However, the BLM must base its environmental analysis for the proposed project on existing and reasonably foreseeable conditions. Unless the applicant for the proposed project requests that BLM delay the processing of its environmental review, the BLM can only consider current status and policies regarding any WSA.

24-18 CONT. serve as a further catalyst in speeding resolution of the wilderness issue.

TECHNICAL ASPECTS OF THE POWERLINE

24-19 What problems are seen with respect to production of nitrous oxide by corona resulting from the inordinately high voltage of this system? This is not addressed in the EIS.

24-20 What are the relative costs of underground vs. overhead transmission lines? The Pirelli patents of 60 years ago used 220 kV lines, and 345 kV underground lines are in use today. This was not addressed in the EIS.

24-21 What steps have been taken to avoid fouling and resultant energy losses on the PV-D #1 line? In standard practice (STANDARD HANDBOOK FOR ELECTRICAL ENGINEERS, Fink and Carroll, Section 17-287) urban areas require weekly inspection and service, while monthly intervals are preferred in more remote areas. This permits saving energy losses due to leakage and possible major accidents, which cost the consumer must ultimately bear.

24-22 The PV-D #2 line would be separated from the present transmission line by 130 feet. This represents a poor design practice to us. Hazards such as rockfalls, earthquakes, aircraft/vehicle strikes, or sabotage/terrorism would be greatly reduced by a completely separate routing for the second transmission line, especially in the remote, isolated parts of Arizona. This issue was not addressed in the EIS.

The PV-D #2 line, at 1200 megawatts (MW) is a twin of the PV-D #1 line. Together, they would supply a total of 2400 MW. Each of Palo Verde's plants will have a maximum capacity of 1270 MW, but from experience with other nuclear plants, this maximum will never be attained--some nuclear plants operate at less than 50% capacity. Theoretically, by 1988 the three Palo Verde plants will have a combined capacity of 3810 MW. According to the Arizona Corporation Commission (this state's public utilities commission), the ownership and rights are: Arizona Public Service, 29%; Public Service of New Mexico, 17%; Salt River Project, 11% (down from 29%), El Paso Electric, 17%; leaving Southern California Edison 26%.

24-23 Since SCE owns 26% of the nuclear plants' output, it would never own more than a theoretical maximum of 990.6 MW. Yet the PV-D #1 line can carry 1200 MW. It is not clear why a second PV-D line is needed. The present one is operated at a maximum of 82.5% of a theoretical maximum of the nuclear generators that will never be reached because nuclear plants just don't attain their maximum.

24-19 A separate technical report titled "Electrical Effects of High-Voltage Transmission Lines" was prepared as part of Volume II of the CPUC's Draft EIR for the project, and was included as Technical Appendix D of that EIR. Page 23 of that appendix says the following with regard to nitrogen oxides: "Nitrogen oxides are also produced by corona discharges from high voltage transmission lines. However, studies have shown that the amount of nitrogen oxides produced by corona is normally one-tenth of the quantity of ozone produced. The maximum ground-level concentration of nitrogen oxides produced by the proposed transmission line is expected to be negligible."

Because of similar conclusions for other effects of high voltage lines, these issues were not addressed specifically in the Draft SEIS (see section 6.0, p. 149).

24-20 The cost of undergrounding a 500 kV line is approximately 10 times greater than using towers (J. Kahle, Edison, pers. comm.).

24-21 Series compensation banks and routine maintenance procedures (described on p. 23 and pp. 29-30 of the Draft SEIS) will be used to avoid or minimize energy losses.

24-22 Please see response 23-6.

24-23 The applicant for the project (SCE) has stated that the Devers-Palo Verde #2 project is needed because the #1 line does not have sufficient firm transfer capability to accommodate Southern California Public Power Authority's and Modesto-Santa Clara-Redding Public Power Agency's firm resource entitlements in addition to its own Palo Verde share (Draft SEIS, p. 7). However, as part of its review, the California Public Utilities Commission (CPUC) conducted a detailed analysis of the need for the proposed project. The CPUC in San Francisco or Sacramento may be contacted for further information.

(The comments in this section were submitted by Dr. Lothar Schmidt of the Yuma Audubon Society.)

MITIGATION

While mitigation measures for California are clearly spelled out in the EIR, corresponding mitigation measures for Arizona appear to be absent from the EIS. We can hardly comment on their adequacy if we don't know what they are. The only list we can find is in Appendix E to the EIS, but mitigation measures are identified only by number and there is no table explaining what the numbers mean.

24-24

This is another inadequacy of the EIS--by the time we find out what the proposed mitigation measures are, it will be too late for public comment to influence the final EIS.

Obviously, measures similar to those for California should be included as a minimum.

We also hope that archaeological surveys will not be run during the hot months of June through August again (EIS, p. 93). This can easily lead to missed sites because of the unpleasantness of the working conditions.

24-25

2-87

How many counterpoises had to be used on PV-D #17 These can extend 100 feet (EIS, p. 28). It would seem they could have a significant effect on the vegetation, especially if a large number are used.

24-26

SUMMARY

The main point we wish to make is that Northern Alternative 2 is preferable to the route through the Kofa Refuge. A route following I-10 virtually all or most of the way through Arizona may also be preferable to the Kofa route, but we don't know because it was never analyzed in spite of the fact that it is a BLM-approved utility corridor.

24-27

We list the reasons above which support our preference, as well as the biases present in BLM's analysis which prevent reaching objective conclusions about the alternatives.

Thank you for the opportunity to comment on this proposal.

24-24 Mitigation measures for the proposed project in both Arizona and California are presented in section 3.4 (pp. 43 to 57) of the Draft SEIS. These and additional measures proposed for the project are also presented in Appendix A of this document.

24-25 Comment is noted.

24-26 No counterpoises were required on the Devers-Palo Verde #1 line. It is anticipated, therefore, that few, if any, would be required on the #2 project. If any are needed, BLM will require revegetation/rehabilitation of areas where vegetation is significantly disturbed. (Counterpoises are cables attached to the towers and firmly secured to the ground as much as 100 feet away in order to provide additional stability).

24-27 The BLM believes that when all factors are considered, the preferred route adjacent to the Devers-Palo Verde #1 line has the least potential for significant environmental impact. Please refer to section 1.3.5 for a discussion of why the route following I-10 was not considered to be a reasonable alternative.

Sincerely,

Cary W. Meister, Chairman
Conservation Committee

Encl.

2-88

Congress of the United States
Washington, DC 20515

April 8, 1987

TO INTERESTED ARIZONANS

RE: ARIZONA WILDERNESS ISSUES

Dear Friend:

Four years ago, the Arizona Congressional delegation sought the advice and comments of a broad cross-section of interested citizens throughout the State regarding wilderness designations. That detailed involvement and review by our constituents, including ranchers, miners, environmental groups, local government officials and other interested citizens, resulted in passage of the Arizona Wilderness Act of 1984.

That legislation set more than a million acres of Forest Service (FS) and Bureau of Land Management (BLM) lands designated as wilderness. Still, most BLM roadless areas, as well as important wildlife refuges and some Forest Service and National Park wilderness proposals, are still outstanding in Arizona. It is important that these lands be removed from an administrative status and a decision made as to which should be returned to the multiple use planning process and which should be accorded the highest degree of protection allowable.

With the cooperation and involvement of interested citizens and groups in Arizona, it may be possible to resolve during the 100th Congress, the remaining wilderness issues in Arizona. We need to know of your views and concerns regarding specific areas whether currently proposed or under study, especially the BLM Wilderness Study Areas (WSAs). Your site-specific comments will help us determine whether it will be possible to reach a consensus and pursue a comprehensive legislative resolution within the next two years.

If there is going to be legislation, we need to build a grassroots consensus, as we were able to accomplish in 1984. We intend to gather and consider your comments during the year. Arizonans have already shown the determination and cooperation necessary to make this process work. We are soliciting your help in achieving that goal once again.

We know that you will have many questions and constructive suggestions and we invite you to contact our staffs for whatever assistance we can offer and to receive your comments.

Sincerely,

JOHN McCAIN

JIM KOLBE

JOHN RHODES, III

MORRIS K. UDALL

DENNIS DeCONCINI

JON KYL

BOB STUMP

2-88

LETTER 25

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 30 PM
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Dear Mr. Haigh:

The Environmental Protection Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) titled DEVERS-PALO VERDE #2 TRANSMISSION PROJECT.

Our review is based on the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508). Our comments on this document are enclosed.

We have classified the SEIS as Category EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of Rating Definitions and Follow-Up Action"). This SEIS is rated EC-2 because compliance with Section 404(b)(1) Guidelines of the Clean Water Act has not been demonstrated. The classification and date of EPA's comments will be published in the Federal Register in accordance with our public disclosure responsibilities under Section 309 of the Clean Air Act.

2-80

We appreciate the opportunity to review this SEIS. Please send four copies of the Final Environmental Impact Statement (FEIS) to Region 9 at the same time it is officially filed with our Washington, D.C. office. If you have any questions, please contact Harriet Hill, Federal Activities Branch, at (415) 974-8193 or FTS 454-8193.

Sincerely yours,

Deanna M. Wieman, Director
Office of External Affairs

Enclosure (3 pages)

Section 404 Permit Comments

1. The Devers-Palo Verde Transmission Line Project could involve the discharge of dredged or fill material into waters of the United States, particularly during the construction of access roads. Potential "waters of the United States" for the project include riparian areas, dry washes, and palm oases. Such actions must be authorized by Section 404 of the Clean Water Act.

   EPA will review the project for compliance with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Material [40 CFR 230], as required by Section 404(b)(1) of the Clean Water Act.

   a. In the FEIS, BLM must document its consultations with the U.S. Army Corps of Engineers (COE), Los Angeles District, and EPA to ensure the project complies with these Guidelines.

      1) EPA's evaluation will focus on the maintenance of water quality and the protection of:

         a) fisheries and wildlife resources,

         b) threatened or endangered species, and

         c) special aquatic sites, including wetlands, as defined under Subpart E of the Guidelines.

   b. The FEIS should demonstrate the alternatives' compliance with the 404(b)(1) Guidelines, which:

      1) prohibit discharges which would result in significant degradation of the aquatic environment [230.12 (a-c)],

      2) require the selected alternative to be the least-damaging available to achieve the project purpose [230.10(a)(1-2)], and

      3) require that unavoidable adverse impacts to the aquatic environment be fully mitigated [230.10(d)].

25-1

2-81

Water Quality Comments

1. The FEIS should:

   a. Include specific Best Management Practices to minimize erosion during project construction and

25-2

25-1 The BLM has consulted with the U.S. Army Corps of Engineers (Corps) (Los Angeles District) concerning possible permit requirements. The Corps has indicated that a specific determination of areas requiring Section 404 permit and evaluation of the project's impacts and compliance with 404 (b)(1) guidelines will be conducted as part of its standard environmental assessment procedures. The formal evaluation will begin upon receipt of an application from SCE for a Section 404 permit.

25-2 Management practices designed to minimize erosion are described in Appendix A of this document. Specific measures include: Geology 4 through 6; Soils 1 and 2; Hydrology 1 through 4 (plus those proposed by SCE); and Vegetation 1, 2, 5, and 6.

25-2 CONT. Site-specific measures to control sedimentation in the Colorado River should be outlined.

25-3 2. Expand the mitigation measure on page 47 (paragraph 2) to include specific actions that will be taken to prevent surface water from being contaminated with debris, petroleum products, or other hazardous materials.

25-2 CONT. It is not anticipated that construction of the project in the flood plain would increase erosion or sedimentation into the Colorado River. Tower sites and road access on both sides of the river are on the landward side of levees, so there would be no direct drainage into the river. The Corps, however, will determine if any additional measures are necessary in its permit review of the project.

25-3 Vegetation mitigation measure 6 (Appendix A) has been expanded to require proper offsite disposal of mechanical and human waste material. Hydrology mitigation measures 12 and 13 have also been added to reduce potential contamination by hazardous materials.

3.0 MODIFICATIONS AND CORRECTIONS

3.0 MODIFICATIONS AND CORRECTIONS

3.1 TEXT REVISIONS TO THE DRAFT SEIS

Section 3.1 presents page by page text corrections to the Draft SEIS in tabular form. Column 1 indicates the page in the Draft SEIS on which the correction occurs (a partial paragraph at the top of the page is numbered as 1); Column 3 indicates the line within the paragraph; and Columns 4 and 5 present the text as it occurs in the Draft SEIS ("Is") and how it should be corrected or modified ("Should Be").

3.1 TEXT REVISIONS TO THE DRAFT SEIS

Page	Paragraph	Line	Is:	Should be:
X	5		"..Arizona Department of Game and Fish.."	Arizona Game and Fish Department
44	4	1-4	Link 9, which passes through the southern Palo Verde Valley agricultural lands, has no sensitivity to cultural resources because of alluviation of sites and extensive surface disturbance.	The portion of Link 9 that passes through the souther Palo Verde Valley agricultural lands has no sensitivity to cultural resources because of alluviation and extensive surface disturbance.
44	5	All	Helicopter construction should be considered on a site specific basic and used to avoid excessive new spur road construction in sensitive areas along alignments where there are no existing access roads close to the new tower sites. This would minimize the potential for erosion and slope instability. This alternative type of construction may be desirable in	The Authorized Officer will require, on a site specific basis, either helicopter or helicopter-assisted construction in sensitive areas. Sensitive areas are those that exhibit both: 1) High erosion potential and/or slope instability; and 2) lack of existing access roads within 1/4 mile or more of the tower site, or existing access that is not suitable for upgrading to

Page	Paragraph	Line	Is:	Should be:
44 Cnt.	5	All	the badlands areas and on the steeper slopes of the Indio Hills. However, helicopter construction recommendations for minimization of surface disturbance need to be balanced against the increased hazards and additional worker risk, particularly in areas of strong gusty winds. Helicopter construction is likely to have limited applicability in the project area.	accommodate conventional tower construction or line stringing equipment, and where it is determined that, after field review the issues of erosion and/or slope instability cannot be successfully mitigated through implementation of accepted engineering practices. This will avoid construction of excessive new spur roads and minimize surface disturbance in the "Badlands" areas and on the steeper slopes of the Indio Hills. However, these alternative methods will be balanced against potentially increased safety hazards during construction and maintenance activities, and are likely to have limited applicability.

Page	Paragraph	Line	Is:	Should be:
45	1	All	Construction of new access roads and soil disturbance should be avoided or minimized on slopes over 35 percent and all areas designated on the geology maps and soil erosion maps (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR) as having high wind and water erosion hazards or potential slope instability, and where extensive new spur access roads may be required. Placement of towers by helicopter should be considered in these areas depending on safety factors. This is likely to have limited applicability.	New access roads and soil disturbance will be avoided or minimized in all areas designated as having high erosion hazards or potential slope instability (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR). If the Authorized Officer, after consultation and review of alternatives (including helicopter or helicopter assisted construction) deems the proposed new access road feasible, design plans must be submitted for approval, in writing, prior to construction.

Page	Paragraph	Line	Is:	Should be:
124	1	2-4	This alternative crosses 1 mile of the Big Marias ACEC (Link 7, milepost 1.6 to 2.6) and approximately 3 miles of priority wildlife habitat in the Dome Rock Mountains.	This alternative crosses 1 mile of the Big Marias ACEC (Link 11, milepost 1.6 to 2.6) and approximately 3 miles of priority wildlife habitat in the Dome Rock Mountains.
144	2	1-3	The Southern Alternative may be considered to potentially cause the fewest impacts among alternatives to the proposed route by virtue of being the shortest length.	One might think that the Southern Alternative would have a lower potential for impacts because it is the shortest of the alternatives considered.
156	3	2-8	Darwin Snell, District Manager Mike Werner, Surface Protection Specialist T. Hughes, Biologist Jim Adkins, Environmental Coordinator Alan Belt, Area Manager Bob Abbey	J. Darwin Snell, District Manager Bob Abbey, Assistant District Manager for Resources Allan Belt, Yuma Resource Area Manager Mike Werner, Surface Protection Specialist

Page	Paragraph	Line	Is:	Should be:
156	3	2-8	Susanna Henry, Biologist	Tim Hughes, Biological Technician Jim Atkins, Environmental Specialist Susanna Henry, Wildlife Biologist Dennis Turowski, Outdoor Recreation Planner

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4.0 REFERENCES AND LITERATURE CITED

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APPENDICES

APPENDIX A
MITIGATION MEASURES

MITIGATION MEASURES

BLM REQUIRED MITIGATION MEASURES

The following describes measures, listed by resource topic, which will be required by the BLM to be incorporated into the project design to mitigate potential adverse impacts of the Devers-Palo Verde #2 project. Measures incorporated by SCE into their project design or otherwise described by SCE in the Proponent's Environmental Assessment (PEA) (SCE 1985) are provided following the BLM mitigation measures.

Most described mitigation measures would be applicable to any alternative. Where a measure is specific to a single alternative, it is specifically identified as such.

Access Roads

Although the holder may restore and maintain existing access roads, they cannot be either widened or upgraded.

Geology

Measures to mitigate the potential geologic impacts and constraints are listed below and are equally applicable where appropriate to the proposed and alternative routes. It is noted that these measures have been proposed by the holder (also referred to as right-of-way holder or "holder") in general terms (See SCE Geology Mitigation Measures) and are fairly standard procedures; those described below are, however, more specific than those indicated in the PEA (SCE 1985).

1. Transmission towers will not be sited on nor straddle the mapped traces of any known fault that has been designated active or potentially active (see Figure 4.2-1 in the CPUC Draft EIR). In areas where known faults are present the holder will visually check the tower site area before clearing, and will check the tower footing holes for any trace of a previously unmapped fault. If manifestations of a fault are found, construction will immediately stop at that site and the holder will consult with the BLM Authorized Officer. The BLM Authorized Officer will determine if it is a fault trace and if so, will ascertain if it is active, potentially active, or inactive.

2. Towers will be located so that the line will span the surface traces of active and potentially active faults such that a relative lateral surface displacement would shorten the span between towers, and thus avoid potential line breaks. Where this is not feasible, the holder will incorporate slack spans to bridge the fault(s) such that the projected lateral surface displacement, as forecast by the holder's geologist and accepted by the BLM Authorized Officer, will not structurally affect the associated towers.

3. Appropriate tower design will be used to mitigate the potential for very strong seismic ground shaking. In general, an appropriate tower design which accounts for lateral wind loads and conductor loads during line stringing exceeds any credible seismic loading (ground shaking). Transmission lines have historically performed well during earthquakes, and there has never been a tower failure in California due to an earthquake.

4. Towers will be located to avoid areas of highly sensitive dune sand (see Map 10-AZ in the Draft EIS and Figure 4.5.1 in the CPUC Draft EIR). Where these areas cannot be avoided, towers will be located to minimize disturbance to the deposits at a site approved by the BLM Authorized Officer.

5. Towers will be located to avoid gullies or active drainages, and oversteepened slopes wherever possible to minimize the potential for slope instability.

6. The Authorized Officer will require, on a site specific basis, either helicopter or helicopter assisted construction in sensitive areas. Sensitive areas are those that exhibit both: 1) High erosion potential and/or slope instability; and 2) A lack of existing access roads within a reasonable distance of the tower site (generally no more than 1/4 mile), or existing access that is not suitable for upgrading to accommodate conventional tower construction or line stringing equipment, and where it is determined that after field review the issues of erosion and/or slope instability cannot be successfully mitigated through implementation of accepted engineering practices.

This will avoid construction of excessive new spur roads and minimize surface disturbance in the "Badlands" areas and on the steeper slopes of the Indio Hills. However, these alternative methods will be balanced against potentially increased safety hazards during construction and maintenance activities, and are likely to have limited applicability.

Soils

Mitigation measures to reduce adverse impacts on soil resources are applicable to the proposed and alternative routes. The following mitigation measures are recommended by BLM:

1. New access roads and soil disturbance will be avoided or minimized in all areas designated as having high erosion hazards or potential slope instability (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR). If the Authorized Officer, after consultation and review of alternatives (including helicopter or helicopter assisted construction) deems the proposed new access road feasible, design plans must be submitted for approval, in writing, prior to construction.

2. New access roads which are required will be designed to minimize ground disturbance from grading. They will follow natural ground contours as closely as possible and include specific features for road drainage, including water bars on slopes over 25 percent. Other measures could include drainage dips, side ditches, slope drains, and velocity reducers. Where temporary crossings are constructed, the crossings will be restored and repaired as soon after completion of the discrete action associated with construction of the line in the area as possible.

Hydrology

The holder has indicated in the PEA (SCE 1985) that normal engineering design will consider potential hydrologic problems. This is a standard procedure and is assumed to be adequate for mitigation; however, a more specific description than was provided in the PEA is provided here for the reviewer's information. The following measures will be required by BLM and are applicable for the proposed and alternative routes:

1. Side casting of soil during grading will be minimized. Loose, sidecast fill can be a significant source of erodible material. Excess soil will be properly stabilized or, if necessary, end-hauled to an approved disposal site.

2. During the first year following construction, potential soil erosion sites will be inspected by the holder after each major rain storm as access permits. For the purpose of this measure, a major rain storm is defined as any singular storm where the total precipitation exceeds the arithmetic mean for similar events in the area and results in flooding. Examples include cloudburst (high quantity - short duration) or storms where saturated soils produce runoff (high quantity - long duration).

3. Construction equipment will be kept out of flowing stream channels except when absolutely necessary to construct crossings.

4. Erosion control and hazardous material plans will be incorporated into the construction bidding specifications to insure compliance. A representative of the holder responsible for contract compliance inspection officer will be designated for quality assurance.

Biological Resources

Vegetation. The holder's proposed mitigation measures (SCE 1985) are generally adequate regarding botanical resources. Most sensitive features can be spanned effectively. Details of proposed transplant efforts need to be identified. Additional mitigation guidelines, as given in Appendix N by E. Linwood Smith and Associates (1985) and presented for California in Appendix B of the Devers-Palo Verde #2 EIR and for Arizona in Appendix E of the SEIS, will be required by BLM and followed to the extent feasible. A summary of the primary recommended mitigation measures follows:

1. Use existing access roads to the greatest extent possible, thereby minimizing new road construction and the associated ground disturbance.

2. Minimize the amount of road improvement needed for existing roads and for new tower access on flat terrain. This would reduce loss of individual plants.

3. Avoid direct disturbance of highly sensitive features (as identified in E. Linwood Smith's [1985] Impact Assessment/Mitigation Planning Chart; see Appendix E) with spanning and careful local adjustment in tower footing placement.

4. Provide additional detailed surveys and tower-specific adjustments prior to construction for major sensitive feature sites (e.g., concentrations of sensitive plants, individual palm trees, woody dune or wash communities) which cannot be easily avoided by spanning. (See Appendix B of the Devers-Palo Verde #2 EIR and Appendix E of the SEIS.) The methodologies and results of these surveys must be submitted to and approved in writing by the BLM Authorized Officer.

5. Minimize the area needed for equipment operation and material storage and assembly.

6. Prevent contamination of natural landscape and waterways with oil, grease, other chemicals, and any construction-related debris by requiring proper offsite disposal of all mechanical and human waste materials in the contract bid specifications. (Also see hydrology mitigation measures 12 and 13.)

7. Initiate transplant efforts for Ferocactus and Coryphantha as soon as probable losses can be determined. Any plans for transplanting must be developed in consultation with a BLM botanist and approved in writing by the BLM Authorized Officer.

8. The right-of-way holder will have the Arizona State Department of Agriculture and Horticulture identify native plants that would otherwise be destroyed by construction and sell them to the holder.

9. Conduct preconstruction surveys of proposed construction areas in the segment west of Devers to identify if any resource features of concern are present or require specific detailed siting/avoidance measures. The methodologies and results of these surveys must be submitted to and approved in writing by the BLM Authorized Officer.

Wildlife. Significant impacts to wildlife resources will be avoided and other impacts minimized to the extent practical by adhering to mitigation measures presented by the holder in Section 7.6 of the PEA, as well as adopting the measures previously described for vegetation and additional measures required by BLM which are described below.

1. Existing tower spacings and conductor heights will be matched to the extent practical. This would reduce the potential for bird collisions with the powerline.

2. Wash communities along the entire route and sand dune communities in the Coachella Valley (see Map 10-AZ in the Draft SEIS and Figure 4.5-1 in the CPUC Draft EIR) will be spanned to the extent possible (minimum habitat loss or alteration).

3. The holder will be required to purchase lands to compensate or enhance lands or conduct studies for the disturbance of public lands that are within areas of moderate to high value desert tortoise habitat. This will include disturbance caused by tower pad clearance and new access roads. Acquired lands will be in a nearby area of good tortoise density, within tortoise crucial habitat, and within an area where tortoise conservation is a priority (e.g., Chuckwalla Bench ACEC). The rate of compensation will be determined by BLM after discussions with the Department of Fish and Game, the Desert Tortoise Council, and the holder. The lands delivered to the United States to be administered by the BLM.

4. Prior to construction activities, the holder shall have a qualified tortoise biologist present a class or briefing to construction workers. Subjects addressed shall include tortoise sensitivity to human disturbance, daily and seasonal activity patterns, and proper handling for removal from roadways.

5. The holder shall hire a qualified tortoise biologist to conduct daily inspections of roads and work areas within tortoise habitat during the tortoise season of activity. Tortoises found to be in jeopardy will be removed to a nearby site. Tortoises may be held for short periods, if judged necessary, to allow construction crews

to pass through an area. The holder will provide proper facilities for such temporary holding. Tortoises will be released as soon as possible at or near the site of capture.

6. The holder shall restrict the speed on all roads within tortoise habitat to a maximum of 25 miles per hour. The holder is responsible for ensuring compliance with this limit by its employees.

7. Within tortoise habitat in California, spur roads shall not be bladed except where necessary to allow access for construction vehicles. Required vehicles shall enter on one pathway which is flagged and developed only by the passage of vehicles crushing vegetation. The spur shall be flagged by a qualified tortoise biologist prior to use. The spur shall avoid tortoise burrows and large perennial plants, yet be as short as possible within these requirements. Due to the presence of silty soils in Arizona, blading may occur.

8. Any desert tortoise observed on access roads or work areas will be moved immediately 100 yards away from the roadway into safe areas.

9. In areas considered to comprise suitable tortoise habitat, or other areas where tortoise are observed, all access roads and tower construction sites will be surveyed by a qualified biologist to delineate burrows or individuals for protection. Burrows near construction sites will be clearly delineated on the ground. Road, footing, and work area alignments should be modified to the extent possible to avoid adversely affecting any tortoise burrows encountered during these surveys. Where tortoise burrows will be unavoidably destroyed, they should be excavated carefully using hand tools, under the supervision of a field biologist with demonstrated prior experience with this species. See Map 11-AZ in Appendix F and Figure 4.5-2 in the Devers-Palo Verde #2 EIR. Also see Appendix E for link and milepost descriptions and mitigation measures.

10. If possible, no new roads, tower sitings, or spur roads will be built in blow sand areas. However, if new spur roads are required through windblown sand habitat, the road will be returned to natural conditions and effectively closed (gated or bermed) following con-

struction. This would reduce the potential for secondary impacts such as off-road vehicle use and reduce the long-term loss of this critical habitat. Pre-construction surveys will identify wind-blown sand dune habitat.

11. Where the project crosses through the Coachella Valley Preserve, the holder will cooperate with the preserve in closing (gating) existing access roads. A qualified biologist will also be present with work crews to survey and clear work areas daily for Coachella Valley fringe-toed lizard (CVFTL), flat-tailed horned lizard (FTHL), and other sensitive species in the Preserve and sand dune communities from Link 14, milepost 7.6 to Link 16, milepost 5.0. A preconstruction biological survey will also be conducted through Links 14 and 16 to identify if any additional areas of occupied CVFTL and FTHL habitat are present along the route or at construction staging areas. This survey will be conducted during appropriate seasons and conditions for species identification. For any areas of suitable habitat, mitigation measure number 11 will apply.

12. In the Coachella Valley, compacted soils should be scarified and seeded with a mix of native plant seeds, including bugseed (Dicoria canescens), to promote revegetation of plant species valuable to the lizard.

13. Where the proposed route crosses the Kofa National Wildlife Refuge, the holder will coordinate with the U.S. Fish and Wildlife Service refuge management personnel to determine specific tower site and spur road locations in order to minimize habitat disturbance and/or the loss of valuable habitat features.

14. Construction will be prohibited in or near bighorn sheep lambing areas from January 1 to March 31. These areas along the proposed route include link 2 (milepost 29.0 to 34.0) and link 6 (milepost 0.0 to 6.0).

15. The BLM will work with the Arizona Game and Fish Department to minimize temporary construction disturbance to catchment #660 and the holder will develop another catchment in a suitable location as identified by the Authorization Officer.

In addition to the previously described measures, the following measures are recommended for the Northern Alternative 1 and Northern Alternative 2 routes in order to reduce the potential for direct or indirect impacts to bighorn sheep:

16. In Link 5, where the Northern Alternative 1 route crosses the Plomosa Mountains (mileposts 7 to 14), helicopters will be utilized to construct the transmission line and ferry work crews in and out of the area. This measure would be necessary to avoid constructing new roads or creating vehicle trails which would encourage off-road vehicle use in this area.

17. In Northern Alternative 2, the transmission line in Link 4b will be routed to the west to further avoid the bighorn sheep lambing habitat on Scadden Mountain. This may be accomplished by continuing the route southwesterly, parallel to Interstate 10, from milepost 10 to an interconnection point in Link 17 at milepost 14.0. The route would then continue in Link 17 to Link 4c.

Visual

General Considerations. A number of mitigation measures will be required by BLM on Federal land throughout one or all of the alternative corridors to reduce the visual presence of transmission facilities. These measures are listed below:

1. For all alternative alignments, nonspecular conductors will be used. (An exception would be on Link 10 of the proposed route through Blythe where specular conductors are recommended for aircraft safety. See Section 5.5 of the Devers-Palo Verde #2 EIR.)

2. For the proposed alignment, tower spacing will correspond to the spacing of the existing transmission line, except where other resource concerns warrant. Additionally, new tower heights will be adjusted such that the top elevations of each set of towers (new and existing) are horizontal with each other. This will visually coordinate perceptions of towers and conductors as one element. Site specific conditions will determine when such mitigation is feasible. Other exceptions to these two measures are where towers will be sited to avoid sensitive features and/or to allow conductors to clearly span the features.

3. For alternatives involving new alignments, siting of any access or spur roads will follow the area's landform contours, providing that such alignment does not additionally impact resource values. Towers will be sited to avoid sensitive features and/or allow conductors to span sensitive features. At all highway and recreation routes-of-travel crossings, including the Colorado River, towers will be placed at the maximum feasible distance, and at right angles, from the crossing.

The following are site-specific mitigation measures for high impact areas along the proposed route (links 1, 2, 6, 10, 12, 13, 14, and 16).

4. Orocopia Mountains (Link 13, Milepost 52 to 53.5). As depicted in Figure 5.7-4 of the Devers-Palo Verde #2 EIR, existing access road and fill areas which create a significant visual impact will be treated with Eonite or similar treatments. This will reduce the visual contrast created by the light-valued disturbed soils with the darker-valued, vegetated surroundings. The holder will consult with BLM on a site by site basis for the use of Eonite. No new access roads will be constructed or upgraded. No widening or upgrading of existing roads will be undertaken. New towers in this section will ideally be constructed downhill from existing towers to avoid the potential for skylining. Towers will be placed to avoid sensitive features.

5. Interstate 10 Crossing (Link 13, Milepost 65). Where feasible, new towers will be aligned such that the top alignment of the towers is horizontal to the eye. Towers immediately adjacent to the highway at the crossing will be placed at right angles to the existing towers and as parallel to the Interstate as possible to avoid a "scalloping" effect of the conductors crossing over the highway.

Park, Recreation, and Preservation Area Mitigation

1. The holder will meet with Riverside County and BLM park and recreation section staff to explore possibilities of sharing rights-of-way where the project crosses the proposed County and BLM trails.

2. Through consultation with Coachella Valley Preserve (CVP) representatives, the holder will assist efforts to enclose and gate the CVP.

General Mitigation

At the end of the project's useful life, the transmission line would be abandoned. Subsequently, conductors, insulators, hardware, and towers on public land will be dismantled and removed. Dismantling of towers on private lands will be accomplished by the utility at the owners discretion. Tower footings will be removed at the owner's discretion. The removal of towers and footings will be most important in agricultural and residential areas.

Socioeconomics

Demographic changes in the project study area are anticipated to be insignificant; therefore, no mitigation is proposed. It is recommended, however, that the holder coordinate the California and Arizona work crews, as well as pipeline and state prison construction project crews and other major project personnel, to avoid significant impacts to temporary housing supply in the Blythe area, particularly during peak tourist season, and to ensure adequate accommodation for construction crews.

Acoustic Considerations

Construction Noise. To substantially reduce the short-term noise impacts during construction, the following measures are recommended:

1. Limit the hours of construction occurring within 500 feet of noise sensitive receptors (human occupied facilities such as residences and hospitals) to between ?:00 am and 5:00 pm during weekdays (proposed route; Northern Alternative 1, Link 5; Northern Alternative 2, Links 4c or 17; Southern Alternative, Link 7).

2. Locate construction yards at least 500 feet away from residences.

3. Minimize the use of helicopters within 500 feet of residences.

4. Notify residents within 500 feet of any upcoming noisy construction activities and schedule the activities, when possible, to minimize conflicts with the neighbors.

Cultural Resources

The following mitigation measures are recommended for the Devers-Palo Verde #2 transmission line relative to archaeological and historical resources. These recommendations provide a means to comply with the National Historic Preservation Act of 1966, as amended, in accordance with procedures codified in 36 CFR Part 800. These procedures provide a formal decision-making strategy to identify and protect cultural resources and to provide appropriate State Historic Preservation Officers and (SHPO) the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on federal agency actions.

The following tasks will be carried out to ensure compliance with applicable laws and regulations in accordance with Programmatic Memoranda of Agreement for California and Arizona among the BLM, SHPOs, and ACHP.

1. All resources will be inventoried by the cultural resource contractor (CRC). The nature and extent of inventory will be determined by BLM in consultation with the appropriate SHPO and will be based upon project engineering specifications.

2. The CRC will evaluate all cultural resources for significance and make recommendations for National Register eligibility. Determinations of eligibility will be made by BLM in consultation with the appropriate SHPO.

3. The CRC will prepare a Cultural Resource Treatment Plan for National Register eligible sites to mitigate identified impacts. Avoidance or testing and data recovery will be used as mitigation alternatives. Priority will be given to avoidance through project design. If avoidance is not feasible at specific sites, data recovery or other mitigation measures will be undertaken in consultation with BLM and SHPO.

4. The Advisory Council Historic Preservation will be given an opportunity to comment on proposed mitigation in accordance with the Programmatic Memoranda of Agreement applicable to California and Arizona.

5. Notices to Proceed will be issued following completion of any field work determined necessary through the inventory, evaluation and consultation process described above.

A site specific program of mitigation will be undertaken for the proposed right-of-way, if selected. Intensive cultural resources field surveys will be conducted along staked rights-of-way for all newly proposed access roads. Intensive cultural resource field surveys also be undertaken at the three new construction yards or any other projected impact areas outside of the previously surveyed corridor. Site specific field surveys will also be undertaken at all projected areas of impact within the previously surveyed corridor that coincide with previously recorded site locations. Visual inspection by a qualified archaeologist will be used to determine if prior mitigation efforts are adequate to mitigate new impacts or if further mitigation efforts in the form of project redesign or data recovery are required.

An intensive cultural resource field survey will be carried out within any alternative corridor selected. The selected right-of-way will be staked prior to this survey. The survey will be of sufficient nature and extent to identify intensive Class III inventory of all cultural resources with a staked right-of-way. The survey corridor will have to be of sufficient width to identify impacts from tower pad construction, access road installation, and transmission line construction and operation. All cultural resources must be evaluated for significance so that BLM and SHPO can make National Register eligibility determinations.

Priority will be given to avoidance through project design as the preferred mitigation alternative. If that is not feasible at specific sites, a program of data recovery will be developed within the context of an explicit research design.

SOUTHERN CALIFORNIA EDISON COMPANY'S MITIGATION MEASURES

The following mitigation measures are included by Southern California Edison Company (SCE) in their project design or otherwise described in the PEA.

Recreational Resources

1. Minimize construction during heavy recreational use periods, including major holidays in selected areas.

Geology

Mitigation of potentially significant impacts to the western end of the proposed transmission line due to (1) potential surface fault rupture along the Banning, Mission Creek, and Mecca Hills faults, and (2) potential for severe seismic shaking can be achieved by standard design methods listed below.

1. Towers will be sited so as not to straddle active fault traces.

2. The alignment will be designed to cross an active fault such that future rupture on the fault would not cause excessive stress on the line or the towers.

3. Standard foundation and structural design measures will be utilized to minimize the impact from severe seismic shaking.

Hydrology

1. Appropriate design of tower footing foundations, such as raised foundations and/or enclosing flood control dikes, will be used to prevent scour and/or inundation by a 100-year flood.

2. Towers will be located to avoid active drainage channels, especially downstream of steep hillslope areas, to minimize the potential for damage by flash flooding and mud and debris flows.

3. Appropriate design of tower foundations will be used to reduce the potential for settlement and compaction.

4. Diversion dikes will be required to divert runoff around a tower structure if: a) the location in an active channel cannot be avoided; and b) where there is a very significant flood scour/deposition threat, unless specifically exempted by the BLM Authorized Officer.

5. Runoff from roadways will be collected and diverted from steep, disturbed, or otherwise unstable slopes.

6. Ditches and drainage concourses will be designed to handle the concentrated runoff, will be located to avoid disturbed areas, and will have energy dissipations at discharge points.

7. Cut and fill slopes will be minimized by a combination of benching and following natural topography where possible.

Land Use

Potential mitigation measures were applied to high and moderate impact levels following the implementation of the impact model described in Human Environmental Resource Studies: Devers-Palo Verde #2 Transmission Line Project (Draft) conducted by WIRTH Environmental Services.

1. Link 2 Low to moderate impacts would result during the construc tion phase of the project where Link 2 crosses the Kofa National Wildlife Refuge. These impacts could be minimized by the following mitigation:

2. Existing access (gas pipeline roads) will be used during the construction and operation phases of the project. Access to each tower site will use existing spur roads off the gas pipeline roads. When access crosses the actual gas pipelines, fill dirt would be placed on top of the pipelines in order to protect the pipe from construction equipment passing over the pipe. In general, all access roads may need to be refurbished in order to provide proper access during construction. All vehicular traffic would be limited to approved access or spur roads. No off-road travel would be permitted. Construction activity would be scheduled to avoid major holidays.

3. Link 10 - The proposed route will parallel the existing right of way, use H-frame tower design in agricultural areas, and towers will be spaced to the existing Devers-Palo Verde #1 line.

4. Link 13 - Towers will be placed so as to avoid sensitive areas and/or to allow conductors to clearly span such areas.

Cultural Resources

1. Cultural resource mitigation may take one or more of the following forms: avoidance (preferred), preservation in place, and/or data recovery/recordation. Precise mitigation measures would be developed on a case-by-case basis subsequent to complete inventory and in consultation with the responsible regulatory entities and representatives of locally affected Native American groups. Mitigation measures would be undertaken prior to construction in the affected area.

Biological Resources

The following discussion presents general mitigation measures to avoid or minimize impacts to biological resources as recommended by the holder in the PEA (SEC 1985).

1. Where possible, towers or access roads will be located so as to avoid individual plants or plant communities. Where this is not feasible, affected individual plants will be transplanted. Towers will also be placed so that the lines will span critical wildlife habitat.

2. Tower sites will be selected to allow maximum spanning of sensitive features.

3. New access road construction will be kept to a minimum.

4. Conduct site-specific surveys for sensitive plant and wildlife species and note individual occurrences.

5. Limit construction activities to those months of the year when conflict with bighorn sheep would be minimal.

6. Avoid upland areas where desert tortoises might occur and/or have a biologist present during construction activities that involve earth moving in order to move any tortoises (in burrows or cover-sites, or on the surface) that would likely be impacted.

7. Avoid construction activities that would tend to create wind barriers that might result in sand stabilization in order to minimize impacts to populations of the Coachella Valley fringe-toed lizard.

Noise

1. Schedule construction activities to avoid major holiday periods where the route crosses Indio Palm's State Park in Link 14.

Visual

Several general mitigation measures to reduce the visual impact of the proposed project have been suggested by the holder in the PEA. These measures are listed below:

1. Standard tower spacing would be modified to correspond with spacing of existing transmission line towers where feasible and within limits of standard tower design to reduce visual contrast.

2. Towers would be placed so as to avoid features and/or to allow conductors to clearly span the feature (within limits of standard tower design) to minimize the amount of sensitive feature disturbed and/or reduce visual contrast (e.g., avoiding skyline situations through placement of tower to one side of a ridge or adjusting tower location to avoid highly visible locations and utilize screening of nearby landforms).

3. Conductors will be constructed of nonspecular material.

Public Health and Safety

1. While no significant or potentially significant health and safety impacts will result, this transmission line is designed to minimize exposures to electric and magnetic fields. Engineering design considerations include the height of the towers, amount of line sag allowed, and the right-of-way widths utilized to minimize the generation of electromagnetic fields. Physically grounding all

potentially conductive objects to the earth will minimize the occurrence of annoyance shocks. Finally, public concerns will be addressed by Edison as they arise.

General Mitigation

1. Site specific areas that require mitigation measures will be coordinated with the agency specifically involved with those areas, such as governmental agencies listed in Exhibit F of the application.

West of Devers Related Transmission Facilities

1. Land Use and Visual Resources. Where the existing corridor crosses State Scenic Highway 62 and Interstate 10, or where the line is close to residential areas, non-specular wire would be used to decrease the visibility of the conductors. In the few locations where new construction access may be required, grading would be done to minimize visual impacts; and where roads are not required for maintenance, they would be returned to pre-construction conditions.

2. Cultural Resources. Precise mitigation measures (avoidance, preservation in place, and/or data recovery/recordation) would be developed on a case-by-case basis subsequent to complete inventory and impact assessments, and in consultation with the responsible regulatory entities and representatives of locally affected Native American groups. Mitigation measures would be undertaken prior to construction in the affected area.

APPENDIX B
STUDIES OF DESERT BIGHORN SHEEP

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
POINTE CORPORATE CENTRE. 7500 NORTH DREAMY DRAW DRIVE. SUITE 145
PHOENIX. ARIZONA 85020 (602) 371-1110

Mr. Steve Foreman
14 Galli Drive
Suite A
Novato, CA 94949

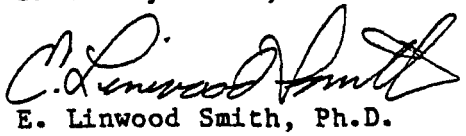
2 November 1987

Dear Steve:

Enclosed is a revised copy of the bighorn sheep impact report synopsis. I found about a dozen other gliches in the original, all have been corrected. The one table you asked about was, as I had suspected, data for another sheep, not for sheep 10A.

If you have any other comments or questions, please do not hesitate to contact me.

Sincerely Yours,



E. Linwood Smith, Ph.D.
Regional Director,
Biological Resource Studies

3030 N. Longhorn Drive
Tucson, Arizona 85749

STUDIES OF DESERT BIGHORN SHEEP (OVIS CANADENSIS MEXICANA) IN WESTERN ARIZONA

IMPACTS OF THE PALO VERDE-DEVERS 500kV TRANSMISSION LINE 1

FINAL REPORT SUMMARY

Submitted To:

Southern California Edison Company
Rosemead, California

Submitted By:

E. Linwood Smith, Ph.D.
Regional Director,
Biological Resource Studies
Dames & Moore

30 October 1987

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INTRODUCTION

During the early planning stages for the Devers-Palo Verde 500kV Transmission Line 1, it became apparent that none of the potential alternative routes could be constructed without passing through or very near high quality desert bighorn sheep (Ovis canadensis mexicana) habitat in western Arizona. Moreover, discussions between the proponents of the line, Southern California Edison Company (SCE) and Arizona Public Service Company (APS), and land and wildlife management agency personnel indicated a wide divergence of opinion relative to the potential impact of a 500kV transmission line in bighorn habitat. Some wildlife experts felt that such a line would interrupt normal movement patterns, prevent sheep from using traditional water sources, interfere with lambing, and cause sheep to abandon traditional home ranges; others felt that the line would have little or no effect. Consequently, SCE management made a decision to fund a major study of desert bighorn in western Arizona in order to generate hard data on the actual effects of the proposed transmission line. A contract to conduct the studies was issued to E. Linwood Smith & Associates, Tucson, Arizona in September 1977.

The study began in late November, 1977 when the Arizona Game and Fish Department captured and radio-collared 20 bighorn in the Plomosa, New Water, and Dome Rock Mountains. The field data collection portion of the study ended on 1 January 1984. The fundamental study design revolved around collection of field data prior to construction of the transmission line (baseline data) and collection of identical kinds of data during the construction and post-construction periods. The original study was to last five years; two years baseline, one year

construction, and two years post-construction. Due to construction delays, however, the baseline data collection period extended from 1 December 1977 to 28 February 1981, construction of Palo Verde-Devers Line 1 occurred in the western Arizona study area between 1 March and 18 December 1981 and the line was energized on 17 March 1982. The post-construction period extended from 19 December 1981 to 1 January 1984.

The study area was expanded in November, 1979 when two ewes were captured and radio-collared in the Livingston Hills, situated between the Kofa and the New Water Mountains. In October, 1981 at the request of the U.S. Fish and Wildlife Seervice, Kofa National Wildlife Refuge (KNWR), the study area was further expanded with the collaring of 7 bighorn on the KNWR and the hiring of a second field biologist to monitor the KNWR radio-collared population.

The data collected, and partially summarized in the following synopsis, resulted from a total of 504 aerial relocation flights (one flight approximately every five days for the duration of the study), 11,321 relocations of radio-collared sheep, and information contained on 2242 double-sided visual observation forms. The number of radio-collared sheep in the study population ranged from a low of 13 (due to radio collar failures) in the fall of 1978 to a high of 37 in October, 1981.

Two of three volumes of the final report for the project have been completed; Volume I contained findings from the Kofa National Wildlife Refuge studies, and Volume II deals with the impacts of the Palo Verde-Devers 500kV Transmission Line 1. The following is a brief summary of Volume II and deals with human activity levels in the study area, responses of desert bighorn to human-caused disturbances, and construction and post-construction impacts to desert bighorn.

HUMAN ACTIVITY IN THE STUDY AREA

INTRODUCTION

Seasonal temperature variation is the primary determinant of human activity in the study area. Mild winter temperatures and social events sponsored by the Town of Quartzsite on Interstate 10 attract many thousands of winter visitors. The permanent population of Quartzsite is around 600 people, but this number swells to well over 12,000 during the winter months with many people residing in the large Bureau of Land Management campgrounds located south of the town. Members of this winter resident population spend considerable time in the study area gathering wood for carving and fires, rockhounding, hiking, pleasure driving (including all terrain vehicle use on washes that penetrate the heart of the study area), camping, and hunting. Peak activity occurs during the first week of February when the annual five-day Quartzsite Pow Wow is held. In 1978 750,000 people attended the pow wow and over 1,000,000 people passed through the area (Witham et al., 1980; Jones, 1979; Feitz, 1980).

During the late spring through mid-autumn months the numbers of people in the study area is greatly reduced due to extremely warm temperatures (daytime highs in excess off 110 degrees are common). Some activities that continue through these months include mining, mine claim maintenance, cattle ranching, and limited hiking and rockhounding.

METHODS

In order to attempt to quantify human activity levels in the study area, traffic counters were placed on roads that entered bighorn habitat. We assumed that the quantity of vehicular traffic on these roads would be a reasonably good barometer of the amount of human activity in the study area. Biannual samples were taken during mid-winter and mid-summer from the Plomosa Road, a county maintained road that connects the towns of Quartzsite and Bouse, the gas pipeline road in Copper Bottom Pass (also part of the transmission line corridor), and South La Posa Road, which enters the New Water Mountains. During the post-construction period the above three roads were sampled as were the north and south Gold Nugget Roads, east of Quartzsite in the Plomosa Mountains, and the north La Posa Road. Samples were also collected from Copper Bottom Pass during the height of the construction period. Unfortunately we lost many samples over the years due to stolen, vandalized, and malfunctioning traffic counters.

RESULTS

As expected the highest levels of human activity in the study area occurred between the months of December and March and the lowest between June and September. During the preconstruction period, the number of vehicles traveling in Copper Bottom Pass never exceeded an average of five per day during the winter months and averaged well below one per day during the summer. On the Plomosa Road we noted a steady annual increase in vehicular traffic as the study progressed; in 1978 we recorded a high of approximately 30 vehicles per day, a similar number in 1979, 45 in 1980, and 60 per day in 1981. On the South La

Posa Road we noticed an opposite trend in winter with more than 50 vehicles recorded per day in 1978 and 1979, about 35 in 1980, and slightly over 20 in 1981. During the summer months of those same years vehicles recorded on the Plomosa Road was consistently between 0 and 5 while on the South La Posa Road traffic recordings were almost always 0 to 1 per day.

In Copper Bottom Pass an average of 18.9 hits per day was recorded during the construction period as construction vehicles moved in and out of the area. Following construction, an average of 10 hits per day was recorded in Copper Bottom Pass in February, 1983. The latter compares with 1.8 and 3.5 hits per day in 1978 and 1979, respectively. Other roads monitored showed a pattern very similar to that recorded during the preconstruction period (i.e., maximum use in the winter months and dropping to near zero use in the summer).

It is clear that the greatest amount of human ingression into the Plomosa, New Water, and Dome Rock Mountains occurs during the cooler winter months. A similar pattern almost certainly exists in the Kofa Mountains, however we did not do any monitoring of human activity in the Kofas. Relative to impacts on desert bighorn resulting from winter human activity, winter is the least stressful season owing to the general availability of water and forage. Also, it is doubtful that very many of the occupants of vehicles entering the various mountain ranges ever get more than one-half mile from their vehicle. Our experience with observing people is that most appear to be sightseeing, collecting ironwood or rock samples and most confine these activities to areas very near where they park. We have never encountered a non-biologist in remote portions of the study area (e.g., areas that require one to walk several

kilometers). Moreover, the primary evidence of human activity in such areas is manifest in the form of rock cairns marking mining claims. Consequently it is our opinion that despite the large numbers of people present in the Quartzsite area in winter, few of them get into prime bighorn habitat and, while some disturbance to sheep does accrue, we feel that the impacts are relatively minor.

RESPONSES OF DESERT BIGHORN TO HUMAN CAUSED DISTURBANCES

METHODS

Over the course of the study we recorded a total of 2242 observations of bighorn that were of adequate duration to warrant filling out a field data sheet (see Figure 1). Frequently groups of sheep under observation were confronted by people (usually the field biologist), trucks, helicopters, airplanes or other animal species. When a potential disturbance was witnessed, we recorded the distance the sheep were from the disturbance and the distance the animal(s) moved away from the disturbing feature and the animal's reactions. From these observations we ranked sheep responses to disturbance on a scale of 0 (no observable reaction) to 4 (severe, obvious reaction). Descriptions of the five reaction categories are presented in Table 1. The majority of disturbances were cuased by a solitary individual (usually the observer), 2 individuals, the Cessna 172 aircraft used in relocation flights, and parked vehicles. The responses of groups of sheep to disturbances were evaluated based on group composition (e.g., ram, ewe, or mixed groups), the presence of lambs in the group, group size, and distance to the disturbance. In the case of airplane caused responses, it should be noted that all observations were made from inside the airplane.

S.C.E./A.P.S.
DESERT BIGHORN
STUDIES

Visual Observation No. _____
Date _____
Frequency _____
Time _____

General Location _____
Metric Coordinates _____ X _____

Band Size _____ Accurate Count: Yes No Observation Distance _____

Ad. Ewes ____ ____ Wet ____ Dry ____
Y. Ewes ____ ____ Able to age animals: Yes No
Lambs ____ ____ Newborn __ One Week ___ Months: one___ two___
Y. Rams ____ ____ three _____ four _____ four+ _____
R I ____ ____ _____
A II ____ ____ _____
M III ____ ____ _____
S IV ____ ____ _____

Initial Activity _____

Traveling: Up Down Contour Stationary

Leading Sheep _____ Order ___ ___ ___ ___ ___ ___ ___ ___

Plant Shade/ Rock Shade/ Sun/ No Sun

Weather (General) _____
Initial Temperature _____ % Cloud Cover _____ Wind Direction _____
Wind Velocity: 0, 0-5, 5-10, 10-15, 15-20, 20+

Dominant Vegetation _____

Forage Type: browse grass forbs cactus mineral water

Identified Forage Species _____

Overall Vegetation Density: absent sparse moderate dense

Physical Habitat:

Elevation of Sighting _____ Initial Aspect _____
Of Desert Floor _____ Initial Slope _____
Difference _____ Substrate _____
% Distance Upslope _____ Elevation Base to Top _____

Distance from Steep Slope: 0, 0-.25, .25-.50, .50-.75, .75-1.0 > 1 km

Habitat Type:

Wash	Butte Slopes	Butte Top	Low Hills
Bajada	Mesa Slopes	Mesa Top	Flats
Foothills	Extensive Peaks Slopes	Extensive Peaks Top	

General Habitat _____

_____

_____

FIGURE 1. An example of the field data sheet used to record ground-based observations.

TABLE 1. Categories of reactions of bighorn sheep to disturbance.

0 = No reaction	Animals aware of disturbance but no observable response.
1 = Slight reaction	Some, or all of the group noticed, stared, then ignored the disturbance.
2 = Mild reaction	Animals moved away at a walk, or stayed and stared but returned to original activity.
3 = Moderate reaction	Immediate reaction, either trotted for a short distance or walked off with head erect in alarm posture. Animals returned to original activity within 10 minutes or 100 m.
4 = Severe reaction	Immediate running/trotting. Very startled and leave the area without returning.

RESULTS

During the study we collected data on 1766 groups of sheep of which 1150 groups (involving a total of 4696 sheep) were confronted with some kind of potential disturbance while under observation. A total of 22 different types of disturbances were classified (Tables 2 and 3). The 4 most common disturbances (Table 2) accounted for over 95 percent of the observations and were analysed separately. None of the miscellaneous disturbances listed in Table 3 occurred with great enough frequency to provide a sample size that would lend itself to statistical analysis. However, some interesting points can be made from the frequency distribution of sheep reactions (Table 3). Passing cars or highway noise rarely disturbed animals (12 of 13 recorded occurrences resulted in slight or no reaction). Most of these encounters involved sheep on high ridges above roads, highways, or jeep trails. In contrast, all ground-based observations of small planes (n=3) and helicopters (N=3) resulted in moderated reaction by the

animals under observation. In 6 observations of sheep being disturbed by other sheep, all the reactions were strong. These observations occurred when one group was under observation and a second group appeared running over a ridge. In all cases the running group caused the other group to run also. In some cases the two groups merged, in others they did not.

For the 4 most common disturbances there was a significant difference in the severity of reactions of sheep to different disturbances (X^2 = 413.0, D.F. = 12, P = 0.0001)(Table 2). Inspection of the individual cells in the Chi-square contingency table revealed that sheep reacted strongly to one or two people more often than was expected, and a majority of airplane disturbed sheep (71 percent) showed no overt reaction.

TABLE 2. Frequencies of reaction of 1093 groups of bighorn sheep to the four most common disturbances. Percent of rows in parentheses.

	Reactions[a]					
Disturbance	No Reaction	Slight Reaction	Mild Reaction	Moderate Reaction	Severe Reaction	N
Observer	78 (14)	114 (20)	115 (20)	49 (9)	220[b](38)	576
Airplane	170[b](71)	30 (13)	2 (1)	20 (8)	16 (7)	238
Parked Truck	34 (19)	72 (40)	29 (16)	11 (6)	34 (19)	180
Two Humans	3 (3)	19 (19)	23 (23)	5 (5)	49[b](49)	99
TOTALS	285 (26)	235 (22)	169 (16)	85 (8)	319 (29)	1093

a/ X^2 = 413, D.F. = 12, P = 0.0001

b/ These cells contributed most of the significance to X^2 by being more frequent than expected.

TABLE 3. Frequencies of reactions to all other disturbances observed.

Disturbance	None	Slight	Mild	Moderate	Severe	N
Passing Car/Truck	1	11	-	-	1	13
Highway Noise	6	1	-	1	-	8
Other Sheep	1	1	-	-	6	8
Small Plane	2	-	-	3	-	5
Helicopter	-	-	-	4	-	4
2 Helicopters	1	-	-	-	-	1
Fox(es)	-	3	-	-	-	3
Gunshots	1	1	1	-	-	3
Military Jets	-	1	-	1	-	2
Bobcat	-	2	-	-	-	2
Mule Deer	-	-	-	1	1	2
Airliner	-	1	-	-	-	1
Work Noises	1	-	-	-	-	1
Coyotes	-	1	-	-	1	2
Explosions	-	-	1	-	-	1
Shouts	-	1	-	-	-	1
Sonic Boom	1	-	-	-	-	1
TOTALS	14	22	2	10	9	57

The sample numbers of sheep disturbed disturbed by one human, the relocation flight aircraft, parked vehicles, and two humans were adequately large to allow more detailed analysis. We looked at the data again by separating out ram, ewe, and mixed groups, and groups with and without lambs. These analyses indicated the following:

Disturbance	X^2 Significant	Reasons For X^2 Significance
Single Human	Yes	- Mixed groups less reactive than expected - Ram groups more reactive than expected
	No	- Groups with lambs compared to those with no lambs
Two Humans	No	- All groups tended to react strongly
Parked Vehicle	Yes	- 32 percent of ram groups responded moderately to strongly - 9 percent of ewe groups responded moderately to strongly - 16 percent of mixed groups responded moderately to strongly
	No	- Groups with lambs compared to those with no lambs
Airplane	No	- 71 percent of groups did not pay any attention to the airplane
		- Groups with lambs tended to react more strongly than groups without lambs

Finally, with respect to bighorn responses to human caused disturbances, we constructed a linear regression model based on distances moved from the four most common disturbance factors in order to assess the strength of response to specific disturbances. Although there was a considerable amount of scatter about the generated regression line, a general statement (that was also statistically significant) that can be made is that the closer the disturbance is to an individual or group, the farther the animal(s) moves from the disturbance. Also, larger groups tended to move farther than small groups or

individuals. There was a large amount of variability in response to disturbance relative to the distance between the sheep and the disturbance. Some animals moved 1000 m away from a disturbance that was 1000 m away when the sheep noticed it. Other animals did not move when the disturbance was very close and the majority of flights away from disturbance were on the order of 100 m only.

CONSTRUCTION AND POSTCONSTRUCTION IMPACTS

METHODS

Throughout the construction and postconstruction periods (1 March 1981 - 18 December 1981 and 19 December 1981 - 1 January 1984, respectively) we continued making aerial relocation flights every 5 days, ground-based observations were made on a near daily basis, and all other study facets initiated during the baseline study were continued.

In order to understand the magnitude of construction period impacts on desert bighorn, we selected seven sheep that normally spent all or part of their time within 5 km of the transmission centerline in Copper Bottom Pass for analysis. Similar analyses were not conducted on any of the New Water Mountain, Kofa Mountains, or Livingston Hills sheep since none of our radio-collared animals normally occurred within 3 km of the transmission line. Several other radio-collared sheep in the Copper Bottom Pass area were similarly not included in this analysis because; 1) the animal was never relocated within 5 km north or south of the line, 2) we had no preconstruction relocations for a given animal, or 3) we had no construction period relocations (e.g., animals whose radios had failed or the animal had died during the baseline study period). The sheep selected had provided a minimum of 29 preconstruction relocations (range 29-169) and 45 construction period relocations (range 45-54). Table 4 contains pertinent data on the sheep used in our examination of construction period impacts in the Copper Bottom Pass area of the Dome Rock Mountains.

In order to determine whether or not construction activities had any effect, we calculated the percent of relocations occurring within 1 km bands for a distance

TABLE 4. Relocations of Dome Rock Mountains radio-collared bighorn within one kilometer bands north and south of the Palo Verde-Devers 500kV Transmission Line 1. N = total number of relocations.

	PRECONSTRUCTION PERIOD (km)						CONSTRUCTION PERIOD (km)					
	0-1	1-2	2-3	3-4	4-5	5+	0-1	1-2	2-3	3-4	4-5	5+
RAM 19B/15C												
Relocations	4	9	10	13	25	12	4	11	8	7	9	6
Percent	5	12	14	18	34	16	9	24	18	16	20	13
Crossings	10 Total						8 Total					
N	73						45					
RAM 8C												
Relocations	7	15	17	7	17	9	9	9	6	14	5	8
Percent	10	21	23	10	24	12	18	18	12	27	10	15
Crossings	9 Total						7 Total					
N	72						51					
RAM 17C/16B												
Relocations	1	1	2	4	26	133	0	0	0	1	9	44
Percent	1	1	1	2	15	80	0	0	0	2	17	81
Crossings	None						None					
N	167						54					
EWE 9D												
Relocations	5	5	9	7	0	0	18	15	14	5	1	0
Percent	19	19	35	27	0	0	34	28	26	9	2	0
Crossings	None						10 Total					
N	26						53					
EWE 5C												
Relocations	22	38	24	7	0	1	13	20	9	6	5	0
Percent	24	41	26	8	0	1	24	38	17	11	9	0
Crossings	8 Total						22 Total					
N	92						53					

TABLE 4. Concluded

	PRECONSTRUCTION PERIOD (km)						CONTSRUCTION PERIOD (km)					
	0-1	1-2	2-3	3-4	4-5	5+	0-1	1-2	2-3	3-4	4-5	5+
EWE 20B/4C												
Relocations	2	2	2	3	5	135	1	5	5	1	1	39
Percent	1	1	1	2	4	91	2	10	10	2	2	75
Crossings	4 Total						None					
N	149						52					
EWE 3B												
Relocations	5	15	4	1	2	142	0	0	0	0	0	48
Percent	3	9	2	0	1	84	0	0	0	0	0	100
Crossings	2 Total						None					
N	169						48					

of 5 km on either side of the transmission line. The number of relocations within each 1 km band during the preconstruction and construction periods was determined for each key sheep. These numbers were then converted to percent of relocations for each band for each study period. Additionally, the number of times each sheep crossed Copper Bottom Pass before and during construction was determined. Data were treated statistically by calculating Spearman Correlation Coefficients to determine the intensity of relationship between construction activity levels and the distribution of radio-collared sheep within the 1 km bands.

The number of construction workers present in Copper Bottom Pass during each week of the construction period was plotted along with the known relocations of each radio-collared sheep. The intent of this aspect of the analysis was to show the spatial relationship between the intensity of construction activity and the distribution of sheep.

Mean distance analyses were conducted on a total of 21 sheep that might have been influenced by construction or operation of the tranmsission line. The sheep included in this analysis were all located, on average, within 12 km of the transmission line in the New Water Mountains, Livingston Hills, Dome Rock Mountains, and Trigo Peaks. Analysis of variance (Simpson et al., comparing mean distances during the preconstruction, construction and post-construction periods was conducted and the same means were supjected to Duncan's Multiple Range Test (Kirk, 1968; Winer, 1971) to identify means that were at variance with others.

Additionally, from aerial relocation data, we determined the number of times sheep crossed the transmission line corridor during the 3 study phases. Crossings were normalized to a monthly value and preconstruction values were used as expected values for conducting Chi-square analyses on construction and post-construction crossing rates.

RESULTS

Construction Period Impacts: Dome Rock Herd

Of the 7 Dome Rock sheep selected for construction period analysis, Rams 8 C and 19B/15C and Ewes 9D and 5C spent most of their preconstruction and construction period time in the vicinity of Copper Bottom Pass. The other 3 sheep, Ewes 20B/4C and 3B and Ram 17C/16B spent more than 75 percent of their preconstruction and construction period time more than 5 km from the Copper Bottom Pass area. Ram 17C/16B never crossed Copper Bottom Pass and was relocated within 4 km of the pass only 8 times during the preconstruction period (= 0.6 percent of all relocations) and only once (2.0 percent of all relocations) during the construction period. Ewe 3B was relocated within 4 km 25 times (17.6 percent of all relocations) during preconstruction and never during the construction period. Ewe 3B crossed Copper Bottom Pass twice during preconstruction, never during construction. Ewe 20B/4C was relocated within 4 km of the pass 9 times during preconstruction (6.0 percent of all relocations) and 12 times (23.1 percent of all relocations) during the construction period. Ewe 20B/4C crossed Copper Bottom Pass twice during preconstruction, never during the construction period. These 3 sheep, whose home areas were located south of Copper Bottom Pass rarely traveled north to the pass, and provided little real data on construction period impacts.

The other 4 sheep could be considered "Copper Bottom Pass residents" and they provided some very interesting information.

Ram 19B/15C was 12 years old during the construction period. He spent about the same amount of time north and south of the transmission line corridor during the construction period, and he crossed the corridor at least 8 times (Table 4, Figure 2). Ram 19B/15C apparently spent more time within 3 km of the line during the construction period than during the preconstruction period (Table 4, Figure 6). Calculation of Spearman Correlation Coefficients for both periods shows a strong correlation during the preconstruction period ($r = 0.828$), but no correlation during the construction period (0.028).

In our initial analysis of this animal's movements during the construction period, we suggested (E. Linwood Smith & Associates, 1983) that further scrutiny of his relocations during the construction period was warranted. In looking further at the data, we found that Ram 19B/15C definitely was relocated more frequently near the construction zone (51.1 percent of all relocations within 3 km) than was the case during preconstruction (31.1 percent of all relocations within 3 km). Moreover, all construction period relocations, 37 of 45 (82.2 percent) occurred north of Copper Bottom Pass compared with 55 of 73 (75.3 percent) prior to the construction period. These are not major differences between the two periods, however, and it seems unwarranted to try and explain them in terms of construction activity. The latter is particularly true when one considers the erratic movement patterns exhibited by this ram over the course of the entire study. Ram 19B/15C had a large home area, he often moved to points more than 5 km north and south of the transmission line corridor, from near Interstate 10 on the north, south to the Trigo Peaks area. On 31 August 1983, he was relocated for the last time in our study area south of Weaver Pass, 9 km south of the transmission line. On 4 October 1983 he was found dead in an irrigation canal east of Yuma and south of the Muggins Mountains.

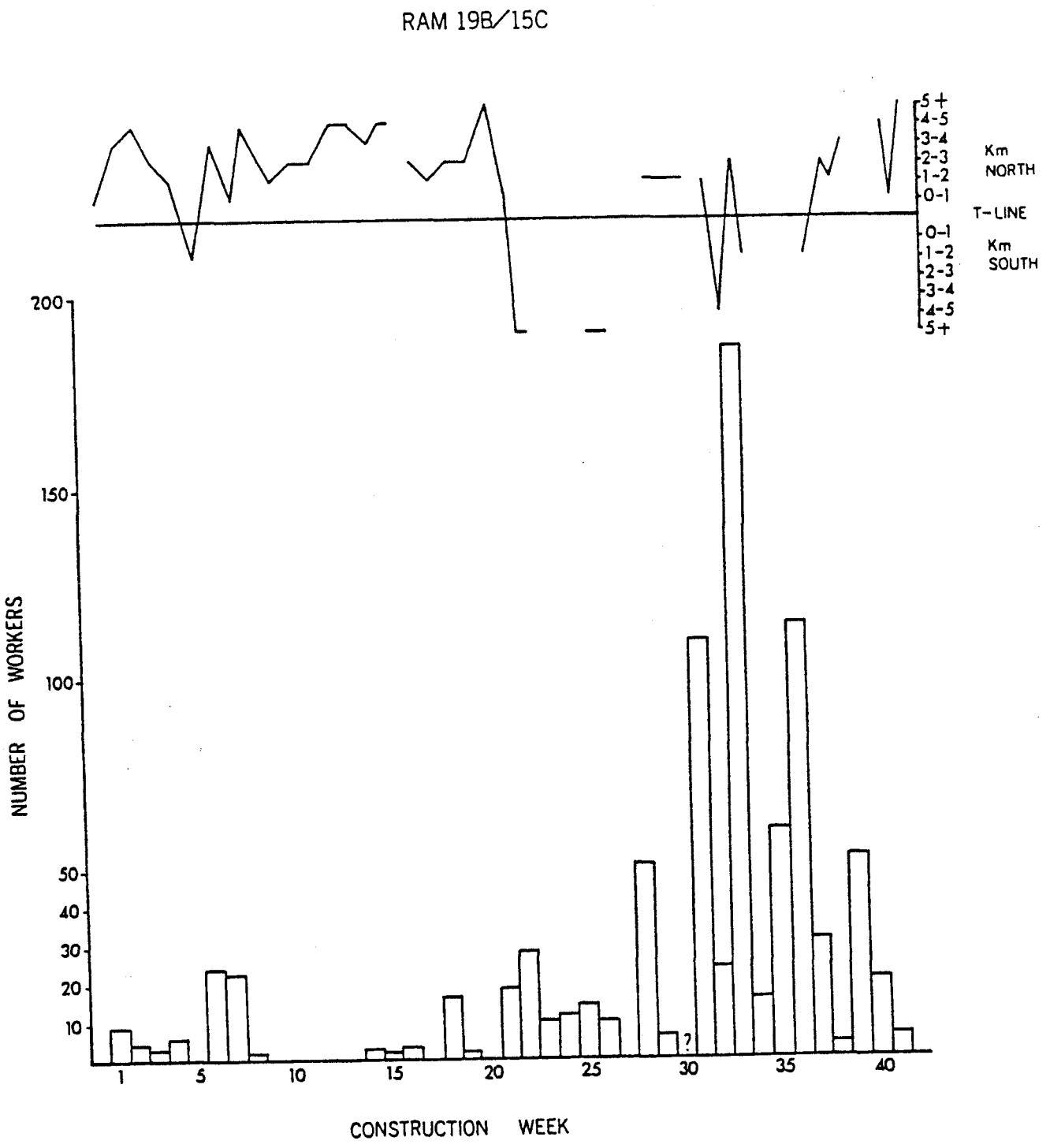

FIGURE 2. Relocations of Ram 19B/15C/871 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

Ram 8C, also a 12 year-old, spent about 87 percent of his time within 5 km of the line prior to construction and 84 percent during construction (Table 4, Figure 6). He crossed Copper Bottom Pass 9 times prior to construction and 8 times during the construction period (Figure 3). This ram also had a large home area, ranging from Interstate 10 south to the Trigo Peaks, a distance in excess of 20 km. Spearman Correlation Coefficients for the preconstruction and construction periods indicate no relationship between this ram's movements and distance from the transmission line. A strong negative correlation ($r = -0.851$) suggests that this sheep did not spend a lot of time in the immediate vicinity of the transmission line corridor (see Figure 3).

Ewe 9D was originally radio-collared on 1 November 1978 as a 3 year-old. Her home area was generally located north of Copper Bottom Pass and within 5 km of the transmission line where she was relocated 100 percent of the time both before and during construction (Figures 4 and 6, Table 4). Prior to construction 9D had not been relocated south of Copper Bottom Pass. During construction, however, she crossed the pass at least 10 times (Figure 4, Table 4). Spearman Correlation Coefficient calculations showed a weak negative relationship between relocations and distance to the transmission line prior to construction ($r = -0.500$), probably reflecting a preferred home range more than 2 km north of the line (Table 4). An extremely strong negative ($r = -1.000$) correlation found for the construction period indicates, rather forcefully, that Ewe 9D may have been attracted to the construction activity.

Ewe 5C, originally collared on 29 November 1979 as a 4 year-old, and recollared on 30 October 1981, stayed within 4 km of the transmission line corridor 98.9

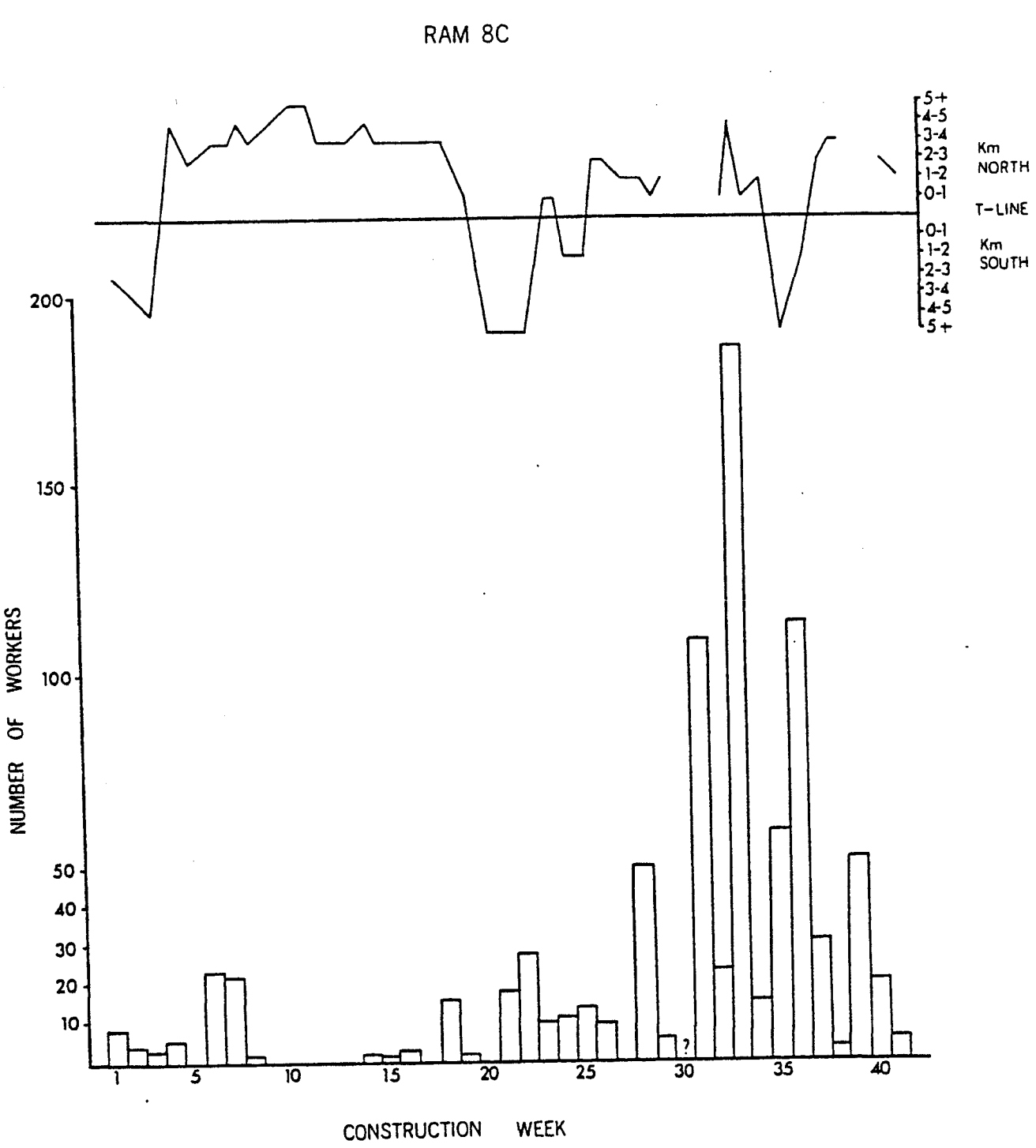

FIGURE 3. Relocations of Ram 8C/833 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

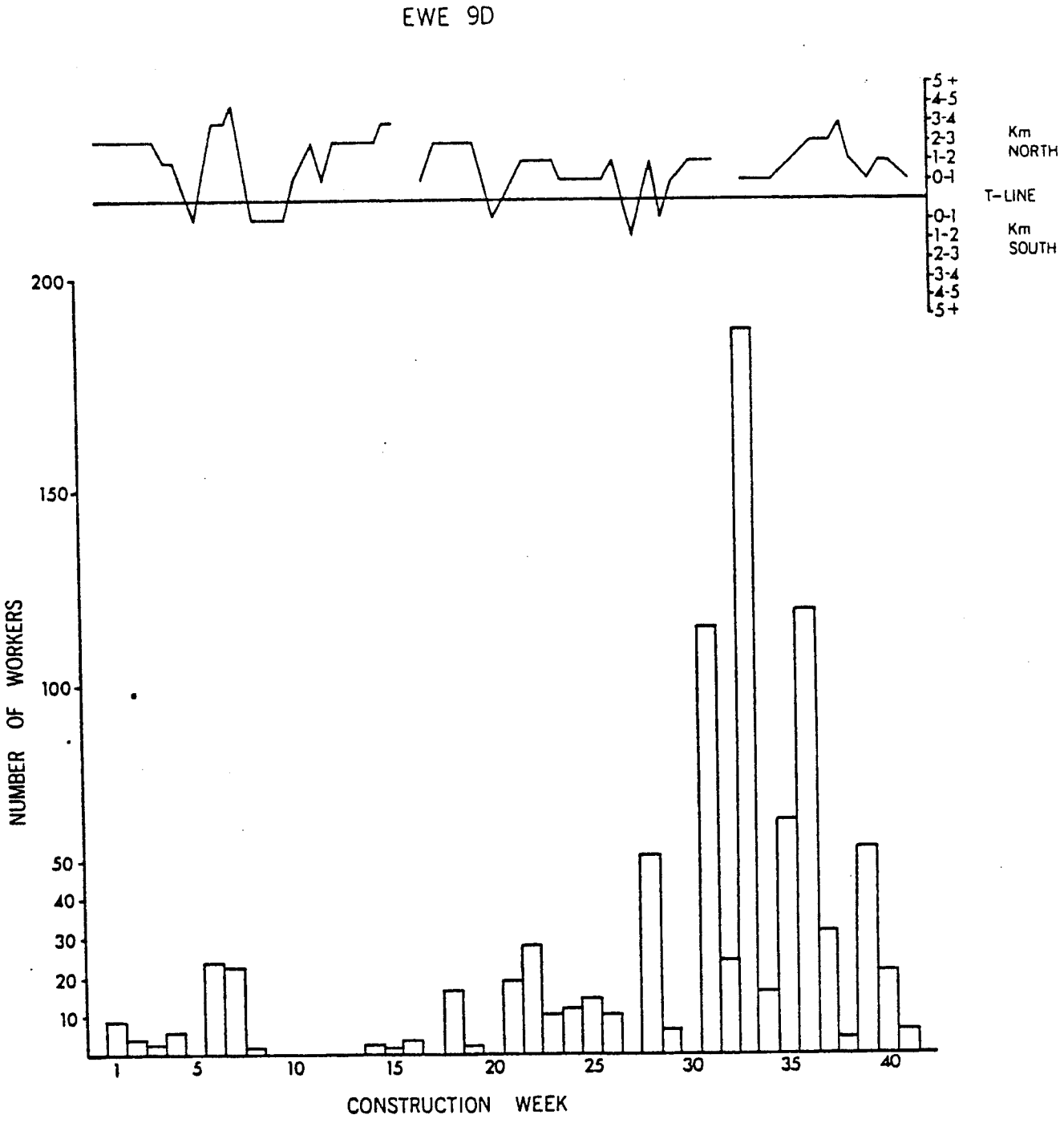

FIGURE 4. Relocations of Ewe 9D/888 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Pass area.

percent of the time during preconstruction. During the construction period she was relocated within 4 km 90.6 percent of the time (Figures 5 and 6; Table 4). Prior to construction 5C crossed the transmission line corridor a total of 9 times, compared with at least 22 crossings during the construction period. Ewe 5C did not appear to shift the location of her preferred use area as a result of construction and Spearman Correlation Coefficients for the preconstruction (r = 0.771) and construction (r = -0.942) periods bear this out. The strong negative correlation and increased number of corridor crossings during the construction period suggest that this ewe, like 9D, was actually attracted to the construction activity. This apparently clear picture is somewhat clouded, however, in that we know at least 2 of Ewe 5C's crossings were the result of being disturbed by field biologists gathering behavioral data.

Mean Distance Analysis and Corridor Crossings

Sheep selected for mean distance analysis are listed in Table 5. These animals were selected on the basis of our having at least construction and post-construction data for them and because relocations had been obtained in close proximity to the transmission line corridor.

In our final report "Impacts of the Palo Verde To Devers 500kV Transmission Line" (E. L. Smith & Associates, 1986) we presented full mean distance analyses for each of the 21 sheep listed in Table 5. For the purposes of this summary report, we are presenting data for only 5 of the 21 animals, one each from the west New Water Mountains (i.e., west of Black Mesa), east New Water Mountains (Black Mesa and eastward), Livingston Hills, Kofa Mountains, and Dome Rock Mountains. We selected a representative sheep from each of these areas based on the animal's normal proximity (i.e., closest) to the transmission line.

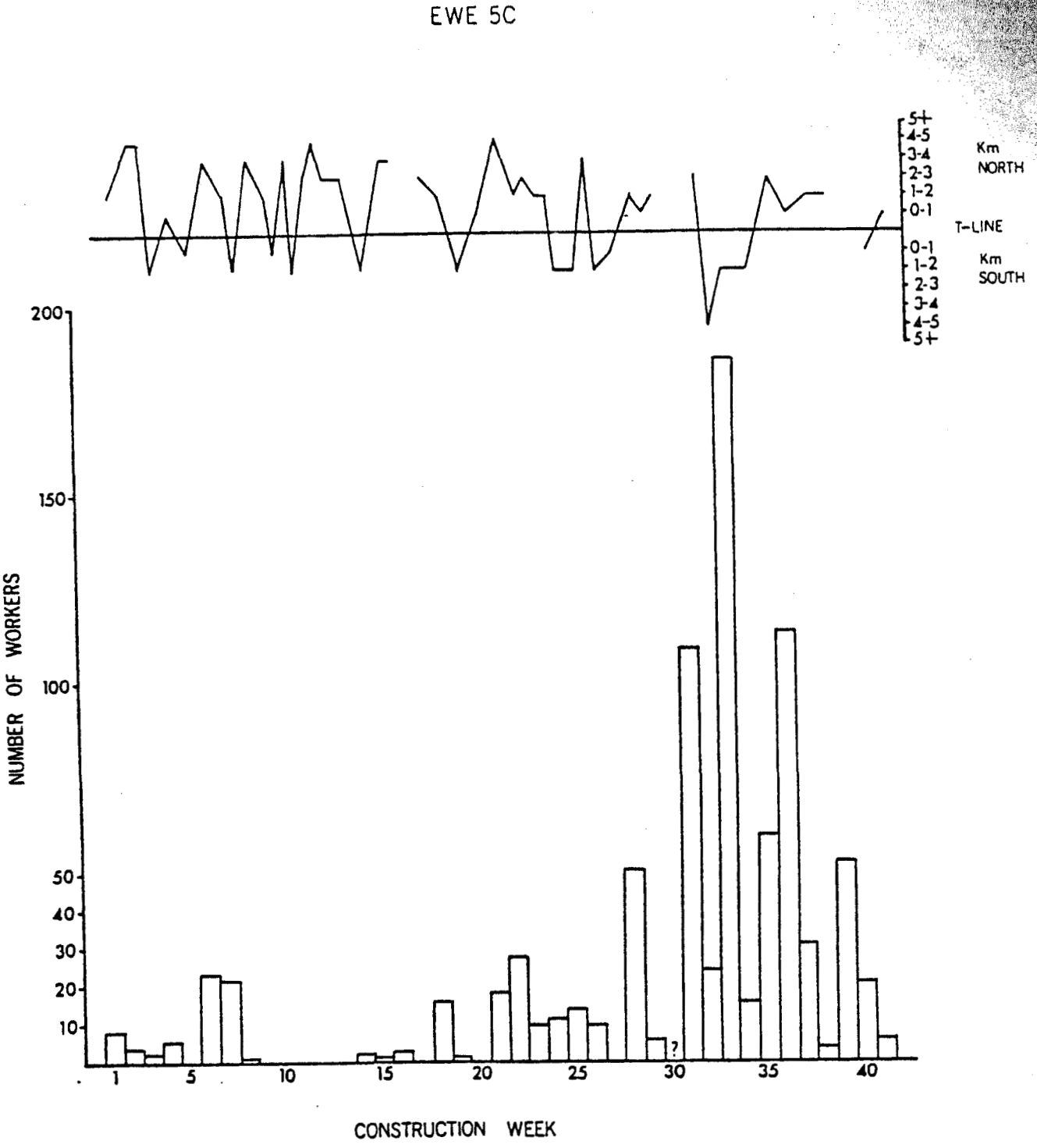

FIGURE 5. Relocations of Ewe 5C/945 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

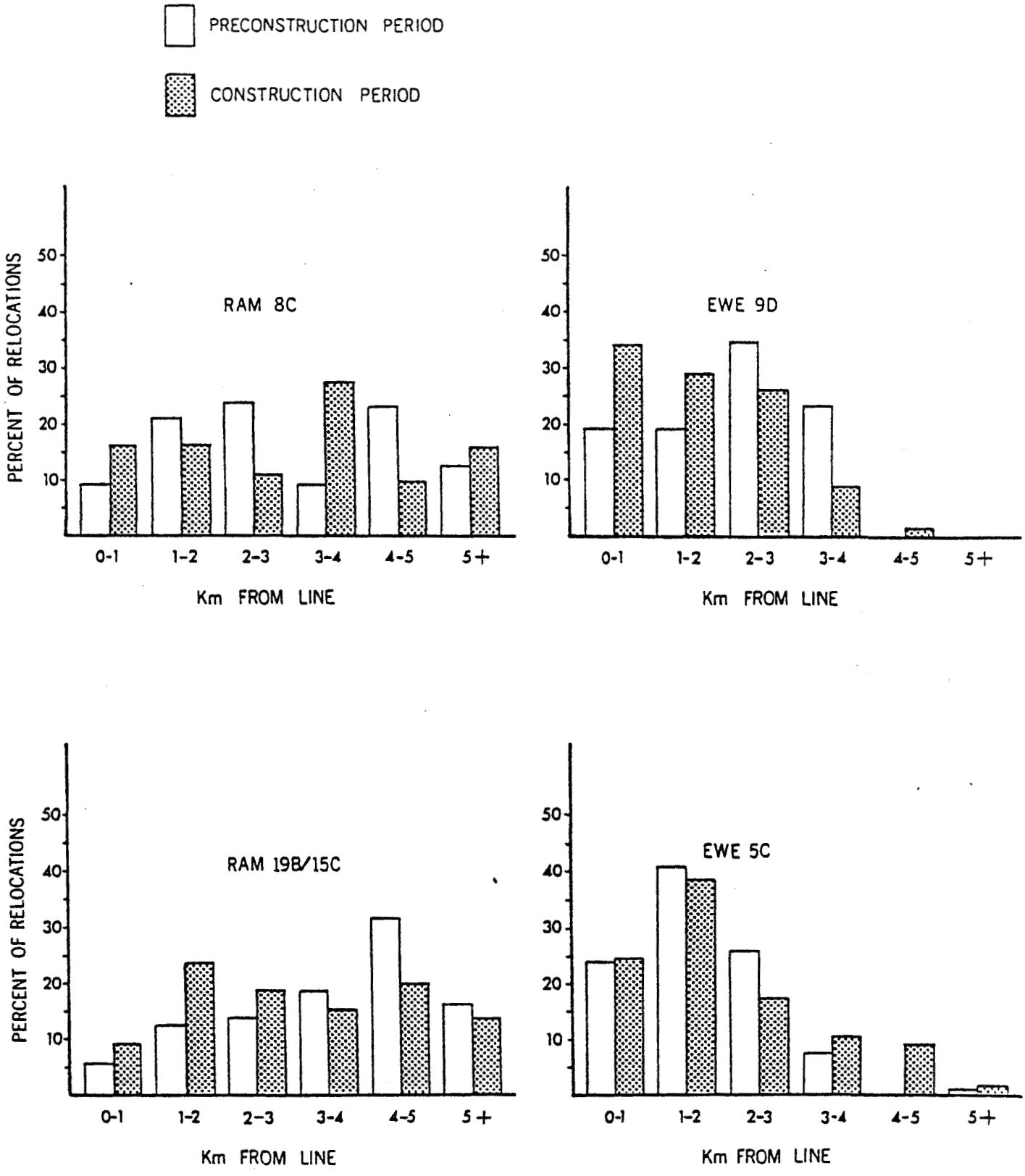

FIGURE 6. Percent of relocations of four Dome Rock Mountain sheep within five one kilometer bands north and south of the Palo Verde-Devers 500kV Transmission Line 1 before and during construction of the line.

TABLE 5. Radio-collared sheep selected for mean distance analysis.

Sheep No.	Sex	Home Area*	Number of Relocations	Nearest to Transmission Line	Mean Distance[1]
14A/15K/872	M	WNW	275	1.75 km	13.05 km
10A/10B/893	F	WNW	458	1.72	5.69
11A/12B/856	F	WNW	350	0.93	9.14
17B/7D/878	M	ENW	305	0.40	6.33
13C/861	M	ENW	151	0.45	12.14
19C/891	M	ENW	178	2.08	9.25
924	M	ENW	29	0.94	3.61
930	M	ENW	139	0.48	5.84
8B/915	F	LH	301	1.00	5.57
7C	F	LH	127	1.88	4.78
16K/921	M	LH	204	0.5	3.94
12K/857	F	LH	208	1.68	3.75
13K/862	F	LH	208	1.78	7.06
8C/883	M	DR	280	0.01	3.49
5C/945	F	DR	309	0.07	1.61
20B/4C/942	F	DR	332	0.67	7.81
3B/936	F	DR	369	0.36	8.29
9D/888	F	DR	232	0.07	1.77
19B/15C/871	M	DR	243	0.02	3.28
17C/16B/876	M	TP	328	0.22	11.18
909	M	K	127	1.80	9.06

*WNW = West New Water Mountains
ENW = East New Water Mountains
LH = Livingston Hills
DR = Dome Rock Mountains
TP = Trigo Peaks
K = Kofa Mountains

1/ Measured from the centerline of the Palo Verde-Devers 500kV Transmission Line

Sheep 10A/10B/893, a ewe, was 1.75 years-old when first radio-collared on 17 November 1977 in the west New Water Mountains. A total of 458 relocations resulted in an overall mean distance from the transmission line of 5.69 km (Table 6). This sheep was relocated within 1.75 km of the line and as far away as 12.28 km. The former occurring during the post-construction phase breeding season of the study, and the latter during the preconstruction breeding season. This ewe crossed the corridor to the Livingston Hills (29 September 1983) and returned to the west New Waters (4 November 1983) only once during the entire study.

It is interesting to note that the only seasonal mean distance from the transmission line that was statistically different from any other mean for this ewe was the construction period breeding season mean (Table 6). The preconstruction breeding season mean approaches being the same as the construction period breeding mean (6.36 km versus 7.55 km). Given the distance this animal normally occurred from the transmission line corridor and the extremely dry conditions that prevailed during the 1981 breeding season, it seems more logical to suggest that this ewe moved northward and concentrated her breeding season activities near permanent water (i.e., Dripping Springs) than to try and infer construction activity impacts. This supposition is further strengthened by the fact that Ewe 10A/10B/893's normal home range was centered in an area separated from the construction zone by 3-5 kilometers of fairly rugged terrain, which probably precluded her being disturbed at all by human activity associated with construction.

Ram 924 was captured and radio-collared on 29 October 1981 at the end of the

construction period in the New Water Pass area. Unfortunately his transmitter failed on 12 May, giving us a scant total of 29 relocations and only 2 construction period relocations. Consequently, despite the fact he was the east New Water Mountain sheep whose average mean distance from the transmission centerline was the least, for the purposes of this synopsis, we choose to substitute Ram 930 for which we have 139 relocations and whose mean distance from the transmission centerline was 5.84 km (Tables 5 and 7). His range of relocation distances fell between 0.48 and 16.00 km from the centerline, and although we have only 2 construction period relocations (930 was captured and radio-collared within the week that construction activity in the New Water Pass area ceased), we do have 137 postconstruction relocations.

Ram 930 crossed the transmission line corridor a total of 13 times following construction. Further, as can be seen by examination of Table 7, there were no significant differences in any of the mean distances calculated for this sheep, and it thus appears that the presence of an operational 500kV transmission line did not cause this sheep to move away from the facility, nor did it prevent him from crossing back and forth through the corridor.

Ewe 12K/857, collared initially as a yearling on 28 October 1980 in the Livingston Hills, had an overall mean distance of 3.75 km and a range of 1.68 km to 10.39 km based on 208 relocations (Table 8). Ewe 12K/857, like to the other radio-collared ewes in the Livingston Hills never crossed the transmission line corridor. With respect to differences in seasonal means, it should be pointed out that we obtained only 8 preconstruction breeding season relocations of this animal and only 6 construction period non-breeding relocations. Construction and post-construction breeding season means were not significantly different

TABLE 6. Mean distance analysis for sheep 10A/10B/893 between 17 November 1977 and 27 December 1983. Sheep 10A is a ewe that was 1.75 years of age when originally collared in the west New Water Mountains. The following distance analysis is based on 458 relocations. Distances presented in the table are mean distances from the centerline of the Palo Verde to Devers 500kV transmission Line 1 and are measured in kilometers (1 km = 0.62 miles). N = number of relocations and SD is the Standard Deviation. Breeding season is from June through November and non-breeding season is December through May. In Analysis of Variance, DF = degrees of freedom, Sum SQ is the sum or squares, and in Duncan's Multiple Range Test the means included above a continuous line are not significantly different from each other.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	5.84	157	2.32	3.26	11.82
Preconstruction	Breeding	6.36	120	2.27	3.35	12.28
Construction	Non-breeding	4.61	5	1.38	3.99	7.07
Construction	Breeding	7.55	17	1.95	3.85	10.12
Post-construction	Non-breeding	4.90	77	1.45	3.31	9.33
Post-construction	Breeding	4.85	82	2.02	1.72	10.56
TOTALS		5.69	458	2.21	1.72	12.28

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Construction	Non-breeding	4.61
Post-construction	Breeding	4.85
Post-construction	Non-breeding	4.90
Preconstruction	Non-breeding	5.84
Preconstruction	Breeding	6.36
Construction	Breeding	7.55

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	227.54	45.51	10.22 (P = 0.000)
Within Groups	452	2011.72	4.45	
TOTAL	457	2239.26		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

4.61 4.85 4.90 5.84 6.36 7.55

TABLE 7. Mean distance analysis for Ram 930 between 29 October 1981 and 1 January 1984. Ram 930 was 5 years of age when originally radio-collared in the east New Water Mountains (SE of Black Mesa). The distance analysis below is based on 139 relocations. Distances are measured in kilometers from the centerline of the Palo Verde-Devers 500kV Transmission Line 1. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Construction	Breeding	6.76	2	3.53	4.26	9.25
Post-construction	Non-breeding	5.00	67	3.67	0.48	13.54
Post-construction	Breeding	6.63	70	4.06	1.13	16.00
TOTALS		5.84	139	3.93	0.48	16.00

MEAN DISTANCE IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Non-breeding	5.00
Post-construction	Breeding	6.63
Construction	Breeding	6.76

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	2	92.30	46.15	3.08 (P = 0.049)

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

5.00	6.63	6.76

TABLE 8. Mean distance analysis for Sheep 12K/857 between 28 October 1980 and 28 November 1983. Ewe 12K/857 was estimated to be one year of age when collared in the Livingston Hills. The following distance analysis is based on 208 relocations of this animal. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers 500kV Transmission Line. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	4.97	32	0.74	2.67	5.69
Preconstruction	Breeding	4.64	8	1.05	2.81	5.59
Construction	Non-breeding	4.22	6	1.11	2.73	5.99
Construction	Breeding	3.96	27	1.66	1.68	9.65
Post-construction	Non-breeding	3.57	65	1.42	1.87	5.87
Post-construction	Breeding	3.13	70	1.49	1.68	10.39
TOTALS		3.75	208	1.51	1.68	10.39

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Breeding	3.13
Post-construction	Non-breeding	3.57
Construction	Breeding	3.96
Construction	Non-breeding	4.22
Preconstruction	Breeding	4.64
Preconstruction	Non-breeding	4.97

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	85.92	17.18	9.02 (P = 0.000)
Within Groups	202	384.93	1.91	
TOTALS	207	470.84		

DUNCAN'S MULTIPLE RANGE TEST

3.13	3.57	3.96	4.22	4.64	4.97

from each other although they were different from preconstruction values, being closer to the transmission line corridor (Table 8). Ewe 12K/857 made frequent forays into the west Kofa Mountains, although she did not do it as often or as regularly as her cohort 13K/862.

As a group, the Livingston Hills ewes tended to be relocated farthest from the transmission line corridor during the breeding season. Exceptions to this generalization occurred with ewes that were radio-collared late in the breeding season and provided few relocations prior to the non-breeding season. When these small samples (e.g., ewes 12K/857 and 13K/862) are discarded, there is a clear tendency for breeding season ewes in the Livingston Hills to be located farther from the transmission line in both the construction and post-construction periods. We have no good preconstruction data for some of the Livingston Hills ewes. For the two we do, 7C and 8B/915, however, it was very clear that movement to the south, away from the corridor was characteristic during the summer months and probably occurred in response to water stress. In light of this, it seems probable that breeding season movements of ewes away from the corridor during the construction and post-construction periods was probably a manifestation of normal biological requirements rather than disturbance from the transmission line construction and operation.

Ewe 5C/945 was first radio-collared on Sawtooth Ridge in the Dome Rock Mountains on 29 November 1979. She was estimated to be 4 years of age when collared. A total of 309 relocations were used to calculate her overall mean distance of 1.61 km. The range of relocation distances for this sheep was 0.07 to 6.70 km from the transmission centerline. There were no significant differences between of her seasonal means which ranged from 1.49 km to 1.79 km (Table 9). This ewe

TABLE 9. Mean distance analysis for Ewe 5C between 29 November 1979 and 27 December 1983. Ewe 5C was four years of age when first radio-collared on Sawtooth Ridge in the Dome Rock Mountains. The following mean distance analysis is based on 309 relocations of this animal. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers Transmission Line in Copper Bottom Pass. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	1.67	53	1.04	0.38	6.70
Preconstruction	Breeding	1.49	38	0.85	0.29	3.20
Construction	Non-breeding	1.79	23	1.03	0.42	3.77
Construction	Breeding	1.73	34	0.98	0.41	4.52
Post-construction	Non-breeding	1.57	84	1.01	0.25	3.96
Post-construction	Breeding	1.58	77	0.89	0.07	3.47
TOTALS		1.61	309	0.97	0.07	6.70

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Preconstruction	Breeding	1.49
Post-construction	Non-breeding	1.57
Post-construction	Breeding	1.58
Preconstruction	Non-breeding	1.67
Construction	Breeding	1.73
Construction	Non-breeding	1.79

ANALYSIS OF VARIANCE (ANOVA) COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	2.18	0.44	0.47 (P = 0.801)
Within Groups	303	283.57	0.94	
TOTALS	308	285.76		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

ANOVA shows no significant differences between any means

was a true resident of the Copper Bottom Pass area, using Cunningham Mountain, Sawtooth Ridge and the rugged terrain to the west. We documented 59 corridor crossings by 5C/945, 9 during preconstruction, 22 during construction, and 28 during the post-construction period. None of the data we have for this sheep suggests that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 had any effect on her activities, with the possible exception that she seemed to be attracted to the construction activity.

Ram 909 was radio-collared near Holly Seep on the Kofa National Wildlife Refuge on 26 October 1981. We have very limited data (N = 2 relocations) on this ram for the construction period and none from the preconstruction period. A total of 125 post-construction relocations provided us with an overall mean distance from the transmission line of 9.06 km and a range of 1.80 to 16.94 km (Table 10). Ram 909 crossed the transmission line corridor 5 times during the post-construction period and had a post-construction breeding season mean distance of 6.50 km, the smallest mean distance for this sheep. The 6.50 km mean distance is significantly different from other means for Ram 909. However, owing to the substantial distance from the operational power line, it is probably not biologically meaningful and it appears that operation of the transmission line had no effect on this animal.

Throughout the preceding material we have mentioned transmission line corridor crossings by radio-collared bighorn. Table 11 summarizes these crossings in the New Water and Copper Bottom Pass areas and Table 12 provides more details on ram crossings between the Kofa Mountains/Livingston Hills and the New Water Mountains. Chi-square analysis of these data (Table 13) indicated significant

TABLE 10. Mean distance analysis for Ram 909 between 26 October 1981 and 20 December 1983. Ram 909 was four years of age when radio-collared on the Kofa National Wildlife Refuge (Holly Seep). The following distance analysis is based on 127 relocations of 909. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers 500kV Transmission Line 1 and are measured in kilometers. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Construction	Breeding	7.62	2	1.94	6.25	9.00
Post-construction	Non-breeding	11.79	61	3.92	3.08	16.94
Post-construction	Breeding	6.50	64	2.48	1.80	14.95
TOTALS		9.06	127	4.17	1.80	16.94

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Breeding	6.50
Construction	Breeding	7.62
Post-construction	Non-breeding	11.79

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	2	878.92	439.46	41.51 (P = 0.000)
Within Groups	124	1312.64	10.59	
TOTALS	126	2191.56		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

6.50	7.62	11.79

TABLE 11. Transmission line corridor crossings by radio-collared desert bighorn during the preconstruction, construction and post-construction phases of the study.

Sheep No.	Sex	Preconstruction	Construction	Post-construction	Totals
NEW WATER PASS					
930	M	X	X	13	13
909	M	X	X	5	5
999	M	X	X	2	2
16K/920	M	0	0	10	10
13C/861	M	3	2	2	7
19C/891	M	0	0	1	1
14A/A5K/872	M	3	0	2	5
17B/7D/878	M	6	0	6	12
13A	M	3	X	X	3
924	M	X	X	X	0
00A/B/893	F	0	0	2	2
8B/915	F	0	0	0	0
11A/12B/856	F	2	0	0	2
12K/857	F	0	0	0	0
13K/862	F	0	0	0	0
7C	F	0	0	X	0
TOTALS		17	2	43	62
COPPER BOTTOM PASS					
8C/883	M	9	7	12	28
17C/16B/876	M	0	0	0	0
19B/15C/871	M	10	8	19	37
5C/945	F	9	22	26	57
20B/4C/942	F	4	0	0	4
3B/936	F	2	0	0	2
9D/888	F	0	10	10	20
TOTALS		34	47	67	148

X = Sheep not a part of the study population during this period

* = A 4-5 year-old ram collared near Mohave Tanks on 6 November 1982 as part of an Arizona Game and Fish Department study on the Yuma Proving Grounds. In order to be present in the New Water Pass area of our study area, this sheep had to cross Arizona Highway 95.

TABLE 12. Transmission line corridor crossings by radio-collared rams in the New Water Pass area between 1 December 1977 and 1 January 1984.

RAM	Direction Of Crossing	From: UTM Grid Location (Date)	To: UTM Grid Location (Date)
15K/872	N to S	2228-37187 (12-01-77)	2308-37052 (12-12-77)
	S to N	2331-37053 (12-17-77)	2288-37146 (12-22-77)
	N to S	2295-37143 (01-09-78)	2293-37045 (01-16-78)
	S to N	2331-37077 (08-16-82)	2217-37191 (09-09-82)
	N to S	2223-37203 (09-27-82)	2342-37059 (10-04-82)
7D/878	N to S	2323-37179 (01-31-79)	2421-36973 (02-06-79)
	S to N	2343-36989 (03-12-79)	2299-37161 (03-17-79)
	N to S	2303-37201 (06-30-79)	2291-37043 (07-05-79)
	S to N	2253-37007 (08-15-79)	2337-37177 (08-20-79)
	N to S	2319-37203 (07-09-80)	2241-37029 (07-14-80)
	S to N	2331-37059 (08-12-80)	2319-37197 (08-22-80)
	N to S	2291-37145 (12-28-81)	2275-37119 (01-02-82)
	S to N	2269-37117 (01-16-82)	2281-37155 (01-20-82)
	N to S	2309-37205 (02-09-82)	2275-37037 (07-14-82)
	S to N	2235-37021 (07-28-82)	2367-37149 (08-02-82)
	N to S	2367-37149 (08-02-82)	2343-36999 (08-10-82)
	S to N	2291-36987 (08-29-82)	2299-37161 (09-09-82)
13C/861			
	N to S	2309-37153 (04-18-80)	2295-37121 (04-23-80)
	S to N	7771-36985 (08-12-80)	2311-37201 (08-17-80)
	N to S	2311-37201 (08-17-80)	2541-36973 (08-22-80)
	S to N	2447-37003 (08-05-81)	2299-37149 (08-10-81)
	N to S	2299-37149 (08-10-81)	2321-36829 (08-24-81)
	S to N	2407-36971 (07-26-82)	2301-37229 (08-02-82)
	N to S	2301-37229 (08-02-82)	2777-37131 (08-09-82)
19C/891			
	N to S	2257-37271 (07-30-82)	7673-37105 (08-20-82)
16K/920			
	S to N	7711-37085 (02-28-82)	7731-37139 (03-05-82)
	N to S	7777-37191 (03-19-82)	7709-37083 (03-27-82)
	S to N	7685-37101 (07-05-82)	7749-37201 (07-12-82)
	N to S	7737-37199 (07-26-82)	7719-37001 (08-02-82)
	S to N	7729-37099 (05-02-83)	7725-37135 (05-09-83)
	N to S	7729-37143 (05-19-83)	7685-37101 (05-23-83)
	S to N	7713-37085 (07-19-83)	7761-37165 (07-25-83)

TABLE 12 - concluded

RAM	Direction Of Crossing	From: UTM Grid Location (Date)		To: UTM Grid Location (Date)	
16K/920 - continued					
	N to S	7747-37213	(08-01-83)	7713-37205	(08-08-83)
	S to N	7675-37107	(11-07-83)	7673-37157	(11-14-83)
	N to S	7671-37159	(11-14-83)	7693-37093	(11-21-83)
930					
	N to S	7721-37139	(11-06-81)	7669-37069	(11-21-81)
	S to N	7673-37077	(12-11-81)	7655-37187	(12-17-81)
	N to S	7715-37233	(08-24-82)	7685-37010	(08-30-82)
	S to N	7693-37091	(11-12-82)	7731-37139	(11-15-82)
	N to S	7729-37134	(05-19-83)	7723 37097	(05-23-83)
	S to N	7723-37097	(05-23-83)	7731-37131	(05-30-83)
	N to S	7625-37141	(06-21-83)	7695-37097	(06-25-83)
	S to N	7695-37097	(06-25-83)	7757-37195	(06-26-83)
	N to S	7757-37195	(06-26-83)	7681-37097	(07-05-83)
	S to N	7709-37087	(08-08-83)	7663-37157	(08-15-83)
	N to S	7663-37157	(08-15-83)	7671-37075	(08-22-83)
	S to N	7689-37071	(09-19-83)	7719-37227	(09-26-83)
	N to S	7665-37187	(11-28-83)	7667-37111	(12-05-83)
909					
	S to N	2335-37075	(08-09-82)	2321-37179	(08-16-82)
	N to S	2287-37143	(09-27-82)	2337-37045	(10-04-82)
	S to N	2237-37047	(06-21-83)	2295-37209	(06-26-83)
	N to S	2315-37201	(07-25-83)	2309-37097	(08-01-83)
	S to N	2335-37057	(08-08-83)	2353-37165	(08-15-83)
13A					
	N to S	2327-37173	(01-08-79)	2349-37061	(01-22-79)
	S to N	2255-37025	(05-23-79)	2293-37203	(05-28-79)
	N to S	2293-37203	(05-28-79)	2331-37055	(06-02-79)
999					
	S to N	7761-36895	(08-26-83)	7727-37290	(10-09-83)
	N to S	7699-37266	(10-10-83)	7363-36945	(10-30-83)

TABLE 13. Transmission corridor crossings by radio-collared bighorn during the preconstruction, construction, and post-construction phases of the study. Num = number of crossings recorded, (N) = number of months sheep was monitored during each study phase, and #/Mo = total number of crossings/number of months observed.

		PRECONSTRUCTION		CONSTRUCTION		POST-CONSTRUCTION	
Sheep No.	Sex	Num	#/Mo	Num	#/Mo	Num	#/Mo
NEW WATER PASS CROSSINGS:							
861	M	3 (13)	0.23	2 (6)	0.33	2 (9)	0.22
872	M	3 (41)	0.07	0 (6)	0.00	2 (13)	0.15
878	M	2 (29)	0.21	0 (6)	0.00	6 (15)	0.40
856	F	2 (41)	0.05	0 (6)	0.00	0 (8)	0.00
893	F	0 (41)	0.00	0 (6)	0.00	2 (25)	0.08
COPPER BOTTOM PASS CROSSINGS:							
883	M	9 (13)	0.69	8 (6)	0.89	12 (23)	0.52
945	F	9 (15)	0.60	22 (9)	2.45	28 (24)	1.17
942	F	4 (15)	0.27	0 (9)	0.00	0 (21)	0.00
936	F	2 (27)	0.07	0 (9)	0.00	0 (24)	0.00
888	F	0 (4)	0.00	10 (9)	1.11	10 (24)	0.42
871	M	10 (27)	0.37	8 (9)	0.89	19 (21)	0.90

differences in crossing rates in the New Water Pass area during the construction period (X^2 = 2.9, DF = 1, P < 0.050), as fewer crossings per month occurred than had been expected. This could, however, have been the result of construction occurring during an unusually dry breeding season with very little plant biomass production and rams were not moving about as much, or were confining their activities to areas near reliable water sources. In looking at crossings during the same period in 1982, another very dry year with minimal annual plant biomass production, we recorded 13 crossings of the corridor compared with only 2 during the 1981 construction period. Alternatively, it is possible that construction activity was sufficient to prevent some ram crossings. A total crossing rate of 3.3/month was observed while a rate of 5.6/month was expected. No significant difference was noted in the same area during the post-construction period (X^2 = 2.27, DF = 1, P < 0.250) where an observed crossing rate of 8.5/month was compared with an expected rate of 5.6/month.

Chi-square analysis of Dome Rock crossing rates in Copper Bottom Pass indicated highly significant differences during the construction (X^2 = 73.2, DF = 1, P < 0.001) and post-construction periods (X^2 = 17.7, DF = 1, P < 0.001). The differences here, however, stem from greatly increased crossing rates in these two study phases. Construction period crossing rates of 52.3/month were compared with expected rates of 20.0/month; post-construction crossings occurred at the rate of 30.0/month. Some of the construction period crossings were caused by biologists disturbing sheep, which does introduce some error into the construction period rate. Biologist-caused crossings, however, numbered fewer than 10, a number to small to negate the observations. Dome Rock construction period crossing rates could also have been inflated by construction activity,

but the inference from other analyses of the data is that sheep were attracted to the activity rather than being repelled by it. Regardless of any interpretations of the data, it is abundantly clear that construction and operation of the transmission line did not preclude free movement of desert bighorn back and forth across the corridor in Copper Bottom Pass.

To summarize the preceding material, it generally appears that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 had little negative impact on bighorn populations in the Dome Rock Mountains, New Water Mountains, Kofa Mountains, or the Livingston Hills. Variations in seasonal mean distances from the transmission line can almost universally be given logical, biological explanations based on preconstruction observations of seasonal patterns. There were no clear indications that construction and operation of the line caused nearby, resident sheep to abandon, or even move, normal home areas. Quite the contrary, several individual sheep most directly affected actually appeared to be drawn to construction activity. One ram, 16K/920, did move out of the Livingston Hills in May, 1981; it is possible that this movement was related to construction work occurring to the north of the Livingston Hills. The ram did, however, return to the Livingston Hills in early June, 1981 and remained there until his radio failed in September. He was subsequently recollared in October, 1981 in the Livingston Hills and we suspect that he remained in that small mountain range the entire time his radio was nonfunctional. Ram 16K/920 did make similar movements out of the Livingston Hills in the post-construction period, and it is likely that his May, 1981 departure was not abnormal.

With respect to corridor crossings, there seems to be adequate information to

suggest that transmission line construction precluded normal ram corridor crossings between the New Water Mountains and the Kofa Mountains/Livingston Hills complex. A single ram (13C/861) crossed the corridor twice during the construction period compared with 4 separate rams making 15 crossings during preconstruction and 8 rams making 41 crossings in the post-construction phase. Three of 5 rams that crossed during preconstruction did so during the post-construction phase, 1 did not, and 1 of the ram's radio failed prior to construction. While construction activity may have reduced ram crossing rates in this area, it is clear that the presence of an operational 500kV transmission line has not had a similar effect.

The transmission corridor crossing issue is confounded by Dome Rock sheep which crossed the corridor with greater frequency during the construction and post-construction phases. It could be that construction activity elicited some crossings by disturbing sheep. It is also possible that sheep crossing Copper Bottom Pass are more likely to do so, even in the face of considerable human activity, because excellent escape terrain is immediately available on both sides of the pass throughout much of its length in the Dome Rock Mountains. The latter is not the case in potential crossing areas south of the New Water Mountains. In most areas where sheep might move between the Kofa Mountains or Livingston Hills and the New Water Mountains, it is necessary for sheep to cross substantial areas of flat to rolling terrain with good escape terrain 2 or more kilometers distant. Given that situation, it seems logical that a sheep traveling between the New Water Mountains and the Livingston Hills or Kofa Mountains and confronted with noisy, heavy equipment or numbers of smaller trucks and people, and isolated from good escape terrain, would be more inclined

to return to his original location than continue moving toward a destination that required "uncomfortable" passage of people and equipment.

As a result of this study, we feel confident in stating that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 may have had some short term, transient, negative impact to bighorn sheep in that portion of the corridor that passes between the New Water Mountains and the Livingston Hills/Kofa Mountains complex. The latter negativity manifest by suppressed bighorn crossing rates in that area. No similar effect was noted in the Dome Rock Mountains. With respect to having an operational 500kV transmission line present in bighorn habitat, we have no evidence at all that suggests a long term negative impact; it appears that bighorn have accepted the transmission line as part of their environment and pay no attention to it whatsoever.

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APPENDIX C
U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION

United States Department of the Interior

FISH AND WILDLIFE SERVICE

LAGUNA NIGUEL FIELD OFFICE
24000 Avila Road
Laguna Niguel, California 92656

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November 13, ~~1987~~

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Memorandum

To: State Director, Bureau of Land Management, Sacramento, California

From: Acting Field Office Supervisor, Laguna Niguel Field Office, Laguna Niguel, California

Subject: Formal Section 7 Endangered Species Consultation on Southern California's Proposed Palo Verde-Devers 500 kV Transmission Line No. 2 (1-6-87-~~F-57~~)

This is in response to your letter, dated August 14, 1987 and received by us on August 18, requesting formal consultation pursuant to Section 7 of the Endangered Species Act of 1973 (Act), as amended. This memorandum addresses the construction and operation of a 500 kV transmission line between the Palo Verde Nuclear Generating Station in Arizona and the Devers Substation, near Palm Springs, California and its potential impacts on the Yuma clapper rail (Rallus longirostris yumanensis), least Bell's vireo (Vireo bellii pusillus), and Coachella Valley fringe-toed lizard (Uma inornata).

Discussions pertaining to several candidate species that may be affected by proposed project actions are included in the text of this Opinion. Section 7 of the Endangered Species Act does not require formal consultation on the effects of a Federal action on a species that is a candidate for listing as endangered or threatened because candidate species are not protected by the Act. As such, the determination of jeopardy or non-jeopardy to such species will not be addressed. We stress consideration of candidate species because they may become listed during later planning and construction phases of a project.

The conclusions and recommendations in this Biological Opinion are based on the Bureau of Land Management's (Bureau) Biological Assessment and Supplemental Draft Environmental Impact Statement for this project, conversations with Bureau and Nature Conservancy personnel, and information contained in the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan.

Biological Opinion

It is our Biological Opinion that the proposed project is not likely to jeopardize the least Bell's vireo, Yuma clapper rail,

or Coachella Valley fringe-toed lizard. No known nesting areas of the vireo occur within two miles of the proposed transmission line. Therefore, the least Bell's vireo will not be affected by the proposed project and will not be addressed in this Opinion.

Project Description

The proposed transmission line will parallel the existing Devers-Palo Verde 500 kV transmission line from approximately 40 miles west of Phoenix, Arizona to near Palm Springs, California. The length of the line would vary between 235 and 265 miles, depending on the route selected (pages 35-42 and map 1 of the Supplemental Draft Environmental Impact Statement). The line is typical of other 500 kV transmission lines in the United States. It consists of overhead wires supported by steel lattice towers. Most areas of sensitive habitat, such as Colorado River riparian woodlands, will be spanned. Tower placement can be modified slightly to reduce or eliminate adverse effects to locally important wildlife resources. Because the line will be constructed using the access road for the existing line, only short spur roads to the new tower locations will be needed. Detailed descriptions of project facilities, construction methods, and operations can be found in the Supplemental Draft Environmental Impact Statement on pages 11 to 32.

Species Accounts

LISTED SPECIES

Yuma clapper rail

The Yuma clapper rail appears to be a year-round inhabitant of the lower Colorado River drainage. During the breeding season (late March to early October), rails inhabit fresh and brackish marshes of the Colorado River from Needles, California, south to the delta in Mexico. Within Arizona, rails have also been found along the lower Gila River near Buckeye in the Dome and Mohawk Valleys, along the Salt River east of Phoenix, and in wetlands at Pichacho Reservior, and within California, they occur in marshes around the Salton Sea and in agricultural drains and canals and associated seep wetlands.

The preferred breeding habitat of the Yuma clapper rail is freshwater marshes with mature cattail (Typha latifolia) and bulrush (Scirpus acutus) as the dominant emergent vegetation. In addition, constant water levels of less than one foot, readily available mud flats for feeding, and nearby high ground also characterize their habitat. They have been observed in other vegetation types such as carrizo cane, willow, salt cedar, and arrowweed when located at the edge of marshes.

This species was federally listed as endangered on March 11, 1967. Current estimates indicate the Yuma clapper rail

population exceeds 700 birds, divided approximately equally between the United States and Mexico, from the Colorado River delta in Mexico northward to Topock Marsh, Arizona.

Destruction of habitat is the major threat to the continued existence of the Yuma clapper rail. The primary objective of the 1983 Yuma Clapper Rail Recovery Plan (Anderson 1983) is to ensure the continued survival of a total breeding population of 700-1000 Yuma clapper rails in the United States.

Coachella Valley fringe-toed lizard

The Coachella Valley fringe-toed lizard inhabits windblown sand deposits in the Coachella Valley. Low temperatures cause the species to become inactive between November and March, while high summer temperatures reduce activity periods to times of the day when its body temperature is between 20 and 45 degrees Centigrade. The fringe-toed lizard has been considered to be primarily insectivorous, but recent evidence suggests that annual plants, such as bugseed (Dicoria canescens) may be more important food items than was previously thought.

The Coachella Valley fringe-toed lizard was listed as a federally threatened species in 1980. A Habitat Conservation Plan for the protection of this species was finalized in June, 1985 (Steering Committee 1985). The Plan presents guidelines for development of lands and compensation for impacts to the lizard within most of the Coachella Valley fringe-toed lizard's historic range and portions of the existing sand transport system necessary to maintain viable lizard habitat.

The primary threats to the existence of this species result from agricultural and urban development. In addition to the direct destruction of habitat, development has eliminated sand sources or blocked movement of sand, thus indirectly affecting the quality of lizard habitat by interfering with or ceasing the transport of wind-blown sand across the Coachella Valley. Off-road vehicle use is responsible for killing individual lizards, while pesticide spraying may cause some additional losses.

CANDIDATE SPECIES

Numerous candidate species were observed or expected in or near the proposed project site. The following list notes these species and their current status:

Desert tortoise	Xerobates agassizi (Category 2)
Flat-tailed horned lizard	Phrynosoma mcallii (2)
Western yellow-billed cuckoo	Coccyzus americanus ssp. occidentalis (2)
Night-blooming cereus	Peniocereus greggii (2)
Wiggin's cholla	Opuntia wigginsii (2)
Foxtail cactus	Coryphantha vivipara var.

	alversonii (2)
Barrel cactus	_Ferocactus acanthodes_ var. _acanthodes_ (2)
Coachella Valley milkvetch	_Astragalus lentiginosus_ var. _coachellae_ (1)
Orocopia sage	_Salvia greatai_ (2)
California ditaxis	_Ditaxis californica_ (2)

The Biological Assessment for the proposed project contains sufficient information on the ecology of these species, the potential effects of the project, and the proposed mitigation measures. The Fish and Wildlife Service (Service) believes that impacts to these species will be mitigated in large part by the actions proposed in the Biological Assessment. We recommend that the Bureau include these actions as conditions of licensing of the proposed project, should the Bureau decide that licensing is appropriate. Therefore, except for additional comments on the desert tortoise and the flat-tailed horned lizard, these species will not be addressed further in this report.

Desert tortoise

The desert tortoise is a Category 2 candidate species which the Service has determined warrants Federal listing throughout its range in the United States (52 Federal Register 24485-24488), although this action has been precluded at this time by other pending proposals and funding and personnel limitations. The life history information available in the Biological Assessment for this project is adequate; more detailed information can be found in Berry et al. (1984). Because data on desert tortoise populations and trends are better developed for California, this Opinion will be concerned only with the tortoise in California.

The Biological Assessment notes that the proposed transmission line crosses approximately 80 km or 50 miles of desert tortoise habitat, including the Chuckwalla Bench Crucial Desert Tortoise Habitat area. Figure 4.5-2 of the Supplemental Draft Environmental Impact Statement indicates that at least eight observations of tortoises occurred along the route during May, 1985. Density estimates along the line range from low to high in the area immediately west of the Chuckwalla Mountains, but estimates of the areal extent of these densities are not provided.

Flat-tailed horned lizard

The flat-tailed horned lizard is a Category 2 candidate which occurs in California in the area roughly centered around the Salton Sea, southwestern Arizona, and northern Mexico. The horned lizard usually is found in blow sand areas of creosote bush scrub. It is active primarily in the spring and early summer and subsists almost entirely on harvester ants. More detailed life history information can be obtained from Turner and

Medica (1982) and Norris (1949). The Biological Assessment for this project did not mention the flat-tailed horned lizard, although Figure 4.5-2 of the Supplemental Draft Environmental Impact Statement indicates that it is expected to occur in approximately the same portion of the line as the Coachella Valley fringe-toed lizard.

Threats to the continued existence of the flat-tailed horned lizard include agricultural and geothermal developments, urbanization, off-road vehicle use, military operations, water projects, and possibly pesticide use.

Effects of the Proposed Action

LISTED SPECIES

Yuma clapper rail

The construction phase of the proposed project would not effect the Yuma clapper rail, nor result in the loss of any marsh habitat.

There is a potential collision hazard for Yuma clapper rails once the transmission line has been placed across the river. However, recent studies by the Service show the Yuma clapper rail to be a year-round inhabitant of the project area with limited migratory activity. Also, the rails are weak flyers and move in short, low, level flights from marsh to marsh. Therefore, the potential for collision appears to be limited, and thus, no impact to the rails is anticipated.

Coachella Valley fringe-toed lizard

The Habitat Conservation Plan (Steering Committee 1985) for the Coachella Valley fringe-toed lizard states that transmission line construction is a compatible use with lizard habitat. The proposed transmission line crosses approximately 16.6 miles of the Coachella Valley Preserve. However, the line does not cross any developed dune systems containing fringe-toed lizards. Also, the power line will not block sand transport and thus reduce habitat suitability elsewhere on the Preserve. Spur road and tower construction could result in impacts to small patches of windblown sand within the Preserve and also in the approximately 10.2 miles of potential fringe-toed lizard habitat between Towers 2414 to 2406 (Edom Hill to Flat Top Mountain) and Towers 2019 to 2010 (Palm Drive to North Palm Springs).

The proposed project crosses approximately 24.2 miles of Mitigation Fee Area as shown on Figure 8-1 of the Habitat Conservation Plan (Steering Committee 1985). This figure was determined using a digital planimeter. Therefore, we estimate that powerline construction activities will temporarily or permanently disturb 12.8 acres of land within the Mitigation Fee

Area, based on the Draft Environmental Impact Report's estimate of 0.4 acres of disturbance per mile of line plus a portion of the potential additional 17 acres of total disturbance between all the towers (page 148). As set forth in the Habitat Conservation Plan, any disturbance of previously ungraded land in the Mitigation Fee Area must be compensated by payment to The Nature Conservancy of a fee of $640.00 per acre for acquisition of lands within the Coachella Valley Preserve. Payment of the $8,192.00 fee to The Nature Conservancy is required to satisfy the conditions of the Section 10 permit, as developed in the Habitat Conservation Plan (Steering Committee 1985). Additionally, the adoption of the mitigating measures recommended in the Biological Assessment and reiterated as Conservation Recommendations in this Opinion should aid in reducing the number of lizards taken and the amount of habitat disturbed.

CANDIDATE SPECIES

Desert tortoise

The proposed transmission line crosses approximately 80 miles of desert tortoise habitat. Based on the acreage of disturbances presented on page 148 of the Draft Environmental Impact Report, we estimate that approximately 42.4 acres of tortoise habitat will be temporarily or permanently disturbed by project activities. Temporary disturbance of desert tortoise habitat would likely be of longer duration than that of fringe-toed lizard habitat, given the nature of the species' differences in preferred substratum types. Some individuals will probably be killed during construction, both on access roads and in their burrows, even if pre-construction surveys are done. Indirect impacts also will occur to a small degree. The access road already exists so no additional off-road vehicle use should occur, but the towers and powerlines will provide additional perch sites for avian predators of tortoises, such as loggerhead shrikes, common ravens, and golden eagles.

As stated in the Biological Assessment, the transmission line crosses a portion of the Chuckwalla Bench Crucial Desert Tortoise Habitat area. The adverse impacts of the project will be most pronounced in this region where tortoise densities are highest, although habitat quality along the remainder of the line will also be lowered slightly. The Biological Assessment does not quantify the acreages of habitat lost in low, medium, or high desert tortoise density areas. Because this project will result in further degragation of desert tortoise habitat, the Service recommends that, in addition to mitigating impacts during construction, the applicant, Southern California Edison, should acquire private lands within the Chuckwalla Bench area and donate them to an appropriate wildlife management agency, such as the California Department of Fish and Game, to be managed specifically for desert tortoise values.

Flat-tailed horned lizard

Impacts of the project to flat-tailed horned lizards would closely approximate those which will occur to Coachella Valley fringe-toed lizards. In general, the amount of horned lizard habitat crossed approximately equals that of the fringe-toed lizard, but is located slightly to the east. If mitigation measures designed to reduce impacts to the fringe-toed lizard were extended to the horned lizard, most impacts to this species could also be avoided.

Cumulative Impacts

Cumulative effects are those impacts of future State and private actions that are reasonably certain to occur prior to completion of the subject Federal action. A non-federal action is "reasonably certain to occur" if the action requires the approval of a State or local land use control agency, and such agencies have essentially approved the action. Those actions not requiring local government approvals should be ready to proceed.

Loss of Coachella Valley fringe-toed lizard habitat has been addressed by the development and implementation, in 1985, of a Habitat Conservation Plan for that species. This Plan has established a means of securing funds for purchase of prime lizard habitat in exchange for clearances from the Service to develop other lands occupied by the lizard. In general, the Plan seems to be functional although some development has occurred within the Mitigation Fee Area which has not resulted in payment of the appropriate fees.

Non-federal actions concerning the Yuma clapper rail in the vicinity of the project area relate primarily to habitat degradation within the Coachella Valley. These actions are the result of the unauthorized activities of private individuals and water districts illegally filling or clearing riparian habitat in the Whitewater River delta. Several resource agencies are currently attempting to solve the problem, but a resolution may not be forthcoming in the near future.

Impacts of non-federal projects and activities on the desert tortoise and flat-tailed horned lizard continue to occur throughout the ranges of these species. Off-road vehicle use and possibly pesticide use continue to cause declines in horned lizard populations. County-permitted activities, such as yucca harvesting and sand and gravel mining, continue to affect tortoises and are ongoing, particularly in the Ward Valley area. Off-road vehicle use, shooting, and collecting of individuals are responsible for continued population declines.

Quantification of State and local actions throughout the ranges of the species involved over the life of the project would be extremely difficult. The Service is often unaware of such

projects until late in the agency planning process. However, uncompensated loss of habitat for all of these species, except perhaps the fringe-toed lizard, continues to occur over all or portions of their ranges.

Biological Opinion

It is our Biological Opinion that construction and use of the Devers-Palo Verde 500 kV transmission line #2 will not jeopardize the continued existence of the Yuma clapper rail and Coachella Valley fringe-toed lizard.

Incidental Take

The Service does not anticipate that any incidental take of Yuma clapper rails will occur as a result of the proposed project.

Take of Coachella Valley fringe-toed lizards could occur through construction activities. This take would be authorized under the Section 10 permit developed in the Habitat Conservation Plan. Payment of $8,192.00 by Southern California Edison for disturbance of 12.8 acres of land within the Mitigation Fee Area should be made to The Nature Conservancy, as required by the Habitat Conservation Plan for the lizard.

Conservation Recommendation

In furtherance of the purposes of the Act [Sections 2(B), 2(c), and 7(a)(1)], which mandates Federal agencies to use their authorities to carry out programs for the conservation of listed species and to conserve the ecosystems upon which they depend, we recommend the following additional actions:

(1) To the extent possible, construction operations within suitable habitat of the Coachella Valley fringe-toed lizard should occur when the air temperatures one inch above ground in the shade are between 96 and 112 degrees Fahrenheit. The lizards should be active within this temperature range and be able to avoid crushing by vehicles and personnel.

(2) Windblown sand areas in the Coachella Valley should be avoided when constructing towers, spur roads, and other facilities, whenever possible. These localized areas could support small numbers of fringe-toed lizards. Preconstruction surveys would identify sandy areas and allow avoidance by designating specific areas to avoid.

(3) All construction activities should be restricted to designated work areas, with all vehicle use occurring only on designated roads. Any spoils should be stockpiled in previously disturbed areas which have been examined for the presence of lizards (and cleared of lizards, if necessary) by a qualified

biologist.

(4) Spur roads and other areas to be disturbed should be examined for lizards (and cleared, if necessary) by a qualified biologist immediately prior to construction.

(5) Compacted soils should be scarified and seeded with bugseed (Dicoria canescens) to promote revegetation of plant species valuable to the lizard.

(6) Southern California Edison should install locked gates at the entrances to their access roads where these roads cross Thousand Palms Road within the Coachella Valley Preserve. The Nature Conservancy's Preserve manager should be consulted prior to placement of these gates and any other work within the Preserve.

The Service also strongly recommends that Southern California Edison implement the following measures to conserve individuals and habitat of the candidate species, the flat-tailed horned lizard and the desert tortoise. Such measures, if successfully implemented, could reduce the need to list these species in the future.

(1) For flat-tailed horned lizards, conservation recommendations 3, 4, and 5 for the fringe-toed lizard should be implemented for the area described as potential horned lizard habitat on map 4.5-2 of the Supplemental Draft Environmental Impact Statement.

(2) Compensation for lost horned lizard habitat ~~values by~~ acquisition of private lands would occur concurrently with payment of fees associated with fringe-toed lizard habitat losses and no further action is recommended.

(3) To reduce loss of individual desert tortoises we recommend that:

(A) Within 30 days from date of proposed construction, the corridor for spur roads, tower footings, and associated work areas should be surveyed for tortoise sign. Road, footing, and work area alignments should be modified to the extent possible to avoid adversely affecting any "active" tortoise burrows encountered during these surveys. Where tortoise burrows will be unavoidably destroyed, they should be excavated carefully using hand tools, under the supervision of a field biologist with demonstrated prior experience with this species. Tortoises encountered above ground during preliminary surveys should be released into substantially unaltered areas within a one-mile radius from initial point of capture. Tortoises exhumed from burrows should be segregated and retained until weather conditions permit safe release into substantially unaltered areas within a one-mile radius from the initial point of capture.

(B) Employees involved during construction and later operation of the transmission line should be informed of the occurrence of the desert tortoise in the project area and measures being instituted for its protection and management. This program should note that the desert tortoise is often encountered crossing paved and unpaved roads in the general project area, is highly vulnerable to road mortality, and thus care should be exercised when commuting to and from the project site. The program should also note that the desert tortoise is protected under California law and that collection for pets is unlawful.

(C) As a means of reducing the potential "attractive" nature of the project facilities to avian predators, we recommend that any trash or potential food sources for ravens be promptly contained and removed from the areas during construction, and that associated facility design prohibit opportunity for collection of any surface waters.

(4) To compensate for loss of desert tortoise habitats resulting from transmission line construction and subsequent maintenance, we recommend:

(A) The applicant should provide for off-site compensation by purchasing desert tortoise habitat and donating this area to The Nature Conservancy, the Desert Tortoise Preserve Committee, or the California Department of Fish and Game for management. The best area for acquisition would be within the Chuckwalla Bench Crucial Habitat area. Specific areas to be acquired, and terms of management transfer should be decided upon during discussions between the applicant, U.S. Fish and Wildlife Service, and the California Department of Fish and Game. Because areas of low, medium, and high density tortoise habitat were not identified in the project's environmental documents, we recommend that all desert tortoise habitat be treated as high density habitat and be replaced at a ratio of ten acres of acquired land for each acre lost. We base this recommendation on ratios recommended for replacement of low and medium density areas elsewhere in California. The Service would be willing to fine-tune this ratio based on more detailed information on tortoise densities, should Southern California Edison desire.

(B) The applicant should provide funds to the organization responsible for management of secured lands for the operational life of the transmission line project. Funding amounts should be acceptable to the U.S. Fish and Wildlife Service, California Department of Fish and Game, and the subject management organization.

(5) Any candidate plant populations encountered in the proposed transmission line project during pre-construction surveys should be prominently marked and avoided to the extent possible during construction. A biologist familiar with these species should also be present on-site during construction to aid

in plant identification and avoidance of sensitive species.

This concludes formal consultation on the proposed construction and operation of a 500 kV transmission line from the Palo Verde Nuclear Generating Station to the Devers Substation. Should the project be significantly modified in a manner not discussed, or if new information on listed species or impacts to listed species becomes available, or if incidental take of Yuma clapper rails occurs, or if the area of Coachella Valley fringe-toed lizard habitat to be disturbed exceeds 12.8 acres, or if a new species becomes listed, then reinitiation of formal consultation should be considered. We would appreciate written notification of your intentions in light of this Biological Opinion. For further discussion, please contact Ray Bransfield of this office at FTS 796-4270 or (714) 643-4270.

Wayne D. Kaple

for Jeffrey D. Opdycke

cc: CDFG, Region 5, Long Beach, CA
Coachella Valley Preserve, Thousand Palms, CA

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EXHIBIT B-2

PROPONENT'S ENVIRONMENTAL ASSESSMENT

DEVERS-PALO VERDE NO. 2 TRANSMISSION LINE PROJECT

VOLUMES I AND II

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Certificate of Public Convenience and Necessity Concerning the Devers-Palo Verde No. 2 Transmission Line Project	)	Application No. 05-04-015 (Filed April 5, 2005)

PROPONENT'S ENVIRONMENTAL ASSESSMENT

DEVERS-PALO VERDE NO. 2 TRANSMISSION LINE PROJECT

VOLUME I – PART 1 OF 2

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Dated: April 5, 2005

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ACRONYM LIST

AAM	annual arithmetic mean
AC	alternating current
ACC	Arizona Corporation Commission
ACEC	Areas of Critical Environmental Concern
ACSR	Aluminum Conductor Steel Reinforced
ADA	Arizona Department of Agriculture
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
ANPL	Arizona Native Plant Law
APE	area of potential effect
APS	Arizona Public Service
ASLD	Arizona State Land Department
ASM	Arizona State Museum
BACM	Best Available Control Measures
BLM	Bureau of Land Management
CAISO	California Independent System Operator
Cal/OSHA	California Occupational Safety and Health Administration
CAP	Central Arizona Project
CARB	California Air Resources Board
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CDNPA	California Desert Native Plant Act
CEC	Certificate of Environmental Compatibility
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
CRC	Certificate of Right-of-Way Compatibility
CRIT	Colorado River Indian Tribe
CRNR	California Regulatory Notice Register
CVAG	Coachella Valley Association of Governments
CVMSHCP	Coachella Valley Multiple Species Habitat Conservation Plan
dB	Decibels
dBA	A-weighted decibels

DC	direct current
DEIR	Draft Environmental Impact Report
DEIS	Draft Environmental Impact Statement
DES	Department of Economic Security
Devers	Devers Substation
DOC	Department of Commerce
DOD	Department of Defense
DPV1	Devers-Palo Verde Project No. 1
DPV2	Devers-Palo Verde Project No. 2
DSWP	Desert Southwest Power, LLC
DSWTP	Desert Southwest Transmission Project
DWMA	Desert Wildlife Management Area
DWR	Department of Water Resources
EHV	extra-high voltage
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
FERC	Federal Energy Regulatory Commission
FSEIS	Final Supplemental Environmental Impact Statement
GPS	global positioning system
Harquahala	Harquahala Generating Station Switchyard
Henwood	Henwood Energy Services, Inc.
HGC	Harquahala Generating Company
HOV	high occupancy vehicle
HPMP	Historic Properties Management Plan
I-10	Interstate 10
I-15	Interstate 15
IID	Imperial Irrigation District
ISO	Independent System Operator
kcmil	thousand circular mil
kV	kilovolt
kV/cm	kilovolts per centimeter

LADWP	Los Angeles Department of Water and Power
lbs/day	pounds per day
LTPP	Long Term Procurement Plan
MDAQMD	Mojave Desert Air Quality Management District
MFP	Management Framework Plan
MPA	Municipal Planning Area
MVAR	mega volt-amperes-reactive
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NECO	Northern and Eastern Colorado
NEPA	National Environmental Policy Act
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	ozone
OHV	off-highway vehicle
OPGW	Optical Ground Wire
OPH	Office of Historic Preservation
OSHA	Occupational Safety and Health Administration
PEA	Proponent's Environmental Assessment
PM_{10}	particulate matter
ppm	parts per million
PVNGS	Palo Verde Nuclear Generating Station
RMP	Resource Management Plan
ROC	reactive organic compounds
ROD	Record of Decision
SBC	San Bernardino County
SCAB	South Coast Air Basin
SCADA	Substation Control and Data Acquisition
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCIT	Southern California Import Transmission
SDEIS	Supplemental Draft Environmental Impact Statement
SDG&E	San Diego Gas & Electric
SEIS	Supplemental Environmental Impact Statement

SHPO	State Historic Preservation Office
SONET	Synchronous Optical Network
SONGS	San Onofre Nuclear Generating Station
SO_x	oxides of sulfur
SPCC	Spill Prevention Control and Countermeasure
SR	State Route
SRP	Salt River Project
STEP	Southwest Transmission Expansion Planning
SVC	Static VAR compensation
SWPPP	Storm Water Pollution Prevention Plan
T&D	Transmission and Distribution
TCP	traditional culture properties
TEAM	Transmission Economic Assessment Methodology
$\mu g/m^3$	micrograms per cubic meter
UC-2	Utility Corridor 2
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAR	voltage ampere-reactive
VRM	Visual Resource Management
WA	Wilderness Area
WAPA	Western Area Power Administration
WECC	Western Energy Coordinating Council
WSA	Wilderness Study Area
WSC	wildlife of special concern
WSCC	Western Systems Coordinating Council

CHAPTER 1.0
SUMMARY

1.1 INTRODUCTION

Southern California Edison Company (SCE) proposes to construct a new 230-mile, high-voltage electric transmission line between California and Arizona known as the Devers-Harquahala 500 kilovolt (kV) transmission line. Operation of the proposed line would require that upgrades be made to certain existing SCE electrical transmission facilities in California. The proposed line and transmission facility upgrades are known as the Devers-Palo Verde No. 2 Transmission Project (DPV2). DPV2 would be constructed within existing and new SCE rights-of-way. Construction of DPV2 would add transmission facilities necessary to import additional lower-cost electricity into California from the Southwest.

1.1.1 Proposed Route

1.1.1.1 Devers-Harquahala 500kV Transmission Line

The proposed Devers-Harquahala 500kV transmission line would be constructed from SCE's Devers Substation (Devers) located near Palm Springs, California to the Harquahala Generating Station switchyard (Harquahala), located near the Palo Verde Nuclear Generating Station (PVNGS) west of Phoenix, Arizona as shown on Map 1-1. The proposed line would extend for 230 miles, of which 102 miles are located in Arizona and 128 miles are located in California. The majority of the proposed Devers-Harquahala route would parallel SCE's existing Devers-Palo Verde No. 1 (DPV1) 500kV transmission line.

1.1.1.2 West of Devers 230kV Transmission Upgrade

Upgrades to SCE's existing 230kV transmission system between Devers and SCE's Vista Substation in the City of Grand Terrace and San Bernardino Substation in the City of Redlands, San Bernardino County, as shown on Map 1-2, would include the following:

- Removal of an existing 40-mile, single-circuit wood H-frame 230kV line between Devers and San Bernardino Junction. San Bernardino Junction is the intersection of 230kV transmission line corridors located 3.4 miles south of the San Bernardino Substation.

- Removal of an existing 40-mile, single-circuit lattice steel 230kV line between Devers and San Bernardino Junction.

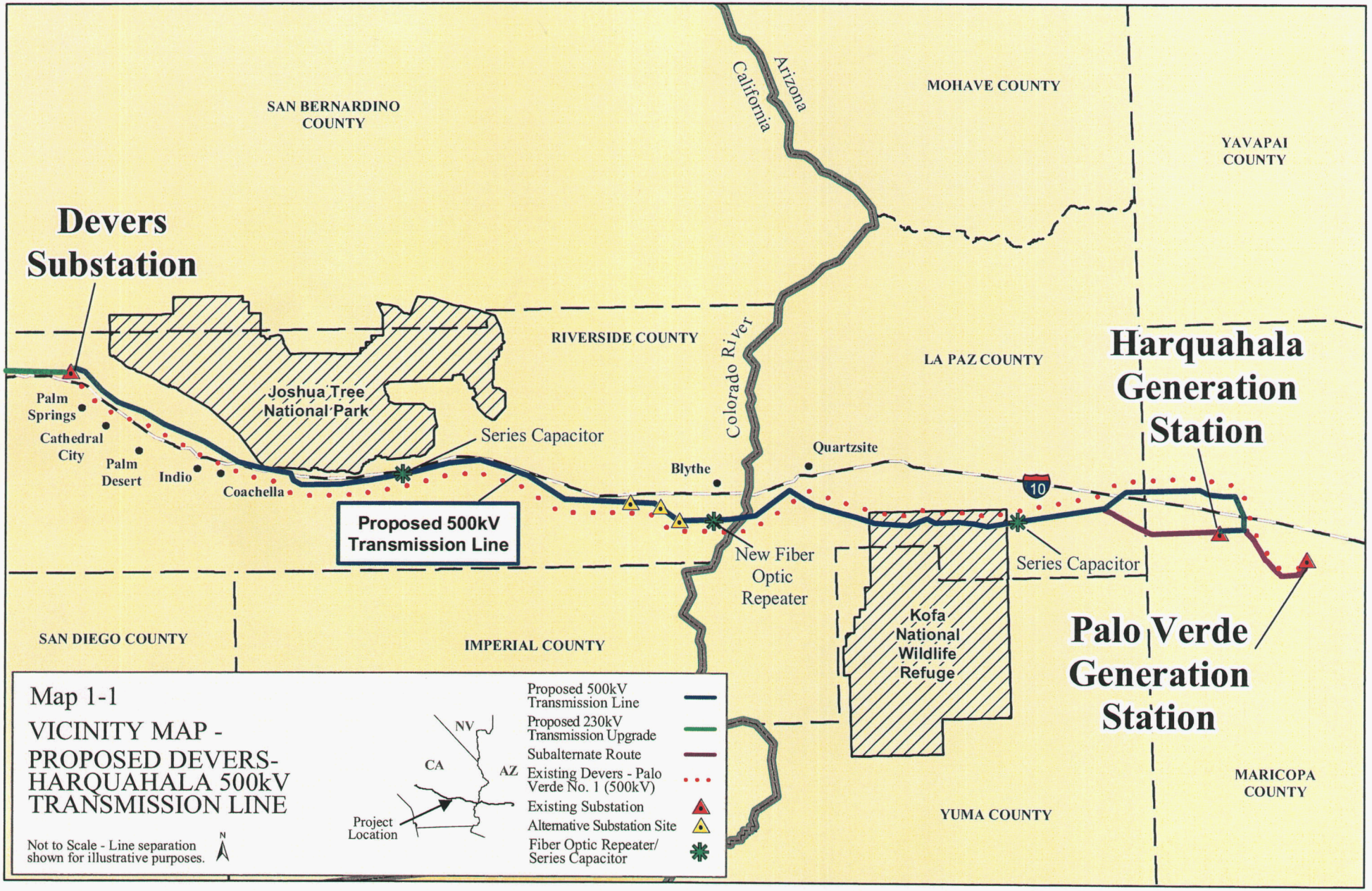
- Construction of a new 40-mile, double-circuit 230kV line between Devers and San Bernardino Junction within the existing right-of-way.

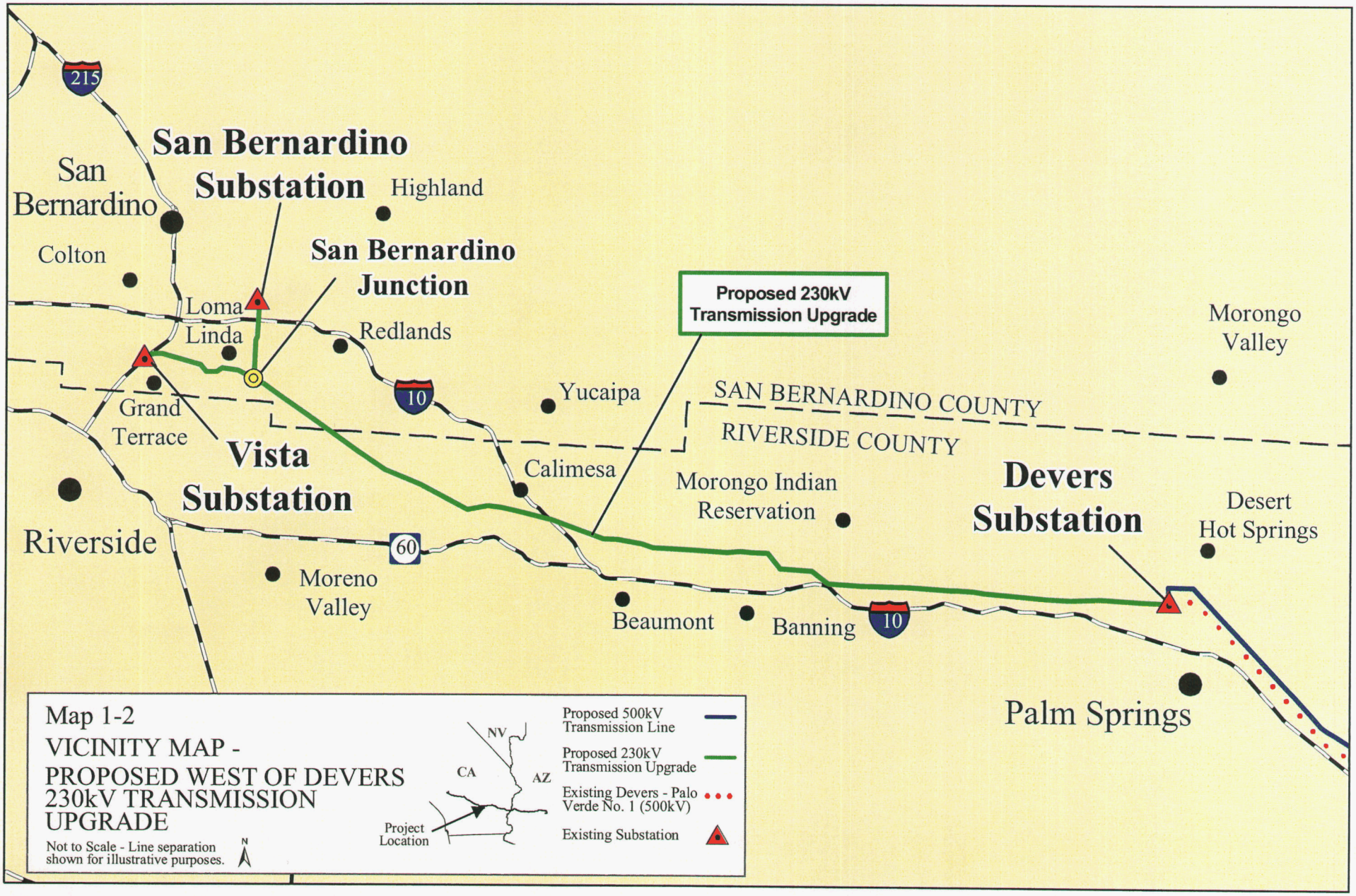
- Reconductoring of and modification to the existing 40-mile, double-circuit 230kV lattice steel tower line between the Devers Substation and San Bernardino Junction.

- Reconductoring both circuits on an existing 4.8-mile, double-circuit 230kV lattice steel tower line between Vista Substation and San Bernardino Junction.

- Reconductoring one circuit on each of the two existing 3.4-mile, double-circuit 230kV lattice steel tower lines between San Bernardino Substation and San Bernardino Junction.

A detailed description of the proposed route is provided in Chapter 3.


SAN BERNARDINO COUNTY
California
Arizona
MOHAVE COUNTY
YAVAPAI COUNTY
Devers Substation
RIVERSIDE COUNTY
Colorado River
LA PAZ COUNTY
Harquahala Generation Station
Joshua Tree National Park
Palm Springs
Cathedral City
Palm Desert
Indio
Coachella
Series Capacitor
Blythe
Quartzsite
10
Proposed 500kV Transmission Line
New Fiber Optic Repeater
Series Capacitor
Kofa National Wildlife Refuge
Palo Verde Generation Station
SAN DIEGO COUNTY
IMPERIAL COUNTY
MARICOPA COUNTY
YUMA COUNTY
Map 1-1
VICINITY MAP -
PROPOSED DEVERS-HARQUAHALA 500kV TRANSMISSION LINE
Not to Scale - Line separation shown for illustrative purposes.
N
NV
CA
AZ
Project Location
Proposed 500kV Transmission Line
Proposed 230kV Transmission Upgrade
Subalternate Route
Existing Devers - Palo Verde No. 1 (500kV)
Existing Substation
Alternative Substation Site
Fiber Optic Repeater/ Series Capacitor


215
San Bernardino
San Bernardino Substation
Highland
Colton
San Bernardino Junction
Loma Linda
Redlands
Proposed 230kV Transmission Upgrade
Morongo Valley
10
Yucaipa
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Grand Terrace
Vista Substation
Calimesa
Morongo Indian Reservation
Devers Substation
Desert Hot Springs
Riverside
60
Moreno Valley
Beaumont
Banning
10
Palm Springs
Map 1-2
VICINITY MAP -
PROPOSED WEST OF DEVERS 230kV TRANSMISSION UPGRADE
Not to Scale - Line separation shown for illustrative purposes.
N
NV
CA
AZ
Project Location
Proposed 500kV Transmission Line
Proposed 230kV Transmission Upgrade
Existing Devers - Palo Verde No. 1 (500kV)
Existing Substation

1.1.1.3 Related Facilities

In addition to the construction of the proposed Devers-Harquahala 500kV transmission line, and upgrades to the 230kV transmission system west of Devers, related facilities would be constructed to enable safe and efficient system operations. These facilities include series compensation banks, improvements to existing substations, a new telecommunications site and system upgrades, and other equipment as listed below.

Devers-Harquahala 500kV Transmission Line

For series compensation, two series capacitor banks would be constructed—one in Arizona and one in California. Also, two shunt line reactors would be installed—one at Devers Substation and one at Harquahala.

At the Devers Substation, a transformer bank, disconnect switches, circuit breakers, static volt-ampere-reactive (VAR) compensation, and control equipment would be added within the existing substation property boundary.

At the Harquahala Generating Station switchyard, disconnect switches, circuit breakers, and control equipment would be added within the switchyard property boundary.

At the Valley Substation, static VAR compensation would be added within the existing substation property boundary.

Conductors, wave traps, disconnect switches, and relays would be replaced within existing substation property boundaries at the Devers, San Bernardino, and Vista substations.

Detailed descriptions of the related facilities are provided in Chapter 3.

1.1.2 Purpose and Need

The DPV2 project is primarily driven by the need to provide additional high-voltage electrical transmission infrastructure to enhance competition among energy suppliers, and increase reliability of supply, which will enable California utilities to reduce energy costs to customers by about $1.1 billion over the life of the project. Specifically, DPV2 will increase transmission capacity by 1,200 megawatts (MW), allowing California access to cost-effective energy in the southwestern United States, and potentially displace higher-cost generation in California.

A detailed discussion of the purpose and need for the project can be found in Chapter 2.

1.1.3 Agency Actions and Approvals

SCE submitted an Application for a Certificate of Public Convenience and Necessity (CPCN) and Proponent's Environmental Assessment (PEA) to the California Public Utilities Commission (CPUC) for the DPV1 project in 1978. The CPUC prepared a Final Environmental Impact Report (FEIR) for the DPV1 project and issued a CPCN for DPV1 in 1979. A Record of Decision (ROD) also was issued by the Bureau of Land Management (BLM) and U.S. Nuclear Regulatory Commission (NRC), which approved the DPV1 project. SCE completed construction of the DPV1 transmission line in 1982.

SCE initially applied to the CPUC for a CPCN for DPV2 in 1985. Following reviews of SCE's PEA (1985) and the CPUC EIR (1987) in compliance with the California Environmental Quality Act (CEQA) and subsequent filing and review of the 1988 Amended Application and PEA (SCE 1988), the CPUC issued an Interim Order in December 1988 that granted a CPCN to SCE allowing construction of the DPV2 project. The approval contained several conditions including compliance with an environmental mitigation program specified in the CPUC EIR (1987). In 1997, intervening events, including electric industry restructuring, led SCE to request abandonment of construction of the DPV2 project, and the CPUC granted SCE's request.

The proposed route crosses federal, state, private, and tribal lands. The majority of the proposed Devers-Harquahala 500kV transmission line would be constructed within the right-of-way located on federal lands, granted in perpetuity to SCE for the DPV2 project by the U.S. Department of Interior (DOI), BLM in the 1989 ROD and Right-of-Way Grant (Appendix B). The right-of-way crosses approximately 57 miles of public land in California and approximately 79 miles of public land in Arizona. The majority of the proposed route is within utility corridors designated in the BLM's Resource Management Plans (RMPs), and approved in compliance with the National Environmental Policy Act (NEPA) by the BLM following completion of a Final Supplemental Environmental Impact Statement (FSEIS) in 1988 and ROD in 1989. Also, the U.S. Fish & Wildlife Service (USFWS) issued a Certificate of Right-of-Way Compatibility (CRC) in 1989 for the portion of the proposed Devers-Harquahala 500kV transmission line that crosses the KOFA National Wildlife Refuge (NWR) in Arizona (Appendix C).

The DPV2 route that was approved in 1989 followed the entire length of the existing DPV1 line and terminated at PVNGS. The proposed Devers-Harquahala transmission line would terminate at the Harquahala Generating Station switchyard, located approximately 16 miles directly northwest of PVNGS (see Map 1-1). Therefore, the proposed Devers-Harquahala route would require the construction of new transmission line from the Harquahala Generating Station switchyard, for a distance of 4.8 miles east to the junction with the DPV1 corridor, adjacent to the existing Harquahala-Hassayampa 500kV transmission line.

SCE is submitting this application and PEA to the CPUC so that the CPUC may issue a CPCN for the project and issue and certify an environmental document (i.e., an EIR or Mitigated Negative Declaration) for the California portion of the project pursuant to CEQA.

SCE will submit an application to the BLM for an Amended Right-of-Way Grant and, if approved, the BLM would issue a Notice to Proceed, allowing construction to be administered by the BLM in California and Arizona.

SCE anticipates, based on discussions with CPUC and BLM staff prior to filing this application, that the CPUC and BLM will work cooperatively and will conduct a joint CEQA/NEPA review of the project in California. This cooperation will include use of a single environmental consultant by both agencies.

The Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) and the Arizona Corporation Commission (ACC) are responsible for the environmental review on state-jurisdictional land in Arizona, and the BLM has jurisdiction for environmental review for federal land. The ACC siting process in Arizona is comparable to CEQA review, and thus, pursuant to Arizona Revised Statute 40-360, et. seq., the ACC will conduct the environmental review of the Arizona portion of the project.

Staff of the ACC have indicated a strong preference that SCE time the filing of its application for a Certificate of Environmental Compatibility to coincide with the CPUC's and BLM's issuance of their draft environmental document. This is to allow the Siting Committee and ACC to complete their environmental permitting process concurrently with the final decision by the CPUC and BLM. (The ACC process timelines are shorter than CEQA and NEPA.)

Thus, for a project that traverses state and federal land in California and Arizona, the CPUC and ACC will conduct permitting processes within their respective states, while the BLM will conduct permitting on federal land in both states. SCE anticipates that all three agencies will work cooperatively together and will likely use a single environmental consultant.

1.1.4 Project Design

Construction of the proposed Devers-Harquahala 500kV transmission line would utilize the same four types of structures as the existing DPV1 and Harquahala-Hassayampa 500kV transmission lines. Of the approximately 784 structures required, approximately 709 would be four-legged, single-circuit lattice steel towers. To reduce potential impacts to agricultural operations, approximately 39 two-legged (or H-frame) single-circuit towers would be used in the Palo Verde Valley south of Blythe, California. Where feasible, structures would be constructed next to the existing DPV1 towers. During construction of DPV1, in anticipation of the eventual construction of DPV2, conductors for a 3-mile portion of the DPV2 line were installed on 13 double-circuit towers that were constructed for the DPV1 line to minimize impact to bighorn sheep habitat in the Copper Bottom Pass of the Dome Rock Mountains in Arizona. Approximately 23 new tubular steel poles would be constructed parallel to the existing Harquahala-Hassayampa 500kV line east of Harquahala.

Because the majority of the Devers-Harquahala line would be constructed within the utility corridor that contains the existing DPV1 line and existing access for line maintenance, construction of new main access roads would not be needed in most locations. Spur roads would be extended from the existing DPV1 main access roads to provide construction access for the proposed Devers-Harquahala 500kV line.

The existing 230kV transmission line system west of Devers consists of one set of double-circuit tower lines and two separate sets of single-circuit lines between Devers and San Bernardino Junction. The proposed 230kV system upgrade west of Devers would require the removal of an existing single-circuit 230kV tower line on wood H-frame structures, and the removal of an existing single-circuit 230kV tower line on lattice steel structures between Devers and San Bernardino Junction; replacement with a new double-circuit 230kV line; and reconductoring and modification of the existing double-circuit 230kV tower line. Also, the upgrade would require reconductoring both circuits on an existing double-circuit 230kV tower line between Vista Substation and San Bernardino Junction. In addition, one circuit on each of the two existing

double-circuit 230kV tower lines between the San Bernardino Junction and San Bernardino Substation would be reconductored. Installing inter-set structures, or raising existing structures, would be required at some locations. Existing access roads would be utilized wherever possible for construction and line maintenance.

A detailed description of the proposed transmission line design and construction process is provided in Chapter 3.

1.1.5 Alternative Routes

1.1.5.1 Subalternate Routes Considered and Eliminated

Alternatives and subalternate routes were evaluated in previous studies for DPV1 and DPV2 (BLM 1978, 1988; CPUC 1987; SCE 1978, 1985, 1988). Four subalternate routes were previously considered in response to concerns that the proposed route would impact the KOFA NWR in Arizona or agricultural lands in California's Palo Verde Valley. Subalternate routes are shown on Map 3-1 in Chapter 3. Four subalternate routes were evaluated in the 1988 DPV2 PEA. The subalternate routes were located as follows: Subalternate 1, north of the KOFA NWR, south of Interstate 10 (I-10); Subalternate 2, north of Blythe through the Colorado River Indian Reservation; Subalternate 3, south of the Palo Verde Valley through a portion of Imperial County; and Subalternate 4, north of the KOFA NWR and north of I-10. The results of the 1988 evaluation indicated that each of the subalternate routes would result in greater levels of potential environmental impact than would the proposed route. None of the subalternate routes parallel the existing DPV1 line. If any of these subalternate routes were utilized, between 31 and 72 miles of new access roads would need to be constructed. New access roads would cause greater amounts of ground disturbance and higher levels of impact to wildlife habitat and movement corridors, sensitive vegetation, cultural resources, and scenic quality. The selection of the proposed route for DPV2 was based on a multi-resource comparison of impacts, followed by agency and public reviews that were undertaken as part of the DPV2 permitting process in the late 1980s. A

detailed analysis of the alternatives and selection of the preferred route were documented in the previous studies for DPV2 in the 1988 PEA, EIR, and SEIS (BLM 1988), and is described in Chapter 3.

1.1.5.2 Subalternate Routes Considered and Evaluated in this PEA

Two subalternate routes at the eastern portion of the proposed route for the Devers-Harquahala 500kV line are considered in this PEA. The Harquahala-West Subalternate Route and the Palo Verde Subalternate Route are described below.

Harquahala-West Subalternate Route

This subalternate route would exit the Harquahala Switchyard directly to the west for 12 miles, then follow the El Paso Natural Gas pipeline corridor northwest for 9 miles to its intersection with the proposed Devers-Harquahala 500kV route. The route would be located in a designated BLM Utility Corridor. New right-of-way would need to be acquired across private, state, and BLM land. The Harquahala-West Subalternate Route would be 14 miles shorter than the proposed route (a total distance of 216 miles), and would require about 48 fewer 500kV towers than the proposed route.

Construction of the Harquahala-West Subalternate route would result in a greater amount of adverse environmental impact than the proposed route. Because this subalternate route would not parallel an existing transmission line, visual impacts to residential viewers would occur. Also, construction of a new access road for a portion of the subalternate route would be required, causing more ground disturbance than the proposed Devers-Harquahala route.

Currently, Arizona Public Service Company (APS) is planning for the Palo Verde Hub to TS-5 500kV transmission line that may parallel DPV1 between the PVNGS interconnection area and the Central Arizona Project (CAP) Canal. If the Palo Verde Hub to TS-5 line is constructed in a

manner that would preclude SCE from entering Harquahala switchyard from the east, then the Harquahala-West subalternate may become SCE's preferred route.

Palo Verde Subalternate Route

The proposed route for the Devers-Harquahala 500kV transmission line is generally parallel to SCE's existing 500kV DPV1, as shown on Map 1-1. Unlike the DPV2 route described in the 1988 PEA, the proposed project involves building a new 500kV transmission line from Devers to the Harquahala Generating Station switchyard terminus, and acquiring the existing Harquahala-Hassayampa 500kV transmission line.

As an alternative to the termination of DPV2 at Harquahala, and SCE's acquisition of the existing Harquahala-Hassayampa 500kV transmission line, the DPV2 line would terminate at the PVNGS Switchyard. This would require the construction of the Palo Verde Subalternate Route, a new 500kV transmission line parallel to the DPV1 transmission line for an additional 10 miles to the PVNGS switchyard. Although environmental impacts of construction and operation of the Palo Verde Subalternate Route would not be substantially more adverse than the environmental impacts resulting from the proposed Devers-Harquahala route, SCE's preference is to construct the proposed Devers-Harquahala route.

1.1.6 Midpoint Substation Alternative Sites

SCE has received an interconnection request from Desert Southwest Power, LLC, the proponent of the Desert Southwest Transmission Project (DSWTP). The proposed DSWTP is a 500kV transmission line that, as currently proposed, would be constructed parallel to SCE's DPV1 and Devers-Harquahala 500kV lines from Blythe, California, to Devers Substation. In an effort to minimize environmental impacts and project costs, SCE and Desert Southwest Power, LLC have agreed to explore ways to integrate the proposed DSWTP and the DPV2 transmission line

projects. Under a joint project proposal, only one of the two 500kV transmission lines would be constructed between Blythe and Devers, since the parties would share a single 500kV transmission line. The joint project would include the construction of a 500kV switchyard called the Midpoint Substation (Midpoint). Midpoint, as proposed, would provide connections for the DPV1 and Devers-Harquahala 500kV lines, and the DSWTP.

The preferred location for Midpoint is about 10 miles southwest of Blythe, adjacent to SCE's DPV1 right-of-way, and immediately west of Imperial Irrigation District's (IID) Blythe-Niland 161kV and Western Area Power Administration's (WAPA) Blythe-Knob 161kV transmission lines. As described in Chapter 3, two alternative sites for the substation have been identified and are evaluated in this PEA.

1.1.7 Environmental Impacts and Mitigation

Because the proposed DPV2 project would be built within established utility corridors and generally adjacent to existing, similar transmission lines, potential environmental impacts would be less than significant. Use of existing access roads for construction and future maintenance would minimize potential soil erosion and disturbance to sensitive plants, wildlife habitat, and wildlife movement corridors. It also would minimize the potential for increased public access into sensitive habitat. Because established utility corridors would be used, existing communities would not be further divided and impacts to land uses would be minimal. Because new structures would be of design and dimensions similar to the existing structures (i.e., DPV1 500kV, west of Devers double-circuit 230kV upgrade, and the Harquahala-Hassayampa 500kV structures), and because they would be installed to approximately match the spans and heights of the existing structures where feasible, the resulting level of visual contrast would be kept to a minimum. With the application of effective mitigation measures incorporated in the project design proposed by SCE, the resultant level of visual impact would be less than significant.

The proposed project is designed to locate structures to avoid archaeological sites. Therefore, impacts to cultural resources would be less than significant. Air quality impacts during construction would be potentially significant, however, implementation of mitigation measures would reduce emissions to levels that are less than significant. Water quality, geology, traffic and transportation, and noise impacts would be less than significant. Impacts to agricultural lands would be minimized by using special towers and would be less than significant. No significant impacts would result to land use, population, housing, and public services due to the temporary nature of construction. Beneficial socioeconomic impacts would result from construction employment, material and equipment purchases, and potential tax revenues to counties in the region.

Detailed descriptions of impacts and mitigation can be found in Chapters 5, 6, and 7.

1.1.8 Public Information and Outreach

SCE conducted public outreach activities for the DPV2 project to encourage communication with local communities, local businesses, elected and appointed officials, and other interested parties. In October 2003, SCE began public outreach and information activities that included distribution of a project fact sheet, in-person interviews, media briefings, open houses, and individual meetings. The project fact sheet was mailed to all property owners within 300 feet of the proposed DPV2 project, and to elected and appointed officials, and other interested parties in the project area. The fact sheet provided basic information about the project scope and purpose. It also provided the names and contact information for local SCE region managers as sources for additional information.

Following the distribution of the project fact sheet, SCE used an independent public involvement specialist to talk directly with a small sample of potentially impacted residents, local businesses,

elected and appointed officials, and others interested in the project. These in-person interviews were conducted during October and November 2003.

In August 2004, SCE provided a project update fact sheet to those persons in the project area that received the 2003 project fact sheet, as well as to those who asked to be added to the project mailing list.

In the summer and fall of 2004, SCE hosted open houses in Blythe, Loma Linda, Calimesa, Beaumont, and Coachella Valley. Invitations were mailed to the list of property owners within 300 feet of the proposed project and to elected and appointed officials, and to other interested persons in the project area. Additionally, SCE advertised the open houses in local newspapers.

Following the open houses, SCE mailed information responding to "Frequently Asked Questions" to property owners within 300 feet of the proposed project right-of-way, as well as to elected and appointed officials, and other interested persons in the project area.

Copies of fact sheets and FAQs are included in Appendix E. The list of property owners located within 300 feet of the proposed project is included in Appendix F.

CHAPTER 2.0
PURPOSE AND NEED

2.1 PURPOSE AND NEED FOR THE PROPOSED PROJECT

Californians have learned from painful experience during the 2000-2001 electricity crisis that the market for electricity in California is susceptible to volatile commodity prices, the exercise of market power, and the risk of supply shortages. Development of new transmission facilities to gain greater access to generation may help California avoid or limit similar experiences. Additionally, development of new transmission facilities to areas where generation has been more easily sited and constructed may spur development of new competitive generation to provide further insurance against future electricity crises.

The objectives for building DPV2 are to:

- Increase California's access to low-cost energy by adding 1,200 MW of transmission import capability into California from the Southwest. This is expected to substantially benefit California by reducing energy costs.
- Enhance competition among generating companies supplying energy to California.
- Provide additional transmission infrastructure to support and provide an incentive for the development of future energy suppliers selling energy into the California energy market.
- Provide increased reliability of supply, insurance value against extreme events, and flexibility in operating California's transmission grid.

These objectives are discussed below and in Section 2.2.5.

2.1.1 Increase California's Transmission Import Capability

DPV2 will increase California's transmission import capability by 1,200 MW providing greater access to sources of low-cost energy currently operating in the Southwest. The Southwest region

currently has over 6,000 MW of surplus generation, which may be imported into California. The Southwest Transmission Expansion Planning (STEP)[1] working group independently concluded a similar magnitude of generation is available for import into California. Increased access to energy in the Southwest is forecasted to lower total energy costs and substantially benefit California consumers. As described in Section 2.2 below, SCE's economic analysis, with conservative assumptions, demonstrates that DPV2 provides $1.1 billion of benefits to California consumers over the life of the project, and has a benefit-to-cost ratio of 1.7:1.

2.1.2 Enhance the Competitive Energy Market

As a public policy matter, SCE believes it is in California's interest to encourage investment in new generation infrastructure through (1) the construction of needed high-voltage transmission lines and (2) through reducing the time to permit such transmission lines. For example, on May 8, 2004, regulatory agencies in California adopted the *Energy Action Plan* for California. The *Energy Action Plan* concluded that adequate, reliable, and reasonably priced energy supplies can be achieved, in part, by upgrading and expanding the electricity transmission and distribution infrastructure and reducing the time needed before facilities are brought on line.[2] In particular, "Action IV" of the *Energy Action Plan* states that ([t]he State will reinvigorate its planning, permitting, and funding processes to assure that necessary improvements and expansions to the bulk electricity grid are made on a timely basis."

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1 STEP's Purpose and Scope states "Southwest Transmission Expansion Plan (STEP) is a sub-regional planning group that was formed to address transmission concerns in the Arizona, southern Nevada, southern California, and northern Mexico area. As a result of a large amount of new generation developed in this area, it was apparent to many that the transmission grid would be inadequate to efficiently deliver that power to the major load areas. The goal of STEP is "To provide a forum where all interested parties are encouraged to participate in the planning, coordination, and implementation of a robust transmission system between the Arizona, Nevada, Mexico, and southern California areas that is capable of supporting a competitive efficient and seamless west-side wholesale electricity market while meeting established reliability standards."(See, Jan. 17th 2003 PDF file at: http://www1.caiso.com/docs/2003/01/22/2003012211380012544.pdf and the May 8th, 2003 document at http://www1.caiso.com/docs/2003/05/13/2003051315061917183.pdf.)

2 The California Energy Commission's Electricity and Natural Gas Infrastructure Assessment Report (December 2003) available at www.energy.ca.gov (http://www.energy.ca.gov/reports/100-03-014F.PDF). Similarly, the report highlights the need for additional transmission infrastructure investment, particularly to support generation infrastructure.

Transmission infrastructure is necessary for a competitive market, and is vital to integrating new generation additions.[3] The Federal Energy Regulatory Commission (FERC) recently stated that FERC's Goal 1 is to "Promote a Secure, High Quality Environmentally Responsible Infrastructure through Consistent Policies." Under this goal is objective 1.1:

> Expedite appropriate infrastructure development to ensure sufficient energy supplies; and
>
> Identify transmission and pipeline projects with high public interest benefits and facilitate their speedy completion, consistent with the Commission's (FERC) statutory mandates and due process.[4]

The California Legislature, likewise, has encouraged investment in transmission facilities to facilitate competition in the generation market. It has stated that reasonable expenditures to expand transmission facilities are in the public's interest, if made for the purpose of facilitating competition in electric generation markets.[5]

DPV2 is expected to enhance competition amongst energy suppliers by increasing access to the California energy market, providing siting incentives for future energy suppliers, and providing additional import capability. Facilitating a competitive energy market in the Southwest may also create employment opportunities, which are beneficial to the economy and industries in Arizona and California.

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3 See, R.04-01-026, Order Instituting Rulemaking on policies and practices for the Commission's transmission assessment process (January 28, 2004) (Attachment B, Report of Current Planning Process for Investor-Owned Utilities).

4 See, Federal Energy Regulatory Commission Strategic Plan FY2004-FY2008, September 10, 2003, http://ferc.gov/about/strat-docs/09-29-03-detail-strategic-plan.pdf.

5 Cal. Pub. Util. Code § 454.1 ("(a) Reasonable expenditures by transmission owners that are electrical corporations to plan, design, and engineer reconfiguration, replacement, or expansion of transmission facilities are in the public interest and are deemed prudent if made for the purpose of facilitating competition in electric generation markets, ensuring open access and comparable service, or maintaining or enhancing reliability, whether or not these expenditures are for transmission facilities that become operational.")

2.1.3 Support the Energy Market in the Southwest

The Western Electricity Coordinating Council (WECC) transmission system is an interstate regional system (including Northwestern Mexico and Western Canadian provinces) that links power generation resources with customer loads in a complex electrical network. DPV2 will expand this network and increase the ability for California and the Southwest to pool resources for ancillary services, and provide emergency support in the event of generating unit outages or natural disasters. DPV2 will also provide insurance against major contingencies such as the emergency outage of a major generating facility or of another high-voltage transmission line; i.e., DPV2 will provide a hedge against low-probability, high-severity events such as short- and long-term outages of generating facilities, substations, and transmission lines. For example, if an earthquake disabled lines from the Pacific Northwest into California, then a line importing power from the Southwest, such as DPV2, would provide significant benefits above what is quantified by DPV2's economic analysis. In fact, some experts conclude that past experience demonstrates that high-voltage transmission lines can pay for themselves in just a few years because of the benefits they provide during low probability, high-impact events.[6]

2.2 SCE's ECONOMIC ANALYSIS

SCE examined DPV2's impact on total production costs, and uncertainty of major assumptions to determine the project's expected economics. Using production cost models, SCE estimated total production costs in California with and without the project and found that total energy production costs for electricity consumers in the CAISO area would be over $1 billion lower with the project than they would otherwise be without the project. SCE determined that the lifecycle benefits of DPV2 are greater than the lifecycle costs of constructing and operating DPV2.

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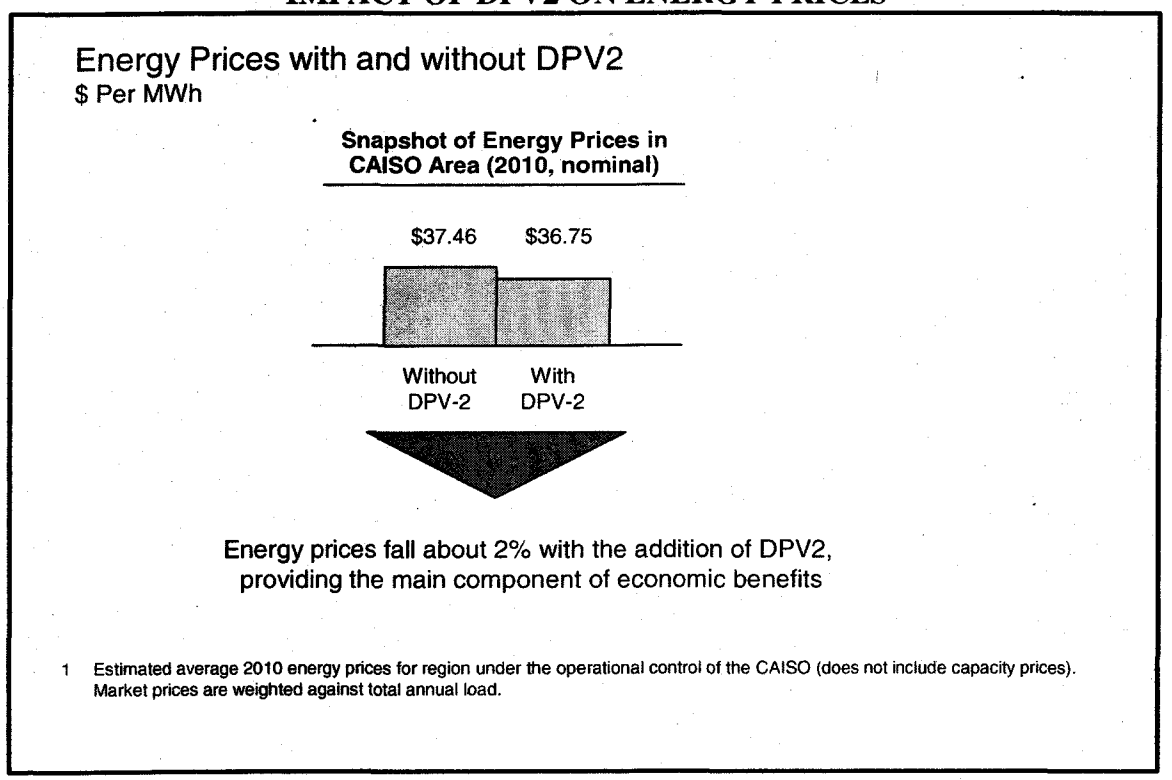
[6] http://www.electricpowergroup.com/Downloads/Planning/Planning_CA_FutureTrans_Grid_Final_Task1.pdf

To provide confidence in these results, SCE analyzed DPV2's benefits over a wide range of load forecasts, natural gas prices, and available hydro-generation, providing ample analysis of volatility affects. This analysis was performed using stochastic tools (also known as Monte Carlo Analysis). This type of analysis is important as it provides an expected value of benefits over a wide range of possible futures. Section 2.2.2 describes SCE's cost-effectiveness analysis of DPV2 which illustrates DPV2's benefit-to-cost ratio is 1.7:1. Appendix G-1 and Appendix G-2 provide additional information regarding SCE's cost-effectiveness analysis of DPV2.

DPV2's economic benefits are largely derived from lowering California energy costs. Figure 2-1 below illustrates that constructing DPV2 is expected to significantly lower energy prices for ratepayers in the CAISO area.

FIGURE 2-1
IMPACT OF DPV2 ON ENERGY PRICES



2.2.1 Description of Assumptions

SCE first evaluated DPV2 in the context of its July 2004 LTPP,[7] which identifies the baseline assumptions used in the benefits analysis of DPV2. The baseline assumptions were designed around the overall intent and "loading order" of the joint agency Energy Action Plan[8]. The 2004 LTPP was found reasonable and adopted[9] by the CPUC on December 16, 2004, subject to modifications that do not significantly affect the need, timing, or cost effectiveness analysis of DPV2.

For the analysis submitted herein, SCE updated the LTPP assumptions for gas prices, loads, and resources to better reflect more recent forecast conditions. In addition, SCE incorporated in this analysis as many of the Commission directed modifications as appropriate in order to maintain consistency with other regulatory forums that also make use of SCE's 2004 LTPP assumptions and analysis.[10] Those modifications include the acceleration of resource adequacy requirements from 2008 to 2006, updated natural gas prices, and updated procurement activities since the initial filing. In addition to these modifications, the 2004 LTPP also was updated for announced resource additions and retirements (generation and transmission alike), load forecasts throughout the WECC, and generic resource additions due to changes in the load forecast. Major assumptions in the adopted 2004 LTPP include:[11]

- SCE meeting 20 percent Renewable Portfolio Standard by 2010 per the Energy Action Plan

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7 Rulemaking (R.) 04-04-003. SCE's LTPP can be found at http://www3.sce.com/law/cpucproceedings.nsf/vwUFiling?SearchView&Query=long+term+procurement+plan&Start=1&Count=30. Specifically, the analysis performed to evaluate DPV2's economics ties directly to SCE's Medium Load Scenario.

8 State of California Energy Action Plan, adopted May 8, 2003. http://www.energy.ca.gov/energy_action_plan.

9 Decision (D.)04-12-048.

10 For example, the California Energy Commission's IEPR Compliance Filing (Docket 04-IEP-1D), Advanced Metering Initiative (R.02-06-001), and the SCE's 2006 General Rate Case, Phase 2 (A.04-12-014).

11 A more detailed description of SCE's LTPP can be found in Rulemaking (R.)04-04-003.

- Mohave Generating Station Units No.1 and 2 shutdown on December 31, 2005
- Mountainview Generating Station operational by summer of 2006
- San Onofre Nuclear Generating Station (SONGS) steam generator replacement in 2009-2010 time frame
- Compliance with Southern California Import Transmission nomogram import limits
- Significant increases in cost effective energy efficiency and demand response programs

2.2.2 Results of the Economic Analysis

DPV2's transmission revenue requirement will be paid by ratepayers of utilities (Participating Transmission Owners, or PTOs) whose facilities are under the operational control of the CAISO. The impact to ratepayers in the CAISO's area is shown in the Figure 2-2 below. SCE estimated benefits and revenue requirements based upon DPV2's estimated average service life.

FIGURE 2-2
DPV2 PROJECTED LIFECYCLE BENEFITS
(2005 NPV, $ Millions, 10.5% Discount Rate Per Annum)

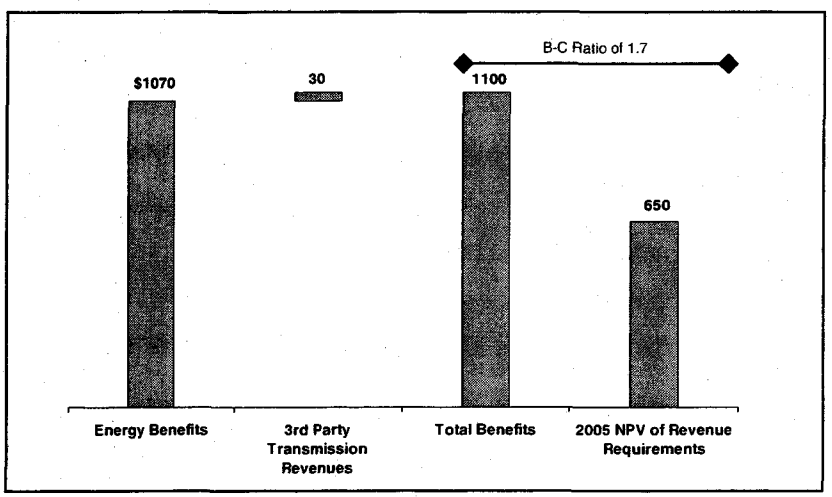

Figure 2-2 illustrates that the economic benefit of DPV2 is $1.1 billion, comprised of energy cost savings, and third-party transmission use revenues. With the addition of DPV2, the revenue requirement used to develop rates for both CAISO wheeling service and Existing Transmission Contracts will increase, and the benefit calculation reflects the increasing revenues from existing

and forecast transmission service users. Edison estimates wheeling service and Existing Transmission Contracts' (ETCs) benefits will provide approximately $0.6 million annually of increased revenue to SCE from certain ETCs and approximately $2.4 million annually of increased CAISO wheeling revenues to SCE or about $30 million (2005 NPV) over the life of the project. This estimate includes only the revenues to SCE, and does not reflect increased revenues to other CAISO entities. If these revenues were taken into account, the benefit would be greater.

The 2005 present value revenue requirement for DPV2 is estimated at $650 million. With a benefit-to-cost ratio of about 1.7:1, DPV2 is a highly cost-effective project for ratepayers in the CAISO area.[12] Appendix G-1 and Appendix G-2 provides additional details regarding SCE's cost-effectiveness analysis of DPV2.

2.2.3 CAISO's Evaluation of DPV2

DPV2 is an economic transmission project as described under Section 3.2.1.1 of the CAISO Tariff. As provided in Section 3 of the CAISO Tariff, SCE submitted a report to the CAISO for their use in evaluating the cost-effectiveness of constructing the Devers-Palo Verde No. 2 Transmission Project.[13] The original report, and a revision to reflect updated assumptions, are included in Appendix G-1 and Appendix G-2. SCE's analysis conformed to the principles and methods the CAISO has outlined in its Transmission Economic Assessment Methodology (TEAM), and demonstrates that DPV2 is cost effective to ratepayers in the CAISO area.

The CAISO conducted an independent review of DPV2 and also found the DPV2 project to be a necessary and cost-effective addition to the CAISO controlled grid.[14] The CAISO Board approved the DPV2 project on February 24, 2005 and directed SCE to proceed with the

12 Ratepayers in the CAISO area are those served by utilities, which are CAISO Participating Transmission Owners who have placed their transmission facilities under the operational control of the CAISO.

13 On April 7, 2004, SCE provided a report entitled "Devers-Palo Verde No. 2 Cost-Effectiveness Report".

14 http://www.caiso.com/docs/09003a6080/34/e4/09003a608034e440.pdf.

permitting and construction of the transmission project, preferably to the completed by the summer of 2009.

2.2.4 Alternatives that SCE Considered

The California Environmental Quality Act (CEQA) requires the project proponent to evaluate alternatives to the project that could meet the project's objectives.[15] Alternatives to DPV2 were identified and evaluated in accordance with CEQA Guidelines. CEQA Guidelines (Section 15126(a)) state:

> An environmental impact report (EIR) shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.

CEQA Guidelines (Section 15364) define feasibility as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Chapter 3 discusses alternative routes that were considered for the project. Additionally, SCE evaluated several other potential transmission projects, which could meet SCE's objectives of increasing transmission import capability into California and accessing surplus, low-cost energy in the southwestern United States. SCE also considered generation and demand reduction as possible substitutes for the DPV2 project. These projects are discussed below.

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15 CCR Title 14, Division 6, Chapter 3, Section 15126.6(f).

2.2.4.1 Transmission Alternatives

The following transmission projects were identified as potentially meeting the basic objectives of DPV2:

- Second Southwest Power Link 500kV transmission line
- Upgrades to Southwest Powerlink No. 1, Devers-Palo Verde No. 1 (DPV1), Navajo-Crystal, and Moenkopi-Eldorado 500kV transmission line series capacitors, known as the Path 49 Upgrade Project
- New Imperial Valley-Devers 500kV transmission line (IV-Devers)
- Combination of Imperial Valley-Devers and Series Capacitors Path 49 Upgrade Project

These projects, and DPV2, were screened using production simulations to determine their economic benefits. Only DPV2 and the Path 49 Upgrade Project showed sufficient economic benefits to be evaluated further (i.e., net positive benefits). The other projects had benefit-cost ratios of less than one so they were screened out from further analysis. See, Appendix G-1 and Appendix G-2 for more details regarding this screening analysis. The Path 49 Upgrade Project has been approved by the CAISO and engineering and construction activities have begun. SCE's economic analysis of DPV2 assumes that the Path 49 Upgrade Project is constructed.

The STEP working group also evaluated potential transmission alternatives to DPV2. In its July 11, 2003 Final report on potential 500kV transmission alternatives,[16] the STEP group evaluated 26 transmission alternatives to determine the preferred projects for expanding transmission capacity between the Southwest and California. In addition, after this thorough stakeholder process that started in 2002, the CAISO concluded in 2005 that DPV2 is a "...necessary and cost effective addition to the CAISO Controlled Grid..."[17]. SCE participated in this multi-year stakeholder process and supports its recommendation that DPV2 is a necessary project as compared to other potential transmission alternatives.

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[16] See, the document on the CAISO's web site located at: http://www2.caiso.com/docs/2003/07/11/2003071114390719585.pdf.

[17] http://www.caiso.com/docs/09003a6080/34/e4/09003a608034e440.pdf.

2.2.4.2 Technical Alternatives

In 2003, SCE performed power system technical studies to evaluate how to increase the East of the [Colorado] River (EOR) transfer capability. The levels evaluated were 1,050 MW, 1,200 MW, 1,500 MW, and 2,400 MW. When performing power system technical studies, it is SCE's practice to use the North American Electric Reliability Council ("NERC"), WECC Planning Standards ("NERC/WECC Planning Standards"), and the CAISO's Planning Standards as the system performance standards.

First, a 1,050 MW increase was evaluated to determine if the west of Devers upgrades could be avoided. However, the studies found that west of Devers upgrades would be needed because the Devers-San Bernardino No. 1 230kV line continued to be overloaded at the 1,050 MW transfer capability increase amount. The 1,500 MW and 2,400 MW levels were likewise evaluated but were also found to require significant amount of voltage support and upgrades west of Devers to support such an increase in transfer capability. Therefore, these three levels of increased transfer capability were excluded from further evaluation.

The technical studies focused on fully developing the Plan of Service for a 1,200 MW increase in transfer capability on the EOR and WOR path due to the DPV2 Project being constructed. The 1,200 MW increase was the level of increase that provided the most cost effective Plan of Service to meet the objectives of the Project.

Alternative technical modifications to the existing DPV1 500kV transmission line were evaluated and include: (1) increasing the percent compensation on the existing DPV1 500kV transmission line, and (2) converting DPV1 from an AC line to a DC line.

The DPV1 increase in percent compensation evaluation assessed the potential for Subsynchronous Resonance (SSR) concerns for the Palo Verde generators. The potential for SSR concerns was evaluated with DPV1 at its present 47 percent compensation and at compensation levels from 50 percent to 70 percent increasing in 5 percent increments. The results of this SSR

study clearly demonstrated that an SSR concern for the Palo Verde nuclear generating units would be present at compensation levels at and greater than 50 percent. Based on this result, this alternative was dismissed and not evaluated any further.

SCE performed a scoping study in 2002 to evaluate converting the existing DPV1 AC line to 3,000 MW, +/-500kV HVDC line. It was assumed that the existing AC line could be converted for HVDC operation with two of the three phases operating as the DC poles for the DC operation, and the remaining phase act as the ground return.

Based on the preliminary power flow and stability studies, the project scope of the DC Alternative was identified as follows:

- Palo Verde Substation: Install a converter and associated filters for 3,000 MW
- Devers Substation: Install a converter and associated filters for 3,000 MW HVDC operation
- Build a new Devers-Valley #2 500kV transmission line
- Build a new Valley-Serrano # 2 500kV transmission line
- Drop load at eight SCE A bank stations
- Drop generation in Arizona for the loss of DC line

This DC Alternative was eliminated from further evaluation due to the higher cost when compared to the DPV2 Project.

2.2.4.3 Non-Transmission Alternatives

SCE considered several supply-side and demand-side alternatives to DPV2. Supply-side alternatives include new generation, both conventional and renewable. Demand-side alternatives include additional demand response and energy efficiency. Distributed generation was also considered, as well as the no-project alternative.

SCE concurs with the CAISO[18] that both generation and transmission options need to be pursued to meet future customer demand. SCE does not rely entirely on one or the other, but rather a portfolio that integrates both. Generation and transmission options have differing attributes that help meet the needs of a load-serving entity. For example, generation provides local-area reliability such as voltage support and black/quick-start, whereas transmission provides access to multiple generators and enhances liquidity in the market and market competition.[19] Both options are necessary, and DPV2 is the specific transmission project that is being considered here.

The alternatives discussed below are resource options SCE is aggressively pursuing[20] to meet the demands of its customers and southern California in general. As shown by the "in-out" analysis,[21] these resources are complimentary to the future benefits of DPV2 and therefore are not substitutes. Nevertheless, all of the non-transmission alternatives were eliminated from consideration because they do not meet the project's objectives of (1) increasing access to low-cost, surplus generation in the Southwest by adding 1,200 MW of transmission import capability into California and reducing energy costs in California; (2) enhancing competition among generating companies supplying energy to California; (3) providing additional transmission infrastructure to support and provide an incentive for the development of future energy suppliers selling energy into California; and (4) providing increased reliability of supply, insurance value against extreme events, and flexibility in operating California's transmission grid.

New Generation Alternatives

A project to construct an economic transmission line is not comparable to generation, either conventional or renewable. First, an economic transmission line provides access to many generators, which will increase competition and broaden the energy market. DPV2 will facilitate a robust transmission system that will not only allow for interconnection of new generation

18 CAISO report on Economic Evaluation of Palo Verde Devers No. 2, February 2, 2005.

19 DPV2 does not preclude the development of new generation.

20 SCE prioritizes its resource considerations consistent with the Energy Action Plan's "loading order."

21 A more detailed discussion may be found in Appendix G of the PEA.

resources to the transmission grid, but also will provide for flexible delivery alternatives and increase access to a greater number of resource procurement options.

Second, a transmission line such as DPV2 will allow load serving entities to procure short-, medium-, and long-term contracts with existing low-cost generation from the Southwest in addition to only long-term contracting associated with a new generation alternative located in southern California. As discussed in Section 2.1.1, there are over 6,000 MW of existing surplus generation in the Southwest. New generating plant 'alternatives' in southern California would likely require long-term contracts to meet financing requirements to be built and would likely have their full output secured through the contracts.[22] In this scenario, these generating plants would not participate in the short-term energy markets and produce the enhanced competition DPV2 is expected to facilitate. Renewable resources, in particular, tend to rely even more on dedicated, long-term, full-requirement contracts. SCE is not aware of any renewable generation projects in southern California in which only a portion of its full capacity is secured by contract, and the remaining capacity is sold on a merchant basis.

When considering new generation alternatives, one should also consider whether new transmission is required to deliver the power to the load. DPV2 does not preclude the development of new power, renewable or otherwise. On the contrary, as load continues to grow, DPV2 can provide the additional means for new generation to be delivered to the load.[23]

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[22] SCE's experience has been that the current market environment prefers new generating plants in southern California to secure all or most of its full output by a long-term contract to obtain financing. As indicated in various parties' testimony in the R.04-04-003 (see, for example, witness Kelly of the Independent Energy Producers, transcript p.1036), it is currently difficult to finance new power development without a long term contract.

[23] Even if DPV2 is fully utilized, new cost effective generation can compete with existing generation for access to DPV2 transmission.

Furthermore, the economics of new generation in the Palo Verde area have historically been lower relative to new generation in southern California due to the following factors:

- Lower cost of delivered natural gas
- Lower labor rates
- Lower cost for bulk materials purchased locally (including state taxes)
- Lower costs for emissions offsets/credits
- Lower land costs

SCE believes these factors will continue into the future therefore providing a lower-cost energy option to California consumers.

SCE specifically considered the solar and wind renewable generation as alternatives to this project. Generation from either technology is categorically "as available" and therefore does not provide the dispatch flexibility that resources delivered via DPV2 can potentially provide. Nevertheless, SCE's evaluation of DPV2 assumes full compliance with California's Renewable Portfolio Standard, in which SCE plans to meet the statutory requirement that 20 percent of its retail energy load be met by renewable generation and a significant portion of this goal is expected to be met through wind and solar generation. Moreover, SCE's future procurement activities will consider additional cost-effective renewable resources that go beyond the 20 percent statutory requirement.

For these reasons, new generation alternatives do not meet the project's objectives and were excluded from further evaluation.

Demand-Response Alternative

Demand response represents a small fraction of the total capacity requirement needed to meet SCE's import and supply reliability objectives. As a stand-alone alternative to DPV2, these

programs cannot meet the growing electricity demands of California for two main reasons. First, SCE's 2004 LTPP already includes the maximum amount of approved demand response investments over the next ten years, amounting to approximately 1,400 MW of peak load reduction by 2014. Even with the amount of demand response SCE is planning to implement, DPV2 is still a cost effective project. Second, demand response programs are resources that are designed to primarily provide capacity benefits and not low-cost energy benefits such as DPV2. While SCE supports the Commission's "loading order" and is aggressively pursuing demand-side programs before other resource alternatives, implementation of additional demand response over-and-above what is currently planned in SCE's service territory that match the size and scale of DPV2 is unlikely. Instead, new supply resources and/or increased access to new supply resources via transmission are needed in addition to demand response investments. For these reasons, the demand response alternative does not meet the project's objectives and was excluded from further evaluation.

Energy Efficiency Alternative

SCE's 2004 LTPP already includes the maximum reliably achievable amount of cost effective energy efficiency, amounting to nearly 6 billion kWh reduction in sales over and above what is currently implemented over the next ten years and therefore is not an alternative to DPV2. In fact, DPV2 is still a cost effective project even with the amount of energy efficiency SCE is planning to implement. Finally, for similar reasons as the demand response alternative discussed above, the energy efficiency alternative does not meet the project's objectives and was excluded from further evaluation.

Distributed Generation Alternative

As stated in SCE's 2004 LTPP[24], SCE supports the integration of cost-effective distributed generation as both a demand-side and grid-side resource. SCE's 2004 LTPP forecasts a 6 percent annual growth in distributed generation resources[25] exceeding the Energy Action Plan goal of 1 percent growth per year. Note, however, most distributed generation facilities are very small, averaging less than 0.1 MW per facility. It does not appear to be feasible to construct and operate a distributed generation alternative in sufficient quantity to meet projected demand growth that can be served by the large-scale generation in the Palo Verde area. For these reasons, the distributed generation alternative does not meet the project's objectives and was excluded from further evaluation.

No-Project Alternative

Should DPV2 not be completed or should it be delayed indefinitely, the net economic benefits that would have been derived from DPV2's access to surplus, low-cost generation in the Southwest would not materialize. This was demonstrated in the DPV2 "in-out" analysis,[26] which shows SCE purchasing more, higher-cost energy from within the state and importing less economy energy from the Southwest without DPV2. Also, the potential benefits of increased competition within the generation sector would be lost. And finally, the added operational benefits needed during a major generation or transmission outage would not be available.[27] The no-project alternative would mean that DPV2 would not be built, an alternative that does not meet the basic project objectives. As such, the no-project alternative was excluded from further

24 See, R.04-04-003 Volume 1 at 81.

25 SCE has over 3500 distributed generation sites with a combined capacity of about 255 MW, which have been approved/authorized since 2001.

26 A more detailed discussion may be found in Section 2.2 of the PEA.

27 A more detailed discussion may be found in Section 2.2.5 of this Chapter 2.0.

economic evaluation, but it was analyzed as part of the environmental analyses in SCE's application and PEA.

2.2.5 Non-Quantifiable Benefits

Some examples of potential benefits not quantified in DPV2's benefit-to-cost ratio of 1.7:1 include:

- New Generation Development – Developing the DPV2 could attract new generation development east of Devers Substation, such as in the Blythe and Palo Verde areas, providing additional supply to the California energy market. If new generation is developed, then DPV2's benefits should increase due to increased access to this new low-cost generation.

- Market Power – DPV2 also may provide benefits by reducing the potential for generators to exercise market power. By helping to increase the quantity of generation and number of suppliers available to serve California markets, DPV2 should help to increase competitive pressure on generators. This, in turn, should help to reduce the ability for generators to exercise market power as California experienced in the recent energy crisis.

- Emergency Value – A new transmission line such as DPV2 could provide benefits during an emergency outage of another major import line or generating facility. For instance, if fire or an earthquake disables lines from the Pacific Northwest into California, then a line importing power from the Southwest, such as DPV2, would provide benefits above what is quantified in this report. A similar emergency value could accrue during the long term or untimely outage of generation located in Southern California.

Using a production simulation modeling assessment to evaluate a transmission project will undervalue a transmission project, since it will not capture the benefits listed above. These

benefits are difficult to quantify because they involve uncertainties that are hard to predict. But historically, transmission lines can pay for themselves in just a few years because of low probability, but high-impact events.[28]

DPV2 provides very real economic benefit to ratepayers by providing access to low-cost energy, supporting SCE's energy procurement goals, and enabling competitive new generation to develop, and providing significant operational benefits because grid operators have more facilities in which to depend upon (as discussed in Section 2.2).

2.3 THIRD-PARTY PROJECT PARTICIPATION AND RELATED TRANSACTIONAL ISSUES

2.3.1 Los Angeles Department of Water and Power

SCE and the Los Angeles Department of Water and Power (LADWP) currently have an existing contractual arrangement that provides for participation by LADWP in the DPV2 project. The Los Angeles-Edison Exchange Agreement was entered into on December 18, 1987 (Exchange Agreement). The Exchange Agreement is summarized in Table 2-1.

Under the Exchange Agreement, LADWP will receive 30.7 percent of the DPV2 line capacity and share in 30.7 percent of the DPV2 project costs. The Exchange Agreement provides that the parties will enter into a participation agreement to more fully describe the parties' respective rights and obligations regarding the ownership of DPV2. Provided LADWP participates in DPV2, its transmission capacity between Palo Verde and Devers will remain essentially the same. LADWP's 368 MW of existing transmission service rights between Devers and Palo Verde will terminate and LADWP will acquire a 30.7 ownership interest in DPV2. LADWP's ownership share would equal 368 MW at the planned rating for DPV2 of 1200 MW.

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[28] http://www.electricpowergroup.com/Downloads/Planning/Planning_CA_FutureTrans_Grid_Final_Task1.pdf.

TABLE 2-1 SUMMARY OF EXCHANGE AGREEMENT
Eastern Transmission Service SCE shall make available to LADWP 368 MW of firm bidirectional transmission service between Devers and Sylmar for the life of DPV1 or upon construction of DPV2 the life of DPV2. SCE shall make available to LADWP 368 MW of firm bidirectional transmission service between Palo Verde and Devers beginning June 1, 1990 and shall continue service until the earliest of any of the following events: (i) the in-service date of the DPV2 Line, (ii) the in-service date of any other transmission line connecting Palo Verde and Devers in which LADWP has obtained either an ownership share or entitlement to transmission service, (iii) the date when the DPV1 Line is permanently removed from service, (iv) four years after SCE has obtained the CPUC approval, pursuant to California Public Utilities Code Section 851 to transfer rights of way for DPV2 to LADWP, or (v) upon 12 months' prior written notice by LADWP, on or after January 1, 2003; provided, however, that upon written notice by SCE, provided within three months following the date of such notice by LADWP, such termination date may be extended for an additional period not to exceed 24 months, if and to the extent necessary to allow SCE to reflect fully the revenue impact of such termination in its CPUC and FERC jurisdictional rates. SCE shall make available to LADWP 100 MW of firm bidirectional transmission service over SCE's transmission facilities between Palo Verde and Sylmar through May 2012.
Northwest Transmission Rights LADWP shall make available to SCE from LADWP's ownership share of the extra-high voltage (EHV) Pacific DC Intertie Line, 500 MW of firm bidirectional Transmission Capacity on the EHV DC Line between Sylmar and the Nevada-Oregon border. SCE shall make available to LADWP 320 MW of bidirectional Transmission Capacity on the EHV Pacific AC Intertie Lines. The exchange of Pacific Intertie transmission service terminates when SCE's rights to the Pacific AC Intertie terminate.
Castaic Service LADWP shall make available to SCE 200 MW from the Castaic Power Plant for a term of five years from the effective date of the Exchange Agreement. This provision expired on December 18, 1992. Commencing upon the effective date of the Exchange Agreement and continuing for a term of 22 years, LADWP shall use its best efforts to make Additional Service available to SCE at LADWP sole discretion. Additional Service is any weekly service for spinning reserve, generation and pumping purchased by SCE.
DPV2 Line Ownership LADWP has the obligation to acquire a 30.7 percent ownership interest in the DPV2 line. SCE shall use its best efforts to construct DPV2 with a minimum 1,200 MW Transmission Capacity Rating. LADWP has the option to purchase firm bi-directional transmission service over DPV2 to make up a total of 368 MW in the event DPV2 Transmission Capacity Rating is less than 1,200 MW.

LADWP has not yet committed to participate in DPV2. On August 1, 2003, SCE sent a letter to LADWP informing LADWP of SCE's intention to pursue the necessary regulatory approvals for the construction of the DPV2 Line. LADWP responded to SCE with a letter dated September 5, 2003 that LADWP is currently in the process of evaluating its rights and obligations pursuant to the Exchange Agreement. SCE has provided LADWP with DPV2 project information and will continue to seek LADWP's participation. SCE will keep the CPUC informed of significant developments regarding LADWP's participation in DPV2. Participation by LADWP in DPV2 will not change total project benefits because LADWP would effectively be trading its existing transmission service right for an ownership right with no net change in new transmission

capacity available to the CAISO. Project costs to CAISO ratepayers would be reduced by LADWP's payment of its ownership share of costs, and thus LADWP participation in DPV2 will improve SCE's cost-benefit analysis. For purposes of this application, SCE has used a conservative assumption that LADWP will not participate in DPV2.

2.3.2 Harquahala Generating Company Option Agreement

SCE and Harquahala Generating Company (HGC) entered into an Option Agreement on February 13, 2001 (Option Agreement). The Option Agreement provides that SCE has the option to purchase the 500kV switchyard at Harquahala; the 500kV transmission line from the Harquahala Switchyard to the Hassayampa Switchyard, and the Harquahala transmission line terminal facilities at the Hassayampa Switchyard.

SCE also entered into a License Agreement with HGC on February 13, 2001 that provides for HGC to construct a portion of the Hassayampa-Harquahala transmission line on SCE right-of-way. The agreement also allows HGC to purchase SCE's land rights between Harquahala and Hassayampa if SCE does not exercise the option by 2011, or if SCE desires to terminate the License Agreement. If SCE exercises the Option Agreement, the License Agreement would terminate.

At the time SCE entered into the Option Agreement, HGC was proceeding to build and own a 500kV transmission line to interconnect its new 1,040 MW natural gas-fired generating plant in Maricopa County, Arizona, with the regional transmission system in central Arizona at the Hassayampa 500kV switchyard. SCE was concerned with the potential for HGC building near SCE's DPV2 right-of-way and potentially adversely affecting SCE's ability to build DPV2. SCE entered into the Option Agreement with HGC to preserve the right-of-way for DPV2.

For the DPV2 project, SCE will construct a new 500kV line from Devers to the Harquahala switchyard. SCE would then use the existing Harquahala-Hassayampa 500kV line to complete

the connection of the DPV2 Project to the Hassayampa Switchyard. The Hassayampa Switchyard is a satellite switchyard, and is functionally equivalent to connecting at the PVNGS Switchyard. SCE's preferred route and alternatives are discussed in Chapter 3.

2.3.3 Arizona Public Service TS5 Project

APS has informally proposed to the Arizona Corporation Commission (ACC) that it construct a 45 mile 500kV transmission facility from the Palo Verde hub to a new TS5 substation located in western Arizona. APS's preferred route for its proposed TS5 line parallels SCE's Devers-Palo Verde right-of-way for approximately 18 miles. The ACC has encouraged APS to evaluate using existing transmission capacity between Palo Verde and Harquahala. APS has approached SCE to determine if arrangements could be made to utilize the existing Harquahala-Hassayampa 500kV line, which SCE plans to acquire from HGC pursuant to the Option Agreement, to complete the connection of the DPV2 Project to the Hassayampa Switchyard as described above in Section 2.3.2. APS's preliminary studies indicate that there may be adequate capacity in the Harquahala-Hassayampa 500kV line prior to 2015 to accommodate both the TS5 and DPV2 Project requirements. SCE is continuing discussions with APS on a possible joint arrangement. SCE will keep the CPUC informed of significant developments regarding these joint project discussions.

2.4 WEST OF DEVERS UPGRADES

2.4.1 230kV West of Devers Transmission Upgrades

For most of its alignment, the DPV2 500kV transmission line route would be located adjacent to the existing DPV1 500kV transmission line within an established transmission line corridor. DPV2 would become part of the EOR transmission system. The EOR System is a WECC–defined transmission path (Path 49) that consists of six 500kV transmission lines linking southern Nevada and western Arizona with southern California, The EOR system is presently

rated at 7,550 MW. The EOR rating is expected to increase to 8,055 MW in 2006 with the completion of the planned upgrades to DPV1 and the SWPL line (Path 49 Upgrade project).

The addition of the DPV2 500kV transmission line to the EOR system would increase the transfer capability on the EOR system by 1,200 MW, increasing the total rating of the EOR system to 9,255 MW. This increase in transfer capability would result in line-overloads on the four 230kV lines west of the Devers under line-out contingencies.

System planning criteria require that the lines provide sufficient capacity during normal and emergency conditions. The criteria are satisfied during emergency conditions if the remaining lines do not overload when another line (or 2 lines) "trips" out of service. Due to the increased power flows associated with the proposed DPV2 project, all four of the west of Devers 230kV lines load beyond their loading capability during an outage of the existing Devers- Valley 500kV transmission line. This condition is a violation of system planning criteria.

Therefore, the DPV2 project and specifically, operation of the proposed Devers to Harquahala 500kV transmission line, will require upgrades to SCE's existing 230kV transmission lines west of the Devers Substation in accordance with applicable system planning criteria.

The west of Devers 230kV system consists of two Devers-San Bernardino lines and two Devers-Vista lines. The Devers-San Bernardino No. 1 and the Devers-Vista No. 1 230kV lines would be upgraded. Those upgrades consist of the removal and replacement of approximately 40 miles of two single-circuit tower lines with a new double-circuit tower line, strung with double-bundled 1033 aluminum conductor steel-reinforced (ACSR) conductors. The single conductors on the existing double-circuit tower lines would be replaced with double-bundled 1033 ACSR conductors. These upgrades would result in four 230kV circuits with double-bundled conductors on two double-circuit tower lines. Minor modifications would be required to some of the towers. Replacing the existing conductors with higher capacity conductors will more than double the capacity of the four 230kV transmission lines west of Devers Substation.

The proposed 230kV upgrades are the most cost-effective and practicable means to resolving the potential system overload conditions by increasing the normal power carrying capacity of the four west of Devers 230kV circuits.

2.4.2 West of Devers Alternatives

Three other system modifications were evaluated as alternatives to the proposed 230kV transmission line upgrades west of Devers: (1) operating mitigation procedures, (2) constructing a new 500kV line, and (3) constructing a new and separate 230kV line (i.e., adding a fifth circuit). These options are described as below.

2.4.2.1 Operating Procedures

If the DPV2 project is constructed without upgrading the transmission system west of Devers, the existing 230kV transmission lines would overload under base case (all lines in-service) and for line out conditions. In the absence of the proposed upgrade project, planned overload mitigation would be required to reduce the loading on the existing lines to below their loading capability. Acceptable mitigation would consist of an operating procedure that would limit the transfer capability on the EOR system. This type of mitigation is not desirable both from the system operation viewpoint and economics because it would reduce the DPV2 power flow on EOR to its present 8055 MW rating; the schedules associated with the 1200 MW rating increase would be reduced to zero.

2.4.2.2 New Devers-Mira Loma 500kV Transmission Line

Adding a new 500kV transmission line between Devers and the Mira Loma substations would resolve the system overload problem identified on the 230kV system west of Devers. However,

building a new 500kV line to prevent the 230kV transmission line overloading would cost more than the proposed 230kV replacement and upgrade west of Devers. Additionally, adding a new 500kV line would not increase the overload capability on the west of Devers 230kV system because the small conductor line would still be there and it is the limiting element to achieve the full 1200 MW transfer capability for the Project. Therefore, for contingency of the new 500kV line, the 230kV lines would overload and an operating procedure would be required to reduce DPV2's 1200 MW import capability to zero.

2.4.2.3 New 230kV Transmission Line

Constructing a new and separate 230kV transmission line west of Devers would increase the base case load carrying capacity of the 230kV transmission system west of Devers. However, it would not increase the overload capability on the existing west of Devers 230kV transmission lines because the small conductor in the lines would still be there and the full 1200 MW transfer capability for the Project could not be achieved. Similar to the discussion in Section 2.4.2.2 above, for the contingency of the new 230kV line, the existing 230kV lines would overload and an operating procedure would be required to reduce DPV2's 1200 MW import capability to zero.

Also, a separate 230kV transmission line cannot be constructed in the existing west of Devers 230kV right-of-way without removal of an existing line, due to the lack of available space.

2.4.3 500kV Static VAR Compensators

A 388 MVAR 500kV Static VAR Compensator (SVC) would be installed and terminated at the 500kV switchyard inside the property line at Devers Substation and one 388 MVAR, 500kV SVC would be installed at SCE's existing Valley Substation. For Valley Substation, the western station fence would be relocated to the western edge of the existing property line. An area of approximately 2.0 acres within the substation property would be used for temporary lay down

and construction. Installing dynamic voltage support equipment is needed to mitigate violations of the voltage stability criteria of the WECC and North American Electric Reliability Council ("NERC") Planning Standards.

2.4.4 Special Protection System

A Special Protection System (SPS) is proposed to mitigate post-transient voltage violations of system planning criteria for the simultaneous loss of Devers-Palo Verde No. 1 and Devers-Harquahala, or Devers-Palo Verde No. 1 and Harquahala-Hassayampa 500kV lines. This SPS will be designed to drop approximately 900 MW of generation in the Palo Verde area and approximately 900MW of SCE load.

2.5 MIDPOINT SUBSTATION

SCE has received an interconnection request from Desert Southwest Power, LLC (DSWP) as the proponent of the Desert Southwest Transmission Project (DSWTP). The proposed DSWTP is a 500kV transmission line that would be constructed parallel to SCE's DPV1 line from Blythe, California to the Devers Substation. In an effort to minimize environmental impacts and project costs, SCE and DSWP have agreed to explore ways to integrate the two projects. Under a joint project proposal, only one, instead of two 500kV transmission lines, would be constructed between Blythe and Devers. The joint project would include the construction of a 500kV switchyard referred to as the Midpoint Substation in the Blythe area. The Midpoint Substation would allow the integration of the DSWTP and the DPV2 Projects. SCE will keep the CPUC informed of significant developments regarding these joint project discussions.

CHAPTER 3.0
DESCRIPTION OF THE PROPOSED PROJECT

3.1 PROJECT DEVELOPMENT PROCESS

3.1.1 Overview

This section describes the steps taken by SCE and the status of permitting actions previously taken by state and federal regulatory agencies in the development of the DPV2 transmission line project. Additional permits or actions required prior to construction of the proposed DPV2 project are listed in Section 3.1.4.

The proposed route for the Devers-Harquahala 500kV transmission line is located generally parallel to SCE's existing DPV1 500kV transmission line route (see Chapter 1, Map 1-1; and Maps 3-2a-c, end of Chapter 3). Electrical systems and siting studies were conducted prior to construction of the DPV1 line. A regional siting study was conducted by SCE in 1976-1977 to identify alternative routes between Devers Substation and PVNGS within a 6,000-square-mile area. Subalternate routes were evaluated in the DPV1 Draft Environmental Impact Statement (DEIS) prepared by the USDOI-BLM and NRC (BLM and NRC, July 1978). These agencies selected the preferred route for the DPV1 transmission line that was constructed in 1982 following state approvals by the CPUC and the Arizona Corporation Commission (ACC).

After construction of the DPV1 line, applications to construct the DPV2 500kV transmission line using the proposed route between Devers Substation and PVNGS were submitted by SCE in 1985. The CPCN application and PEA included the proposed route and four subalternates from the DPV1 studies that were completed in 1978. Agency approvals and other actions pertaining to the DPV2 project are described as follows, and listed in Table 3-1.

TABLE 3-1 DPV2 AGENCY APPROVALS AND OTHER ACTIONS			
Document	**Date**	**Agency**	**Action**
CPCN Application including PEA	12/85	CPUC	Initial filing
Draft Environmental Impact Report	03/87	CPUC	State of California public and agency review
Supplemental Draft Environmental Impact Statement	05/87	USDOI/BLM	Review in compliance with NEPA
Final EIR	08/05/87	CPUC	Compliance with California Environmental Quality Act
Arizona Certificate of Environmental Compatibility Application filed (Case No. 76)	11/16/87	ACC	Filed application for state of Arizona review (withdrawn)
Amended CPCN Application/PEA filed (No. 85-12-012)	08/88	CPUC	Incorporated SCE/Division of Ratepayer Advocates cost/benefit study
Addendum to FEIR	09/88	CPUC	Review required for amended PEA
Final SEIS	10/88	USDOI/BLM	Proposed project and route adjacent to DPV1 approved
Interim Opinion (Decision No. 88-12-030)	12/09/88	CPUC	Interim Order Granting conditional approval for CPCN and route
Record of Decision	02/21/89	BLM	Approved project and preferred route in compliance with NEPA
Certificate of Right-of-Way Compatibility	03/01/89	USFWS	Certified compatibility of 500kV transmission line on KOFA NWR land
Right-of-Way Grant (CA-17905/AZ-23805)	08/11/89	BLM	Right-of-way permitted across federal land
SCE Ten-Year Plan filed	02/28/94	ACC	Notice of SCE's plan to construct in Arizona

SCE applied to the CPUC for a CPCN for DPV2 in 1985. Following reviews of SCE's PEA (1985) and the CPUC EIR (1987) and subsequent filing and review of SCE's 1988 Amended Application and PEA (SCE 1988), the CPUC issued a decision approving the then proposed route for DPV2. The Interim Order issued in December 1988 granted a CPCN to SCE that allowed construction of the project, conditioned upon compliance with an environmental mitigation program and other conditions as specified in the CPUC Final EIR (1987).

The USDOI – BLM approved the DPV2 project and the proposed route following completion of a FSEIS (BLM 1988) in compliance with NEPA, and issued a ROD in 1989. Later that year, the BLM issued a Right-of-Way Grant to SCE for the construction, operation, and maintenance of DPV2 across federal land, pursuant to Title V of the Federal Land Policy and Management Act

of 1976. In 1989, USFWS issued a CRC for the portion of the DPV2 route that crosses the KOFA NWR in Arizona.

The route that was proposed in the 1985 Application and PEA, and 1988 Amended Application and PEA, followed the existing DPV1 line and terminated at PVNGS. The termination point of the 500kV transmission line route that is proposed in the current application is the Harquahala Generating Station Switchyard, located approximately 16 miles directly northwest of PVNGS (see Map 1-1). The distance of the proposed route between Devers Substation and the Harquahala Generating Station is approximately 230 miles and follows the existing DPV1 line for a distance of 225 miles, approximately 8 miles shorter than the route proposed in the previous DPV2 applications.

The majority of the proposed Devers-Harquahala 500kV transmission line would be constructed within the 130-foot-wide right-of-way on public land granted in perpetuity to SCE for the DPV2 project by the BLM in 1989. The right-of-way was granted for a total of 149.9 linear miles of public land between Devers and PVNGS, 57.2 miles in California and 92.7 miles in Arizona, including land managed by the BLM, USFWS, U.S. Department of Defense (DOD), and U.S. Bureau of Reclamation (USBR). The proposed Devers-Harquahala 500kV transmission line route would require a total of 136.6 miles of public land, as shown in Table 3-2. The Devers-Harquahala 500kV route also is within utility corridors as designated in the BLM RMPs for each of the respective BLM planning areas in Arizona and California. Construction would proceed as authorized by the BLM, incorporating the mitigation measures identified in the final versions of the FEIR, FSEIS, ROD, Right-of-Way Grant, CEC, and CRC.

TABLE 3-2 DPV2 RIGHT-OF-WAY GRANT AND PROPOSED DEVERS-HARQUAHALA 500kV TRANSMISSION LINE RIGHT-OF-WAY		
Land Management Agency	**Total Miles of Right-of-Way**	
	DPV2 Right-of-Way Grant (BLM 1989)	**Proposed Devers-Harquahala 500kV Transmission Line**
BLM	123.8	110.5
USFWS	26.1	26.1
Total	**149.9**	**136.6**
Note: BLM land withdrawals include DOD, Yuma Proving Ground (0.1 mile); USBR, CAP Canal (0.1.mile). USFWS land includes the KOFA NWR (23.8 miles) and Coachella Valley NWR (2.3 miles).		

Additional right-of-way requirements include Arizona State Trust Land (10.8 miles), California State Land (0.6 mile), Agua Caliente Indian Reservation (0.1 mile), and private land (81.6 miles). Some portions of the right-of-way were previously acquired from private owners by SCE. The Devers-Harquahala 500kV right-of-way acquired on private land, adjacent to the DPV1 right-of-way, will be a minimum of 130 feet wide.

Reinforcement of the 230kV system west of Devers was planned for the proposed 1985 DPV2 project. The proposed DPV2 project, for which SCE is now requesting CPUC approval, also includes upgrades to SCE's 230kV system west of Devers. The proposed improvements would be constructed within SCE's existing right-of-way that consists of one set of double-circuit towers and two separate sets of single-circuit structures between Devers and San Bernardino Junction (40 miles). San Bernardino Junction is the intersection of 230kV transmission line corridors located 3.4 miles south of the San Bernardino Substation. The proposed 230kV system upgrade west of Devers would require the removal of an existing single-circuit 230kV transmission line on wood H-frame structures, and the removal of an existing single-circuit 230kV transmission line on lattice steel structures between Devers and San Bernardino Junction; replacement with a new double-circuit 230kV line; and reconductoring and modification of the existing double-circuit 230kV line. Also, the upgrade would require reconductoring both circuits on an existing double-circuit 230kV tower line between Vista Substation and San Bernardino Junction. In addition, one circuit on each of the two existing double-circuit 230kV tower lines

between the San Bernardino Junction and San Bernardino Substation (3.4 miles) would be reconductored.

The upgrade will result in four 230kV circuits, each with new 1033.5 thousand circular mil (kcmil) ACSR bundled (two) conductors.

3.1.2 Alternatives – Devers-Harquahala 500kV Segment

3.1.2.1 Alternative Routes

Alternative routes described in this chapter include subalternates considered and eliminated in the DPV1 EIS; the 1985 DPV2 PEA (amended in 1988); as well as alternatives considered in this PEA. Following is a description of the subalternate routes considered in the 1985 DPV2 PEA as amended in 1988, and a review conducted in 2002-2003 to update the subalternate route conditions. Alternatives to be considered in this PEA also are described in this chapter, with resource analysis following in Chapters 4 and 5.

Alternative Routes Considered and Eliminated

Studies were conducted to evaluate both electrical system alternatives and routing alternatives to the proposed DPV2 project. The electrical system alternatives are described in Chapter 2, Purpose and Need, of this document. Four subalternate routes for the portion of the line proposed between Devers and PVNGS were evaluated to address potential sensitivities in the Blythe and KOFA NWR areas. The subalternate route evaluation was documented at successive stages of project development for the 1985 PEA and amended 1988 PEA.

Following are summary descriptions of the subalternate routes considered in the 1988 amended PEA (SCE 1988) and impacts related to specific resources that potentially would result from the

construction and operation of the DPV2 project for each of the subalternate routes. (See Appendix D, Chapter 10, page references noted below are from the 1988 PEA.)

A comparison of the proposed and subalternate routes is provided in Table 3-3. The subalternate route segments range from 82.3 to 90.6 miles long, and include links that comprise the route segments between common points, as listed in the table and shown on Map 3-1. (Links 1 and 13 are common segments at the eastern and western ends of the network of subalternate routes.)

TABLE 3-3
DEVERS-HARQUAHALA 500KV TRANSMISSION LINE
PROPOSED AND SUBALTERNATE ROUTE COMPARISON

Description of Proposed and Subalternate Routes	Link Numbers	New 500kV Towers (number in segment)	Length of Route Segment		Ground Disturbance	
			Route (miles)	New Access and Spur Roads (miles)	Temporary Construction Areas (laydown areas, tensioning and pulling sites, in acres)	Permanent Area (access and structure footings, in acres)
Proposed Route	2, 6, 8, 10, 12	258	79.0	5.4	275	9
Subalternate 1	3, 4a, 4b, 4c, 6, 8, 10, 12	271	82.4	48.3	288	82
Subalternate 2	3, 5, 11,12	282	82.3	79.7	298	135
Subalternate 3	2, 6, 7, 9	296	90.6	36.7	314	62
Subalternate 4	3, 4a, 17, 4c, 6, 8, 10, 12	277	84.1	50.1	294	85

Subalternate Route 1 (Links 3, 4a, 4b, 4c, 6, 8, 10, and 12). This route was originally part of a subalternate route in Arizona that was evaluated in the BLM's EIS (1978) for the DPV1 transmission line. Subalternate Route 1 was selected for further evaluation for the 1985 DPV2 project at the time of the previous studies in response to potential concerns regarding impacts to the KOFA NWR and protection of the desert bighorn sheep. This route would cross BLM land located north of the KOFA NWR boundaries (as delineated at the time of the previous studies).

Map 3-1
SUBALTERNATE ROUTES CONSIDERED IN THE 1988 PEA

Devers - Palo Verde No. 2 Transmission Line Project

Sources

United States Geological Survey (USGS), Phoenix, AZ (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Arizona land ownership, EPG, Inc. 2000. Arizona land jurisdiction, Town of Quartzsite, 2003. KOFA, U.S. Fish and Wildlife Service. U.S. Bureau of Land Management, California State Office, June 1998. U.S. Department of the Interior, Bureau of Land Management, BLM Arizona Access Guide (La Posa), October 1999. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 2.5 5 10 Miles

SOUTHERN CALIFORNIA EDISON
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epg

m:/projects/sce/devers/arizona/mxds/1988PEA_subalts2.mxd

Land Ownership

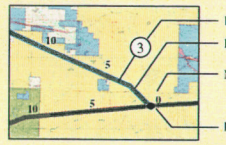
- Bureau of Land Management
- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- Native American Tribe
- Yuma Proving Ground
- State
- Private

Land Jurisdiction

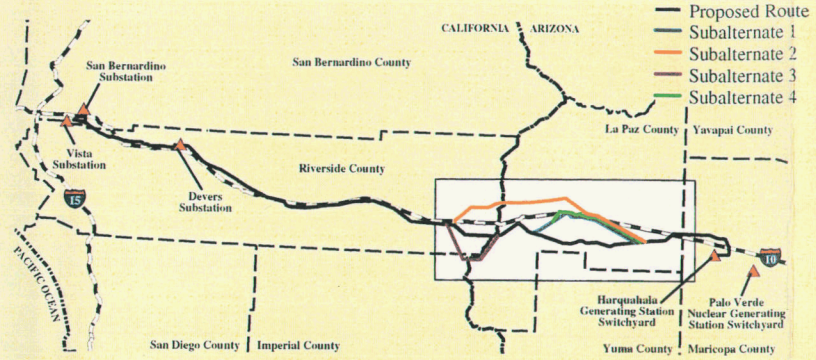
- Municipal Boundary

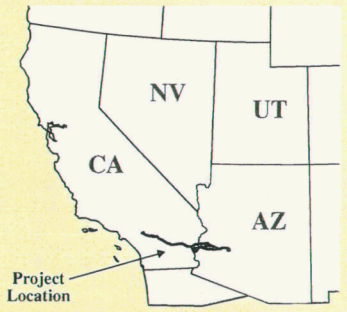
General Reference Features

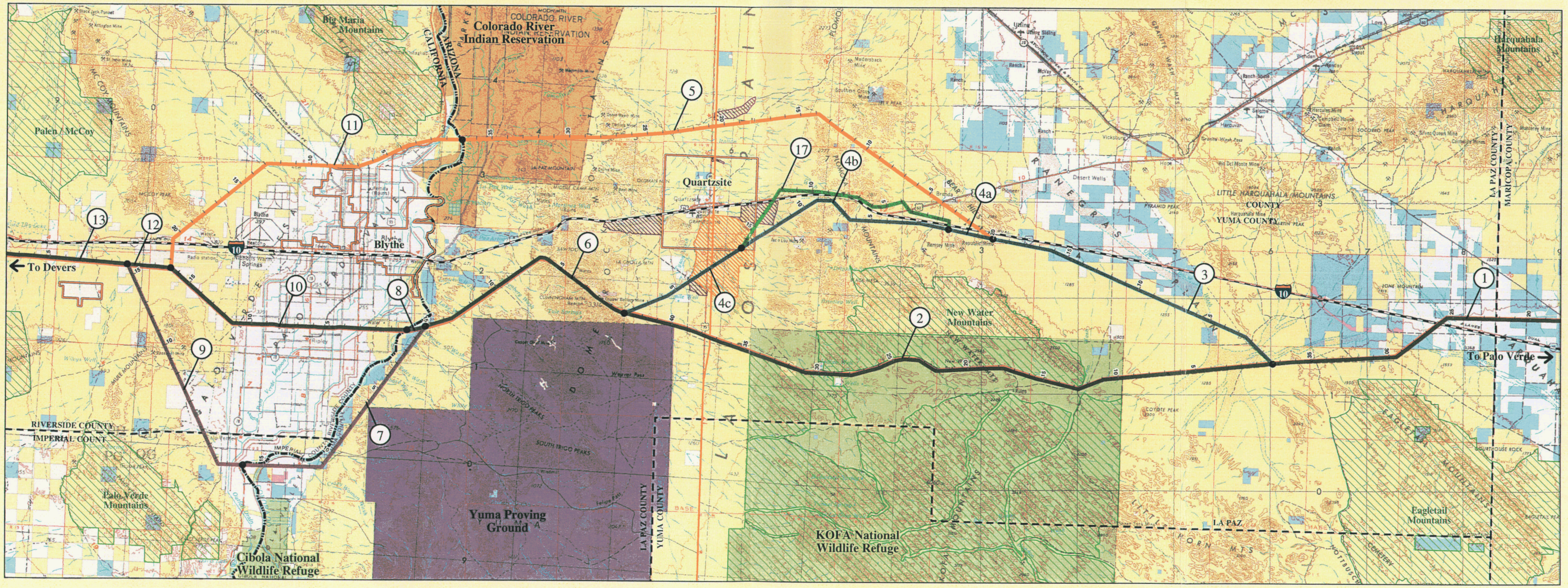
- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- State Boundary
- County Boundary
- Substation/Switchyard
- Wilderness
- BLM La Posa Designated Camping Area
- BLM La Posa Long-Term Visitor Area



Panel Index Map







However, the route would have crossed the New Water Mountains Wilderness Study Area (WSA), on BLM land, as well as a contemplated expansion area of the KOFA NWR along the southern side of I-10. This subalternate route would be 3.4 miles longer than the proposed route (Link 2) and result in 82 acres of permanent ground disturbance, compared to 9 acres for the proposed route (see Table 3-2).

SCE's 1988 amended PEA concluded that the following impacts would result from Subalternate 1:

- Movement of wildlife species – The need for new construction access in a separate corridor would result in potentially greater adverse impact to bighorn sheep than the preferred route (1988 PEA, p. 10-75); potentially significant impact to an area of major sensitivity (within proposed KOFA NWR expansion area) (1988 PEA, p. 10-60); and impacts to Tyson Wash (Link 4c).

- Recreation use – Significant impacts to the BLM La Posa Recreation Site and Long-Term Visitor Center – (Link 4b-4c) and views from the site (1988 PEA, pp. 10-56 – 10-84).

- Visual resources – Significant impact from construction of the project in a new corridor in areas of Class A and Class B scenic quality (Link 4b); significant impact to scenic value of views from I-10, parallel to the transmission line in a new corridor with strong visual contrasts (Link 4a-4b), and crossing Highway 95 in the La Posa Plains (Link 4c); significant impact to views from residences (Link 4c) (1988 PEA, pp. 10-78 – 10-81).

Subalternate Route 2 (Links 3, 5, 11, and 12) – Subalternate 2 is a portion of Subalternate Route "P," that was evaluated in the DPV1 DEIS, in response to concerns regarding agricultural impacts in the Palo Verde Valley for the proposed route. Subalternate Route 2 would cross agricultural land on the Colorado River Indian Tribe (CRIT) Reservation, and would be 3.3 miles longer than the proposed route (Link 2). This route would result in approximately 135 acres of permanent ground disturbance compared to 9 acres for the proposed route.

The CRIT Tribal Council previously denied SCE a right-of-way for the DPV1 line in 1977, indicating that it would adversely impact the tribes. At the time of SCE's 1988 amended PEA, the CRIT indicated that a right-of-way would not be approved for the proposed DPV2 project.

Resource impacts that would occur if Subalternate Route 2 was selected include the following:

- Agricultural land – potentially significant impacts to prime farmland (Links 7 and 11) (1988 PEA p. 10-58).

- Visual resources – Significant impact from construction of the project in a new corridor in areas of Class A and Class B scenic quality in the northern portion of the Plomosa and Dome Rock mountains (Link 5), in the Colorado River riparian area (Link 5), and through agricultural land in the Palo Verde Valley of California (Link 11). Significant impact to scenic values for views from I-10 with strong contrasts south of Bear Hill and west of Blythe Airport (Link 11); State Route (SR) 95 in the La Posa Plains; US 60 west of Brenda, Poston Road, and Midland Road (Link 5); and US 95 north of Blythe (Link 11). Significant impact to residential views near Brenda (Link 5) and along the Colorado River (Link 11) (1988 PEA, p. 10-78 – 10-84).

- Movement of wildlife species – Significant impact to high-quality bighorn sheep habitat (Link 5) including a major movement corridor between Ibex Peak/Haystack Peak and Lazarus Tanks mountain block and nearby lambing areas in the north Plomosa Mountains.

Subalternate Route 3 (Links 2, 6, 7 and 9) - This subalternate route was not evaluated in studies conducted initially for the DPV1 line, but was considered in the studies for the 1985 DPV2 project (1985 PEA) in response to concerns regarding agricultural impacts in the Blythe area. This subalternate route crossed the Palo Verde Valley in California, about 10 miles south of the DPV1 crossing through a portion of Imperial County. Subalternate Route 3 would be 11.5 miles longer than the proposed route. The subalternate route would cross 3.8 miles of farmland (Links

7 and 9), which would be less than the 9.8 miles of farmland on the proposed route (Links 8, 10, 12). Because Subalternate Route 3 is 11.6 miles longer than the proposed Devers-Harquahala 500kV transmission line, the resultant area of permanent ground disturbance would be 62 acres, or 53 acres greater than the proposed route (see Table 3-3). Even though impact to agricultural land would be less, the overall impact to ground disturbance would be greater.

Construction on Subalternate Route 3 would result in significant impacts, as follows:

- Visual impacts – Significant impacts to scenic values and residences at the Colorado River crossing and riparian area, and Palo Verde Mesa (Links 7 and 9); significant impacts at CA 78 highway crossing (Link 9); significant impacts to the BLM Oxbow Recreation Site (Link 7) and Imperial County Palo Verde Park (Link 9) (1988 PEA, pp. 10-78 – 10-84).

- Cultural resources – Impact to significant archaeological sites including the Ripley Intaglio and two other major intaglio groups; potentially significant impacts to sensitive areas in the Colorado River terraces, Mule Mountain, and the Palo Verde Mesa would result from construction of new access (Links 7 and 9) (1988 PEA, pp. 10-60 – 10-62).

Subalternate Route 4 (Links 3, 4a, 17, 4c, 6, 8, 10, and 12) – Subalternate Route 4 is the same as Subalternate Route 1, except that Subalternate Route 4 would follow a portion of the All American Pipeline corridor north of I-10 in Arizona (Link 17 instead of Link 4b), crossing I-10 twice and U.S. Highway 60 once. Impacts would be comparable to Subalternate Route 1, with the addition of the following:

- Wildlife species – Potentially significant impact to the area north of I-10, between Ranges 16 and 18 West (Link 17), identified in the BLM's Lower Gila South RMP as bighorn sheep lambing grounds, unsuitable for overhead transmission lines (1988 PEA, pp. 10-55). Although Subalternate 4 would avoid crossing the KOFA NWR, it would

have potentially greater adverse impact to bighorn sheep than would the preferred route (1988 PEA, pp. 10-75).

- Visual impacts – Significant impacts to viewers of the line that would be constructed parallel to I-10 in a new corridor, at the two highway crossings east and west of the Plomosa Mountains (Link 17), and crossing US 60 southwest of Brenda (Link 17); significant impacts to residential viewers near Brenda and the BLM La Posa Recreation Site (Link 17) (1988 PEA, pp.10-80 – 10-84).

Construction of Subalternate Route 4 would disturb approximately 85 acres, or 76 more acres of permanent ground disturbance than the proposed route (see Table 3-3).

The USFWS agreed that the preferred DPV2 route through the KOFA NWR had less impact than Subalternate Route 1. As stated in the CRC issued by the USFWS for KOFA NWR, "the preferred alternative route [for the Devers-Palo Verde #2 500kV Transmission Line depicted in the SEIS]...is compatible with the purpose for which the land was acquired, subject to established mitigation measures and the stipulation that no further above-ground utility development of this corridor be permitted after construction of this [DPV2] transmission line" (USFWS 1989).

Results of the 2003 Review of Subalternate Routes and Proposed Route

In conjunction with the environmental studies conducted for this PEA in 2002-2004, SCE and Environmental Planning Group (EPG) conducted a review of the current conditions within the proposed and four subalternate corridors for the Devers-Harquahala segment in order to document changes that may have occurred during the period since the 1988 FEIR/Final SEIS. Reviews of agency land management plans and updates, aerial imagery, and ground and aerial field reconnaissance also were conducted. Results of the current review indicated that no

significant changes had occurred that would alter the selection of the proposed route for the DPV2 transmission line that received conditional approval in 1988.

The overriding factor in this evaluation is that existing access for construction and maintenance of the Devers-Harquahala 500kV line would be available along the DPV1 corridor. In general, consolidating transmission lines within common utility corridors is desirable because it minimizes: land disturbance, barriers to wildlife movement, and additional visual impacts that typically result from separate transmission line corridors. Constructing the project within a corridor separate from the designated utility corridor that includes DPV1 would be inconsistent with the BLM RMPs. Plan amendments would be needed in order for the BLM to grant alternative rights-of-way. The 3-mile portion of the DPV1 line through Copper Bottom Pass was constructed on double-circuit structures, including installation of conductor wires for the DPV2 circuit. Consequently, there is no need to build additional structures or acquire additional right-of-way, and no new impact would occur for this segment.

None of the subalternate routes that were evaluated in the studies would be preferable to the proposed route based on environmental, technical, or economic factors. The environmentally preferred route, approved in 1988 by the CPUC and in 1989 by the BLM, for the 1985 DPV2 500kV transmission line would therefore remain as the proposed route for the currently proposed Devers-Harquahala 500kV line, except that the Devers-Harquahala line would terminate at Harquahala and not the PVNGS switchyard.

The review of the proposed and subalternate routes identified no additional areas of significant impact. Also, specific areas of significant or potentially significant impact that were identified in the previous studies for the 1985 DPV2 and 1988 amended PEA were unchanged. In conclusion, the proposed route for the 1985 DPV2 500kV transmission line remains the environmentally preferred route for the proposed Devers-Harquahala 500kV transmission line.

The proposed Devers-Harquahala 500kV transmission line route would terminate at the Harquahala Switchyard instead of the PVNGS Switchyard, which was the original termination point in the 1988 amended PEA and 1988 FSEIS.

Alternative Routes Considered and Evaluated

Alternatives to the proposed action considered and evaluated in this PEA for the Devers-Harquahala transmission line route include two subalternate routes for the portion of the 500kV transmission line in Arizona—the Harquahala-West Subalternate Route and the Palo Verde Subalternate Route. The subalternate routes are described below, and are shown on Map 3-2a.

Harquahala-West Subalternate Route

This subalternate route would exit the Harquahala Switchyard directly to the west for 12 miles, then follow the El Paso Natural Gas pipeline corridor northwest for 9 miles to its intersection with the proposed Devers-Harquahala 500kV route. The route would be located in a designated BLM Utility Corridor. New right-of-way would need to be acquired across private, state, and BLM land. The Harquahala-West Subalternate Route would be 14 miles shorter than the proposed route (a total distance of 216 miles), and would require about 48 fewer 500kV towers than the proposed route.

Steel lattice towers would be used for the portion of the route across desert land west of Centennial Wash to the intersection with DPV1 at the Wendon Pump Station. The Harquahala-West Subalternate Route would be constructed using tubular steel pole structures from the Harquahala Generating Station to the Centennial Wash to reduce the affected ground area across farmland. Spur roads would be built from the existing access road along the pipeline for construction of towers, and a new access road would be required along the section lines between the Harquahala Switchyard and the pipeline road. A minimum of 160-foot-wide right-of-way

would need to be acquired on BLM land, and a minimum of 200-foot-wide right-of-way would need to be acquired on state and private land.

Construction of the Harquahala-West Subalternate Route would result in a greater amount of adverse environmental impact than the proposed route, as indicated in Section 5.3.1. Because this subalternate route would not be parallel to an existing transmission line, visual impacts to residential viewers would occur. Also, construction of a new access road for a portion of the subalternate route would be required, causing about 10 acres more ground disturbance than the proposed Devers-Harquahala route.

Currently, Arizona Public Service Company (APS) is planning for the Palo Verde Hub to TS-5 500kV transmission line that may parallel DPV1 between the PVNGS interconnection area and the Central Arizona Project (CAP) Canal. If the Palo Verde Hub to TS-5 line is constructed in a manner that would preclude SCE from entering Harquahala switchyard from the east, then the Harquahala-West subalternate may become SCE's preferred route.

Palo Verde Subalternate Route

The proposed route for the Devers-Harquahala 500kV transmission line is generally parallel to SCE's existing 500kV DPV1, as shown on Map 1-1. Unlike the DPV2 route described in the 1988 PEA, the proposed project involves building a new 500kV transmission line from Devers to the Harquahala Generating Station switchyard terminus, and acquiring the existing Harquahala-Hassayampa 500kV transmission line.

As an alternative to the termination of DPV2 at Harquahala, and SCE's acquisition of the existing Harquahala-Hassayampa 500kV transmission line, the DPV2 line would terminate at the PVNGS Switchyard. This would require the construction of the Palo Verde Subalternate Route, a new 500kV transmission line parallel to the DPV1 transmission line for an additional 10 miles to the PVNGS switchyard. A diagram of the proposed and subalternate route construction

configurations is shown on Map 3-3 (end of Chapter 3). Although environmental impacts of construction and operation of the Palo Verde Subalternate Route would not be substantially more adverse than the environmental impacts resulting from the proposed Devers-Harquahala route, SCE's preference is to construct the proposed Devers-Harquahala route.

3.1.2.2 Midpoint Substation Alternatives – Joint DPV2 and Desert Southwest Transmission Project

In addition to the routing alternatives for the proposed 500kV line, the Midpoint Substation is considered as an alternative component that could be constructed in conjunction with the proposed DPV2 Project. This PEA includes the evaluation of one preferred site and two alternative sites for the substation that would be located south and west of Blythe, California, as shown on Maps 3-2a and 3-2b. Descriptions of the Midpoint Substation preferred site and alternative sites also are provided in Section 3.2.2.4.

The proponents of the California DSWTP are proposing to construct a 500kV transmission line from Blythe to Devers adjacent to the proposed Devers-Harquahala 500kV transmission line. Under a joint project proposal, only one instead of two 500kV transmission lines would be constructed since the parties would share a single 500kV transmission line. The joint project would include the construction of a 500kV substation. Initially, the Midpoint Substation would be equipped only with switching facilities to provide interconnections for the DPV1, Devers-Harquahala, and DSWTP 500kV lines. In the future, 500/230/161/66kV substation equipment would be installed. The Midpoint Substation would be completed in March 2009.

The preferred location for the Midpoint Substation, as shown in Map 3-2a, is about 10 miles southwest of Blythe, California, adjacent to SCE's DPV1 right-of-way. The preferred site is located on BLM land immediately west of IID's Blythe-Niland 161kV transmission line and Western's Blythe-Knob 161kV transmission line. A preliminary block diagram for the Midpoint

Substation is presented in Figure 3-1. The Midpoint Substation would be constructed within a rectangular area approximately 1,000 feet by 1,900 feet, or 44 acres. The switching facilities would be constructed within the Midpoint Substation property.

The 500kV switching station would include buses, circuit breakers, and disconnect switches. The switchyard would be equipped with 108-foot-high dead-end structures.

A new telecommunications facility would be installed on site to provide microwave and fiber optic communications for protective relaying and special protection scheme requirements. Three new microwave paths and two fiber optic systems would be installed at the Midpoint Substation site. The proposed fiber optic systems are Midpoint-Buck Boulevard Substation and Midpoint-Devers-Harquahala. The telecommunications facilities are described in Section 3.4.2.4.

A 45-foot by 70-foot mechanical-electrical equipment room would be installed on site to house all controls and protective equipment and a telecommunications room. A microwave tower also would be installed at the substation site.

A review of several potential siting areas for the Midpoint Substation was conducted by SCE in February 2004. The review considered engineering, environmental, and land availability criteria. Based on this review, a preferred site and two alternative sites were identified that would be feasible for construction and operation of the substation. These sites are described in Section 3.2.2.4 and indicated on Maps 3-2a and b.

3.1.3 Alternatives – West of Devers 230kV Transmission System

Reinforcement of the 230kV system west of Devers was planned for the 1985 DPV2 project, and evaluated in the 1987 EIR. That proposal called for reconductoring and rearranging 230kV circuits, including replacement of some of the towers subject to final engineering. The proposed

DPV2 project now includes modifications to four existing 230kV circuits for the entire route between Devers and Vista substations, and into the San Bernardino Substation.

The proposed improvements would be constructed within SCE's existing utility right-of-way that now contains four 230kV circuits on three sets of structures. Portions of the right-of-way also contain one or more 115kV lines that would remain in place. A detailed description of the proposed 230kV upgrade is provided in Section 3.3.2.

System alternatives have been considered and, as described in Chapter 2, the results of those studies indicate that construction of a new 230kV transmission line in a separate location would not meet the project objectives. The proposed upgrade would consolidate the existing lines on new double-circuit structures within the existing utility corridor. Rearrangement of the existing lines within the existing right-of-way would provide additional space for other transmission lines within the right-of-way, if any were needed in the future. The existing easements comprising portions of the corridor will require some upgrades to accommodate the proposed transmission line structures.

3.1.4 Permits or Other Actions Required Prior to Construction

The list of permits or approvals likely to be required to allow construction of the proposed DPV2 transmission line project is provided in Table 3-4. This list is not all-inclusive.

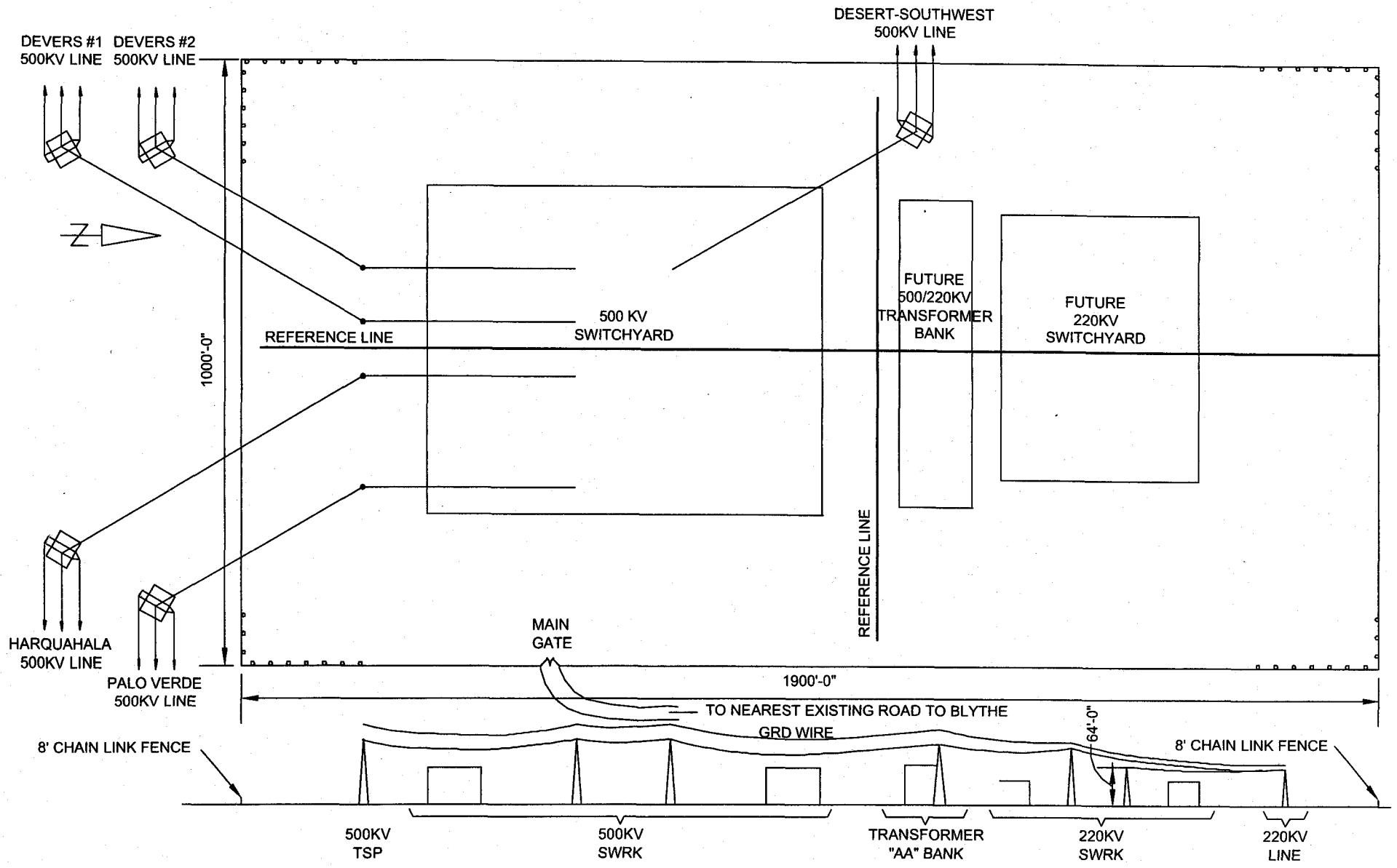


Figure 3-1
Midpoint Substation Block Diagram

Note: Not to Scale

TABLE 3-4
PERMITS OR OTHER ACTIONS REQUIRED PRIOR TO CONSTRUCTION OF THE DPV2 IN ARIZONA AND CALIFORNIA

FEDERAL

Bureau of Land Management
- Amended Right-of-Way Grant
- Notice to Proceed and Temporary Use Permits

U.S. Department of Defense - Army
- Right-of-Way Grant on Yuma Proving Ground-BLM land withdrawal

U.S. Fish and Wildlife Service
- Certificate of Environmental Compatibility for the KOFA NWR
- Right-of-Way Grant - crossing KOFA NWR and Coachella Valley NWR
- Consultation for Section 7 of the Endangered Species Act

U.S. Army Corps of Engineers
- Section 10 Permit – crossing Colorado River
- Section 401/404 Permit – streambed alteration/crossing

Federal Aviation Administration
- 7460(1) Permit
- Notice to Airmen

U.S. Bureau of Reclamation
- Right-of-Way Grant – crossing CAP Canal

Federal Communications Commission
- Licenses/permits related to Federal Communications Commission frequencies and paths

TRIBAL LAND/BUREAU OF INDIAN AFFAIRS

Agua Caliente Indian Reservation – Right-of-way/Easement

Morongo Band of Mission Indians – Right-of-way document

ARIZONA

State

Arizona Corporation Commission – Certificate of Environmental Compatibility

Arizona Department of Transportation – Encroachment/Crossing Permits

State Historic Preservation Office – Consultation for Section 106 of the National and Arizona State Historic Preservation Act

Arizona State Land Department – Right-of-Way Easement

Local and Regional

Maricopa County
- Road/Highway Encroachment/Crossing Permit
- Flood Control/Drainage Channel Encroachment/Crossing Permit

Harquahala Irrigation District
- Encroachment/Crossing Permit

La Paz County
- Road/Highway Encroachment/Crossing Permit
- Flood Control/Drainage Channel Encroachment/Crossing Permit

TABLE 3-4
PERMITS OR OTHER ACTIONS REQUIRED PRIOR TO CONSTRUCTION OF THE DPV2 IN ARIZONA AND CALIFORNIA

CALIFORNIA

State

California Public Utilities Commission – Certificate of Public Convenience and Necessity
State Lands Commission - Right-of-Way Easement
California Department of Transportation - Road/Highway Encroachment/Crossing Permit
Department of Water Resources – Colorado Aqueduct Encroachment/Crossing Permit
State Historic Preservation Office – Consultation for Section 106 of the National Historic Preservation Act

Local and Regional

Riverside County
Road/Highway Encroachment/Crossing Permit
Flood Control/Drainage Channel Encroachment/Crossing Permit

Palo Verde Irrigation District
Encroachment/Crossing Permit

San Bernardino County
Road/Highway Encroachment/Crossing Permit
Flood Control/Drainage Channel Encroachment/Crossing Permit

Cities
Road/Highway Encroachment/Crossing Permit
Flood Control Channel Encroachment/Crossing Permit
Temporary Use/Occupancy Permit - Material and Storage Yards
Regional Water Quality Control Board - Storm Water Pollution Prevention Plan

OTHER UTILITIES

El Paso Natural Gas – Pipeline Encroachment/Crossing Permit
Southern California Gas – Pipeline Encroachment/Crossing Permit
AT&SF Railroad – Encroachment/Crossing Permit

3.2 LOCATION

The proposed project would consist of the construction of a 500kV transmission line, approximately 230 miles long, from the high-voltage switchyard adjacent to the Harquahala Generating Station, west of Phoenix, Arizona, to SCE's Devers Substation near Palm Springs, California. Upgrades to SCE's existing 230kV transmission system west of Devers also would be required.

The proposed route between Harquahala and Devers, as shown on Maps 3-2a and 3-2b (end of Chapter 3), would generally parallel SCE's existing DPV1 500kV transmission line, of which approximately 102 miles are located in Arizona and approximately 128 miles are located in California. The proposed 230kV modifications west of Devers would be located within SCE's

existing rights-of-way between SCE's Devers and Vista substations, a distance of approximately 45 miles, and interconnecting with the San Bernardino Substation within an existing 3.4-mile-long right-of-way, as shown on Map 3-2c.

3.2.1 Termination Points

The Arizona segment of the proposed 500kV transmission line would terminate at the Harquahala Generation Station Switchyard, located in Maricopa County approximately 17 miles northwest of the PVNGS and 60 miles west of Phoenix. The Harquahala Switchyard is in Section 31, Township 2 North, Range 8 West; Gila and Salt River Base and Meridian.

While the proposed transmission line would physically terminate at the Harquahala Switchyard, SCE would utilize the existing Harquahala-Hassayampa 500kV transmission line and the existing Hassayampa to PVNGS 500kV interconnection to provide a path to the PVNGS Switchyard (see Map 3-2a).

An alternative termination point in Arizona would be the PVNGS Switchyard, which would be a direct Devers to PVNGS connection. This route is described in Section 3.1.2 as the Palo Verde subalternate route.

The California segment of the proposed Devers-Harquahala 500kV line would terminate at Devers Substation in Riverside County, north of Palm Springs, California. Devers Substation occupies portions of Sections 4 and 5 in Township 3 South, Range 4 East, San Bernardino Base and Meridian.

The 230kV system upgrade west of Devers would terminate where the existing 230kV lines currently terminate at Vista and San Bernardino substations. Vista Substation is located in the city of Grand Terrace, San Bernardino County, California in Section 32, Township 1 South,

Range 4 West. San Bernardino Substation is located in the city of Redlands in Section 18, Township 1 South, Range 3 West.

3.2.2 Description of the Proposed and Alternative Routes and Substation Sites

3.2.2.1 Proposed Devers-Harquahala 500kV Transmission Line Route

The total length of the proposed Devers-Harquahala 500kV transmission line route is approximately 230 miles. The proposed route parallels SCE's existing DPV1 single-circuit 500kV line for approximately 225 miles, and the existing Harquahala-Hassayampa 500kV line for approximately 5 miles. The proposed line would depart the Harquahala Switchyard and proceed in an easterly direction parallel to the Harquahala-Hassayampa 500kV line to a point where it would meet and parallel the existing DPV1 line. The route then turns north and proceeds approximately 2.7 miles to I-10, where it crosses I-10 and proceeds to a point 1 mile northwest of Burnt Mountain. The route then turns westerly and generally follows I-10 and the CAP Canal for approximately 20 miles through the Big Horn Mountains and across the Harquahala Plain to a point ½ mile north of I-10. From this point, the route turns southwest, crosses I-10, and proceeds approximately 5 miles where it meets the El Paso Natural Gas Company's existing pipeline just north of its Wenden Pump Station north of the Eagletail Mountains.

At this point, the route generally parallels the El Paso Natural Gas pipeline and DPV1 line for approximately 56 miles, crossing the Ranegras Plain, KOFA NWR, La Posa Plain, and Arizona State Highway 95, through the Dome Rock Mountains to the summit of Copper Bottom Pass. The route then turns southwesterly away from the pipeline, descends the western slope of the Dome Rock Mountains, and proceeds approximately 9 miles to a crossing of the Colorado River.

Upon crossing the Colorado River, the route leaves Arizona and passes into the Palo Verde Valley, 5 miles south of Blythe, California. The route proceeds westerly for approximately 10

miles to the top of the Palo Verde Mesa, then proceeds northwesterly approximately 4 miles to a point 2 miles south of I-10 and 5 miles southwest of the Blythe Airport.

At this point, the route proceeds westerly and generally parallel to I-10 and the DPV1 line for approximately 63 miles to a point in Shavers Valley where it turns northerly and crosses I-10 approximately 2 miles east of the Cactus City rest stop. After crossing I-10, the route parallels SCE's existing DPV1 and other transmission lines for the remaining 46 miles to Devers Substation.

3.2.2.2 Harquahala-West Subalternate Route

The Harquahala-West Subalternate Route would begin at the Harquahala Switchyard. Rather than departing the Harquahala Switchyard to the east paralleling the existing Harquahala-Hassayampa right-of-way, as described above for the proposed route, the Harquahala-West Subalternate Route departs the Harquahala Switchyard to the west and follows section lines due west for approximately 12 miles through private and state land to the El Paso Natural Gas pipeline corridor. This portion of the route parallels Courthouse Road approximately 1 mile to the north along section lines to the pipeline corridor. At the pipeline corridor, the transmission line would proceed northwesterly along the pipeline corridor for approximately 9 miles to the intersection with the DPV1 transmission line, immediately north of the El Paso Wendon Pump Station. From this point, the proposed transmission line parallels the southern side of the existing DPV1 transmission line to the west as described in Section 3.1.2. The length of the Harquahala-West segment between the Harquahala Switchyard and the junction with the DPV1 line and the proposed route is 21 miles. The Harquahala-West Subalternate Route would be approximately 14 miles shorter than the proposed route.

3.2.2.3 Palo Verde Subalternate Route

The Palo Verde Subalternate Route would be considered if the proposed 500kV transmission line were to terminate at the PVNGS Switchyard, rather than terminate at the preferred Harquahala Switchyard (see Map 3-2a and Map 3-3). Rather than leave the existing DPV1 transmission corridor and follow the existing Harquahala-Hassayampa 500kV transmission line west to the Harquahala Switchyard, this subalternate route would cross from the western side of the DPV1 transmission line to the east, and continue south, parallel to the DPV1 and Harquahala-Hassayampa 500kV lines. The alternative crosses predominantly BLM land southeasterly past Saddle Mountain, and follows the DPV1 transmission line to the PVNGS Switchyard. The total length of this subalternate route is approximately 240 miles, which is 10 miles longer than the proposed Devers-Harquahala transmission line route.

3.2.2.4 Midpoint Substation Preferred and Alternative Sites

The preferred and alternative sites for the Midpoint Substation are located west of the Palo Verde Valley and Blythe, California. The locations of the substation sites are described below and shown on Map 3-2b.

Preferred Site – This site is located approximately 5 miles south of I-10 and the Blythe Municipal Airport on BLM land in the northwest ¼ of Section 26, Township 2 North, Range 21 East, near the eastern bluff of the Palo Verde Mesa at Gravel Pit Road. The substation site would be directly north of and adjacent to the DPV1 right-of–way, in the northwestern quadrant of the junction of the DPV1 and Devers-Harquahala 500kV lines, IID's Blythe-Nyland 161kV line, and WAPA's Blythe-Knob 161kV line.

Alternative Site 1, Mesa Verde – This site is located approximately 4.5 miles northwest of the preferred site, also north of and adjacent to the DPV1 right-of-way on private land in the northwest ¼ of Section 8, Township 3 North, Range 21 East, about 1.5 miles south of I-10.

Alternative Site 2, Wiley Well – This site is approximately 5 miles due west of the Mesa Verde site, also north of and adjacent to the DPV1 right-of-way, about 17 miles west of Blythe. The site would be constructed in Section 5, Township 3 North, Range 20 East, about ½ mile east of Wiley Well Road on BLM land.

3.2.2.5 West of Devers 230kV Upgrade

This segment of the proposed project is located within existing SCE transmission line rights-of-way between Devers Substation, San Bernardino Substation, and Vista Substation. The right-of-way contains four existing 230kV circuits. The route between Devers and Vista substations is approximately 45 miles long. An additional 3.4 miles of right-of-way exists between San Bernardino Junction and the San Bernardino Substation.

The route departs from Devers Substation, located at the northern boundary of the city of Palm Springs, and proceeds westerly, parallel to the northern side of I-10 through the San Gorgonio Pass. It crosses portions of the Morongo Indian Reservation and the cities of Banning and Beaumont. Approximately 26 miles west of Devers, the proposed line crosses to the southern side of I-10 and proceeds west about 3 miles, across the southern portion of the city of Calimesa and into San Timoteo Canyon. The route proceeds through the San Timoteo Canyon in a northwesterly direction for approximately 7 miles, at which point it enters San Bernardino County, crossing the southwestern corner of the city of Redlands.

Exiting San Timoteo Canyon, the route enters the city of Loma Linda at San Bernardino Junction. It then proceeds north for 3.4 miles, across I-10 through a portion of the city of Redlands, and connects to the San Bernardino Substation, located in an unincorporated portion of San Bernardino County. From San Bernardino Junction, the route continues west for 5 miles through the city of Grand Terrace crossing I-215 and terminating at Vista Substation.

3.3 PROPOSED TRANSMISSION LINE FACILITIES

The proposed 500kV transmission line and upgraded 230kV transmission lines would consist of overhead wires (conductors), which form three electrical phases. The conductors would be supported by steel structures and steel poles and would be electrically isolated from the structures by insulators. In addition to the conductors, structures, and insulators, the proposed transmission lines would contain hardware and overhead optical fiber groundwires for telecommunications.

3.3.1 500kV Transmission Line Facilities (Devers-Harquahala)

The proposed 500kV transmission line is designed to operate at a nominal voltage of 525kV phase to phase and a maximum voltage of 550kV phase to phase. The transmission line capacity rating is limited to 2,700 amps under normal conditions and 3600 amps under emergency conditions.

A summary of the quantities for the proposed Devers-Harquahala 500kV transmission line is presented in Table 3-5.

TABLE 3-5 PROPOSED DEVERS-HARQUAHALA 500kV TRANSMISSION LINE SUMMARY	
Dimensions	
Length of line (miles, rounded to 1 mile)	230
Total right-of-way area (acres, rounded to 10 acres)	3,910
New Permanent Area Occupied (acres)	
Tower footings	7.4
Access roads	None (existing)
Spur roads	32.8
Substation	None (existing)
Series compensation	4.0
Telecommunications	0.2
Total	42.4
New Temporary Area Occupied (acres)	
Transmission line structures	694.0
Access roads	8.1
Construction yards, pulling/splicing and batch plant areas	129.2
Substation/switchyard (Harquahala and shunt reactor)	3.0
Series capacitor banks(2 sites)	6.0
Telecommunications (optical repeater)	1.2
Total	841.5
Number of Structures (approximate)	
New single-circuit lattice steel towers	709
Existing double-circuit lattice steel towers	13
New single-circuit H-frame structures	39
New single-circuit, tubular steel poles	23
Land Ownership (miles)	
State, California	0.6
State, Arizona	10.8
Federal (BLM, USFWS, USDOD, USBR)	136.5
Private	81.6
Indian Reservation (Agua Caliente)	0.1
Existing Utility Corridors (miles)	
Parallel to existing DPV1 500kV right-of-way	225
Parallel to existing Harquahala-Hassayampa 500kV right-of-way	5.0
Number of Crossings	
Primary highways	4
Secondary highways	15
Rivers and streams	1
Railroads	2
Notes: Affected area estimates are based on the following factors: 0.010 acre per lattice steel tower – permanent 0.005 acre per H-frame structure – permanent 0.002 acre per tubular steel pole – permanent 0.9 acre per tower pad – temporary 0.9 acre per pulling station, one every 3 miles – temporary 0.2 acre per splicing station, one every 3 miles – temporary 5.0 acres per construction yard, one every 40 miles – temporary 2.0 acres per batch plant, one every 30 miles – temporary Areas occupied by facilities installed within existing substation and communications site properties are not included in estimates.	

3.3.1.1 Structures

The proposed 500kV transmission line would utilize four types of structures:

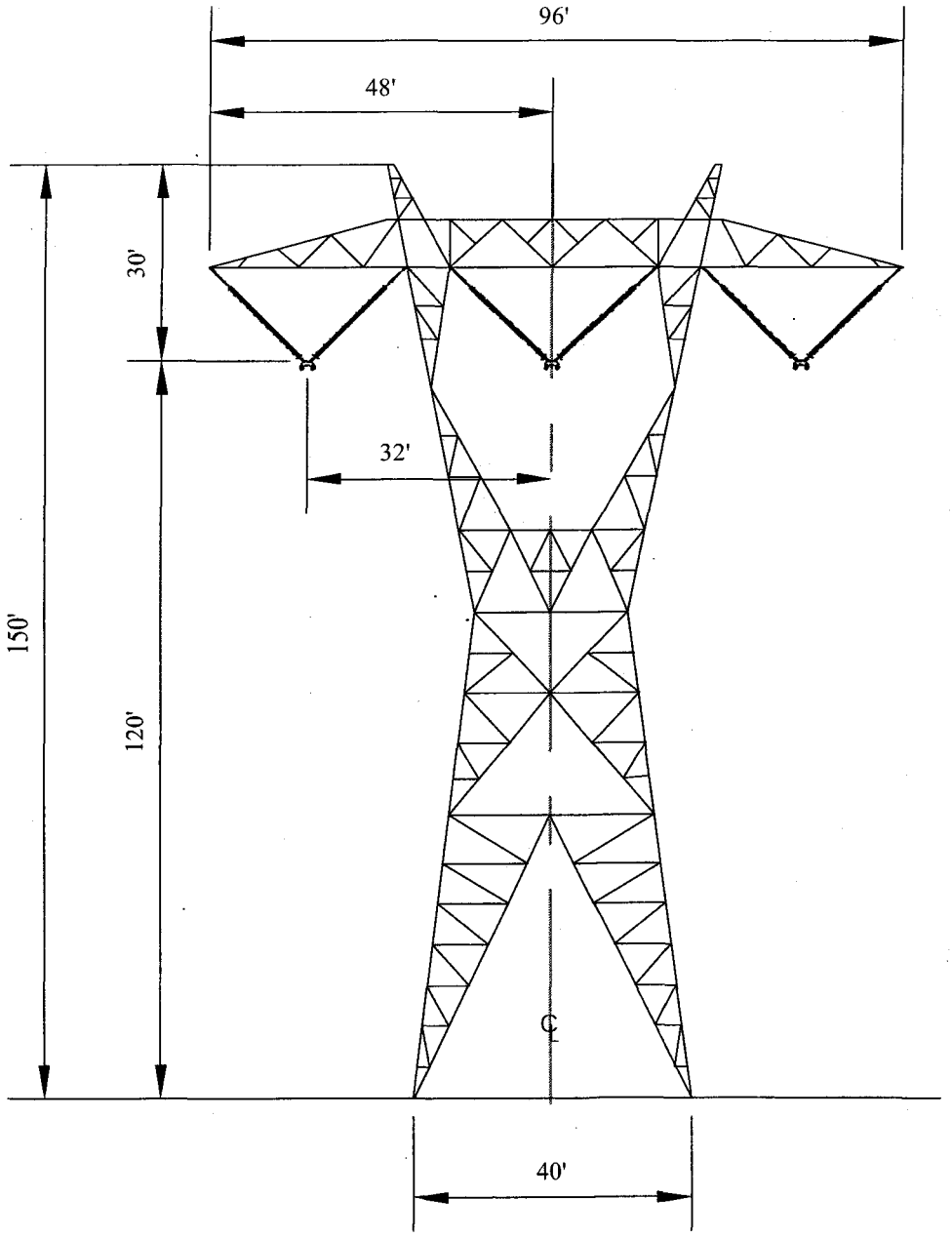
- four-legged single-circuit lattice steel towers
- four-legged double-circuit lattice steel towers (existing structures)
- two-legged (H-frame) single-circuit towers
- single-pole, tubular steel towers

The 709 new four-legged single-circuit lattice steel towers would be constructed of galvanized lattice steel angle members connected together by bolts. These towers would support one circuit consisting of three phases of conductors arranged in a horizontal (flat) configuration; the tower diagram is shown in Figure 3-2.

The 13 four-legged double-circuit towers are existing lattice steel towers which were constructed for the DPV1 line. They are located in the Copper Bottom Pass in the Dome Rock Mountains just east of the Colorado River in Arizona. These towers support two circuits, each consisting of three phases of conductors arranged in a vertical configuration. The DPV1 line is located in the first space and the proposed line would utilize the second space. The tower diagram is shown in Figure 3-3.

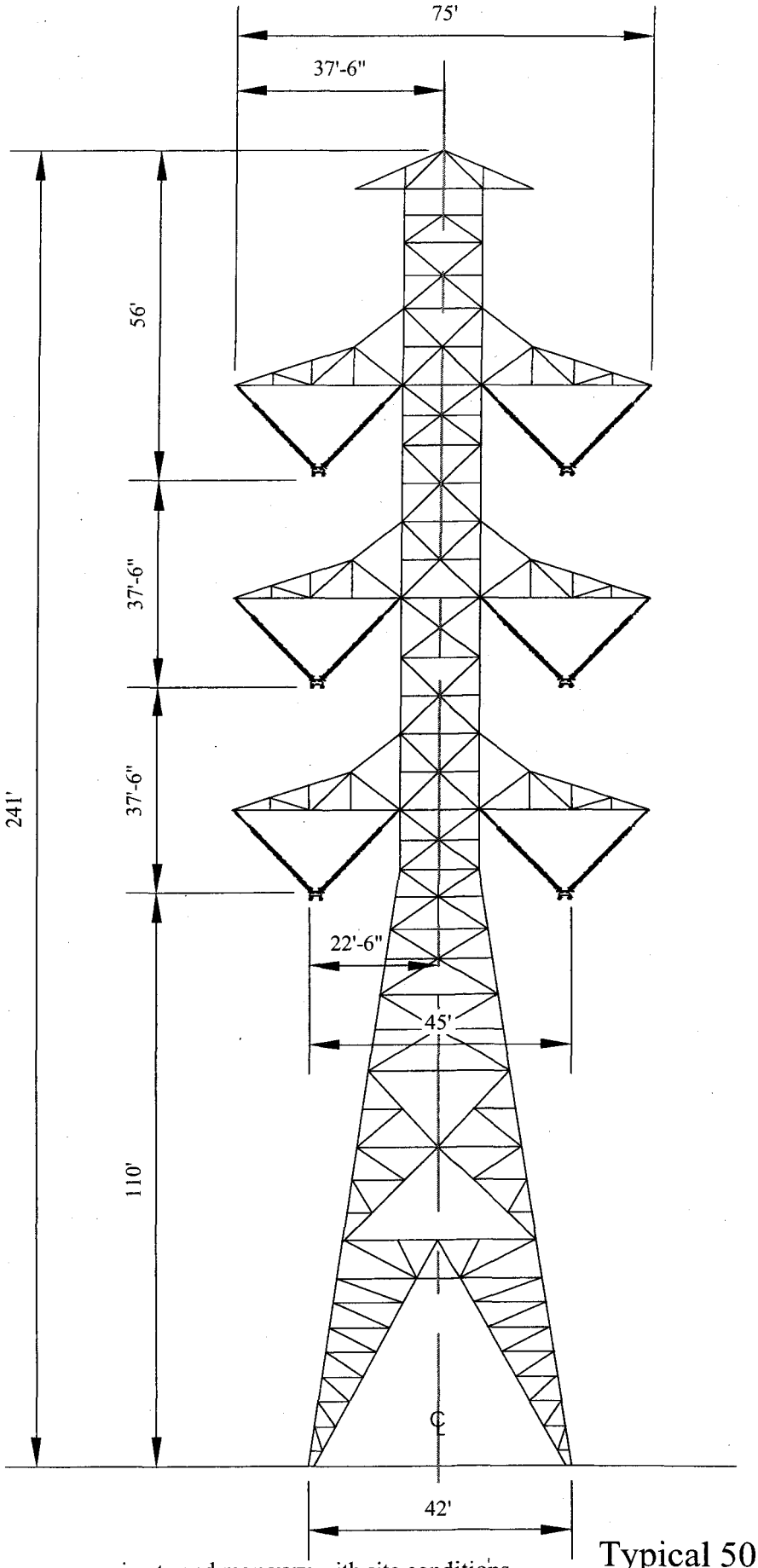
The 39 new two-legged single-circuit towers, also referred to as H-frames, would be used to cross farmland in the Palo Verde Valley to minimize impacts to farming operations. The towers would be constructed of galvanized lattice steel angle members connected together by bolts. These towers would support one circuit consisting of three phases of conductors arranged in a horizontal (flat) configuration. The tower diagram is shown in Figure 3-4.

The 23 new single-circuit tubular steel pole would be used to match the structure type along the 5-mile segment of the existing Harquahala-Hassayampa 500kV line. The pole diagram is illustrated in Figure 3-5.



Note:
Dimensions are approximate and may vary with site conditions.

Figure 3-2
Typical 500kV Single-Circuit
Lattice Steel Tower



Note:
Dimensions are approximate and may vary with site conditions.

Figure 3-3
Typical 500kV Double-Circuit
Lattice Steel Tower

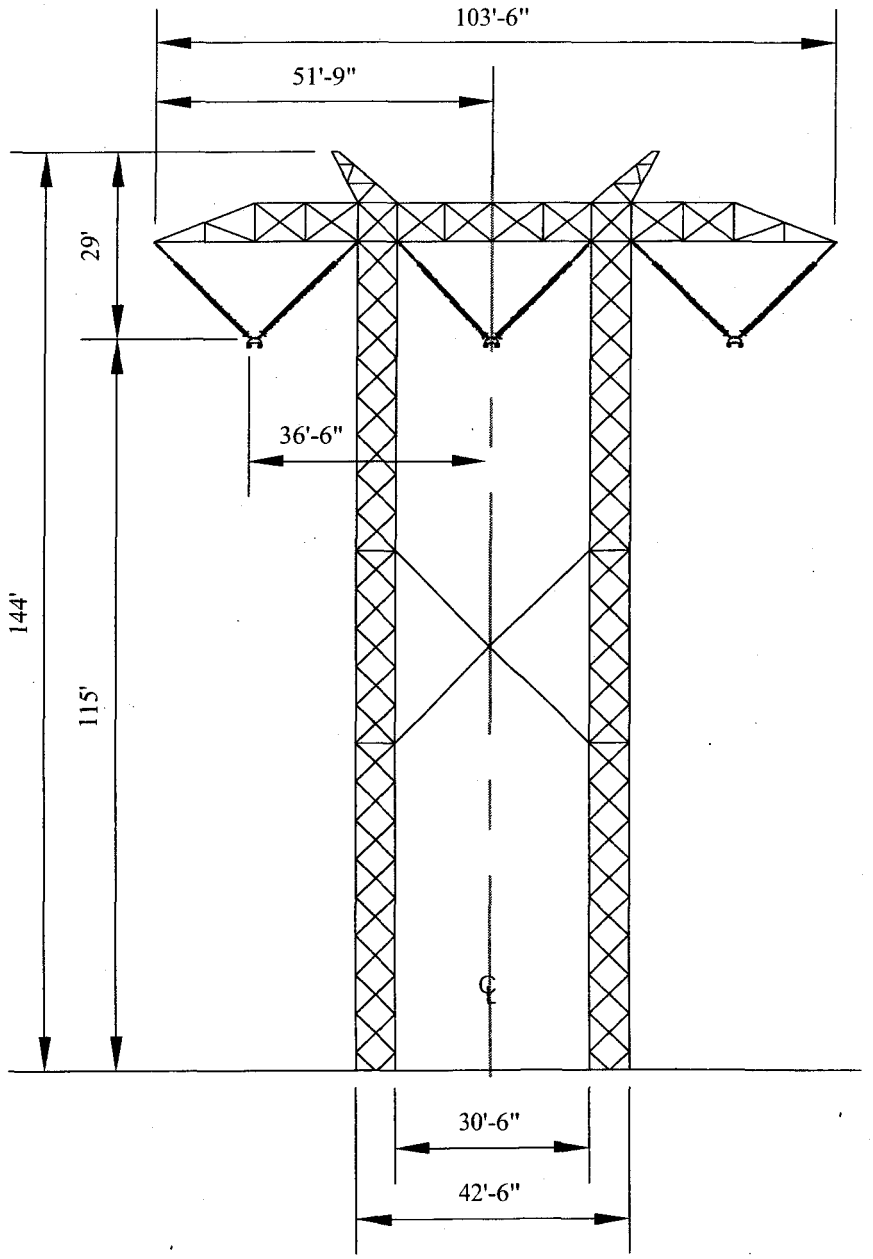
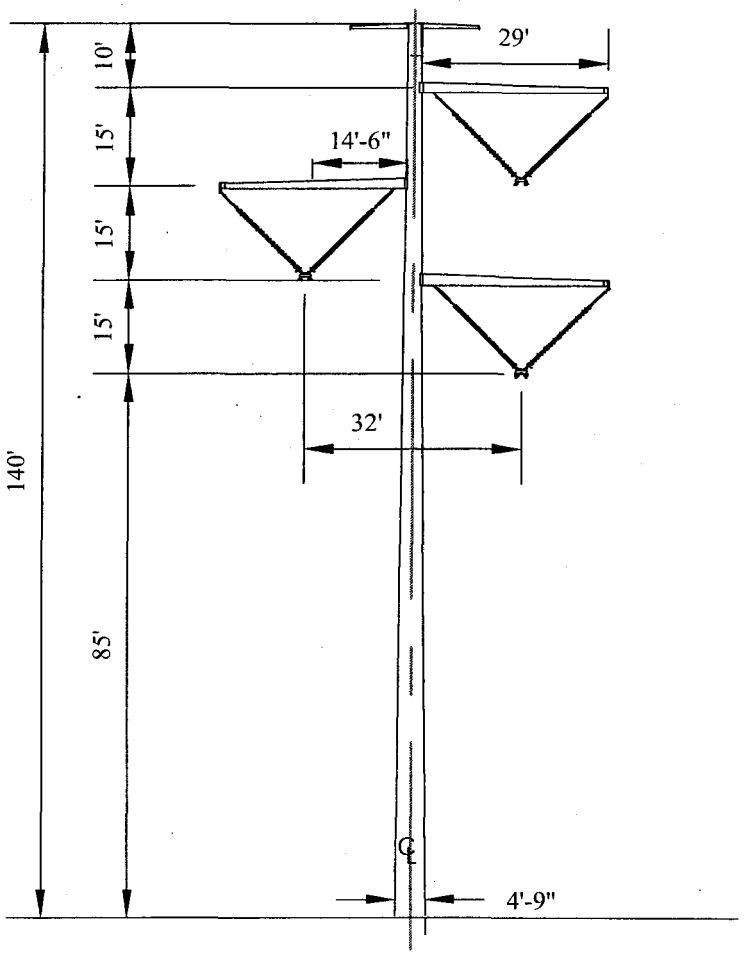


Figure 3-4
Typical 500kV Single-Circuit
"H - Frame" Tower

Note:
Dimensions are approximate and may vary with site conditions.



Note:
Dimensions are approximate and may vary with site conditions.

Figure 3-5
Typical 500kV Single-Circuit
Tubular Steel Pole

The transmission line would be composed primarily of tangent (suspension) type structures where the conductors approach and depart the structures in a straight line. The remaining towers would be heavier structures, which are either angle structures that suspend the conductor and allow a limited change in line direction, or dead-end structures, which are utilized for major changes in line direction. Although structure weights vary with height and specific load carrying capabilities, the approximate weight of each type of structure is as follows:

Structure Type	Weight (pounds)
Four-legged single-circuit tangent	32,000
Four-legged single-circuit angle	50,000
Four-legged single-circuit dead-end	80,000
Four-legged double-circuit tangent	125,000
Four-legged double-circuit dead-end	200,000
Two-legged single-circuit tangent	55,000
Tubular steel pole	38,000

The strength requirements for each structure location will be determined in final design with respect to projected weather data for various areas. Operational experience with the DPV1 line will be utilized to determine tower design parameters. Towers with higher wind resistance ability are anticipated to be utilized in Arizona.

The heights of the structures would vary depending upon the terrain, span length, and the presence of other facilities or features that the transmission line may cross such as rivers, roads, highways, railroads, telephone lines, and other power transmission and distribution lines. The typical overall structure height would be approximately 150 feet for the proposed four-legged, single-circuit lattice steel towers and approximately 144 feet for the proposed two-legged, H-frame towers. The existing four-legged double-circuit towers are approximately 241 feet in height.

Where feasible, the new Devers-Harquahala 500kV towers would be installed to match the overall height of the existing DPV1 towers, and new towers would be aligned horizontally with the existing DPV1 towers. However, the Independent System Operator has specified that the capacity of the line be 2700 amps under normal conditions and 3600 amps under emergency conditions, an increase from the 1988 DPV2 capacity rating. This capacity rating necessitates

that the heights of some of the proposed Devers-Harquahala towers be slightly taller than the adjacent DPV1 structures. In some locations, tower spacing may not correspond to the DPV1 structures, in order to provide adequate conductor ground clearance.

The conductor height also would vary, depending upon the same factors described above for the structures. The minimum conductor height above ground would be 35 feet between towers.

The typical structure foundations would require four to eight augured, cast-in-place concrete piles. The size and number of piles required would vary with the type of structure and soil conditions encountered at each tower site.

The average tower-to-tower spacing (span length) would be approximately 1,550 feet, or about 3.4 towers per mile of line for steel lattice towers. Span lengths generally range from a minimum of 400 feet to a maximum of 2,200 feet. The typical span length for tubular steel poles would be 1,320 feet, or four towers per mile. The exact quantity and placement of the structures is determined by the final detailed design of the transmission line, which is influenced by terrain, land use, environmental resource concerns, and economics.

Some tower locations and site installation conditions may require special tower placement according to government agency requirements. Special tower placements in these cases would be coordinated with the appropriate agency.

3.3.1.2 Conductors

Each 500kV phase would be a two-conductor bundle with a spacing of 18 inches between conductor centers. The typical conductor phase spacing for four-legged single-circuit towers is 32 feet as shown in Figure 3-2; for four-legged double-circuit towers it is 37.5 feet vertically and 45 feet horizontally as shown in Figure 3-3; for two-legged single-circuit towers it is 36.5 feet as shown in Figure 3-4; and for tubular steel poles it is 15 feet vertically and 32 feet horizontally as

shown in Figure 3-5. Each conductor is 1.762 inches in diameter, 2,156 kcmil, ACSR. With this type of conductor, the load current flows through the aluminum strands that are formed in a helix around the core of steel strands. The steel strands provide the mechanical strength to support the aluminum strands.

3.3.1.3 Insulators

The tangent and angle 500kV insulator assemblies would consist of two strings of insulators in the form of a "V." These strings are used to suspend each conductor bundle (phase) from the structure while maintaining the electrical clearance between these conductors, the ground, and the structure. The "V" string also restrains the conductor from swinging into the structure during winds. Each leg of the "V" assembly would contain one or two one-piece gray polymer insulators, depending on the conductor loads. On dead-end structures, the insulators are arranged in a barrel configuration consisting of four polymer insulators. The polymer insulators are visually similar to the porcelain type insulators used on the DPV1 line, but require less effort to install and less maintenance.

3.3.1.4 Hardware

Hardware required for the 500kV transmission line would include suspension clamps, dead-end assemblies, spacers, armor rods, vibration dampers, and other miscellaneous parts. All of the hardware used on the proposed line would be designed for corona-free operation throughout the maximum design voltages.

Conductor spacers would be installed along the lines to keep the two-phase subconductors from contacting each other. This avoids conductor damage due to impacts that would occur without these spacers. Armor rods would be installed at the points where the suspension clamps support the conductors. Armor rods increase the safety and reliability of the lines by minimizing the

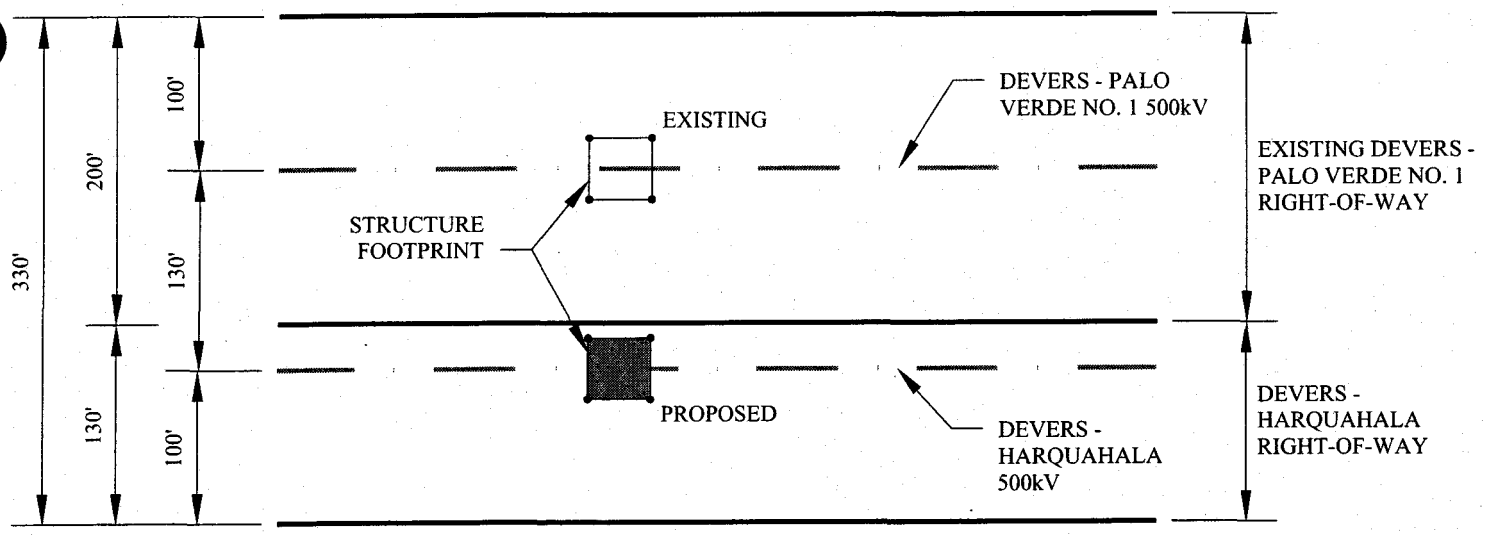
possibility of conductor damage resulting from flashovers of the insulator string and by protecting the conductor mechanically at the support point. Vibration dampers would be located on the conductor. This helps to prevent metal fatigue of the conductor strands by reducing the vibration caused by the wind.

3.3.1.5 Overhead Groundwires

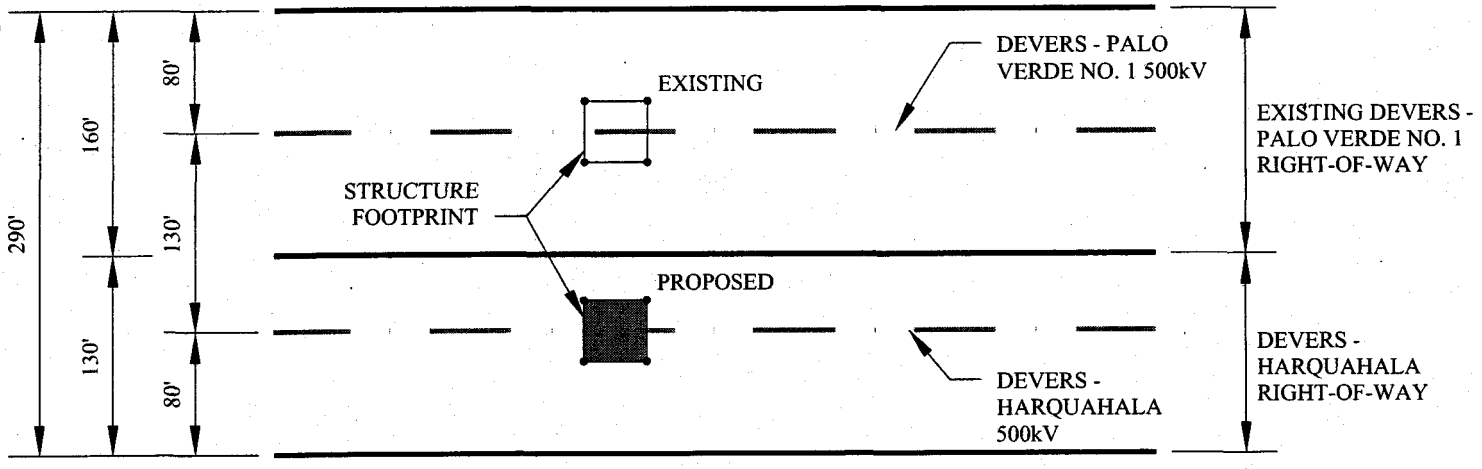
The overhead groundwires, located on the peaks of the transmission line structures, are used to intercept lightning that would otherwise strike the conductors. The 500kV structures would have two overhead groundwires, approximately 0.5 inch in diameter, supported on each of the two structure peaks. Any electric current from a lightning strike would be transferred to the ground through the groundwires and the structure. One of the overhead ground wires would contain optical fibers for communication and line protection purposes.

3.3.1.6 Right-of-Way

The majority of the right-of-way for the proposed Devers-Harquahala line is located adjacent to existing 500kV transmission line rights-of-way, including the DPV1 right-of-way for a distance of approximately 225 miles, and the Harquahala-Hassayampa 500kV transmission line right-of-way for a distance of 5 miles. The proposed 500kV transmission line would be constructed within a 130-foot-wide right-of-way on federal and state land, and within a minimum of 130-foot-wide right-of-way on private land and Indian Reservation land, where located adjacent to the existing DPV1 right-of-way (Figure 3-6). In 1989, the BLM granted a right-of-way to SCE for the DPV2 transmission line, which includes land managed by the BLM and USFWS as shown in Table 3-2. The proposed Devers-Harquahala 500kV line would be constructed within that right-of-way previously granted by the BLM.



TYPICAL RIGHT-OF-WAY ADJACENT TO DPV1 ON PRIVATE LAND, INDIAN RESERVATION, AND CALIFORNIA STATE LAND



TYPICAL RIGHT-OF-WAY ADJACENT TO DPV1 ON BLM AND ARIZONA STATE LAND

Figure 3-6
Typical Devers-Harquahala 500kV
Transmission Line Right-of-Way

The presence of utility or canal structures would require that the Devers-Harquahala 500kV right-of-way be separated from DPV1 or widened to accommodate those structures. In those locations where a separate right-of-way is required, the width would be 160 feet on federal or state land, and a minimum of 200 feet on private land. As shown on Figure 3-6, the centerline of the structures for the proposed Devers-Harquahala 500kV line would be separated by a minimum of 130 feet from the centerline of existing 500kV transmission line structures.

Exceptions to this configuration would be at the following locations:

- The edge of the DPV2 right-of-way would need to be expanded 75 feet by 320 feet for the construction of the series capacitor banks adjacent to the existing series capacitor banks in Arizona and California.

- The proposed Devers-Harquahala 500kV transmission line would be installed within the DPV1 right-of-way on existing double-circuit structures located in Copper Bottom Pass, a distance of approximately 3 miles, wherein no additional right-of-way would be required.

3.3.1.7 Access Roads

Construction of a new transmission line requires roads for construction crew, material, and equipment access to each tower site. After construction, these access roads are required to allow maintenance crews and repair vehicles access to each tower to inspect, maintain, and if necessary, repair or replace damaged towers, conductors, or insulators.

Existing streets and access roads would be used for construction access whenever possible. Existing access roads would be improved as required. No new main access roads are expected to be needed for the proposed route. Spur roads would be needed from the existing access roads to

the new tower sites. Some existing access roads deviate from the right-of-way in order to avoid environmentally sensitive areas or rough land terrain features, such as steep hillside slopes.

Access and spur roads are generally 14-foot-wide unimproved roads. The main access road follows the transmission line right-of-way with spur roads branching off to each tower site. Spur roads usually have turnabout areas near the tower sites. All access road and spur road improvements, whether on or off the right-of-way, would satisfy all applicable permits and regulations.

3.3.2 West of Devers 230kV Transmission System Facilities

The proposed DPV2 project would require upgrades to SCE's existing 230kV transmission system west of Devers. The existing 230kV system west of Devers includes two 230kV circuits connecting Devers and Vista substations and two circuits connecting Devers with the San Bernardino Substation located at the San Bernardino Generating Station (Figure 3-7a). San Bernardino Junction is the term used to identify the intersection of the 230kV transmission line corridors that meet 3.4 miles south of the San Bernardino Substation.

The existing 230kV transmission system upgrade segment from Devers to San Bernardino Junction is approximately 40 miles. The segment from Vista Substation to San Bernardino Junction is approximately 4.8 miles. The segment from San Bernardino Substation to San Bernardino Junction is approximately 3.4 miles. The upgrades required for the 230kV system include the following, as shown on Figure 3-7a:

- Removal of an existing 40-mile, single-circuit wood H-frame 230kV line between Devers and San Bernardino Junction.
- Removal of an existing 40-mile, single-circuit lattice steel 230kV line between Devers and San Bernardino Junction.

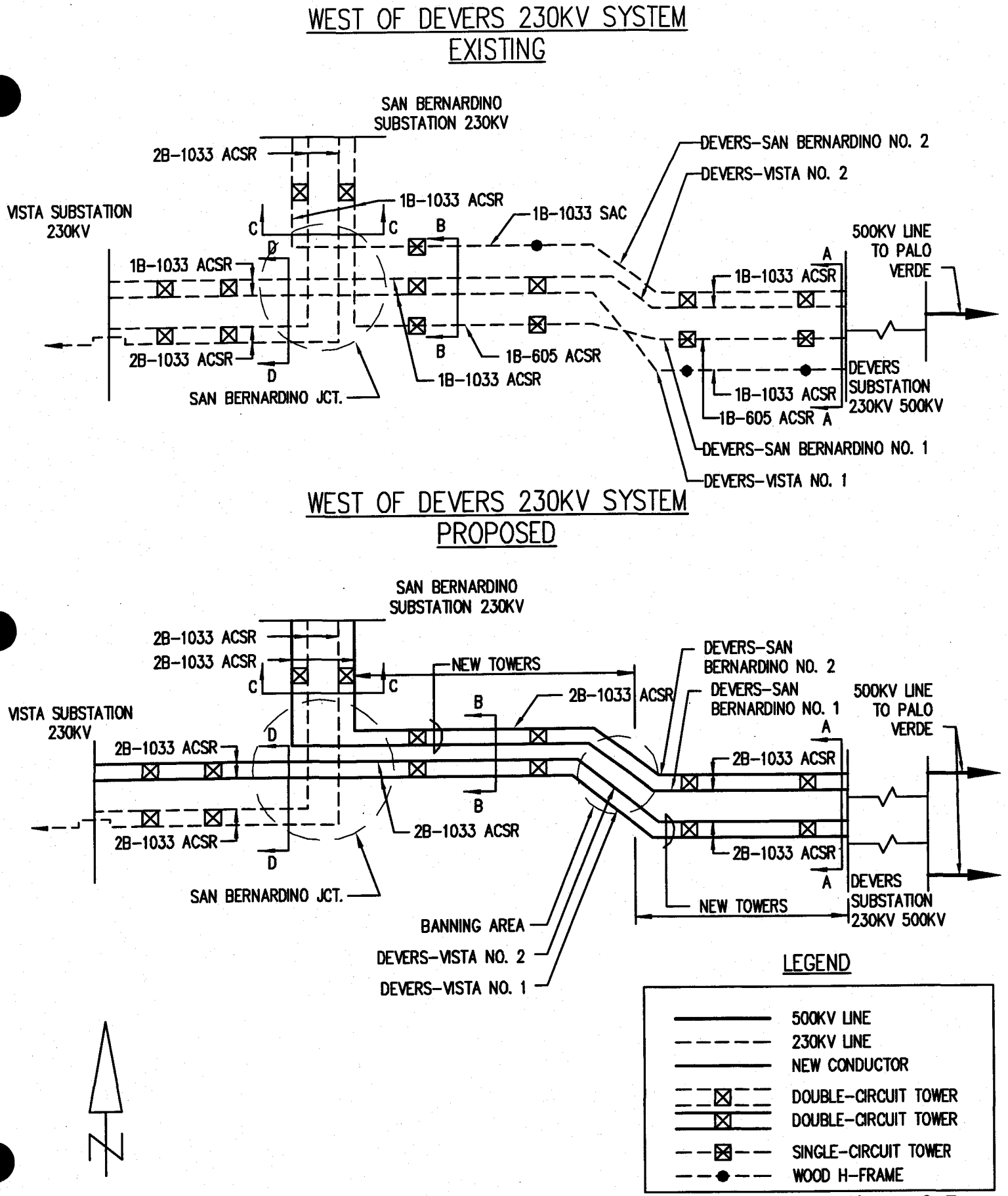


Figure 3-7a
West of Devers 230kV System, Existing and Proposed

- Construction of a new 40-mile, double-circuit 230kV line between Devers and San Bernardino Junction within the existing right-of-way.
- Reconductoring of and modification to the existing 40-mile, double-circuit 230kV lattice steel tower line between the Devers Substation and San Bernardino Junction.
- Reconductoring both circuits on an existing 4.8-mile, double-circuit 230kV lattice steel tower line between Vista Substation and San Bernardino Junction.
- Reconductoring one circuit on each of the two existing 3.4-mile, double-circuit 230kV lattice steel tower lines between San Bernardino Substation and San Bernardino Junction.

Each of the 230kV transmission lines is designed to operate at a nominal voltage of 230kV phase to phase. When the upgrades are completed, each 230kV circuit would be capable of transferring nominally 988 MW of power on a continual basis and 1,335 MW under emergency conditions.

A summary of the proposed west of Devers 230kV transmission facilities is provided in Table 3-6.

TABLE 3-6
PROPOSED WEST OF DEVERS 230kV UPGRADE SUMMARY

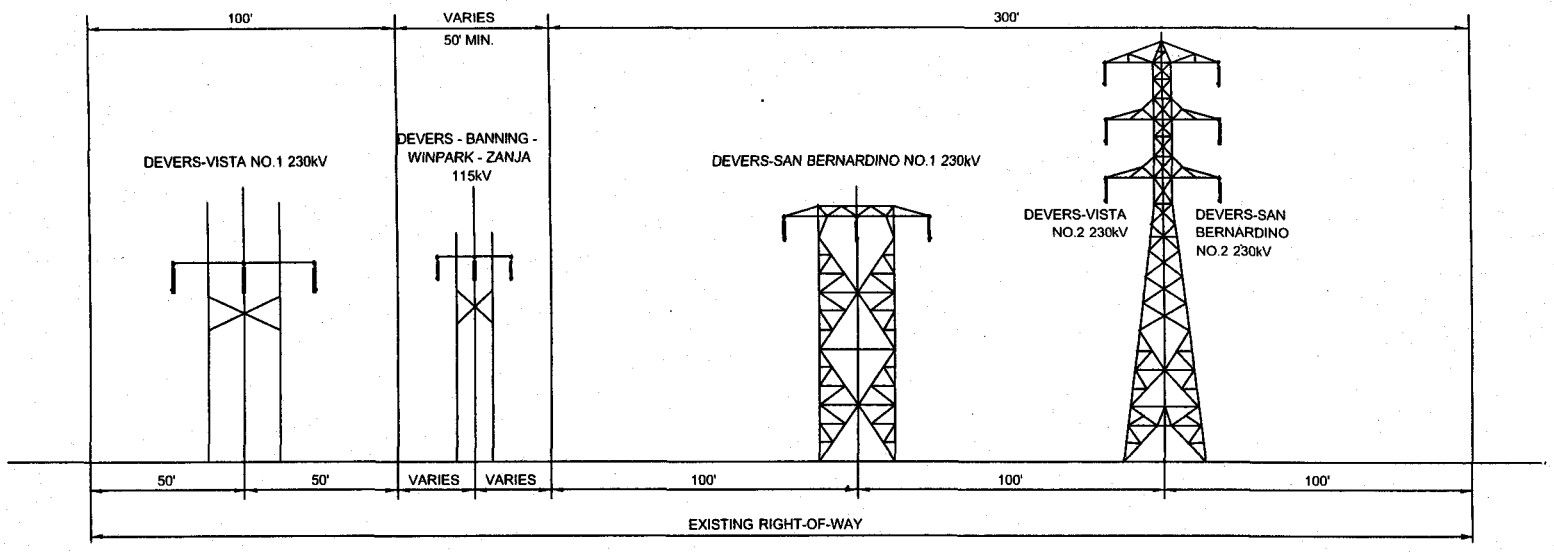
Length of segment from Devers Substation to San Bernardino Junction	40 miles
Length of segment from Vista Substation to San Bernardino Junction	4.8 miles
Length of segment from San Bernardino Substation to San Bernardino Junction	3.4 miles
Span length (spacing between towers)	1,400 to 1,500 feet 3.5 to 3.8 structures/mile (average)
Number of existing structures removed	398
Total number of new structures to be installed	161
Number of existing structures to be raised	23
Number of existing structures to be reinforced	37
Area affected by structure removal	9.7 acres
Area affected by new structure installation	46.7 acres
Area affected by pulling/splicing sites	27.5 acres
Affected area estimates based on the following factors: 0.06 acre per each structure removed - temporary 0.29 acre per new structure installed - permanent 14-foot-wide by 200 feet long spur roads at 25 percent of new tower sites - permanent 0.6 acre/mile pulling/splicing sites - temporary	

3.3.2.1 Structures

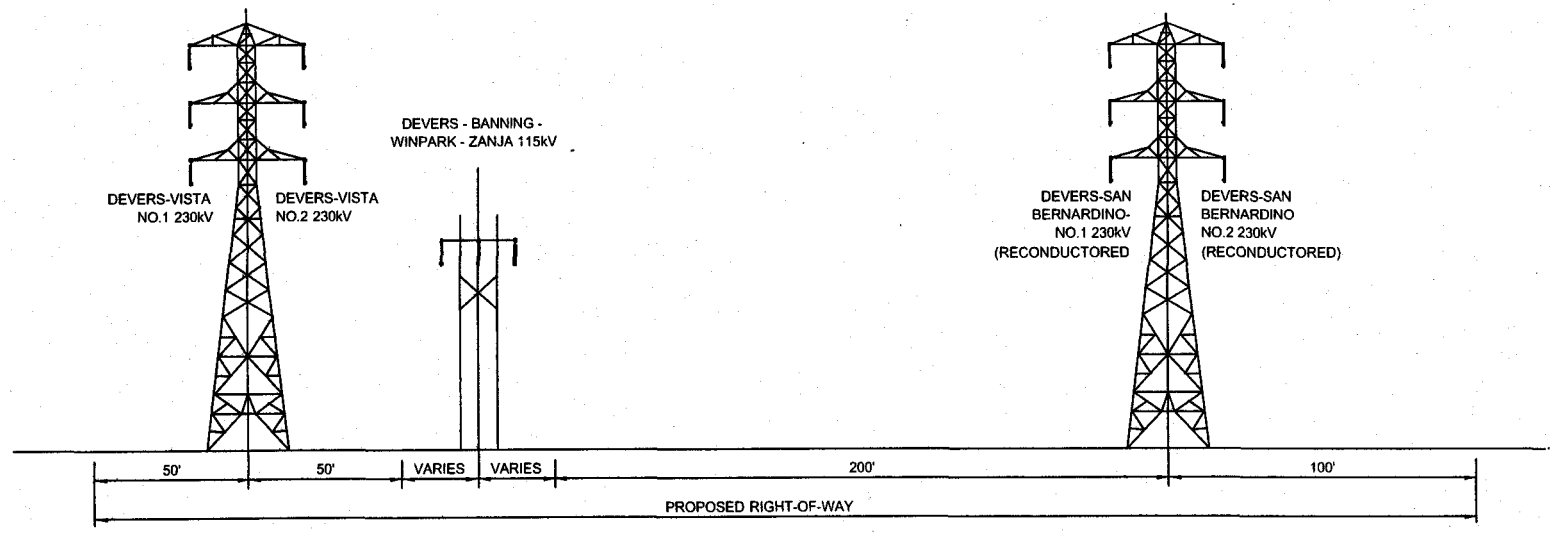
The proposed 230kV transmission system modifications include utilization of the existing double-circuit lattice steel towers between Devers and Vista substations, and between the San Bernardino Substation and San Bernardino Junction. The new double-circuit line between Devers and San Bernardino Junction would be constructed on lattice steel structures similar in size and appearance to the existing structures. It is estimated that 23 existing lattice steel towers may be raised with the use of a lattice steel extension set under the existing structures using new concrete foundations. Some new structures may be inter-set between existing towers, as required, to support new conductors.

The existing and proposed structure configuration and placements are shown on Figures 3-7b through 3-7e. Lattice towers, shown in Figure 3-8, would be constructed of galvanized steel angle members connected with bolts. Each tower would support two circuits consisting of three phases of conductors arranged in a vertical configuration.

The new double-circuit transmission line would be constructed using primarily tangent (suspension) type structures where the conductors approach and depart the structures in the same straight line. The remaining towers are heavier structures, which are either angle structures which permit limited changes in line direction, or deadend structures which are utilized for major changes in line direction. Although structure weights vary with their height and specific load carrying capabilities, the approximate weight of each type of structure is as follows:

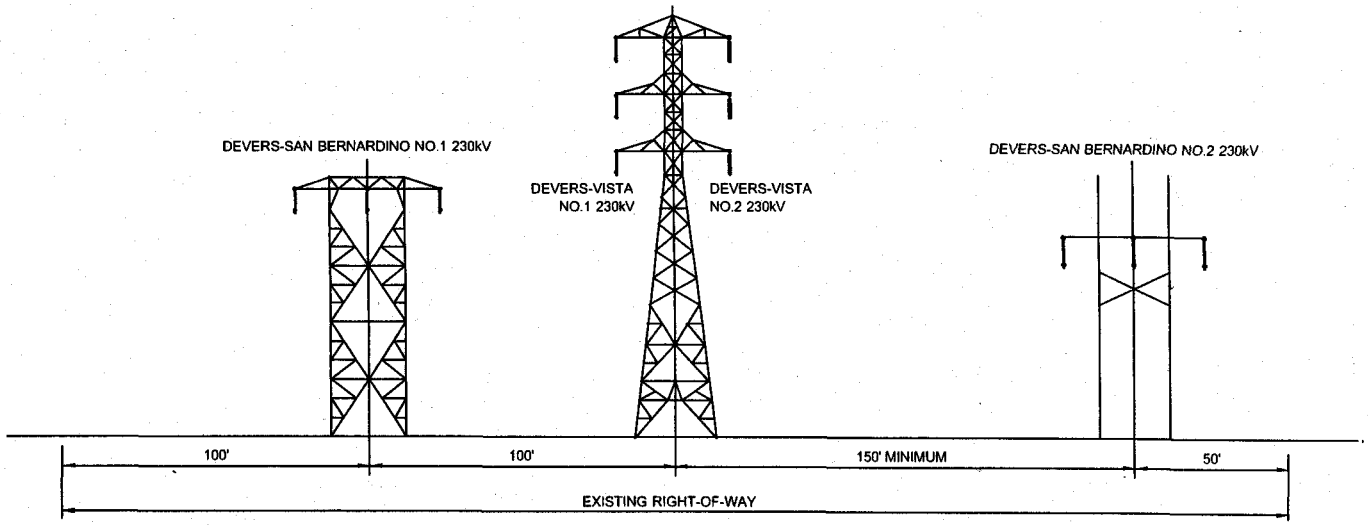


SECTION A-A
EXISTING RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)

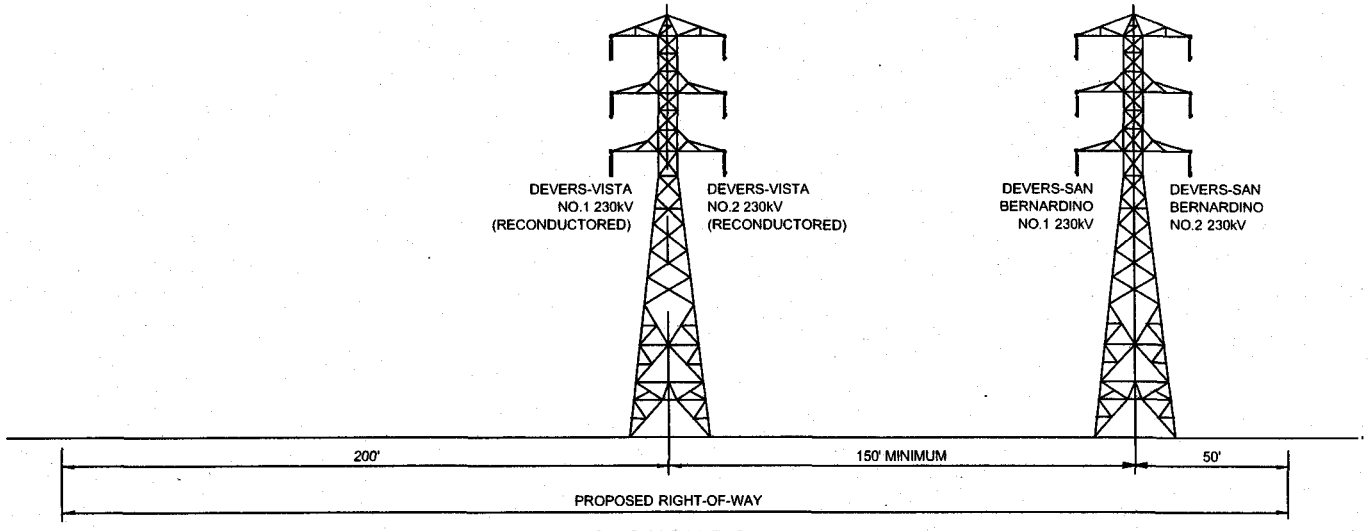


SECTION A-A
PROPOSED RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)

Figure 3-7b
Typical Sections

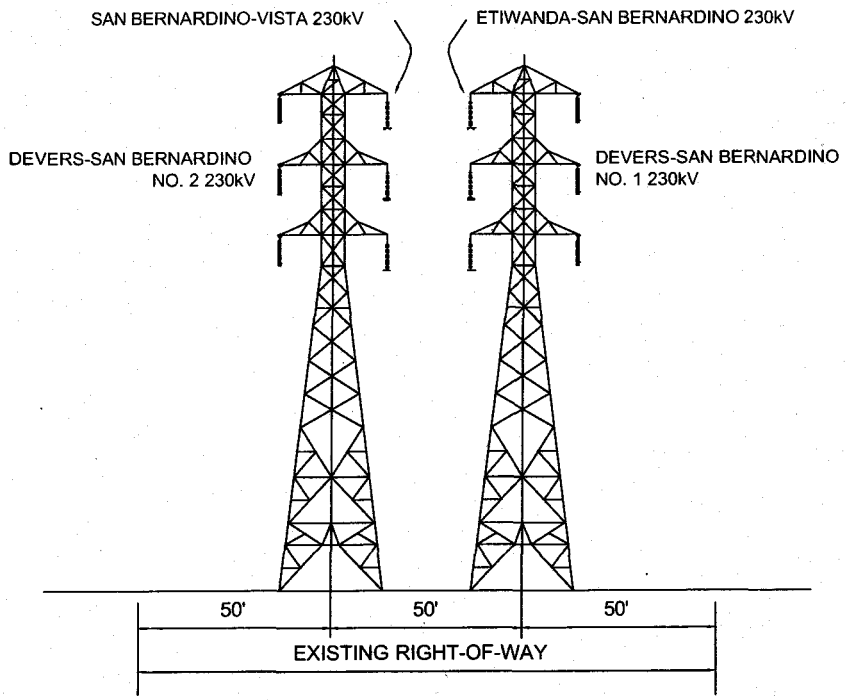


SECTION B-B
EXISTING RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)



SECTION B-B
PROPOSED RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)

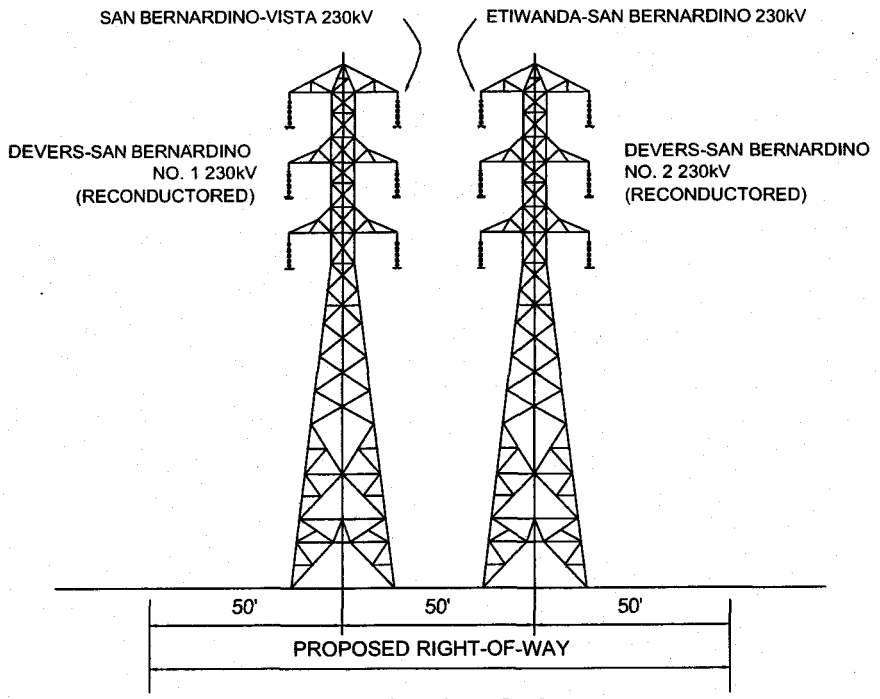
Figure 3-7c
Typical Sections



SECTION C-C

EXISTING RIGHT-OF-WAY LOOKING NORTH

(Refer to Figure 3-7a)

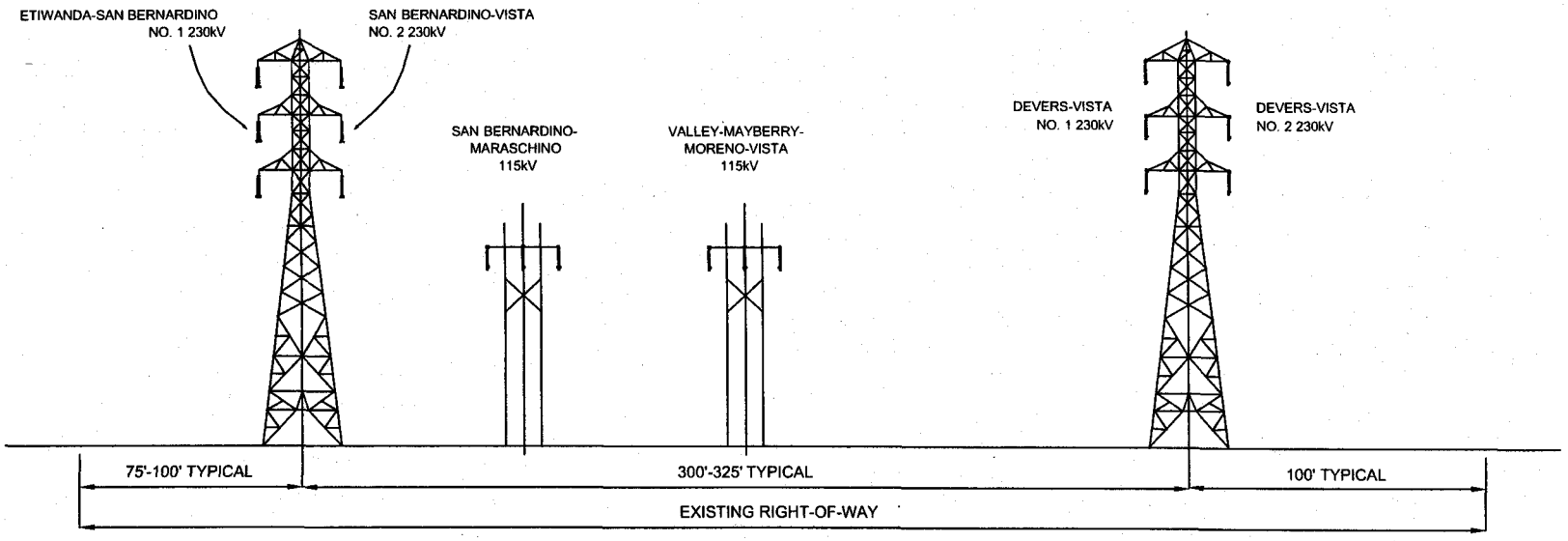


SECTION C-C

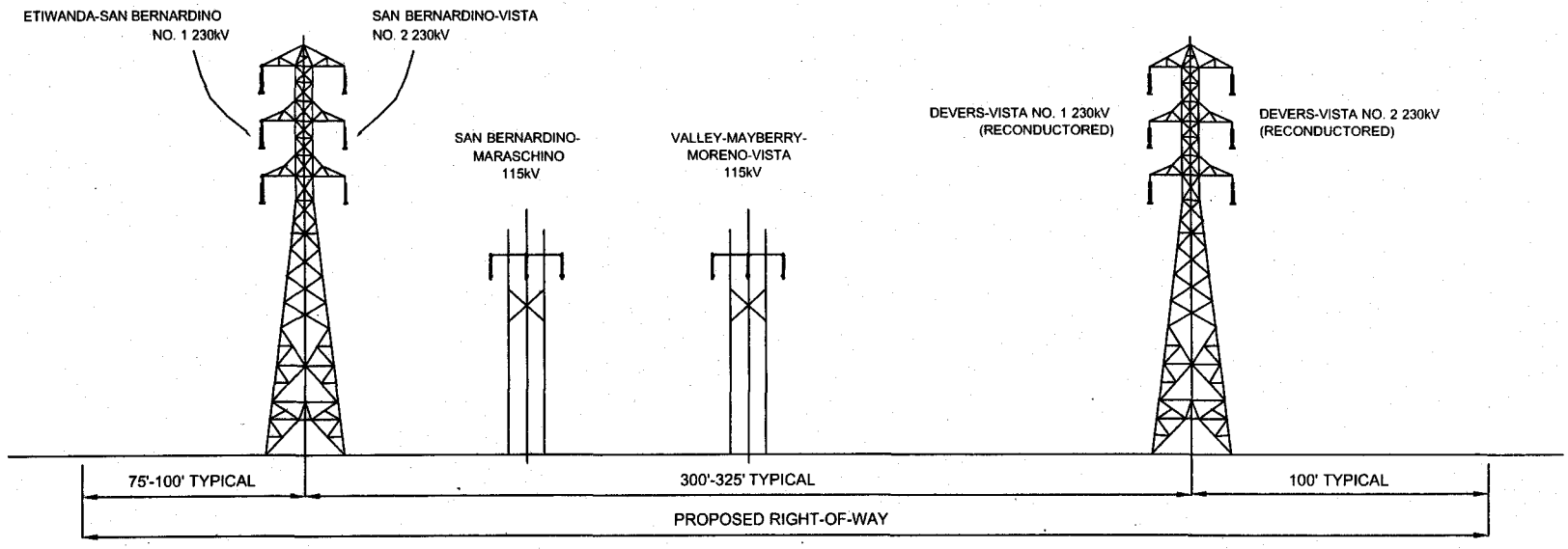
PROPOSED RIGHT-OF-WAY LOOKING NORTH

(Refer to Figure 3-7a)

Figure 3-7d
Typical Sections

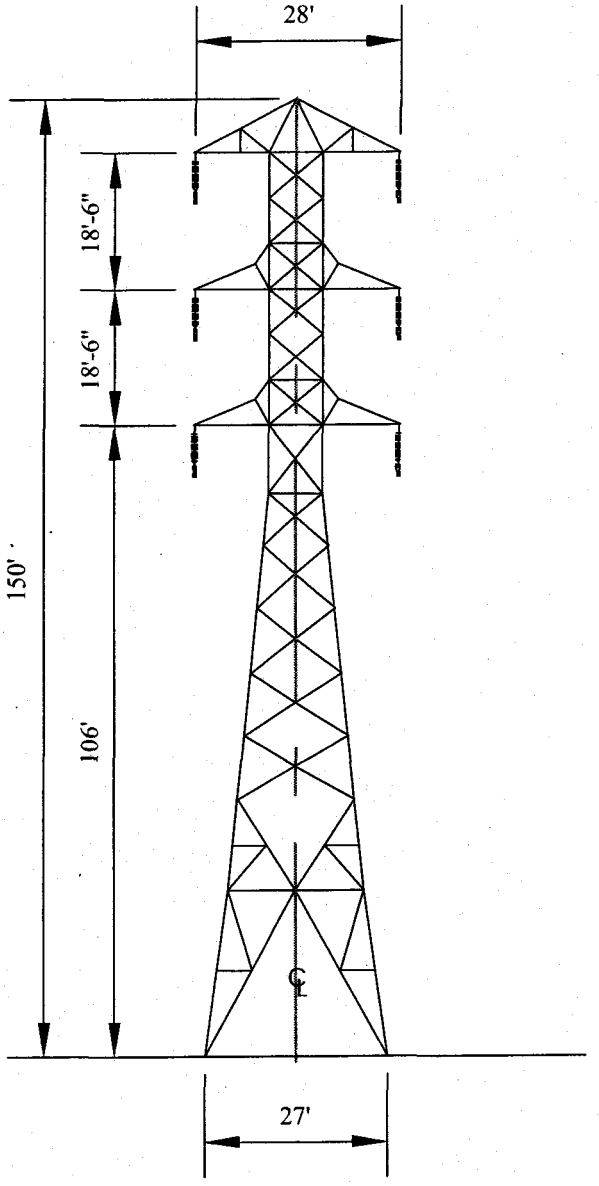


SECTION D-D
EXISTING RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)



SECTION D-D
PROPOSED RIGHT-OF-WAY LOOKING WEST
(Refer to Figure 3-7a)

Figure 3-7e
Typical Sections



Note:
Dimensions are approximate and may vary with site conditions.

Figure 3-8
Typical 230kV Double-Circuit
Lattice Steel Tower

Structure Type	Weight (pounds)
Four-legged double-circuit tangent	35,000
Four-legged double-circuit dead-end	65,000

The heights of the structures would vary depending upon the terrain, span length, and the presence of other facilities and features that the transmission line may cross, such as rivers, roads, highways, railroads, telephone lines, and other power transmission and distribution lines. The typical overall structure height would be approximately 150 feet. Where feasible, the new 230kV double-circuit towers would be aligned horizontally with existing 230kV towers.

The conductor height also would vary, depending upon the same factors described above for the structures. The minimum conductor height aboveground would be 30 feet between towers. The typical structure foundations would consist of four cast-in-place concrete piles. The size of piles required varies with the type of structure and soil conditions encountered at each tower site.

The average tower-to-tower spacing (span length) would be approximately 1,400 to 1,500 feet, or about 3.5 to 3.8 towers per mile of line. The exact quantity and placement of the structures depends upon the final detailed design of the transmission line, which is influenced by terrain, land use, environmental resource concerns, and economics.

3.3.2.2 Conductors

Each 230kV phase would be a two-conductor bundle with a spacing of 16 to 18 inches between centers. The typical conductor phase spacing for double-circuit towers is 18.5 feet vertically and 28 feet horizontally (see Figure 3-6). Each conductor is 1.244 inches in diameter, 1,033.5 kcmil ACSR. With this type of conductor, the load current flows through the aluminum strands that are formed in a helix around the core of steel strands. The steel strands provide the mechanical strength to support the aluminum strands.

3.3.2.3 Insulators

The tangent and angle insulator assemblies will consist of one or two, one-piece gray polymer insulators hung vertically from the tower crossarms in the form of an "I." These strings are used to suspend each conductor bundle (phase) from the structure while maintaining the electrical clearance between these conductors, ground, and the structure. The "I" string swings with the conductor during winds. Each insulator has an approximate height of 84 inches and a diameter of about 6 inches. On dead-end structures, the insulators are arranged in a barrel configuration consisting of two polymer insulators.

3.3.2.4 Hardware

Hardware required for the 230kV transmission lines would include suspension clamps, dead-end assemblies, spacers, armor rods, vibration dampers, and other miscellaneous parts. All of the hardware used on the proposed line would be designed for corona-free operation throughout the maximum design voltages.

Conductor spacers would be located along the lines to keep the two subconductors from contacting each other. This avoids conductor damage due to impacts that would occur without these spacers. Armor rods would be installed at the points where the suspension clamp supports the conductors. These armor rods increase the safety and reliability of the lines by minimizing the possibility of conductor damage resulting from flashovers of the insulator string and by protecting the conductor mechanically at the support point. Vibration dampers would be located on the conductor. This helps to prevent metal fatigue of the conductor strands by reducing the vibration caused by the wind.

3.3.2.5 Overhead Groundwires

Overhead groundwire, located on the peak of the transmission line structures, is used to intercept direct lightning strikes to the conductors. The 230kV structures would typically have a single groundwire at the top of the structure, approximately ½ inch in diameter. Any electric current from a lightning strike would be transferred to the ground through the groundwires and the structure. The overhead groundwire for the Devers-Vista No. 2 230kV line would contain optical fibers for communication and line protection purposes.

3.3.2.6 Right-of-Way

The new double-circuit 230kV line between Devers Substation and San Bernardino Junction would be constructed within the existing right-of-way along approximately the same centerline as the existing single-circuit H-frame 230kV transmission line and the existing single-circuit lattice steel 230kV transmission line, which are to be removed.

No additional right-of-way would be needed where reconductoring is proposed between San Bernardino Substation, Vista Substation, and San Bernardino Junction.

3.3.2.7 Access Roads

The west of Devers 230kV transmission system would utilize existing access roads wherever possible. Installation of new structures at some locations may require the construction of spur roads from existing roads to new tower sites.

3.4 RELATED FACILITIES

3.4.1 Substations and Compensation Banks

Substations may perform the following functions: (1) control, (2) electrical compensation, and/or (3) transformation. They may contain circuit breakers, disconnect switches, shunt reactors, series capacitors, transformers, and static VAR compensators, as well as related control, metering, and telecommunication facilities. These functions are established to optimize performance, reliability, and economics of the transmission system.

The control function consists of switching transmission lines, transformers, capacitors, reactors, static VAR compensators, or series reactors via circuit breakers in order to maintain system performance and reliability.

The compensation function is performed by shunt reactors and series capacitors. Shunt reactors limit the voltage rise along long transmission lines, thereby maintaining voltage regulation. Series capacitors compensate for the inherent inductance in long transmission lines and provide more electrical transmission capacity for a given line.

The transformation function consists of stepping down or up the voltage level so that power may either be transmitted or distributed.

3.4.1.1 Devers-Harquahala 500kV Transmission Line

The proposed 500kV transmission line would terminate at two existing facilities—Devers Substation in California and Harquahala Switchyard in Arizona. In addition, the line would connect to two new series capacitor banks and two new shunt reactor banks. The new series capacitor banks would be located adjacent to the existing DPV1 series capacitor banks located in

Arizona and California. One new shunt reactor bank would be located at Devers Substation. The second shunt reactor bank would be located on a new site located at the Harquahala Switchyard.

Devers Substation

This facility is a 500/230/115kV substation presently owned, operated, and maintained by SCE. The proposed modifications would be constructed within the existing fenced Devers Substation.

New equipment would be installed in the existing switchyard. This requires the installation of a new 133-foot-high by 90-foot-wide dead-end structure, circuit breakers and disconnect switches. Disconnect switches associated with the new Devers-Harquahala transmission line would be installed adjacent to and northwest of the existing DPV1 500kV shunt reactors, which would be assigned to the Devers-Harquahala 500kV line.

A 500kV shunt line reactor bank and associated disconnect switches would be installed within Devers Substation. A 500kV Static VAR Compensation (SVC) would be installed north of the 500kV switchyard within the existing Devers Substation. The SVC would terminate into the 500kV switchrack.

Approximately 2 acres would be required temporarily for laydown and construction purposes within the existing Devers Substation.

Series Capacitor Banks

Two new 500kV series capacitor banks would be installed for the proposed Devers-Harquahala transmission line. Each of the new series capacitor banks would be constructed adjacent to an existing DPV1 series capacitor bank, one in Arizona and one in California.

Each of the two series capacitor banks would consist of the following major components:

- Series capacitors
- Dead-end structures – transition structures located on either side of the series capacitor banks where the transmission line conductors enter the series capacitor sites
- Telecommunication equipment
- AC and DC power to operate facility equipment
- Grounding grid – placed beneath the surface of the facility as a safety measure
- Mechanical-electrical equipment room

Series Capacitor Bank – California Site

The proposed California series capacitor site would be located approximately 64 miles to the east of the Devers Substation in the Chuckwalla Valley on BLM land in Section 6, Township 6 South, Range 14 East (Map 3-2b). The new site would be north of and adjacent to the existing DPV1 series capacitor bank between towers M173-T2 and M173-T3. The site is approximately 0.4 mile south of I-10 and is accessed from the nearby Red Cloud Mine Road. The new series capacitor bank would occupy approximately 2 acres inside the fenced site. In addition, a 1-acre fenced material laydown area for storage and staging would be also required for temporary use.

Series Capacitor Bank – Arizona Site

The proposed Arizona series capacitor site would be located approximately 55 miles west of the Harquahala Switchyard on the Ranegras Plain on BLM land in Section 18, Township 2 North, Range 14 West (Map 3-2a). The new site would be south of and adjacent to the existing DPV1 series capacitor bank between towers M61-T3 and M61-T4. The site is approximately 7 miles south of I-10 and is accessed from the nearby El Paso Natural Gas Pipeline road. The new series

capacitor bank would occupy approximately 2 acres inside the fenced site. In addition, a 1-acre fenced material laydown area for storage and staging would be required for temporary use.

DPV1 Series Capacitor Interconnection Alternative

In order to comply with the CAISO directive dated June 2004 to increase the electrical current capability of the existing series capacitor banks on the DPV1 500kV transmission line, SCE may need to replace the existing DPV1 series capacitor banks by June 2006.

To expedite construction of the new DPV1 series capacitors, the CAISO recommended that each of the DPV1 series capacitor banks be installed in the proposed Devers-Harquahala 500kV transmission line right-of-way, adjacent to the existing DPV1 series capacitor banks. Construction of the new DPV1 series capacitors on the Devers-Harquahala right-of-way would allow for the existing power transfer capacity of the DPV1 line to continue during construction, as well as provide safer construction conditions.

During construction of the Devers-Harquahala line, the new DPV2 series capacitor banks would be constructed in the original DPV1 locations in Arizona and California. The new facilities would then be connected to the DPV1 transmission line, and the previously upgraded facilities would be connected to the Devers-Harquahala transmission line.

In the near future, SCE may file an application with the BLM to amend the right-of-way grant to allow SCE to construct the DPV1 series capacitor banks on the proposed Devers-Harquahala right-of-way. If this option is not pursued or if the application is not approved by BLM, SCE would construct the DPV2 series capacitor banks as described in the previous section.

Harquahala Switchyard

This existing facility is a 500kV switching station presently owned, operated, and maintained by the New Harquahala, LLC (HGC). SCE would purchase the 500kV switchyard as part of the DPV2 project.

There are presently four 500kV lines terminating in the Harquahala Switchyard—the Harquahala-Hassayampa 500kV transmission line and three lines to the generator transformers of each unit at Harquahala.

Equipment would be installed at Harquahala in a double-breaker configuration. A new 145-foot-high by 100-foot-wide line dead-end structure, circuit breakers, and disconnect switches would be installed in the existing switchyard. All equipment necessary to provide Supervisory Control and Data Acquisition (SCADA) would be installed. Most of the equipment required for this function would be contained in a new telecommunications room.

Approximately 2 acres adjacent to the eastern side of the Harquahala property would be required temporarily for laydown and construction purposes.

500kV Shunt Reactor

A 500kV shunt line reactor bank and associated disconnect switches would be installed for the proposed Devers-Harquahala 500kV transmission line. The preferred location for the shunt reactor is immediately adjacent and north of the Harquahala Switchyard within the Harquahala Generating Station property. An alternative location would be east of the switchyard. The shunt reactor would be installed on approximately two acres of property to be acquired for this purpose. Temporary laydown and construction would require approximately one acre.

Valley Substation

A 500kV SVC would be installed and terminate at the 500kV switchyard inside the existing Valley Substation property line. The western substation fence would be relocated to the edge of the western property line. An area of approximately 2 acres within the substation property would be used for temporary laydown and construction.

3.4.1.2 West of Devers 230kV Transmission System Upgrade – Other Modifications

Various equipment that would be needed for the 230kV upgrade project would be installed within the existing fenced areas at Devers, Vista, Lewis (Orange County), and San Bernardino substations. The SONGS Switchyard (San Diego County) would include conductor replacements, wave traps, disconnect switches, and line relays.

3.4.1.3 Special Protection Scheme

A Special Protection System (SPS) is proposed to mitigate post-transient voltage violations of system planning criteria for the simultaneous loss of DPV1 and Devers-Harquahala, or DPV1 and Harquahala-Hassayampa 500kV lines. This SPS will be designed to drop approximately 900 MW of generation in the PVNGS area and approximately 900 MW of SCE load.

Most of the relays needed to support the special protection scheme would be installed within the existing relay room or mechanical electrical equipment room at each substation site. These may include Devers, Padua, and Vista substations in California, and the PVNGS, Hassayampa, and Harquahala switchyards in Arizona. Other locations in Arizona may require new relays or relay upgrades and/or new circuit breakers or circuit breaker upgrades.

3.4.2 Telecommunications Systems

The proposed telecommunications system would consist of both existing and new SCE facilities. The new facilities are required to increase the reliability of the intertie of microwave systems between SCE and APS, as well as provide primary and backup telecommunications services for the new Devers-Harquahala 500kV transmission line. These services include protective relaying, special protection scheme, SCADA, system dispatching, data, and telephone.

3.4.2.1 Devers-Harquahala 500kV Segment

The primary telecommunications system for the proposed Devers-Harquahala 500kV segment would involve construction of a new telecommunications facility at Harquahala Mountain in Arizona. This new facility would be constructed adjacent to an existing facility owned and operated by CAWCD. Three new microwave systems would be installed at this site: (1) Harquahala Mountain-Smith Peak, (2) Harquahala Mountain-Arizona Series Capacitor Bank, and (3) Harquahala Mountain-Harquahala Substation. Upgrades to APS' existing microwave path between Black Peak and Smith Peak also would be required to increase system capacity. The overall telecommunication system capacity would be shared between SCE and APS through a contractual agreement.

The backup telecommunications system for the proposed Devers-Harquahala 500kV segment would involve installation of a new Optical Ground Wire (OPGW) on the Devers-Harquahala transmission line structures. A new Blythe Optical Repeater facility would be constructed approximately 3 miles west of Blythe within the right-of-way of the new Devers-Harquahala transmission line. Three existing SCE facilities also would be used as optical repeater sites: Mirage Substation, California Series Capacitor Bank, and Arizona Series Capacitor Bank. In addition, approximately 3 miles of existing ground/static wire would be replaced with OPGW on the double-circuit tower line at Copper Bottom Pass.

Harquahala Mountain – A new telecommunications facility would be constructed at Harquahala Mountain. Harquahala Mountain is located on BLM land, 1 mile northwest of Salome in La Paz County, Arizona, in Section 31, Township 6 North, Range 10 West. There is an existing telecommunications facility owned, maintained, and operated by the CAP at this site. This facility was built in the early 1980s by the USBR and is surrounded by a wilderness area. This site is powered by solar since there is no available commercial power. The new telecommunications facility would be constructed adjacent to the existing CAP facility. The new facility would include:

- one 12-foot by 36-foot prefabricated building
- one 110-foot self-supporting tubular steel tower
- one emergency generator installed within the prefab building
- two 500-gallon fuel tanks
- one 30 kilowatt solar panel system
- two air conditioning systems
- one direct current power system
- three microwave systems
- one fence

The site would be unmanned during operation. A typical telecommunications facility is shown in Figure 3-9.

There is an existing 10-mile dirt road leading to Harquahala Mountain. A temporary construction area adjacent to the new facility would be established prior to the actual construction for vehicle parking and material storage. This area will be fenced and gate locked. It is estimated that the temporary construction area would occupy approximately 1 acre and the permanent site would occupy approximately ½ acre.

Blythe Optical Repeater Site – The new Blythe Optical Repeater facility would be constructed within the proposed Devers-Harquahala 500kV right-of-way approximately 3 miles southwest of

Blythe adjacent to SCE's DPV1 right-of-way and CA 78 (Neighbours Boulevard). The site is located in Section 30, Township 7 South, Range 23 East, near Ripley, California. The new facility would include:

- one 12-foot by 36-foot prefabricated building
- one emergency generator installed within the prefab building
- one 500-gallon fuel tank
- 120/240-volt alternating current service
- conduits to the OPGW termination
- two air conditioning systems
- one direct current power system
- one Synchronous Optical Network (SONET) system
- one fence

The site would be unmanned during operation.

A temporary construction area adjacent to the new facility would be established prior to the actual construction for vehicle parking and material storage. This area would be fenced and gate locked. It is estimated that the temporary disturbed area would be 1 acre, and the permanent site would occupy approximately ¼ acre.

Devers Substation – Installation of SONET and channel equipment would be required within the existing Devers Substation to support the primary and backup protection circuits. In addition, a 5-inch conduit would be installed from the telecommunications room to the OPGW termination point on the Devers-Harquahala 500kV transmission tower.

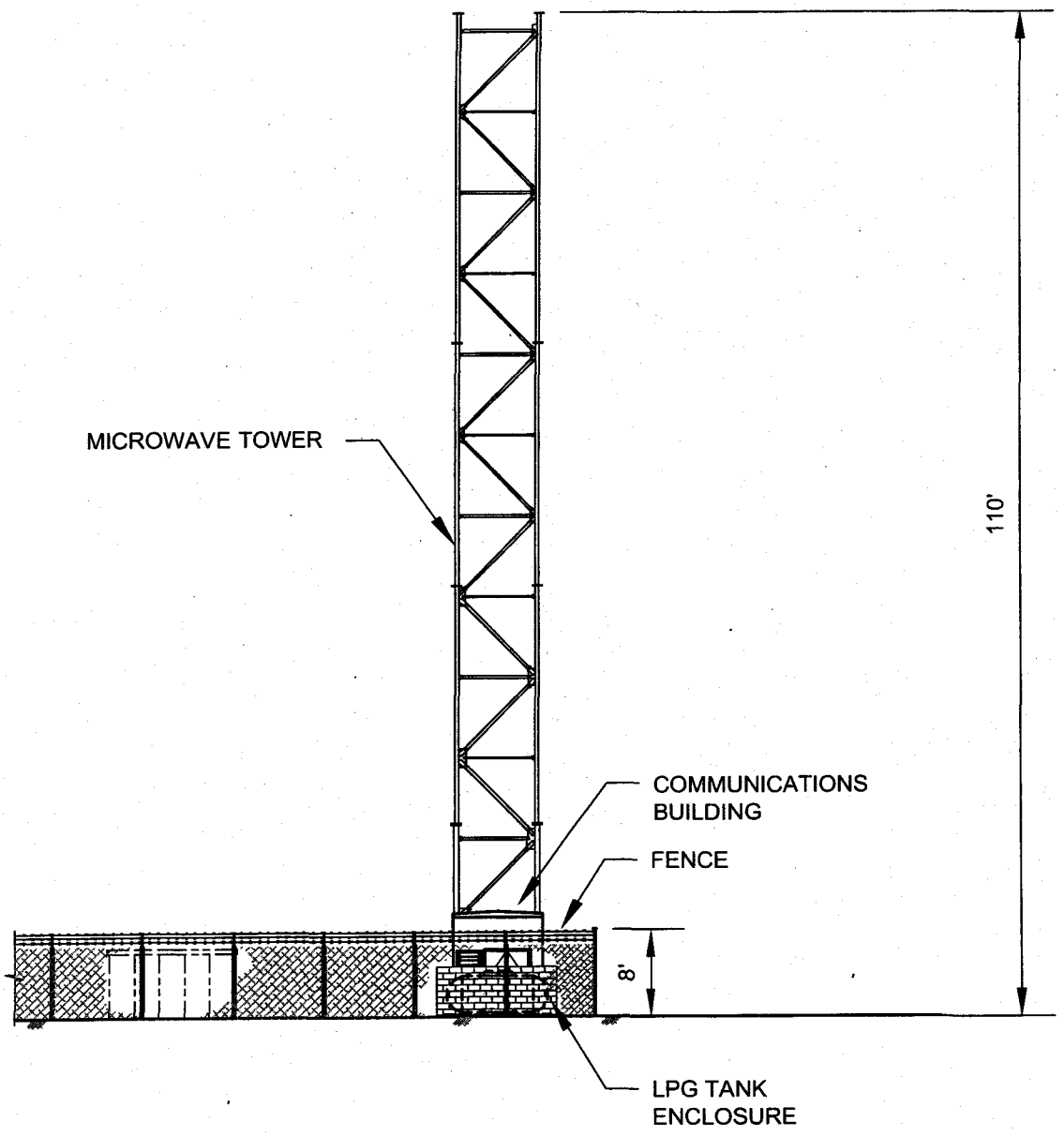


Figure 3-9
Typical Telecommunications Facility

Mirage Substation – Installation of SONET and channel equipment would be required within the existing Mirage Substation to support the backup protection circuits. In addition, a 5-inch conduit would be installed from the telecommunications room to the substation fence. A new fiber optic cable would be installed between the substation and the Devers-Harquahala transmission tower where the OPGW splices would take place.

California Series Capacitor Bank – Installation of SONET and channel equipment would be required within the existing California Series Capacitor Bank to support the backup protection circuits. In addition, a 5-inch conduit would be installed from the telecommunications room to the OPGW termination point on the Devers-Harquahala 500kV transmission tower.

Black Peak Communication Site (APS) – An upgrade to APS' existing microwave equipment and antenna would be required with the existing Black Peak Communication Site to provide additional bandwidth to support the primary protection circuits. The overall system capacity would be shared between SCE and APS through a contractual agreement.

Smith Peak Communication Site (APS) – An upgrade to APS' existing microwave equipment and antenna would be required within the existing Smith Peak Communication Site to provide additional bandwidth to support the primary protection circuits. The overall system capacity would be shared between SCE and APS through a contractual agreement.

Arizona Series Capacitor Bank – Installation of microwave and SONET equipment would be required within the existing Arizona Series Capacitor Bank to support the backup protection circuits. A 5-inch conduit would be installed from the telecommunications room to the OPGW termination point on the Devers-Harquahala 500kV transmission tower. In addition, an upgrade to the existing microwave antenna tower would be required to support two new 10-foot-high performance microwave antennas.

Harquahala Substation – A new telecommunications facility and microwave tower would be constructed within the existing Harquahala Switchyard. Installation of microwave, SONET, and

channel equipment would be required to support the primary and backup protection circuits. One new 5-inch conduit would be installed from the new telecommunications room to the OPGW termination point on the Devers-Harquahala 500kV transmission tower. In addition, the existing conduit containing the fiber cable leading to the Harquahala-Hassayampa 500kV tower would be extended from the existing 500kV mechanical-electrical equipment room to the new telecommunications room.

3.4.2.2 Harquahala-West Subalternate Route

The proposed telecommunications systems for the Harquahala-West Subalternate Route would be identical to the proposed Devers-Harquahala 500kV route.

3.4.2.3 Palo Verde Subalternate Route

For the Palo Verde Subalternate Route, SCE would lease bandwidth from APS and Salt River Project (SRP) between Black Peak Communication Site and PVNGS to support the primary protection circuits.

3.4.2.4 Midpoint Substation Preferred and Alternative Sites

For the Midpoint Substation, a new telecommunications facility would be constructed within the substation to provide microwave and fiber optic communications for protective relaying and special protection scheme requirements. One 12-foot by 36-foot prefabricated building and one 110-foot self-supporting tubular steel tower would be installed. Three new microwave paths and two fiber optic systems also would be installed at this site. The proposed microwave paths are Midpoint-Buck Boulevard Substation (Blythe Energy), Midpoint-Chuckwalla Communication

Site, and Midpoint-Cunningham Communication Site. The proposed fiber optic systems are Midpoint-Buck Boulevard Substation (Blythe Energy) and Midpoint-Devers-Harquahala.

Preferred Site – Installation of microwave, SONET, and channel equipment would be required at this site to provide the primary and backup protection circuits. Conduits would be required between the telecommunications room and the 230kV mechanical electrical equipment room , 500kV mechanical electrical equipment room, OPGW termination point on the Devers-Harquahala 500kV transmission tower, and OPGW termination point on the Buck Boulevard-Midpoint 230kV transmission tower.

Chuckwalla Communication Site – Installation of microwave equipment would be required within the existing Chuckwalla Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing towards Midpoint Substation.

Cunningham Communication Site (APS) – Installation of microwave equipment would be required within the existing APS Cunningham Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing towards Midpoint Substation.

McCoy Communication Site – If Midpoint Substation is constructed in an area where microwave line-of-sight cannot be achieved between Midpoint-Chuckwalla Communication Site, McCoy Mountain Communication Site would be used as an intermediate microwave relay station.

Alternative Site 1, Mesa Verde – Installation of microwave, SONET, and channel equipment would be required at this site to provide the primary and backup protection circuits. Conduits would be required between the telecommunications room and the following: 500kV and 230kV mechanical electrical equipment rooms, OPGW termination point on the Devers-Harquahala 500kV transmission tower, and OPGW termination point on the Buck Boulevard-Midpoint 230kV transmission tower.

Chuckwalla Communication Site – Installation of microwave equipment would be required within the existing Chuckwalla Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing to Midpoint Substation.

Cunningham Communication Site (APS) – Installation of microwave equipment would be required within the existing APS Cunningham Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing to Midpoint Substation.

Alternative Site 2, Wiley Well – Installation of microwave, SONET, and channel equipment would be required at this site to provide the primary and backup protection circuits. Conduits would be required between the telecommunications room and the following: 500kV and 230kV mechanical electrical equipment rooms, OPGW termination point on the Devers-Harquahala 500kV transmission tower, and the Buck Boulevard-Midpoint 230kV transmission tower.

Chuckwalla Communication Site – Installation of microwave equipment would be required within the existing Chuckwalla Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing to Midpoint Substation.

Cunningham Communication Site (APS) – Installation of microwave equipment would be required within the existing APS Cunningham Communication Site to support the primary protection circuits. In addition, two new 10-foot-high performance microwave antennas would be installed on the existing microwave tower pointing to Midpoint Substation.

3.4.2.5 West of Devers 230kV Upgrade

Currently, the fiber optic cable carrying SONET System 47 is wrapped around the ground wire of the existing Devers-Vista No. 2 230kV transmission towers. The proposed upgrade to the double-circuit 230kV transmission line between Devers and Vista would require replacement of the existing fiber wrap cable with a new OPGW on the proposed double-circuit towers. This would require installation of a temporary fiber cable on the Valley-Mayberry-Moreno-Vista 115kV towers between Vista Substation and San Bernardino Junction. This temporary fiber cable is required to re-route existing traffic on the fiber-wrap cable while the line is being reconductored between Vista Substation and San Bernardino Junction. New fiber optic splice cases at San Bernardino Junction also would be installed for splicing purposes.

In order to provide redundant protective relaying circuits for the Devers-San Bernardino 230kV line, a new OPGW would be installed on the Devers-San Bernardino double-circuit towers between San Bernardino Substation and San Bernardino Junction. The primary protection circuits would be carried via existing microwave systems and the backup protection circuits would be carried via SONET System 47.

3.5 CONSTRUCTION

3.5.1 Schedule

The proposed operational date for the DPV2 transmission line project is June 2009. Work activities will commence upon approval by the CPUC and other permitting agencies. Construction on the Devers-Harquahala 500kV line segment would commence March 2007 and take approximately 24 to 28 months to complete. Construction within the 230kV segment west of Devers would commence after June 2006 and be completed in June 2009. The time between completion of construction and the operation date would be used to complete inspection and testing of the project.

3.5.2 Labor Force Requirements

3.5.2.1 Devers-Harquahala 500kV Segment

The construction of the proposed 500kV line is presently planned to be performed by contract personnel with SCE responsible for administration and inspection. The estimated number of personnel and amount of equipment required for each construction phase is shown in Table 3-7. It is estimated that a total of 205 workers (full-time equivalent personnel) will be needed to construct the proposed 500kV line.

TABLE 3-7
PROPOSED DEVERS-HARQUAHALA 500kV TRANSMISSION LINE LABOR FORCE AND EQUIPMENT REQUIREMENTS

Construction Element	Personnel	Equipment	Duration (months)
Management/Office	9	6 – office trailers 9 – pickup trucks	24
Inspection and Environmental	14	14 – pickup trucks	24
Support	9	6 – mechanic trucks 2 – lube service trucks 6 – tool trailers 2 – fire suppression trucks	24
Material Processing	12	8 – forklifts 8 – tractor trucks with trailers	24
Road Crew	12	3 – road graders 3 – dozers 2 – grad-all excavators 3 – water trucks 2 – 10-yard dump trucks 6 – pickup trucks 1- boring rig	24
Foundation Crews	20	5 – pickup trucks 4 – 2½ ton flatbed trucks 4 – backhoes 4 – drill rigs 4 – boom trucks 2 – off-road loaders 2 – tractor truck with trailers 4 – water trucks 1 – trencher	24
Tower Assembly/Erection	75	9 – pickup trucks 9 – 2½ ton flatbed trucks 9 – truck cranes 9 – crew cab pickup trucks 9 – air compressors 4 – large RT cranes	18

TABLE 3-7 PROPOSED DEVERS-HARQUAHALA 500kV TRANSMISSION LINE LABOR FORCE AND EQUIPMENT REQUIREMENTS			
Construction Element	**Personnel**	**Equipment**	**Duration (months)**
Conductor Operations	54	8 – pickups 8 – crew cab pickup trucks 2 – pole truck and trailers 12 – truck cranes 6 – bucket trucks 6 – line trucks 4 – conductor tensioners 2 – static tensioners 2 – sockline pullers 2 – conductor pullers 6 – sagging units (skidder)s 18 – reel stand trailers 9 – 6x6 truck tractors 2 – helicopters 10 – water trucks	18
TOTAL	**205**		**24**

3.5.2.2 West of Devers 230kV Upgrade

The majority of the 230kV system construction west of Devers Substation is presently planned to be performed by contract personnel with SCE responsible for administration and inspection. Certain portions of the work may be reserved for SCE's construction personnel. The number of personnel and amount of equipment required for each construction phase is shown in Table 3-8. It is estimated that a total of 177 workers would be required for the west of Devers upgrade.

TABLE 3-8 WEST OF DEVERS 230kV UPGRADE LABOR FORCE AND EQUIPMENT REQUIREMENTS			
Construction Element	**Personnel**	**Equipment**	**Duration (month)**
Management	3	2 – office trailers 3 – pickup trucks	17
Inspection and Environmental	3	3 – pickup trucks	16
Support	3	2 – mechanic trucks 1 – lube service truck 2 – tool trailers 1 – fire suppression truck	16
Material Processing	6	2 – forklifts 2 – tractor trucks with trailers	16

TABLE 3-8
WEST OF DEVERS 230kV UPGRADE LABOR FORCE AND EQUIPMENT REQUIREMENTS

Construction Element	Personnel	Equipment	Duration (month)
Road Crew	4	1 – road grader 1 – dozer 1 – grade-all excavator 3 – water trucks 2 – 10-yard dump trucks 2 – pickup trucks 1 – boring rig 1 – backhoe	16
Foundation Crews	23	5 – pickup trucks 4 – 2½ ton flatbed trucks 2 – backhoes 2 – drill rigs 4 – boom trucks 1 – off-road loader 1 – tractor truck with trailer 2 – water trucks	12
Tower Assembly/Erection	64	9 – pickup trucks 9 – 2½ ton flatbed trucks 9 – truck cranes 9 – crew cab pickup trucks 9 – air compressors 1 – large crane	9
Conductor Operations	71	12 – pickups 10 – crew cab pickup trucks 2 – pole trucks and trailers 3 – truck cranes 2 – bucket trucks 2 – line trucks 1 – conductor tensioner 1 – static tensioner 1 – sockline puller 1 – conductor puller 1 – bullwheel puller 2 – sagging units 6 – reel stand trailers 3 – 6x6 truck tractors 1 – helicopter 1 – water truck	16
TOTAL	**177**		**24**
NOTE: Equipment required for line dismantle tasks are embedded within each construction element.			

3.5.3 Facility Siting

3.5.3.1 Devers-Harquahala 500kV Segment

Once the proposed 500kV transmission line route has been approved, a detailed survey would be conducted, additional right-of-way would be acquired, and detailed engineering designs, based on this survey, would be started.

A control centerline would be established first, based on field survey measurements. Control monuments, consisting of 2-inch-diameter iron pipes sealed with a stamped brass cap would be set at maximum intervals of approximately 2 miles. Visual reference points, located both parallel and perpendicular to the control line, would be established so that photogrammetric profiles of the area's topography could be compiled. Upon completion, approximate tower locations would be spotted on the profiles according to engineering design criteria.

Once approximate tower locations have been selected, exact positions would be field surveyed and staked, and a small pipe would be placed at the center of each proposed tower site. The top of the pipe would become the centerline hub elevation, which would be used as the basis for all calculations involving structure height.

Survey crews would locate spur road centerlines and grades. Final determinations of road location curvature, cuts and fills, grades and drainage, and necessary erosion controls would be made in accordance with design standards and practices and/or landowner requirements.

All proposed tower sites and access road sites would be field inspected by qualified SCE personnel to ensure correctness and to address and resolve any land use or environmental considerations.

3.5.3.2 West of Devers 230kV Upgrade

Tower siting for the west of Devers 230kV system would be similar to that for the new 500kV line, except that existing survey monuments established for the existing tower lines would be utilized for locating new structures.

3.5.4 Construction Yards

Construction yards would be used as reporting locations for the workers, vehicle and equipment parking, and as storage locations for material. The construction yards would have office facilities for supervisory and clerical personnel. Normal maintenance for construction equipment would be conducted at these locations. The maximum number of workers reporting to any one-yard area is not expected to exceed 144 at any one time; typically, there would be a maximum of 12 workers.

3.5.4.1 Devers-Harquahala 500kV Segment

Construction of the proposed 500kV transmission line would begin with the establishment of approximately seven temporary construction yards located at strategic points along the route—four in California and three in Arizona. The size of each yard would be 3 to 10 acres depending on land availability and intended use.

3.5.4.2 West of Devers 230kV Upgrade

Construction of the 230kV system west of Devers would not take place sequentially along the right-of-way, but would most likely be done in several stages. Since existing lines and structures must be removed, the construction sequence would be highly influenced by circuit outage availability. Construction yards would likely be set up at existing facilities such as Devers, Vista,

and San Bernardino substations, with up to two additional yards set up between Devers and San Bernardino Junction. Each yard would require approximately 3 acres and be located on previously disturbed land parcels.

3.5.4.3 Midpoint Substation Alternatives

Construction of the Midpoint Substation will require a temporary laydown area of approximately 5 acres. The laydown area would be located at or near the existing roadway at the preferred or either of the alternative sites.

3.5.5 Access Roads and Right-of-Way Clearing

3.5.5.1 Devers-Harquahala 500kV Segment

No new main access roads are expected to be required for the proposed 500kV route, with the exception of the approximately 5-mile segment east of the Harquahala Switchyard. Where overland vehicle travel is not possible, upgrades to main access roads and extensions to existing spur roads would be needed to allow passage of construction vehicles. Such upgrades may require vegetation clearing and grading based on site conditions. There are approximately 260 miles of existing main access roads. The total area of potential disturbance for 19.3 miles of new spur roads would be approximately 32.8 acres. The spur roads would be a minimum of 14 feet wide. During grading operations, care would be exercised to minimize side casting. No earth would be removed below final elevations, and no cuts would be made deeper than necessary for clearing and road construction.

Upon completion of construction, any drainage deficiencies would be corrected to prevent future erosion. Trees and brush would be cleared only when necessary to provide electrical clearance, line reliability, or suitable access for maintenance and construction.

3.5.5.2 West of Devers 230kV Upgrade

Construction access is available within the existing right-of-way for the existing 230kV system upgrade. New spur roads would be required for new structures that are not at or adjacent to existing towers. Since no new tower construction is planned, and existing access is available, no new access roads would be required between the San Bernardino Substation, San Bernardino Junction, and Vista Substation. Trees and brush would be cleared only when necessary to provide electrical clearance, line reliability, or suitable access for maintenance and construction.

3.5.5.3 Midpoint Substation Alternatives

A permanent, 24-foot-wide, two-lane access road will be constructed from the existing paved road to the substation site. For the preferred site, the new road would be constructed for a distance of approximately 3 miles from the existing road.

Alternative Site 1, Mesa Verde, would require a 5-mile access road. Alternative site 2, Wiley Well, is located adjacent to the existing paved road and would therefore require only a 100-foot long access road.

3.5.6 Foundation Installation

3.5.6.1 Devers-Harquahala 500kV Segment

The proposed 500kV line from Devers to Harquahala Switchyard would require the construction of approximately 709 new lattice steel towers, 39 H-frames, and 23 tubular steel poles. Each structure would require augured cast-in-place concrete piles. Existing concrete supply facilities would be utilized wherever feasible. If no such facilities exist in certain areas, temporary concrete batch plants would be set up in areas approved by the authorizing agency. Concrete

would be hauled to the structure site from the concrete supply facilities in standard concrete trucks. Care would be taken to minimize damage to the existing landscape and natural vegetation. Disposal of unused concrete would be restricted to methods detailed in the stormwater pollution prevention plan.

Counterpoise may need to be installed if the local soil conditions indicate that the soil has a resistance above 30 ohms. This is accomplished by attaching a 0.375-inch cable to the tower steel. The cable is installed 1-foot underground and extends approximately 100 feet (within the right-of-way) from two or more footings.

3.5.6.2 West of Devers 230kV Upgrade

The proposed 230kV modifications for the west of Devers system would require the construction of foundations for approximately 161 structures. Foundation installation for the 230kV upgrade would be similar to that of the 500kV segment as described above.

3.5.7 Structure Assembly and Erection

3.5.7.1 Devers-Harquahala 500kV Segment and West of Devers 230kV Upgrade

At the structure fabrication plant, structural members would be assembled into bundles, shipped by rail or truck to the construction yards, and then trucked to the individual sites. After being assembled into subassemblies, the subassemblies would be put together with the aid of a crane.

Assembly and erection of the structures required for the proposed transmission line would consist of three main activities: (1) assembly of main sections, (2) erection of the sections, and (3) final cleanup. Sections would be joined together with the aid of a crane and erected on

foundations. Installation of insulators and travelers and final checkout and cleanup would then conclude structure assembly and erection.

3.5.8 Conductor and Overhead Groundwire Stringing

3.5.8.1 Devers-Harquahala 500kV Segment and West of Devers 230kV Upgrade

The stringing of conductor and overhead groundwire on new transmission lines would normally commence once a suitable number of structures had been erected and inspected. Setup locations for stringing equipment located between suspension towers would be temporary 150-foot by 300-foot areas located adjacent to the access roads approximately every 5,000 to 15,000 feet along the line. Smaller setup areas, 100 feet by 200 feet, are possible near either side of dead-end structures. Geographic, environmental, and cultural factors will determine the final locations of setup locations. Other considerations include specific line design issues such as locations of dead-end structures or line direction changes.

To shield underlying activities and facilities, temporary netting systems or wood pole guard structures would be erected at crossings for roads, streets, railroads, highways, or other transmission, distribution, or communication facilities, as required, prior to stringing operations. On roads where traffic is light, guard structures may not be necessary; however, the use of barriers, flagmen and/or temporary stopping of traffic would be required.

Conductor is usually supplied on 96-inch reels in lengths of up to 7,500-foot reels. Groundwire is usually supplied on reels in 15,000-foot lengths. For new transmission lines, stringing initially would consist of flying in pilot lines (small and lightweight) through the stringing travelers by helicopter, subsequently pulling larger steel cable. The conductor or groundwire would then be pulled from the established setup points by wire stringing equipment. For reconductor of existing lines and overhead groundwire west of Devers Substation, stringing would initially consist of replacing insulators, installing travelers, then transferring the existing conductor to the installed

travelers. The existing conductor or groundwire would then be pulled out from the established setup points. The new conductor or groundwire would be pulled in. The conductor or groundwire would then be transferred into suspension hardware.

3.5.9 Removal of Facilities, West of Devers 230kV Upgrade

Two existing single-circuit transmission lines would be removed between Devers Substation and San Bernardino Junction. Guard structures would be erected for the conductor removal activities. In accordance with prearranged outages, facilities would be taken off line, conductor would be removed, and structures disassembled and hauled to staging yards for disposal. Guard structures would then be disassembled and removed. Removal would be coordinated with new line construction, structure rearrangement, and reconductor work. Materials would be recycled where feasible.

3.5.10 Telecommunications Facilities

3.5.10.1 Harquahala Mountain

Contractors and subcontractors would be used to construct the new building and antenna tower. A medium duty crane would be required for the construction of the antenna tower. SCE's telecommunications construction crews will be used for telecommunications equipment installation.

Three trucks and six men would be needed during peak construction periods. Construction of the new facility and antenna tower will take approximately 12 to 16 weeks to complete and would consist of the following steps:

- site preparation
- erect temporary fencing area
- set the foundations
- install prefab building, fuel tanks, and emergency generator
- install photovoltaic (solar) system
- erect the antenna tower
- install antennas and telecommunications equipment
- erect permanent fencing
- site cleanup

The prefabricated building would be pre-assembled at the manufacturing plant and delivered to the Harquahala Mountain. The building would be set on a concrete pad using a crane. The antenna tower will be assembled and erected on site. Each tower section would be erected using a crane.

3.5.10.2 Blythe Optical Repeater

Contractors and subcontractors would be used to construct the new building. SCE's telecommunications construction crews will be used for telecommunications equipment installation.

Three trucks and six men would be needed during peak construction periods. Construction of the new facility and antenna tower will take approximately 10 to 12 weeks to complete and would consist of the following steps:

- site preparation
- erect temporary fencing area
- set the foundations
- install prefab building, fuel tanks, and emergency generator

- install telecommunications equipment
- erect permanent fencing
- site cleanup

The prefabricated building would be pre-assembled at the manufacturing plant and delivered to the job site. The building would be set on a concrete pad using a crane.

3.5.11 Post-Construction Cleanup

During construction, all excess materials would be removed from the right-of-way. After construction, all debris would be disposed of in a manner such that the area would be returned as near as practicable to its pre-construction appearance. This would include removal of surplus buildings and equipment, lumber, refuse, fencing, and all other items not at the sites prior to construction.

3.6 OPERATION AND MAINTENANCE

3.6.1 Schedule

Following completion of project construction, operation and maintenance of the new lines would commence. Inspection and maintenance activities would include the following:

- routine line patrols by both aircraft and truck
- routine, patrol identified, tower and wire maintenance
- routine line washing
- routine, patrol identified, earth and sand abatement from footings
- routine right-of-way road maintenance

The frequency of inspection and maintenance would depend on various conditions including length of the line and weather effects. Schedules by line are summarized in Table 3-9.

3.6.2 Labor Force Requirements

Inspection and maintenance activities typically include senior patrolman, foreman, lead lineman, journeyman lineman, apprentices, groundmen, helicopter pilots, equipment operators, and laborers. If the magnitude of repairs identified by routine patrols is substantial, other specialized employees such as surveyors, engineers, clerical personnel, and technicians would be attached to maintenance crews as required to address any unique problem that may arise due to such variables as substantial storm damage or vandalism. Labor force requirements by line are summarized in Table 3-9.

For the Devers-Harquahala 500kV line, it is expected that there would be a minor increase in operation and maintenance activity compared to the existing operation and maintenance activity along the existing corridor. No significant increase in patrols or grading would be required.

For the west of Devers upgrade, it is expected that there will be a small decrease in operation and maintenance activity because there would be a reduced number of structures to patrol or maintain and the use of polymer insulators would significantly reduce or nearly eliminate the need for insulator washing.

TABLE 3-9
OPERATION AND MAINTENANCE LABOR FORCE

Activity	Frequency	Duration	Personnel Required	Note
Devers-Harquahala 500kV Transmission Line				
Routine Patrol, Aircraft	Every two years	8 hours	Pilot x 1	Lines are patrolled annually; patrol alternates yearly between helicopter and truck.
			Senior Patrolman x 1	
			Lineman x 1	
Routine Patrol, Truck	Every two years	3 weeks	Senior Patrolman x 1	
			Lineman x 2	
Routine repairs identified by Senior Patrolman	Every year	10 days	Foreman x 3	Repair unique items identified by senior patrolman during annual patrols, varies year to year. As many as three 8-man crews plus operators.
			Senior Lineman x 3	
			Lead Lineman x 3	
			Journeyman Lineman x 6	
			Apprentice x 6	
			Groundmen x 3	
			Equipment Operator x 3	
			Laborer x 3	
Remove Windblown Sand from Tower Footings	Every two years	1 week	Foreman x 1	Windblown sand and earth removed from LST steel by contract crew under direction of senior patrolman.
			Equipment Operator x 1	
			Laborer x 1	
Routine Right-of-Way Grading	Every three years	2 months	Foreman x 1	Grade all approved areas only.
			Equipment Operator x 1	
			Laborer x 1	
Routine Washing	N/A	N/A	N/A	Wash insulators as required.
West of Devers 230kV Transmission System				
Routine Patrol, Aircraft	Seldom	8 hours	Pilot x 1	Lines are patrolled annually; patrol alternates yearly between helicopter and truck.
			Senior Patrolman x 1	
			Lineman x 1	
Routine Patrol, Truck	Every year	1 week	Senior Patrolman x 1	
			Lineman x 1	
Routine repairs identified by Senior Patrolman	Every year	3 days	Foreman x 1	Repair unique items identified by senior patrolman during annual patrols, varies year to year. One 8-man crew plus operators.
			Senior Lineman x 1	
			Lead Lineman x 1	
			Journeyman Lineman x 2	
			Apprentice x 2	
			Groundmen x 1	
			Equipment Operator x 1	
			Laborer x 1	
Routine Right-of-Way Grading	Every year	2 months	Foreman x 1	Grade all approved areas only.
			Equipment Operator x 1	
			Laborer x 1	
Washing	NA	NA	NA	Wash insulators as required.
			NA	

3.6.3 System Operation and Maintenance Procedures

Maintenance of the proposed transmission lines would consist of periodic patrols by ground and air to locate any damage that might adversely affect the integrity and reliability of the line. Other non-emergency maintenance would involve the occasional replacement of insulators damaged by lightning or gunfire, the replacement of tower steel members due to gunfire or wind, and the repair of access and stub roads due to erosion or landslides. Crews would wash insulators, as necessary, using a specialized truck for the 230kV lines west of Devers. In the future, if levels of air pollution increase, the 500kV lines east of Devers Substation would require washing as well. Crews also would remove windblown sand and dirt from footings in areas where it has a tendency to accumulate.

3.7 SAFETY CONSIDERATIONS

3.7.1 Design

Safety is one of the primary considerations in the design of the proposed transmission line project. The proposed DPV2 transmission lines would be protected at the substations with circuit breakers that are connected to the protective relay system to minimize the possibility of electrical shock or fire in the event of either a single or multiple conductor breakage. Lightning protection would be provided by overhead groundwires along the lines.

In accordance with good safety practice, all fences and metal gates, either within or crossing the right-of-way, would be grounded.

3.7.2 Construction

Safety-related measures proposed as part of the construction phase activities are listed below:

- Construction operations would be conducted in a manner to avoid closing or obstructing railroads, roads, or other property until the appropriate permits have been obtained from landowners, governmental agencies, or other authorities having jurisdiction.

- Vehicular construction traffic would be limited to approved access roads, construction yards, and construction sites. No off-road travel would be permitted.

- Construction foremen and personnel would be well informed as to where construction equipment and vehicles would be permitted.

- Fences that cross the proposed transmission system access roads would be gated or modified per agreements with the landowner.

- No work would be performed that would affect any existing pipeline, telephone, telegraph or electric line, irrigation ditch, or other structure until proper authorization has been obtained.

- All applicable fire laws and regulations of the land-management agency with jurisdiction over land crossed by the proposed project would be fully complied with, and all fire plans would be followed.

- Construction-related areas would be maintained in a neat, clean, and sanitary condition at all times.

- Each tower site would be kept free from accumulation of waste materials and rubbish as required for safety, appearance, and prevention of fire hazards.

3.7.3 Operation and Maintenance

In case of single or multiple conductor failure, power would be automatically and rapidly removed from the lines to minimize the possibility of electrical shock or fire.

3.8 PROJECT ECONOMICS

3.8.1 Construction Costs

The estimated nominal cost for the construction of the proposed DPV2 transmission line project including right-of-way and related facilities, substation and series capacitors, voltage support, and telecommunication facilities is approximately $591 million. The estimated cost breakdown by individual project elements is summarized in Table 3-10.

TABLE 3-10
SUMMARY OF ESTIMATED CONSTRUCTION COSTS
FOR THE DEVERS-PALO VERDE 2 PROJECT
(2005 dollars)

Elements	Total Element Costs (x $1,000)
TRANSMISSION LINE	
500kV Transmission Line	$ 246,000
230kV Transmission Line	$ 97,000
Series Capacitors	$ 31,000
Subtotal Transmission Line	$ 374,000
SUBSTATION AND RELATED FACILITIES	
Substation Construction	$ 116,000
Voltage Support	$ 72,000
Special Protection Scheme	$ 3,000
Telecommunications	$ 14,000
Subtotal Substation and Related Facilities	$ 205,000
LAND	$ 12,000
TOTAL PROJECT COST	**$ 591,000**

NOTE: This estimate includes pension, benefits, and administrative and general overhead, but does not include Allowance for Funds Used During Construction (AFUDC).

3.9 DECOMMISSIONING

It is expected that the proposed transmission line would have a useful life of at least 50 years. Decommissioning plans, therefore, have not been developed at this time.

Map 3-2a
PROPOSED AND SUBALTERNATE ROUTES
Devers - Palo Verde No. 2 Transmission Line Project
Panel 1 of 3

Sources

United States Geological Survey (USGS), Phoenix, AZ (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 5 10 Miles

SOUTHERN CALIFORNIA EDISON
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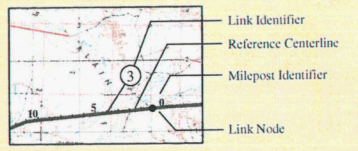
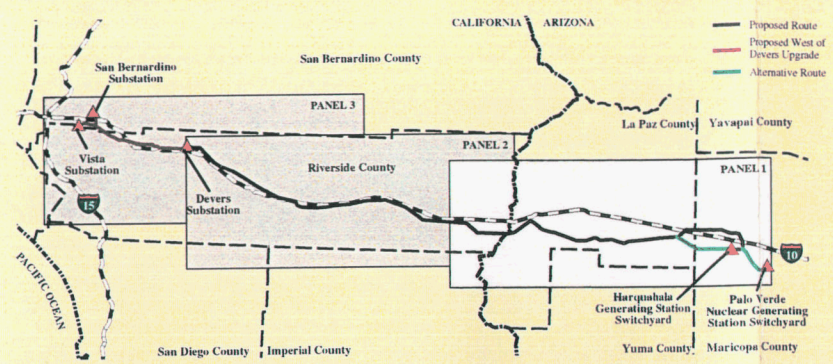
m:/projects/sce/devers/arizona/mxds/prop_route.mxd

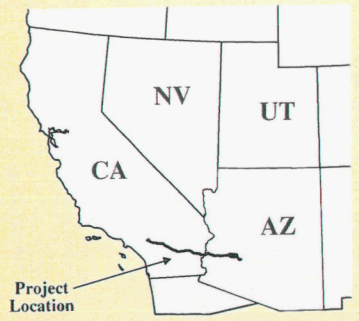
General Reference Features

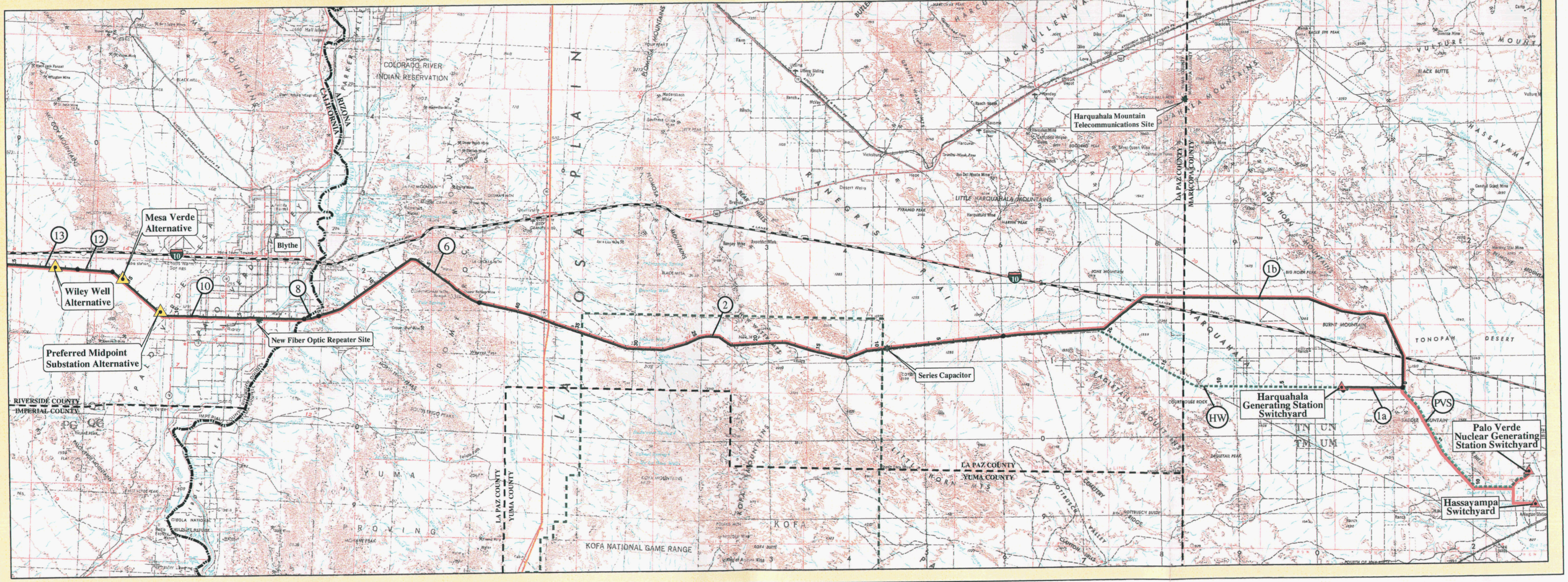
- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- State Boundary
- County Boundary
- Substation/Switchyard
- KOFA National Wildlife Refuge
- Midpoint Switching Station Alternative Sites
- Fiber Optic Repeater Site/ Series Capacitor/ Telecommunications Site



Panel Index Map







Map 3-2b
PROPOSED AND SUBALTERNATE ROUTES

Devers - Palo Verde No. 2
Transmission Line Project

Panel 2 of 3

Sources

United States Geological Survey (USGS), Santa Ana, CA (1979), Needles, CA/AZ, (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 5 10 Miles

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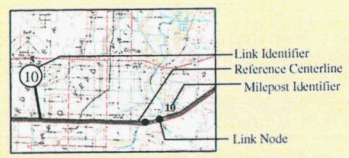
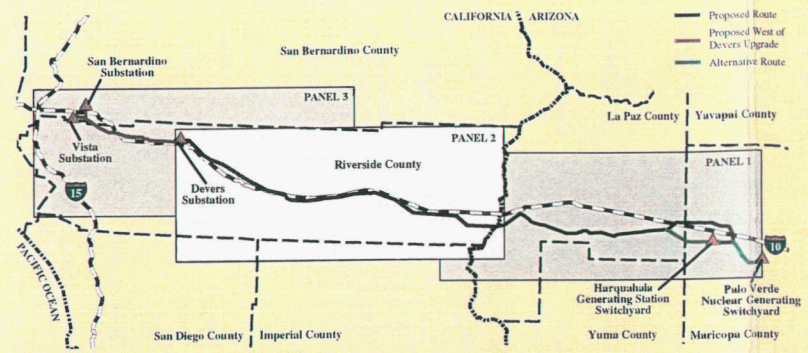
m:/projects/sce/devers/california/mxds/prop_route.mxd

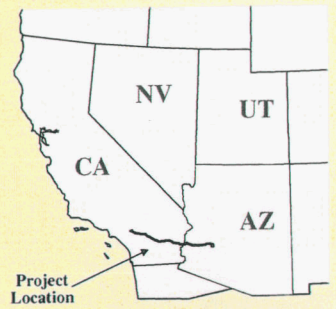
General Reference Features

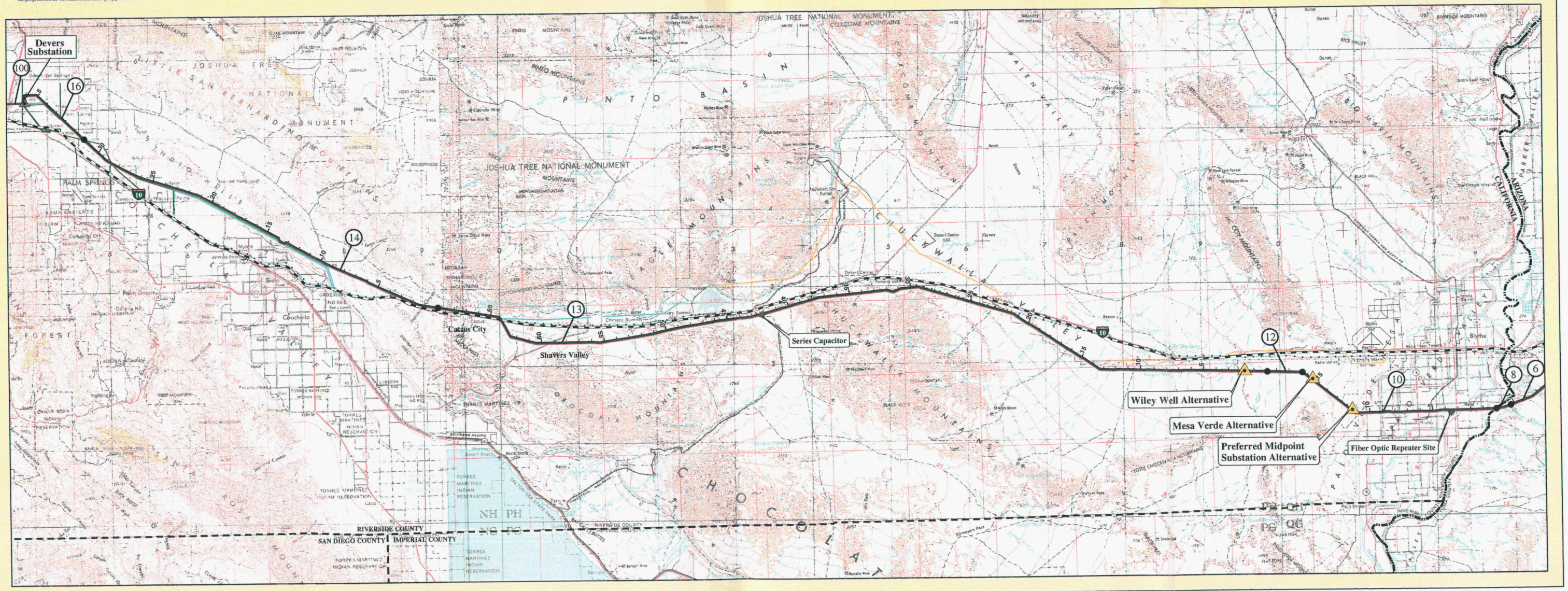
- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Substation/Switchyard
- Midpoint Substation Alternative
- Fiber Optic Repeater Site/Series Capacitor



Panel Index Map







Map 3-2c
PROPOSED AND SUBALTERNATE ROUTES
Devers - Palo Verde No. 2 Transmission Line Project
Panel 3 of 3

Sources

United States Geological Survey (USGS), Santa Ana, CA (1979), Needles, CA/AZ, (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Devers to Palo Verde No.2 PEA (1988). SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 5 10 Miles

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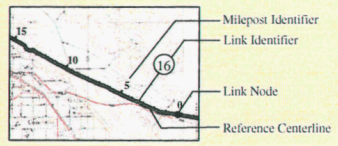
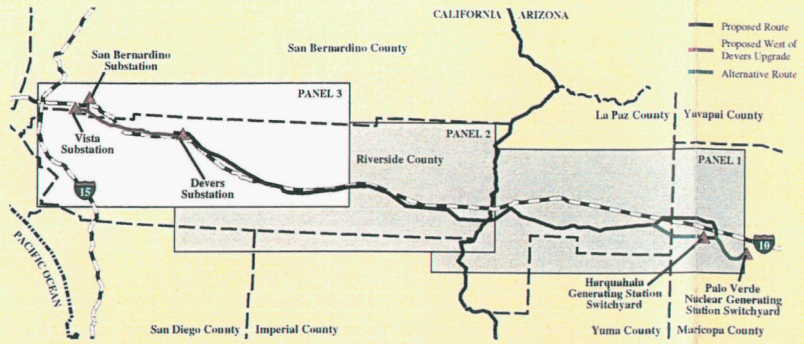
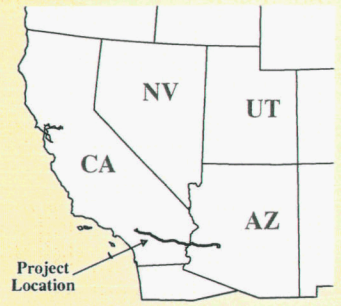
General Reference Features

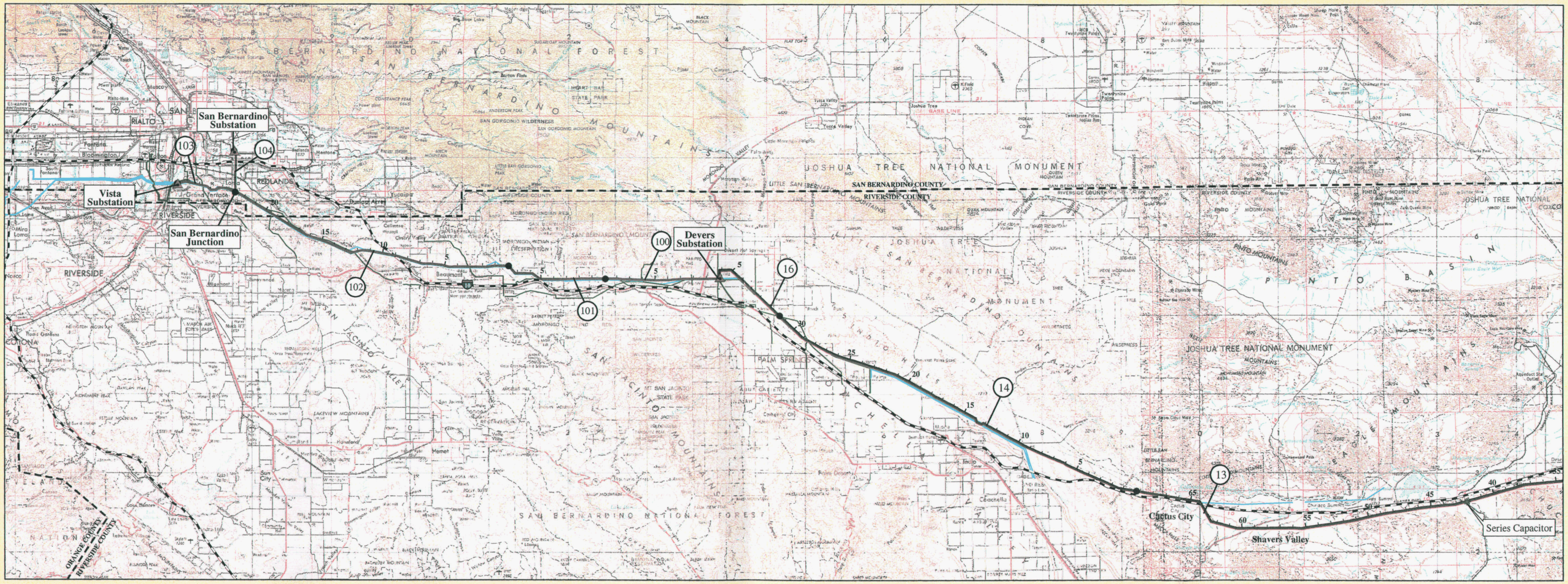
- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- County Boundary
- Substation/Switchyard
- Series Capacitor

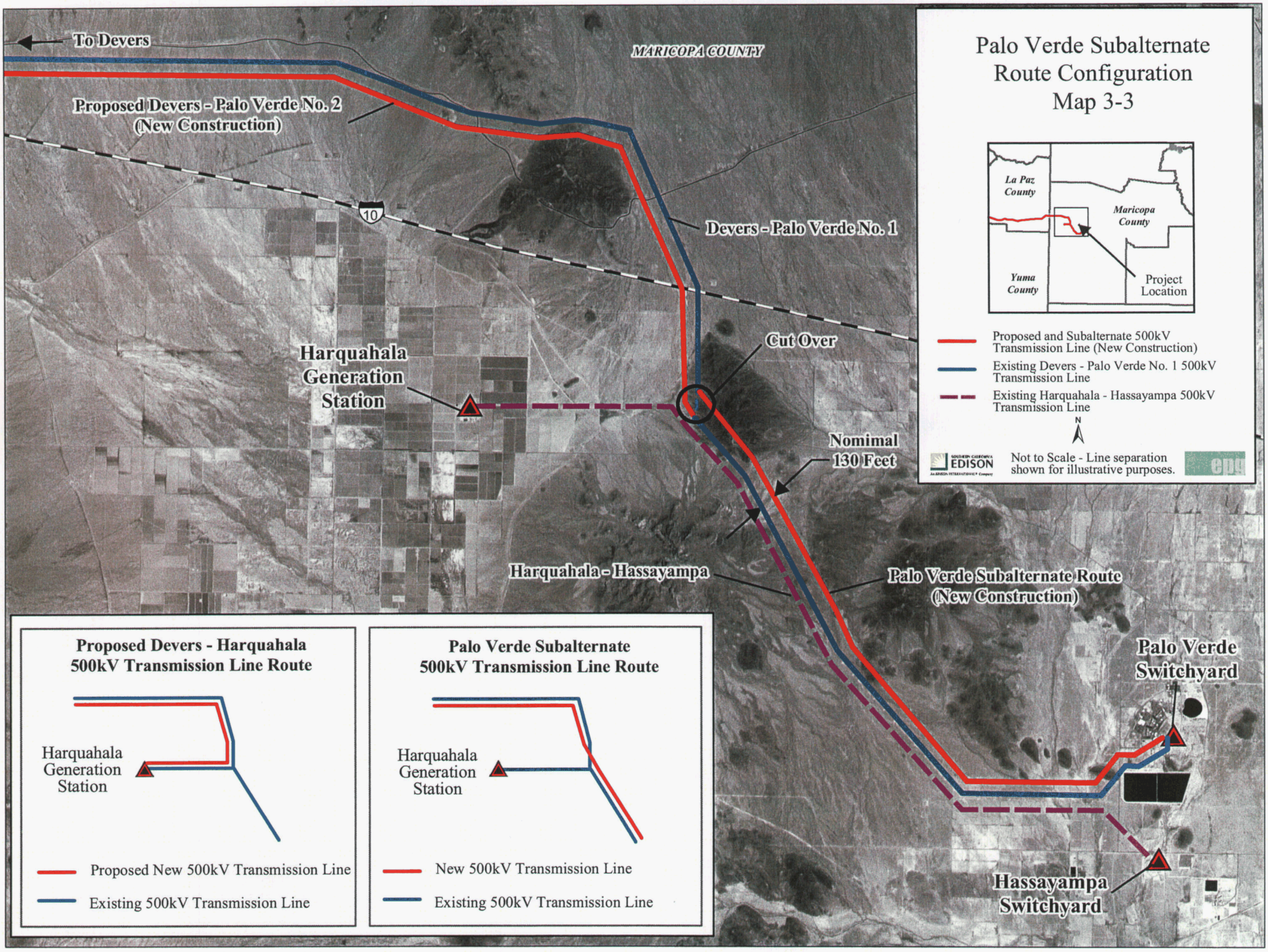


Panel Index Map








To Devers
MARICOPA COUNTY
Proposed Devers - Palo Verde No. 2
(New Construction)
10
Devers - Palo Verde No. 1
Harquahala
Generation
Station
Cut Over
Nomimal
130 Feet
Harquahala - Hassayampa
Palo Verde Subalternate Route
(New Construction)
Palo Verde
Switchyard
Hassayampa
Switchyard
Palo Verde Subalternate
Route Configuration
Map 3-3
La Paz
County
Maricopa
County
Yuma
County
Project
Location
Proposed and Subalternate 500kV
Transmission Line (New Construction)
Existing Devers - Palo Verde No. 1 500kV
Transmission Line
Existing Harquahala - Hassayampa 500kV
Transmission Line
N
EDISON
Not to Scale - Line separation
shown for illustrative purposes.
Proposed Devers - Harquahala
500kV Transmission Line Route
Harquahala
Generation
Station
Proposed New 500kV Transmission Line
Existing 500kV Transmission Line
Palo Verde Subalternate
500kV Transmission Line Route
Harquahala
Generation
Station
New 500kV Transmission Line
Existing 500kV Transmission Line

CHAPTER 4.0
EXISTING ENVIRONMENTAL SETTING

4.1 DEVERS-HARQUAHALA 500kV TRANSMISSION LINE

4.1.1 Introduction

This proposed 500kV transmission line route is approximately 230 miles long and located between the Harquahala Generating Station in western Maricopa County, Arizona and the Devers Substation to the north of Palm Springs, California. The following sections include an inventory of land use, recreation, socioeconomics, population and housing, geology and soils, hydrology, air quality, traffic and transportation, biology, noise, mineral resources/energy, hazards and hazardous materials, public services and utilities, visual resources, cultural resources, and public health and safety. Each of these sections is separated into discussions of the Arizona and California portions of the Devers-Harquahala study corridor.

4.1.2 Land Use

The study corridor for the California portion of the proposed Devers-Harquahala route is 2 miles wide, or 1 mile on either side of the route, an appropriate distance within which potential impacts can be assessed. A 4-mile-wide study corridor is delineated for the Arizona portion of the proposed Devers-Harquahala route to include 2 miles on either side of the proposed transmission line route as required for the Arizona CEC.

Federal land and associated uses dominate the study corridor. Private land can be found primarily on the Harquahala Plain in Arizona, the Coachella Valley north of Palm Springs, and south of Blythe in California. The Agua Caliente Indian Reservation is the only Native American land in the study corridor located near the proposed Devers-Harquahala transmission line route.

Areas designated by federal agencies for preservation, conservation, and/or recreation occur within the study corridor. These areas include wilderness areas (WAs), areas of critical environmental concern (ACECs), the KOFA NWR, and the Coachella Valley NWR/Preserve.

Incorporated cities within or adjacent to the study corridor include Coachella, Indio, Cathedral City, Desert Hot Springs, and Palm Springs, which are all located in Riverside County, California. Other nearby population centers include unincorporated rural communities (e.g., Ripley, Desert Center, Chiriaco Summit, Cactus City, Thousand Palms, and North Palm Springs), small settlements along major transportation routes, trailer/mobile home parks, and large-lot rural residential tracts.

Other land uses within the study corridor include energy facilities, military reservations (Yuma Proving Ground), mines, farms, ranches, rural residences, communications sites, air facilities, and agriculture. A detailed description of land uses found in the study corridor follows.

The inventory was compiled by updating the land use data used for SCE's 1988 Amended PEA for the DPV2 transmission line and existing data from previous studies occurring within the study corridor. Next, existing maps and aerial photographs within and adjacent to the proposed route segment were interpreted. The mapped information was then field verified by air and ground reconnaissance. In addition, key federal, state, county, and local land resource agencies were contacted to update official information and identify planned land uses.

Land use inventory results are described in the following sections and displayed on the following maps, at the end of Chapter 4:

- Map 4-1 a-c: Land Ownership
- Map 4-2 a-e: Land Jurisdiction
- Map 4-3 a-e: Land Use – Existing
- Map 4-4 a-e: Land Use – Future

4.1.2.1 Arizona

Land Ownership/Jurisdiction

Land ownership and jurisdiction status were identified and mapped within the Arizona portion of the Devers-Harquahala study corridor based on available secondary data sources. Descriptions of the major categories follow, and the information is listed in Tables 4-1 and 4-2 and shown on Maps 4-1a, 4-2a, and 4-2b (end of Chapter 4).

TABLE 4-1
LAND OWNERSHIP CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA

Ownership Category	Total Miles Crossed
U.S. Fish and Wildlife Service	23.8
Bureau of Land Management	55.4
Bureau of Reclamation (Central Arizona Project)	0.1
Department of Defense	0.1
Arizona State Trust Land	10.8
Private Land	12.1
Total	**102.2**
Note: Totals may not check due to rounding.	

TABLE 4-2
LAND JURISDICTION CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA

Jurisdiction Category	Total Miles Crossed
Unincorporated Maricopa County	27.2
Unincorporated La Paz County	75.0
Total	**102.2**
Note: Totals may not check due to rounding.	

U.S. Fish and Wildlife Service

Land managed by the USFWS within the Arizona portion of the Devers-Harquahala study corridor includes the KOFA NWR. The KOFA NWR is located east of SR 95 between the town of Quartzsite and the city of Yuma, and is 1,040 square miles in size. The study corridor would cross approximately 24 miles of the KOFA NWR along Link 2 parallel to the existing DPV1 transmission line.

Bureau of Land Management

Public land is nearly continuous in the La Paz and Maricopa County portions of the Devers-Harquahala study corridor. The BLM Phoenix Field Office and Yuma Field Office administer this land. BLM WAs within or adjacent to the study corridor include the Big Horn Mountains, Hummingbird Springs, Eagletail Mountains, New Water Mountains, and KOFA NWR WA. The Big Horn Mountains WA is 21,000 acres in size, Hummingbird Springs WA is 31,200 acres, Eagletail Mountains WA is 100,600 acres, New Water Mountains WA is 24,600 acres in size and the KOFA NWR WA is 510,900 acres in size.

Department of Defense

The U.S. Army Yuma Proving Ground is the only military reservation within the Arizona portion of the Devers-Harquahala study corridor, and is located west of Arizona SR 95 between the town of Quartzsite and the city of Yuma. The Yuma Proving Ground is 1,272 square miles in size and is crossed by Link 2 near Milepost 40 for 0.1 mile.

Bureau of Reclamation

The USBR administers land used for the CAP Canal. The CAP Canal transports water from the Colorado River to the Phoenix and Tucson metropolitan areas. The proposed Devers-Harquahala route crosses the canal at two locations north of I-10 at Mileposts 4.5 and 9.0 along Link 1B.

Arizona State Trust Land

Arizona State Trust Land is located primarily in the Harquahala and Ranegras plains and near the Colorado River. They occupy the bulk of the land not managed by the BLM, USFWS, and the DOD (Yuma Proving Ground).

Private Land

Private land is found scattered throughout the Arizona portion of the Devers-Harquahala study corridor interspersed between federal and state lands.

Native American Land

The proposed transmission line would not cross any Indian reservation land in Arizona. The Colorado River Indian Reservation boundary is located approximately 6 miles north of the DPV1 and proposed DPV2 transmission line corridor.

On February 14, 2005, Arizona Representative Raul Grijalva introduced House Bill H.R. 794, which would change the boundary of the Colorado River Indian Reservation to the boundaries delineated by the Robbins Survey of 1875 and affirmed by the Harrington Resurvey of 1912, including approximately 16,000 acres. A companion bill in the Senate, S.536, was introduced by

Arizona Senator McCain on March 7, 2005. The proposed legislation would extend the reservation boundary south, across I-10 and immediately north of the existing DPV1 and proposed DPV2 rights-of-way in the Dome Rock Mountains. However, some DPV1/DPV2 access roads are located within the proposed new boundary.

Existing Land Use

The following categories of existing land uses within the Arizona portion of the Devers to Harquahala study corridor were identified and mapped based on aerial photography, existing maps, public documents, and field reconnaissance. Results are shown on Maps 4-3a and 4-3b. A general description of land uses is presented in Table 4-3, which summarizes land uses crossed by the study corridor.

TABLE 4-3
EXISTING LAND USES CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA

Land Use Category	Link	Milepost	Miles Crossed
Agriculture	1a	0.5 – 2.5	2
Yuma Proving Ground	2	40	0.1

Residential

Residential land uses are dispersed and somewhat limited in the Arizona portion of the Devers-Harquahala study corridor because of the large amount of federal and state land present. The residential uses include trailer/mobile home parks, large-lot residential subdivisions, and small settlements along major transportation routes.

Rural agricultural residential living can be found in the vicinity of Link 1a on the Harquahala Plain from Milepost 0 to 2.5. A small grouping of trailer homes is located north of Link 1b from Milepost 23 to 25.

Commercial and Industrial

Commercial and industrial uses are somewhat limited and dispersed within the Arizona portion of the Devers-Harquahala study corridor. Sand and gravel operations are found along with mining sites and mineral extraction locations. Most of the mining sites identified are abandoned or inactive. The Copper Bottom Mine is located north of Milepost 2 of Link 6 in the Copper Bottom Pass. Communication sites primarily consist of microwave, radio, and cellular towers and are usually located atop mountain peaks.

Agriculture

Agricultural areas within the Arizona portion of the Devers-Harquahala study corridor are located close to Harquahala Generating Station, generally in the Harquahala Plain. Link 1a crosses approximately 1 mile of agricultural land. Agricultural production by type includes field crops (cotton, alfalfa, and grains).

The Department of Agriculture (Natural Resource Conservation Service) has established a classification of importance for agricultural land. The classifications are Prime Farmland and Farmland of Unique Importance based on criteria for soil characteristics, climatic conditions, and water supply. The criteria include soil type, moisture content, water supply, soil temperature, acidity, salinity, depth, drainage, water table, flooding, slope, erodibility, permeability, rock content, rooting depth, growing season, crop type and value, and other economic factors. In Maricopa County, the agricultural land within the study corridor has been classified as Prime Farmland and Farmland of Unique Importance. There is no agricultural land within the study corridor in La Paz County.

Air Facilities

Air facilities in the study corridor with Federal Aviation Administration (FAA) recognized airspace were identified. Other facilities exist in the vicinity of the study corridor as agricultural operations, and utilize sparsely traveled roads as take-off and landing strips. The FAA establishes airport interference or clear zones. Interference zones were identified around existing airports and airstrips, although the proposed transmission line would not be located within any of these zones.

There are two private and one emergency (abandoned) airstrip in or near the Arizona portion of the study corridor. The Mauldin private airstrip is located approximately 1.6 miles east of the proposed transmission line (Link 1b, near Milepost 1). The Tonopah private airstrip is located approximately 4 miles east of Link 1b near Milepost 10. The abandoned Salome Civil Aeronautic Administration Emergency Air Strip is located near the Link 1 and Link 2 junction. The airport is approximately 3 miles to the north of the study corridor.

Military

Link 2 crosses the Yuma Proving Ground for 0.1 mile near Milepost 40. The proving ground is used by the U.S. Army to test artillery, aircraft target acquisition equipment and armament, and vehicle performance.

Vacant/Undeveloped and Grazing Land

The vacant/undeveloped land use category includes all of the land within the Arizona portion of the Devers to Harquahala study corridor that does not contain an inventoried land use. The vacant/undeveloped land administered by the BLM and Arizona State Land Department (ASLD)

are predominantly open range and are largely used by ranchers who have BLM and state land grazing permits and/or leases for livestock grazing.

Linear Features

Numerous utilities cross the study corridor including pipelines, transmission lines, aqueducts, canals, transportation routes, and railroads.

The major pipelines within the Arizona portion of the Devers-Harquahala study corridor include El Paso Natural Gas lines passing through Wenden Pump Station 4126 and the Castle Dome Pump Station. The Wenden Station is located south of Milepost 30 on Link 1b and the pipelines that pass through it include lines 1600, 1103, 1100, and the All American Pipeline (Line 2000). The All American Pipeline passes from the south, through the station, north to I-10 and parallels the I-10 into California. Pipelines 1600, 1103, and 1100 parallel the proposed transmission line through the KOFA NWR. Line 1110 begins near the eastern boundary of the KOFA NWR, crosses the KOFA NWR, and proceeds north out of the study corridor near Milepost 32 of Link 2, paralleling Lines 1103 and 1100. Line 1600 continues west within the study corridor through Copper Bottom Pass, and moves out of the study corridor to the north near Milepost 6 of Link 6.

The major high voltage electrical transmission lines within the study corridor include the DPV1 500kV, Harquahala-Hassayampa 500kV, and WAPA Gila-Parker 115kV transmission line. The proposed Devers-Harquahala route parallels the existing DPV1 500kV line, at a distance of 130 feet, beginning at Milepost 0 of Link 1b. The lines are in parallel rights-of-way throughout the Arizona portion of the Devers-Harquahala study corridor, with the exception of the Copper Bottom Pass where they are placed on double-circuit towers in the existing right-of-way. The Harquahala-Hassayampa 500kV transmission line parallels the proposed route along Link 1a for 5 miles. The WAPA Gila-Parker 115kV line crosses the proposed transmission line near Milepost 38 of Link 2.

Water is distributed by canal and aqueduct systems throughout the Arizona portion of the Devers-Harquahala study corridor. The CAP Canal provides supplemental water for established agricultural areas, including Native American communities in Maricopa, Pinal, and Pima counties, as well as municipal and industrial water for the rapidly expanding Phoenix and Tucson metropolitan areas. The CAP Canal is near Link 16 from Milepost 4 to 30 and is crossed at Mileposts 4.5 and 10.

Major transportation routes in the Arizona portion of the study corridor include I-10 and SR 95. Secondary roads of varying quality provide access throughout the study corridor. The proposed Devers-Harquahala transmission line route crosses I-10 twice at Mileposts 2.5 and 26 of Link 1b. The route crosses SR 95 at Milepost 38 of Link 2.

Future Land Use

General Comprehensive and Land Management Plans

General comprehensive and land-management planning documents were reviewed to identify future land uses in Arizona. Table 4-4 lists these documents by jurisdiction with their adoption status. The future land uses identified in the Arizona portion of the Devers-Harquahala study corridor are shown on Maps 4-4a and 4-4b.

TABLE 4-4 LAND MANAGEMENT AND GENERAL PLANS FOR THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA			
Agency	**Plan Title**	**Managing Jurisdiction**	**Date of Adoption**
BLM	Final Amendment and Environmental Assessment to the Lower Gila North Management Framework Plan and the Lower Gila South Resource Management Plan	Phoenix District	Feb 2000
	Lower Gila North Management Framework Plan	Phoenix District	May 1985
	Lower Gila South Resource Management Plan	Phoenix District	Aug 1985
	Lower Gila South Final Wilderness Environmental Impact Statement	Phoenix District	Apr 1987
	Yuma District Resource Management Plan	Yuma District	Aug 1985
	Yuma District Resource Management Plan Amendment	Yuma District	Jan 1992
	Proposed Yuma District (Havasu) Resource Management Plan Amendment and Final Environmental Assessment	Yuma District	Sept 1994
	Final Yuma District (Lands) Resource Management Plan Amendment	Yuma District	Mar 1996
	Final Ehrenberg-Cibola Recreation Area Management Plan	Yuma District	Jan 1994
Maricopa County	Maricopa County 2020 Comprehensive Plan	Maricopa County	Oct 1997
	Maricopa County 2020 Tonopah/Arlington Area Plan	Maricopa County	Sept 2000

Bureau of Land Management

The Lower Gila North Management Framework Plan (MFP) became effective May 1985. The amended versions of the MFP have included updates to the land exchange decisions for state, minor estate, and for special legislation. The Lower Gila South RMP adopted August 1985 and the Lower Gila South Final Wilderness Environmental Impact Statement adopted April 1987 (RMP/EIS) provide a comprehensive framework for managing and allocating public land and resources in BLM's Lower Gila South Resource Area in southwestern Arizona. The BLM Phoenix Field Office is currently preparing a new RMP for the Agua Fria National Monument and an Amendment to the Phoenix RMP and Lower Gila North MFP. The Yuma District RMP (1985) and amendments (1992, 1994, and 1996) likewise provide a comprehensive framework for managing public land and resources in the Yuma District over the next 10 to 20 years.

The BLM has planned for utility corridors within its jurisdiction. The proposed Devers-Harquahala 500kV transmission line would be located within a 130-foot-wide right-of-way in the BLM designated 1-mile-wide Palo Verde-Devers utility corridor. The corridor is identified as Utility Corridor 2 (UC-2) within the Phoenix District, and UC-8 within the Yuma District.

Maricopa County

The Maricopa County Comprehensive Plan, along with the Tonopah/Arlington Specific Plan, were updated in 2000. The comprehensive plan includes a collection and analysis of existing data specifying goals and policies to guide general land development. It also indicates the intended future function, density, and characteristic use of land for the different parts of the Maricopa planning area. Land use definitions designated by the Maricopa County Comprehensive Plan within the study corridor include open space and low-density residential.

La Paz County

La Paz County does not have an adopted general plan. According to a representative at the La Paz County Planning Department, the proposed Devers-Harquahala transmission line would not conflict with future land use plans in the county, and would follow a designated utility corridor (Brad Weekley, June 2003).

Other

There is a possibility of private land development along I-10 as a result of potential BLM and ASLD land exchanges. The ASLD, upon exchange, would most likely sell or lease the land for private development purposes.

Park, Recreation, and Preservation Land Uses

Park, recreation, and preservation land uses in the Arizona portion of the Devers-Harquahala study corridor are presented on the Land Use Map (Map 4-4a and 4-4b). Table 4-5 summarizes recreational land uses crossed by the proposed project.

TABLE 4-5
SUMMARY OF PARKS, RECREATION, AND PRESERVATION AREAS CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA

Land Use Category	Link	Milepost	Miles Crossed
KOFA National Wildlife Refuge	2	10 – 35	23.8
Colorado River	8	1	0.1

National Wildlife Refuge

The KOFA NWR encompasses 665,400 acres and is under USFWS jurisdiction. The KOFA NWR is composed of desert environment inhabited by the desert bighorn sheep and the California palm, the only native palm in Arizona. Presently, recreational uses that include hiking, photography, hunting, and wildlife observation are encouraged. Other activities such as camping and rock hounding are permitted.

Wilderness Areas

There are several BLM WAs located within or near the Arizona portion of the Devers-Harquahala study corridor. The WAs include Hummingbird Springs, Big Horn Mountains, Eagletail Mountains, and New Water Mountains. The KOFA NWR also contains wilderness areas within its boundaries. The Hummingbird Springs WA is near Milepost 6.5 of Link 1b. Big Horn Mountains WA is near Link 1b from Mileposts 8 to 14. Eagletail Mountains WA is within

the study corridor near Link 1b from Mileposts 30 to 32. The KOFA NWR WA is near Link 2 from Mileposts 10 to 34.

Scenic Roads

There are no roads designated as scenic in the Arizona portion of the Devers-Harquahala study corridor.

Recreation Areas

Hiking and Riding Trails

No established hiking and riding trails are located within the Arizona portion of the Devers-Harquahala study corridor. Currently, the Arizona State Parks Department is supporting the Arizona Hiking and Equestrian Trails Committee in its effort to develop a trail system adjacent to the CAP Canal.

Campgrounds

There are no designated campgrounds within the Arizona portion of the Devers-Harquahala study corridor. The Crystal Hill campground is located within the KOFA NWR and is managed by the USFWS.

Water-Oriented Use Areas

The Lower Colorado River provides many water-based recreational opportunities, primarily fishing, swimming, boating, and water skiing. Activity is concentrated around the population centers of Lake Havasu City, Parker Strip, Blythe, and Yuma.

Recreation on public land along the Lower Colorado River can be found in developed and undeveloped BLM recreation sites, developed concessions, and areas leased for state, county, and city parks. There are no developed park or recreation sites within the Arizona portion of the Devers-Harquahala study corridor.

Roadside Rest Areas

An Arizona Department of Transportation (ADOT) roadside rest area was identified within the study corridor. The Burnt Well rest stop is located approximately 8 miles west of Tonopah, and is 2 miles west of Link 1b at Milepost 2.5.

Other

Various recreational activities and opportunities are available on public land in the Arizona portion of the Devers-Harquahala study corridor. The desert provides open-space opportunities for activities such as soaring, target shooting, hang gliding, model rocket and airplane flying, and land sailing. Camping, off-road vehicle use, hunting, rock collecting, recreational mining, driving for pleasure, hiking, photography, nature study, sightseeing, and other dispersed recreational activities also occur on public land in the study corridor.

4.1.2.2 California

Land Ownership/Jurisdiction

Land ownership and jurisdiction status were identified and mapped within the California portion of the Devers-Harquahala study corridor, based on secondary data sources. Descriptions of the major categories follow, and a summary of the information is listed in Tables 4-6 and 4-7 and shown on Maps 4-1b, 4-1c, 4-2c, 4-2d, and 4-2e.

TABLE 4-6
LAND OWNERSHIP CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Ownership Category	Total Miles Crossed
U.S. Fish and Wildlife Service (Nature Conservancy)	2.3
Bureau of Land Management	54.9
Bureau of Indian Affairs (Agua Caliente)	0.1
California State Land	0.6
Private Land	69.5
Total	**127.4**
Note: Totals may not check due to rounding.	

TABLE 4-7
LAND JURISDICTION CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Jurisdiction Category	Total Miles Crossed
Unincorporated Riverside County	120.9
City of Coachella	3.1
Cathedral City	3.3
Total	**127.4**
Note: Totals may not check due to rounding.	

U.S. Fish and Wildlife Service

Land managed by the USFWS within the California portion of the Devers-Harquahala study corridor includes portions of the Coachella Valley NWR. The wildlife refuge also is known as

the Coachella Valley Preserve and is managed jointly by the BLM, the Nature Conservancy, California Department of Fish and Game (CDFG), USFWS, and the California Department of Parks and Recreation. The preserve is 20,000 square acres in size and is located approximately 5 miles northwest of Indio between I-10 and Dillon Road. The study corridor would cross 2.3 miles of the preserve along Link 14 starting at Milepost 19.

Bureau of Land Management

The California portion of the proposed Devers-Harquahala route crosses approximately 54.9 miles of public land managed by the BLM. Public land is nearly continuous for the California portion, with the exception of an area between Indio and Palm Springs, and the Palo Verde Valley area southwest of Blythe. BLM WAs within or adjacent to the study corridor include the Chuckwalla Mountains WA, Orocopia Mountains WA, and Mecca Hills WA. The Chuckwalla Mountains WA is 80,770 acres, the Orocopia Mountains WA is 40,735 acres, and the Mecca Hills WA is 24,200 acres in size. The BLM also administers five ACECs within the study corridor.

National Park Service

The proposed Devers-Harquahala route passes within 1 mile of the Joshua Tree National Park. The 1,590-square-mile park is located between I-10 and Highway 62, covering portions of both the Mojave and Colorado deserts.

Native American Land

The Aqua Caliente Indian Reservation is located east of Palm Springs. The proposed Devers-Harquahala route crosses about 0.1 mile of the reservation along Link 14 between Mileposts 25 and 26.

Department of Defense

Section 6 of Township 5 South, Range 8 East, located north of Indio, is under the jurisdiction/ownership of the federal military. The section is north of Link 14 at Milepost 12.

California State School Land

Isolated parcels of California State School Land are scattered throughout the California portion of the Devers-Harquahala study corridor. The proposed Devers-Harquahala route crosses approximately 0.6 mile of State School Land along Link 13 at Milepost 31.

Incorporated Areas

Five incorporated areas—Coachella, Indio, Cathedral City, Desert Hot Springs, and Palm Springs—are located within or adjacent to the Devers-Harquahala study corridor. The study corridor crosses within the Cathedral City and Coachella city limits. Link 14 crosses Coachella from Milepost 4 to 7.5 and Cathedral City from Milepost 28 to 31.

Private Land

Private land is found throughout the California portion of the Devers-Harquahala study corridor interspersed between federal and state land. The study corridor crosses approximately 69.5 miles of private land.

Existing Land Use

The following categories of existing land uses within the California portion of the Devers-Harquahala study corridor were identified and mapped based on aerial photographs, existing maps, public documents, and field reconnaissance. Results are shown in Maps 4-3c, 4-3d, and 4-3e. Following the general description of land uses is Table 4-9, which summarizes the land uses potentially affected by the study corridor.

Residential

Residential land uses are primarily associated with developed communities located within and adjacent to the California portion of the Devers-Harquahala study corridor. Developed areas include the incorporated cities of Palm Springs, Desert Hot Springs, Cathedral City, Indio, and Coachella, and the unincorporated rural communities of North Palm Springs, Thousand Palms, Chiriaco Summit, Desert Center, and Ripley. In addition, smaller settlements along major transportation routes, trailer/mobile home parks, and large-lot residential subdivisions have been classified as residential use.

Along Link 10 from Milepost 0 to 11 are low-density residential land uses associated with agriculture. An abandoned single-family dwelling unit is located north of Link 10 at Milepost 5.3. The residence is located ½ mile between 22nd Avenue and 24th Avenue and ⅛ mile east of Arrowhead Boulevard. Two single-family dwelling units and a mobile home are located on a

single parcel north of Link 10 at Milepost 6.2. The existing corridor contains the DPV1 centerline, a canal, and the proposed Devers-Harquahala centerline. The DPV1 line is located approximately 500 feet south of the residences. The Palo Verde Irrigation District maintains a canal located approximately 200 feet north of the existing DPV1 line. The proposed Devers-Harquahala centerline would be located 100 feet south of the residences. The residences are located ½ mile between 22nd Avenue and 24th Avenue adjacent to CA 78. An area of medium-density residential is located south of Link 14 at Milepost 18, and an area of low-density residential at Milepost 24 is associated with Thousand Palms. Link 16 crosses an area of low-density residential along Mileposts 4 and 5 associated with the unincorporated community of North Palm Springs.

Commercial and Industrial

Commercial uses correlate with developed areas and are associated with the major transportation routes found in the rural areas of the California portion of the Devers-Harquahala study corridor. Commercial centers can be found in Ripley (Link 10, Milepost 6), Indio (Link 14, Milepost 10), Thousand Palms (Link 14, Milepost 24), and North Palm Springs (Link 16, Milepost 3.5).

Light and heavy industrial uses are situated throughout the study corridor. Heavy industrial operations can be found in the urbanized areas. Large-scale commercial wind energy facilities are located in the vicinity of and southeast of Devers (Link 16, Milepost 6). Sand and gravel operations occur throughout the study corridor, along with mining sites and mineral extraction locations such as Link 13, Milepost 38, and Link 14 at Milepost 26. Link 14 crosses approximately 1 mile of the Granite Construction Company's property at Milepost 15. The vast majority of mining sites are abandoned or inactive. Communication sites within the study corridor mainly consist of microwave, radio, and cellular towers and are usually located atop mountain peaks and hillsides.

Agriculture

Agriculture within the California portion of the Devers-Harquahala study corridor is located in the Chuckwalla, Coachella, and Palo Verde valleys. Agricultural production includes field crops (cotton, alfalfa, grains) in most agricultural areas, with citrus, deciduous, and truck crops in the Coachella and Palo Verde valleys.

Agricultural land located in southern California consists of the following four classifications of farmland, as established by federal and state agencies: Prime Irrigated, Statewide Important, Unique, and Local Important. Agricultural land is located within the Palo Verde Valley, along Link 10 from Milepost 0 to 10.5 and within the Coachella Valley along Link 14 at Milepost 8. Within Palo Verde Valley, the agricultural land that is crossed by Link 10 contains farmland that is classified as Prime Irrigated, Statewide Important, and Local Important. Within Coachella Valley, land that is crossed by Link 14 contains farmland that is Prime Irrigated and Unique. Other areas that are not traditional agricultural areas have not been surveyed and therefore do not receive a designation.

Air Facilities

Air facilities with FAA recognized airspace were identified. Other such facilities may exist in the vicinity of the study corridor as agricultural operations, and may utilize sparsely traveled roads as take-off and landing strips. The FAA establishes airport interference or clear zones around all airports and airstrips, although the proposed transmission line would not be located within any of these zones.

One airport is located in the California portion of the Devers-Harquahala study corridor. The Chiriaco Summit Airport is a public use airport situated approximately 25 miles east of Coachella, north of Milepost 51 of Link 13. An additional five airports are located near the study corridor. The Blythe Airport is located 5 miles north of Link 10 near Milepost 10. Desert Center

Airport is located 3 miles north of Link 13 near Milepost 29. The Julian Hinds Private Airstrip is located 2 miles north of Link 13 near Milepost 47. The Bermuda Dunes Airport is located 3 miles south of Link 14 near Milepost 15. Palm Springs International Airport is located 3.5 miles southwest of Link 14 near Milepost 29.

Vacant/Undeveloped and Grazing Land

The vacant/undeveloped land use category includes all of the land within the California portion of the Devers-Harquahala study corridor that is not contained within the inventoried land uses. The vacant/undeveloped land administered by the BLM is open to limited grazing leases.

Linear Features

Numerous utilities cross the California portion of the Devers-Harquahala study corridor, including pipelines, transmission lines, aqueducts, canals, transportation routes, and railroads. The proposed transmission line parallels the existing DPV1 500kV transmission line throughout the California portion of the proposed Devers-Harquahala study corridor. Other existing utility linear features (i.e., pipelines and transmission lines) either parallel and/or cross the study corridor, as shown in Table 4-8.

TABLE 4-8
EXISTING PIPELINES AND TRANSMISSION LINES THAT PARALLEL OR CROSS THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Pipeline/Transmission Line Name	Link	Parallels Proposed Project	Crosses Proposed Project
Sohio Pipeline	12, 13	x	-
Southern California Gas Company H.P. Pipelines (3)	13	x	-
EPNG Pipeline 2051	13	-	x
EPNG Pipeline 2001	13, 14	x	x
EPNG Pipeline 2000	13, 14	x	x
Devers-Mirage #1 230kV	14, 16	x	-
Devers-Mirage #2 230kV	14, 16	x	-
Devers-Santa Rosa 115kV	14, 16	x	x
Garnet-Santa Rosa 115kV	14, 16	x	-
Devers-Eisenhower 115kV	14, 16	x	-
Devers-Hi Desert 115kV	16	x	x
Devers-Palo Verde #1 500kV	10, 12, 13, 14, and 16	x	-
Blythe-Niland 161kV	10	-	x
Blythe-Knob 161kV	10	-	x
Eagle Mountain-Dunes 161kV	13	x	-
Devers-Eagle Mountain Control Line	13, 14	x	x
Devers-Hayfield 230kV	14, 16	x	-
Devers-Julian Hinds 230kV	13, 14, 16	x	x

Water is distributed by canal and aqueduct systems throughout the California portion of the Devers-Harquahala study corridor. The All American Canal and its main branch, the Coachella Canal, provide supplemental water for the Coachella and Imperial valleys of southern California. The Coachella Canal traverses the study corridor along the western side of the Mecca Hills and the Chocolate Mountains to the Coachella Valley. In the Palo Verde Valley, the Palo Verde Irrigation District maintains irrigation canals that transport water for irrigation purposes from the Palo Verde Diversion Dam.

Major transportation routes in the California portion of the Devers-Harquahala study corridor include I-10; CA 62, 78, and 177; Box Canyon Road; and Dillon Road. Secondary roads of varying quality provide access throughout the study area. Link 13 crosses the I-10 at Milepost

64. CA 62 is located west of Link 16 near Milepost 6.5. Link 10 crosses CA 78 at Milepost 6. CA 177 is located north of Link 13 near Milepost 33. Link 13 crosses Box Canyon Road at Milepost 60. Link 14 crosses Dillon Road at Milepost 10.

TABLE 4-9
EXISTING LAND USES CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Land Use Catergory	Link	Milepost	Miles Crossed
Agriculture	10	0 – 10.5	10.5
House (abandoned)	10	5.3	-
Rural Residences (2 single family homes and 1 mobile home)	10	6.2	-
Mobile Home	10	6.2	-
House	10	6.2	-
Extraction Mining	14	14.5 – 15.5	1
Corral	16	3.4	-

Future Land Use

General Comprehensive and Land Management Plans

General comprehensive and land-management planning documents were reviewed to identify future land uses within the California portion of the Devers-Harquahala study corridor. Table 4-10 lists these documents by jurisdiction with their adoption status. The future land uses identified in the California portion of the corridor are shown on Maps 4-4c, 4-4d, and 4-4e.

TABLE 4-10
LAND MANAGEMENT AND GENERAL PLANS FOR THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Agency	General Plan Title/Location of Information	Managing Jurisdiction	Date of Adoption
BLM	California Desert Conservation Area Plan	California Desert District	1980 (as amended 1999)
	Proposed California Desert Conservation Plan Amendment for the Coachella Valley and Final Environmental Impact Statement	Palm Springs/South Coast Field Office	Oct 2002
	Northern and Eastern Colorado Desert Coordination Management Plan	California Desert District	Dec 2002
	Record of Decision, California Desert Conservation Area Plan Amendment for the Coachella Valley	California Desert District	Dec 2002
National Park Service	General Management Plan	Joshua Tree National Park	1995
County	Riverside County Comprehensive General Plan	Riverside County	Oct 2003
Local	City of Coachella General Plan 2020	City of Coachella	Oct 1998
	City of Indio General Plan 2020	City of Indio	Oct 1993
	City of Cathedral City Comprehensive Plan	Cathedral City	Jul 2002
	Desert Hot Springs Comprehensive General Plan	City of Desert Hot Springs	Sept 2000
	City of Palm Springs General Plan	City of Palm Springs	Mar 2003

Bureau of Land Management

The California Desert Conservation Area Plan of 1980 (CDCA) is a comprehensive long-range plan for BLM land in eastern California, and was designed to direct the future development of BLM land. The CDCA has been amended six times. One amending document is the Proposed Northern and Eastern Colorado Desert Coordination Management Plan and Final Environmental Impact Statement (NECO) (see Table 4-10). NECO was adopted in December 2002 and provides additional guidance for the land within the study corridor. Additional plans reviewed include the Proposed California Desert Conservation Plan Amendment for the Coachella Valley and Final Environmental Impact Statement (October 2002), and the Record of Decision for CDCA Plan Amendment for the Coachella Valley (December 2002). The collection of plans provides general, regional guidance for management of the CDCA over a minimum time period of 20

years. All of the public land in the CDCA is under BLM management, except for a few small and scattered parcels.

The BLM has identified utility or planning corridors within the California portion of the Devers-Harquahala study corridor as part of the Energy Production and Utility Corridors Element of the CDCA plan. These planning corridors are used to guide the necessary detailed planning and environmental assessment work that is to be required when a right-of-way is requested. The proposed Devers-Harquahala 500kV transmission line falls within the designated utility corridor K according to Map 16 (Energy Production and Utility Corridors) of the CDCA plan. A right-of-way has been granted by the BLM for the proposed line located within the Palo Verde-Devers Utility Corridor, UC-K, in the California Desert District. Generally, the corridors set aside for utility development are designated as joint-use and are from 2 to 5 miles wide. The UC-K is described as being 2 miles wide, which generally provides sufficient flexibility in selecting alternative routes to be located near an existing right-of-way according to the BLM. The 5-mile standard is selected where there is no existing facility and, therefore, little or no engineering and environmental data are available to define a narrower corridor alignment. It also is selected in those cases where there are so many facilities or merging corridors that a 5-mile width is needed to ensure sufficient space for system integrity and flexibility.

The line will pass through Class M and Class L multiple land use classes along Links 10, 12, 13, and 14. Class M (Moderate Use) is centered on controlling the balance between higher intensity use and protection of public land. Class L (Limited Use) protects sensitive, natural, scenic, ecological, and cultural resource values. Class L is managed to provide for lower-intensity controlled multiple uses while protecting sensitive values.

Desert Southwest Power plans to construct either a 230kV or 500kV transmission line to provide increased transmission line capabilities from a proposed substation/switching station near Blythe to the Devers Substation. The project would include the construction and operation of a new substation/switching station and an approximately 118-mile transmission line. The project would

be located along existing transmission line rights-of-way (UC-K) for much of its alignment, and would use existing access roads.

California State Land Commission

The California State Land Commission has designated rights-of-way granted on state land as property that can be leased. The proposed transmission line crosses a small portion of state land along Link 13 at Milepost 31.

Riverside County

The Riverside County Comprehensive General Plan policy format provides a means for meeting State General Plan requirements and county needs for long-range direction, while allowing Riverside County sufficient flexibility to respond to future changes.

Riverside County has established land use categories that define the intensities and extent of future land uses. These categories are agricultural, rural, open space, and community development. Each of these is subdivided into more detailed land use designations at the area plan level. Riverside County has been divided into 19 Land Use Planning Areas, and 4 of the 19 areas encompass the proposed Devers-Harquahala transmission line corridor: Palo Verde Area, Desert Center, Eastern Coachella Valley, and Western Coachella Valley. The study corridor generally crosses rural residential, agriculture, open space, and conservation areas.

In June 2004, the Riverside County Planning Department provided data for specific development plans along the proposed DPV2 project route right-of-way. Three planned developments were identified within the study corridor right-of-way in Riverside County. An approved commercial development, including a gas station, two restaurants, and a self-storage, is located on the northern side of the study corridor at Milepost 23 of Link 14. Two approved residential

developments occur on the southern side of the study corridor. The proposed Paradise Valley Residential Development is approximately 215 acres and is located along Link 13 at Milepost 65, south of I-10. An approved tract map of 33 residential lots is located along the southern side of Link 14 at Milepost 22.

Coachella

The proposed transmission line crosses within the city limits of Coachella. The line passes through the northeastern portion of the city, which is designated as planned open space, public, and low-density residential.

Indio

The city of Indio's sphere of influence falls within the study corridor. In addition to the general plan, a specific region plan called the Shadow Hills Interim Policy Plan, prepared in 1992, was developed to guide city decision makers with respect to projects north of I-10. The Shadow Hills Interim Policy Plan covers the portion of Indio through which the proposed line crosses at Link 14. The existing land use designation for the area calls out a utility easement through which the proposed transmission line would cross. The future land use designation for this area is predominantly low residential land use.

Cathedral City

The proposed transmission line crosses within the city limits of Cathedral City. The general plan has given an open space designation to the corridor through which the proposed line would cross. The other land uses that fall within the study corridor include low-density residential, general commercial, industrial, business park industrial, public open space, and watercourse open space.

Desert Hot Springs

The southeastern corner of the city of Desert Hot Springs falls within the study corridor and is planned for industrial use. Additionally, the line will cross through a large portion of the city's sphere of influence. The land use designations that would be crossed by the proposed line include low and medium-density residential, energy related industrial, and general commercial.

Palm Springs

The proposed transmission line would end at Devers, north of the city limits of Palm Springs. The line would cross through the Palm Springs sphere of influence. The land use designations within the sphere of influence include low-density residential, general commercial, industrial, energy related industrial, and open space.

Park, Recreation, and Preservation Land Uses

Park, recreation, and preservation land uses in the California portion of the Devers-Harquahala study corridor are presented on the land use maps (Maps 4-3c, 4-3d, and 4-3e) and are summarized in Table 4-11.

TABLE 4-11
SUMMARY OF PARKS, RECREATION, AND PRESERVATION AREAS CROSSED BY THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN CALIFORNIA

Name	Link	Milepost	Miles Crossed
Chuckwalla Dune Thicket ACEC	13	13	1
Alligator Rock ACEC	13	28.5	7.5
Coachella Valley Fringe-toed Lizard ACEC	14	20	1
Coachella Valley Preserve and Nature Conservancy	14	19	2.3

National Wildlife Refuge/National Park

The Coachella National Wildlife Refuge is located near Palm Springs, and has been developed for the preservation of the Coachella Valley fringe-toed lizard (*Uma inornata*), a federally designated threatened species. The refuge is 12,000 acres in size and is contained within the Coachella Valley Nature Conservancy. The study corridor would cross approximately 2.3 miles of the preserve along Link 14 starting at Milepost 19.

The Joshua Tree National Park also is located within the study corridor north of Link 13 from Milepost 64 to 69. The park was elevated from national monument to national park status in 1994. In 1976, Congress designated 420,000 acres as wilderness. Currently, of the 794,000 acres, 585,000 acres are designated as wilderness. Joshua Tree National Park provides habitat for numerous plant and animal species unique to the Southwest deserts.

Wilderness Areas

Three BLM WAs are located within the California portion of the Devers-Harquahala study corridor: Chuckwalla Mountains WA, Orocopia Mountains WA, and Mecca Hills WA. The Chuckwalla Mountains WA is south of Link 13 along Mileposts 17 to 40. The Orocopia Mountains WA is south of Link 13 along Mileposts 49 to 52. The Mecca Hills WA is south of Link 13 Milepost 68.

BLM Areas of Critical Environmental Concern

Existing BLM ACECs are situated in the California portion of the Devers-Harquahala study corridor. The names of these areas are intended to represent a well-known feature in or near the area. The ACECs include Mule Mountains, Chuckwalla Valley Dune Thicket, Alligator Rock, Chuckwalla Bench, and the Coachella Valley Fringe-toed Lizard. The Mule Mountains ACEC is

4,100 acres and is located approximately 1 mile south of Link 10 near Milepost 14. It was designated in September 1980 for its cultural value. The Chuckwalla Valley Dune Thicket ACEC is 2,275 acres in size and is crossed by Link 13 near Milepost 5. It was designated in September 1980 for its fish, wildlife, and botanical value. The Alligator Rock ACEC is 7,740 acres and is crossed by Link 13 from Milepost 29 to Milepost 36. It was designated in May 1984 for its cultural value. Link 13 passes within 1 mile to the north of the Chuckwalla Bench ACEC from Milepost 40 to 43. It was designated in September 1980 for its fish, wildlife, and botanical values. The Coachella Valley Fringe-toed Lizard ACEC is 11,630 acres and is crossed by Link 14 near Milepost 20. It was designated in April 1993 for its biological value.

California Department of Fish and Game Wildlife Areas

CDFG holdings in the study corridor consist of three small areas that provide protection for the Coachella Valley fringed-toed lizard. These areas are contiguous with the California Department of Parks and Recreation Indio Hills Palms State Park, Coachella Valley National Wildlife Refuge, and Nature Conservancy preserves.

State and County Parks

One state park is located within the California portion of the Devers-Harquahala study corridor. Indio Hills Palms State Park is north of Indio, approximately 3 miles north of I-10, in Township 4 South, Range 6 and 7 East. Link 14 passes south of the park at Milepost 25.

There are two county parks that are found in or near the study corridor. These include Goose Flats Wildlife Area and McIntyre Park. Goose Flats Wildlife Area is located 3.5 miles southeast of Blythe on the Colorado River, north of Link 10 Milepost 0. McIntyre Park is located about 7 miles southeast of Blythe on the Colorado River and accommodates camping, river access, and picnic areas. Link 10 passes north of McIntyre Park at Milepost 0.

Nature Conservancy Preserves

The Edmund C. Jaeger and Coachella Valley Nature Conservancy preserves are situated within the California portion of the Devers-Harquahala study corridor. The Edmund C. Jaeger Nature Conservancy Preserve is approximately 80 acres and is south of Link 13, Milepost 35. The Coachella Valley Preserve is 20,000 acres in size and is crossed by Link 14 from Milepost 19 to 21. The Coachella Valley Preserve contains the Coachella Valley NWR within its boundaries.

Scenic Roads

The State of California Department of Transportation (Caltrans) has designated scenic highways and highways eligible for scenic designation. The officially designated scenic highway within the study corridor is CA 62 between I-10 and the San Bernardino county line, which is west of Milepost 5 of Link 16. In addition to the officially designated scenic highway, there is a highway eligible for scenic designation. CA 111 between CA 74 near Palm Desert and I-10 near Whitewater is eligible for scenic designation and has a view of the study corridor. CA 111 is located south of Devers and Link 16.

Recreational Areas

Hiking and Riding Trails

The California Desert Trail corridor was proposed for establishment in the 2002 California Recreational Trails Plan developed by California State Parks. The California Desert Trail connects Mexico to Nevada through the Colorado and Mojave deserts. The trail corridor crosses 650 miles of California desert and continues north to Canada, aligning with the National Desert Trail. The California Desert Trail corridor crosses the California portion of the Devers-Harquahala study corridor through Link 13.

Campgrounds

McIntyre Park is located about 7 miles southeast of Blythe on the Colorado River and accommodates camping, river access, and picnic areas.

Golf Courses

Three golf courses are situated in the California portion of the Devers-Harquahala study corridor: Indio Municipal (south of Link 14 near Milepost 11), Rancho Casa Blanca (south of Link 14 near Milepost 12), and Sun City Palm Desert (south of Link 14 at Milepost 18.5).

Roadside Rest Areas

Two California roadside rest areas were identified within the study corridor: Wiley's Well, located approximately 15 miles west of Blythe, and Cactus City, approximately 15 miles east of Indio. Wiley's Well is north of Link 13 at Milepost 2, and Cactus City is south of Link 13 at Milepost 67.

Other

Various recreational activities and opportunities are available on public land in the California portion of the Devers-Harquahala study corridor. The desert provides open-space opportunities for activities such as soaring, target shooting, hang gliding, model rocket and airplane flying, and land sailing. Camping, off-road vehicle use, hunting, rock collecting, recreational mining, driving for pleasure, hiking, photography, nature study, sightseeing, and other dispersed recreational activities also occur on public land in the study area.

4.1.3 Socioeconomics, Population, and Housing

4.1.3.1 Arizona

The proposed transmission line passes through largely rural, undeveloped areas of Maricopa and La Paz counties in Arizona. Maricopa County is located in central Arizona and encompasses 9,203 square miles with a population density of about 333.8 persons per square mile. The majority of the population is located in a large metropolitan area that includes 22 different municipalities separated only by jurisdictional lines. The aggregate household income in 1999 was $67.6 billion, comprising almost 66 percent of the state aggregate household income of $102.5 billion. The nearest Maricopa County communities in the project study area are the town of Buckeye, roughly 25 miles east of Harquahala, and the unincorporated community of Tonopah, located about 10 miles east of the project with a population of approximately 1,900. These communities historically have been agriculturally based. However, the town of Buckeye has numerous communities planned for development. The town of Buckeye Municipal Planning Area (MPA) contains over 500 square miles, of which approximately 160 square miles are currently annexed into the town. Population projections provided by the Department of Economic Security (DES) for the Buckeye MPA indicate a population of 28,144 by the year 2010 (DES 1997). The 2000 population for the town of Buckeye was 8,497 (corrected count, DES 2001), and 11,955 in 2002 according to the Department of Commerce (DOC 2003). Tonopah contains one hotel and three RV parks. Buckeye contains three hotels, four RV parks, and several apartment complexes.

La Paz County was formed in 1983 when Yuma County was separated into two jurisdictions. The proposed transmission line would pass through an undeveloped area of the 4,500-square-mile county, which is sparsely populated with a density of 4.4 persons per square mile. The aggregate household income in 1999 was $288 million, comprising less than one percent of the state aggregate household income of $102.5 billion. The town of Quartzsite is the only incorporated La Paz County community near the study corridor and is located approximately 8 miles to the north. Quartzsite has a population of 3,354 (Census 2000) and is projected to reach

3,668 in 2010 (DES 1997). Although the population is small, the Quartzsite Chamber of Commerce states that the town receives over 1 million visitors per year, and tourism is a major contributor to the local economy. The town has three motels and 70 mobile home and recreational vehicle parks with over 6,117 total spaces (Town of Quartzsite 2003).

Tables 4-12 through 4-15 demonstrate current and future population, housing data, and employment statistics for Maricopa and La Paz counties. As shown, Maricopa County experienced a 44.8 percent growth rate between 1990 and 2000, and a 7.3 percent growth rate between 2000 and 2002. La Paz County experienced a 42 percent growth rate between 1990 and 2000, and 3.3 percent growth between 2000 and 2002. The state of Arizona experienced 40 percent growth between 1990 and 2000 (Census 2000). Tables 4-16 and 4-17 include population and housing data for the town of Quartzsite.

TABLE 4-12
YEAR 2000 POPULATION AND DEMOGRAPHICS

	La Paz County	Maricopa County
Total Population	19,715	3,072,149
Gender:		
Male	10,123	1,536,473
Female	9,592	1,535,676
Race:		
White	74.2%	77.4%
African American	.8%	3.7%
Native American	12.5%	1.8%
Asian or Pacific Islander	.5%	2.3%
Other	12.0%	14.8%
Total	**100%**	**100%**
Hispanic Heritage	22.4%	24.8%

Source: U.S. Census Bureau, 2000 Census; Arizona DOC

TABLE 4-13 HISTORIC AND ESTIMATED FUTURE POPULATION GROWTH		
Year	Population	
	La Paz County	Maricopa County
1980	12,557	1,509,175
1990	13,844	2,122,101
2000	19,715	3,072,149
2002	20,365	3,296,250
2005	22,799	3,329,561
2010	25,096	3,709,566
2015	27,193	4,101,784
2025	30,656	4,948,423
Source: Arizona DES, Research Administration, Population Statistics Unit Feb. 1997		

TABLE 4-14 YEAR 2000 HOUSING DATA		
	La Paz County	Maricopa County
Total Housing Units	15,133	1,250,231
Occupied	8,362	1,132,886
Owner occupied	6,521	764,547
Rented	1,841	368,339
Vacant	6,771	117,345
Single unit	4,773	821,198
Multiple unit	517	332,061
Mobile	9,843	96,972
Median Value	$86,500	$129,200
Source: U.S. Census Bureau, 2000 Census		

TABLE 4-15 YEAR 2000 EMPLOYMENT BY OCCUPATION		
	La Paz County	Maricopa County
Total Civilian Labor Force	7,139	1,498,223
Total Unemployment	572 8%	70,931 4.7%
Total Employment	6,567	1,427,292
Management, professional, and related	1,565	483,582
Service	1,537	208,498
Sales and office	1,562	423,504
Farming, fishing, forestry	349	5,327
Construction, extraction, maintenance	726	149,539
Production, transportation, material moving	828	156,842
Median Household Income	$25,839	$45,358
Source: U.S. Census Bureau, 2000 Census		

TABLE 4-16 YEAR 2000 POPULATION AND DEMOGRAPHICS	
Town of Quartzsite	
Population	3,354
White	94.5%
African American	.2%
Native American	1.2%
Asian or Pacific Islander	.3%
Other	3.8%
Total	**100%**
Hispanic Heritage	5%
Source: U.S. Census Bureau, 2000 Census	

TABLE 4-17 YEAR 2000 HOUSING DATA	
Town of Quartzsite	
Total Housing Units	3,193
Occupied	1,850
Owner occupied	303
Rented	186
Vacant	1,336
Single unit	570
Multiple unit	30
Mobile	2,593
Median Value	$84,500
Source: U.S. Census Bureau, 2000 Census Note: Numbers of occupied and rented units indicated in Census data as "specified" and do not match total number of units.	

4.1.3.2 California

In California, the study corridor is located entirely in Riverside County, which encompasses 7,207 square miles with a population density of 214 persons per square mile. Between 1990 and 2000, Riverside County experienced the fifth highest California county growth rate at 32 percent. West of the Arizona/California state border, the study corridor passes near the small town of Blythe and through the Coachella Valley municipalities of Coachella, Indio, Cathedral City, Palm Springs, and Desert Hot Springs. The upper Coachella Valley surrounding Palm Springs is a rapidly growing resort area. The lower Coachella Valley including Indio, the Palo Verde Valley, and the town of Blythe to the east, are primarily agricultural. The ethnic heritage of these areas is primarily Hispanic, as shown on Table 4-18. Tables 4-19 through 4-21 demonstrate historic and future population projections, housing, and employment statistics for Riverside County and the municipalities through which the study corridor would pass.

TABLE 4-18
YEAR 2000 POPULATION AND DEMOGRAPHICS
RIVERSIDE COUNTY

	Riverside County	Coachella	Indio	Cathedral City	Palm Springs	Desert Hot Springs
Total Population	1,545,387	22,724	49,116	42,647	42,807	16,582
Gender:						
Male	769,384	11,365	24,710	21,608	22,208	8,155
Female	776,003	11,359	24,406	21,039	20,599	8,427
Race:						
White	65.6%	38.8%	48.7%	65.3%	78.3%	68.2%
African American	6.2%	.5%	2.8%	2.7%	3.9%	6.1%
Native American	1.2%	.8%	1.0%	1.0%	1.0%	1.4%
Asian or Pacific Islander	4%	.3%	1.6%	3.8%	4.0%	2.1%
Other	23%	59.6%	45.9%	27.2%	12.8%	22.2%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Hispanic Heritage	36.2%	97.4%	75.4%	50%	23.7%	40.4%

Source: U.S. Census Bureau, 2000 Census; SCAG 2000

TABLE 4-19
HISTORIC AND ESTIMATED FUTURE POPULATION GROWTH

Year	Population					
	Riverside County	Coachella	Indio	Cathedral City	Palm Springs	Desert Hot Springs
1980	663,172	9,129	21,611	8,910	34,666	5,941
1990	1,170,413	16,896	36,793	30,085	40,181	11,668
2000	1,545,387	22,724	49,116	42,647	42,807	16,582
2002	1,645,300	24,300	52,200	45,450	43,750	16,900
2005	1,864,700	22,996	52,140	41,953	50,464	17,566
2010	2,159,700	24,894	56,330	45,219	51,514	19,180
2015	2,459,600	26,577	59,949	48,166	52,467	20,635
2020	2,817,600	29,283	65,797	52,373	53,825	22,714

Source: California Dept. of Finance 2000, 2002, 2003; SCAG 2001

Note: Table shows actual population figures through 2002. The projections obtained for the years 2005-2020 were obtained from the SCAG 2001 Regional Transportation Plan Growth Forecast. However, discrepancies are present as forecasted population in some instances is lower than the actual population counts in 2000 or 2002. This is attributed to the fact that SCAG completed the forecast in 1998, but due to agency and public review and approval, the study was not deemed complete until 2001.

TABLE 4-20 YEAR 2000 HOUSING DATA – RIVERSIDE COUNTY						
	Riverside County	**Coachella**	**Indio**	**Cathedral City**	**Palm Springs**	**Desert Hot Springs**
Total Housing Units	584,674	5,024	16,909	17,893	30,823	7,034
Occupied	506,218	4,807	13,871	14,027	20,516	5,859
Owner occupied	348,532	2,508*	6,097*	6,837*	9,265*	2,357*
Rented	157,686	1,881*	6,045*	4,901*	8,055*	3,052*
Vacant	78,456	217	3,038	3,866	10,307	1,175
Single unit	398,747	3,419	8,540	11,411	16,272	3,960
Multiple unit	103,066	1,150	5,199	3,846	12,316	2,506
Mobile	82,861	455	3,170	2,636	2,235	568
Median Value	$146,500	$83,700	$99,000	$125,500	$157,000	$81,400
Source: California Dept. of Finance 2003; U.S. Census Bureau, 2000 Census *these figures are noted as "specified" and do not total full number of occupied units						

TABLE 4-21 YEAR 2000 EMPLOYMENT BY OCCUPATION						
	Riverside County	**Coachella**	**Indio**	**Cathedral City**	**Palm Springs**	**Desert Hot Springs**
Total Civilian Labor Force	651,952	8,391	19,382	18,626	19,017	6,571
Total Unemployment	49,096 7.5%	979 11.7%	1,581 8.2%	1,326 7.1%	1,176 6.2%	674 10.3%
Total Employment	602,856	7,412	17,801	17,300	17,841	5,897
Management, professional, and related	167,739	669	3,064	3,800	5,625	983
Service	105,446	2,292	5,226	5,278	4,459	1,719
Sales and office	163,095	1,252	4,043	4,391	5,210	1,550
Farming, fishing, forestry	9,499	1,425	832	57	32	7
Construction, extraction, maintenance	70,974	1,010	2,760	2,264	1,432	906
Production, transportation, material moving	86,103	764	1,876	1,510	1,083	732
Median Household Income	$42,887	$28,590	$34,624	$38,887	$35,973	$25,987
Source: SCAG 2001; U.S. Census Bureau, 2000 Census; Coachella Valley Association of Governments (CVAG) 2000						

The city of Blythe is approximately 5 miles north of the study corridor, just west of the California/Arizona border. Although the area is primarily agricultural, Blythe also enjoys a tourism industry due to the presence of the Colorado River and the associated recreation opportunities. Blythe's year 2000 population was 12,155 (Southern California Association of Governments [SCAG] 2000); the city estimates that the area's population triples during the winter months (City of Blythe 2003). In 2000, available labor force was 5,165, with an

unemployment rate of 4.7 percent (SCAG 2000). There are 23 motels, 7 recreational vehicle parks, and more than 20 mobile home and trailer parks in the Blythe area.

The cities of Coachella, Indio, Cathedral City, Palm Springs, and Desert Hot Springs are part of the Coachella Valley, which is 50 miles long and runs from Palm Springs to the Salton Sea. The Coachella Valley is known as both a desert resort and a major agricultural area. Actual population growth in these cities exceeded population projections prepared by the SCAG in 1998 (see Table 4-19). There are numerous hotels and recreational vehicle resorts in each community, as well as several small airports and the Palm Springs International Airport. The Coachella Valley and Blythe areas have adequate public services and housing accommodations. Public services, however, are limited along the central portion of the study corridor that traverses sparsely populated desert land.

The study corridor would also passes through a small portion of the Agua Caliente Indian Reservation, which has a population of 21,357 and a median household income (1999) of $37,560 for the 11,780 households (Census 2000). The median household income is about $13,000 lower than the average for Riverside County (see Table 4-21). However, the median value of homes on the reservation is $157,200, nearly $11,000 higher than the median home value for Riverside County (Census 2000). The unemployment rate in 2000 was about 5.7 percent, nearly 2 percent lower than the unemployment rate for Riverside County.

4.1.4 Geology and Soils

4.1.4.1 Arizona

Physiographic Setting

The study corridor for the Arizona portion of the proposed Devers-Harquahala transmission line lies within a broad continental physiographic division called the Intermontane Division. Within

that division, five physiographic provinces have been established: Salton Trough, Transverse Ranges, Western Mojave Desert, Eastern Mojave Desert, and Sonoran Desert. Within Arizona, the proposed Devers-Harquahala study corridor crosses the Eastern Mojave and Sonoran Desert. The relationship of these provinces to the study area is shown on Plate 4 in Section 2.1.2 Physiography of SCE's 1977 Environmental Report (hereinafter referred to as 1977 Environmental Report) for the existing DPV1 500kV transmission line. The boundaries for the physiographic provinces were modified from Jenkins (1943) and Wilson (1962) during investigations by SCE in 1974 in the Eastern Mojave Desert, and they remain applicable to this study.

The description of the Eastern Mojave Desert Province is provided in Section 4.1.4.2 with the California portion of this study.

The Sonoran Desert Province, which includes the eastern portion of the study area, lies to the south and east of the Eastern Mojave Desert Province and extends into Mexico (refer to Plate 4 in the 1977 Environmental Report). Approximately 85 miles of the proposed Devers-Harquahala study corridor is located within the Sonoran Desert, which is characterized by discontinuous, subdued mountain ranges that trend northwest to northeast. The Granite Wash, Eagletail, Harquahala, and KOFA NWR mountains rise above alluviated desert plains within the Sonoran Desert Province. In general, the mountains have subdued topography, suggesting advanced stages of the erosion cycle. The plains form approximately 70 percent of the total area. Mountain peaks are generally less than 4,000 feet in elevation with most valleys below 3,000 feet in elevation. Elevations generally decrease southward toward the Gulf of California.

Regional Geology

The generalized geology of the study corridor is based on the 1977 Environmental Report for the DPV1 transmission line and remains applicable to this study. The delineations are shown on Plate 7 of the Environmental Report. Detailed descriptions of the geologic conditions

characterizing each of the physiographic provinces along the existing DPV1 transmission line also were presented in Section A-1 of Appendix A in the 1977 report.

The geological formations exposed within the study corridor were grouped into five basic categories: alluvium, non-indurated sedimentary deposits, indurated sedimentary rocks, igneous rocks, and igneous/metamorphic rocks. All Holocene surficial deposits were mapped as alluvium. Older alluvial fan deposits (of predominantly Plio-Pleistocene age) and all other deposits exhibiting little or no cementation were mapped as non-indurated sedimentary formations. The indurated sedimentary rock category in the 1977 DPV1 Environmental Report Generalized Geologic Map included all bedded and massive sedimentary rocks, such as shale, sandstone, and conglomerate. Granitic and volcanic rocks comprised the igneous rock category. Complexes of igneous and metamorphic rocks were combined to form the last rock category. No attempt was made to designate the age of the rock types.

A major portion of the study corridor is underlain by Holocene alluvial sand and gravel deposits and Pleistocene fan deposits (mapped as non-indurated sedimentary deposits in the 1977 Environmental Report). Igneous and metamorphic rock underlie a small percentage (estimated to be less than 5 percent) of the total length of the proposed alignment. These crystalline rocks occur primarily where the alignments cross mountain passes, such as in the Dome Rock and Plomosa mountains, or where the alignments cross small inselbergs (outlying hills that protrude above the surrounding alluvium).

From the Harquahala Switchyard, the study corridor crosses non-indurated sedimentary rock as it leaves the Harquahala Switchyard, crosses I-10, and goes west, paralleling I-10 through Quaternary alluvium to the KOFA NWR. Within the refuge, the study corridor crosses rock of an igneous and metamorphic complex as it goes through the New Water Mountains. From the New Water Mountains, the study corridor continues through alluvium to the Dome Rock Mountains, an igneous and metamorphic rock complex. The study corridor then crosses through the Dome Rock Mountains and through non-indurated sedimentary rock to the Arizona/California state border.

Seismic Activity

The Arizona portion of the proposed study corridor falls in the Sonoran Zone, a relatively stable tectonic region that is found is southwestern Arizona, southern California, southern Nevada, and northern Mexico. Seismic activity that could affect the proposed project is described under the California Section 4.1.4.2.

Economic Geology

Metallic and non-metallic mineral deposits occur within the study corridor. These resources are summarized in Table 4-22. Metallic mineral deposits are restricted primarily to the areas of exposed bedrock in mountain areas. The metallic deposits identified in Arizona include copper, manganese, gold, silver, and iron. Metallic ore deposits tend to dominate Arizona's mineral resources. However, within the study area, non-metallic deposits including barite, bentonite, sand, and gravel are the most plentiful.

TABLE 4-22
MINERAL LOCALITIES IN ARIZONA

Mineral Resource	Locality
Sand, gravel, rock products	Alluvial apron of the Dome Rock Mountains, La Posa Plain, Plomosa Mountains, Harquahala Mountains
Barite and Bentonite	Ranegras Plain, McMullen Valley, Harquahala Plain
Gold and Silver	Dome Rock Mountains, Plomosa Mountains, Harquahala Mountains, New Water Mountains
Copper	Dome Rock Mountains, Plomosa Mountains, Little Harquahala Mountains
Iron	Big Maria Mountains, Plomosa Mountains
Manganese	Little Maria Mountains, Dome Rock Mountains, Plomosa Mountains, Ranegras Plain, Harquahala Mountains, Granite Wash Mountains
Source of Data: McCrory and O'Hare 1965; Saul, et al. 1968; SCE 1977 Environmental Report; Stipp, et al. 1967	

There are no known economic deposits of oil, gas, or coal within the study corridor.

Soils

Desert soils can be sensitive to man-induced activities. However, the impact of transmission lines on soils, when compared with other types of facilities (such as highways, canals, or pipelines), is minimal and is primarily associated with access roads. In preparing the 1977 Environmental Report for the existing line, SCE mapped the various types of soils in the study area (Plate 9) and ranked the relative sensitivity to erosion and other soil impacts (Plate 23).

Scope and Investigative Procedures

In order to evaluate the potential impacts the proposed new transmission line may have on soils, SCE reviewed soil erosion sensitivities previously estimated for the existing DPV1 line, and observed in the field the actual impacts of the existing line over the first five years after its construction and reported this information in the 1988 Amended DPV2 PEA. Based on this information, a determination was made as to how the proposed transmission line, that parallels the existing DPV1 line, might affect the soils.

The following two sections present a review of the soils characteristics and the results of the soils sensitivity analysis for the proposed line within the Arizona portion of the Devers-Harquahala study corridor.

Soil Associations

Detailed discussions on the characteristics of desert soils in the study area were provided in Section 2 and Appendix A of SCE's 1977 Environmental Report. These discussions remain applicable to the proposed project. Table 4-23, which has been reproduced from the 1977 report, provides descriptions of each of the classes of soils found in the study area. The soil classes are presented in order of relative age and degree of potential sensitivity.

TABLE 4-23
CLASSES OF RELATIVE SOIL EROSION SENSITIVITY

Sensitivity Class	Soil Order (Suborder)	Representative Terrain Characteristics
1	Entisols (Psamments)	Sand dunes and shifting sand sheets; low water-holding capacity; subject to deflation if disturbed; low bearing strength. Sand accumulation downwind from playa lakes; e.g., Palen and Ford dry lakes, in California; Rice Valley, Bouse and Tyson washes, in Arizona.
1	Entisols (Fluvents)	Silts and clays in playa lakes; high shrink-swell potential; e.g., Ford and Palen dry lakes in California; local deflation upon disturbance. Includes some Vertisols.
2	Entisols (Fluvents)	Medium to fine-grained fluvial sediments, typically in Colorado River floodplain, Parker and Palo Verde valleys, in Arizona. Medium shear strength; subject to local, man-induced (irrigation) high groundwater.
2	Entisols (Fluvents and Psamments)	Generally medium to fine-grained alluvial sediments on Pleistocene and Holocene age alluvial fans; typically merge into basins of interior drainage. Low to moderate bearing strength; subject to local hydrocompaction and collapse. Extensive areas in Butler and McMullen valleys in California, and Ranegras and Harquahala plains, in Arizona.
3	Entisols (Orthents)	Primary soils of mountain areas; recent erosional surfaces, usually steep slopes. Not differentiated from rockland, bare surfaces (lithosols, regosols) or from numerous small, linear valleys with alluvial fill giving rise to Orthids or Argids. Includes all upland areas except badland topography of Mecca Hills, in California, and Bouse Hills, in Arizona, designated as sensitivity class 3.
4	Aridisol (Orthid)	Low- and some intermediate-level alluvial fans; usually calcareous and characterized by cambic but not argillic or petrocalcic horizons. Merges imperceptibly and often frequently underlies, as buried soils, younger Fluvents on Holocene-age fans. Typically about 20,000 to 50,000 years old. Moderately extensive on piedmont fans flanking the Orocopia, Chuckwalla mountains in California; Dome Rock, Plomosa, and Harquahala mountains, in Arizona.
5	Aridisol (Orthid)	Intermediate-level and locally higher geomorphic surfaces; local desert pavement common, especially in volcanic and metamorphic rock terrane. Cambic horizon pronounced. Mapped area includes some Argids in the Southern Coxcomb, Palen, Maria and Riverside mountains, in California.
6	Aridisol (Argid)	High-level fan remnants; calcareous with multiple carbonate horizons common, probably indicative of Quaternary climatic change. Argillic horizon present; desert pavement pronounced. Only slight temporary erosion hazard owing to loading and collapse of stonefree eluvial (A_2) horizon. Locally preserved at apex of inset fan systems. Typical of Palen, McCoy, Palo Verde, Maria and Riverside mountains, in California and Dome Rock Mountains, in Arizona.
7	Aridisol (Argid)	Highest level fan remnants preserved only on drainage divides. Stable surfaces; typified by argillic and duripal (usually petrocalcic) horizons. Desert pavement well preserved; eluvial horizon (A_2) to 6 inches thick. Identified on north flanks of Chocolate Mountains, in California and in Dome Rock Mountains, in Arizona. Numerous inclusions mapped within sensitivity classes 5 and 6.

Soils Sensitivity

There are three major areas of soil sensitivity that pertain to desert soils within the study corridor: soil collapse or consolidation, wind erosion, and fluvial erosion. SCE's 1977 Environmental Report provided discussions of each of the conditions in relation to the various soils found within the study area.

The following sections review the characteristics of each of these sensitivities, along with the observed effects of the existing DPV1 transmission line on the soils.

Soil Collapse and Consolidation

Soil collapse and consolidation result from hydrocompaction and loading of the surface. Hydrocompaction is a condition that occurs when water is introduced into some moisture deficient fine-grained soils (typically silts and clay) of arid environments. The introduction of the water causes a collapse of the soils intergranular structure, which consolidates the soil and in turn results in a depression of the ground surface. Within the study area, the soils that are most likely to be susceptible to hydrocompaction are the fine-grained Fluvents and young Orthids found along the basin margins of alluvial fans and adjacent to playa lakes. Hydrocompaction is most commonly associated with projects that introduce large volumes of water to moisture deficient soils, such as canals, irrigation associated with agriculture, or landscaping of development projects.

The potential degree of hydrocompaction resulting from a transmission line is far less than the potential soil compaction resulting from the loading and consolidation of loose surface soil horizons by construction traffic. Such consolidation from vehicular traffic commonly produces a permanent rut or depression in the road surface. If water is channeled into the rut, and there is sufficient gradient to develop surface flow, the rut also may become a location for erosion.

Soil compaction resulting from vehicular traffic also occurs on older alluvial surfaces that have well-developed desert pavements, but to a lesser degree. As previously discussed, these older Argid or Orthid soils typically have a soft, vesicular, silty A_2 horizon immediately below the desert pavement. Loading of this silty A_2 horizon by vehicular traffic compacts the silt, leaving a permanent, slight depression in the pavement surface.

Based on observations made during the reconnaissance of the existing DPV1 transmission line and associated access road, the relative ranking of sensitivity previously presented in SCE's 1977 Environmental Report (Plate 23) appears to represent the sensitivity of the soils present in the study area with respect to soil collapse or consolidation. Areas of revision include the mountainous bedrock areas, which appear to have a low to negligible susceptibility to soil collapse. The apparent impacts due to soil collapse along the existing transmission line are minor, even in soils rated as having the highest sensitivity.

Wind Erosion

Deflation or erosion of soils by wind is a common natural phenomenon in deserts and is governed by the characteristics of the soil and the velocity of the wind. Fine-grained silt and clay particles are picked up by the wind and blown away as dust. Heavier sand particles usually do not become airborne but move in short leaps, referred to as saltation. The most susceptible soils to wind erosion are fine-grained, young Fluvent soils typical of the basin margins of alluvial fans and sediments in washes and playas, such as Ford Lake or the Bouse and Centennial washes. These soils are most susceptible to wind erosion when recently disturbed by activities such as vehicular traffic. In some of the fine-grained soils, raindrops produce a thin film of clay to coat the surface. This crust, referred to as a carapace crust, provides a fragile shield against wind erosion until it is broken again by vehicular traffic or other activities. As a result, most of the wind erosion associated with the existing DPV1 transmission line occurred during its construction. The sensitivity maps presented in Plate 23 of SCE's 1977 Environmental Report can be used to estimate the sensitivity of the various soils within the study area to wind erosion

during the construction phase of the proposed project. However, observation of the existing transmission line suggests that neither the access road nor the tower sites have experienced any appreciable wind erosion since the construction period.

Surface Water Erosion

The sensitivity of a particular site to erosion by surface runoff is a function of the soil type, among other factors. Fluvent and Orthents of the Entisol soil order appear to be more susceptible to erosion than the Orthid and Argid soils of the Aridisol soil order. Another important variable that contributes to surface water erosion sensitivity of a particular site is the degree of topographic relief, which governs the velocity of the surface water runoff.

Erosion due to surface water runoff was the most apparent soil impact observed during the reconnaissance of the existing DPV1 transmission line. However, this erosion was relatively minor and localized. Typical erosional features consist of shallow gulleys and rills along localized areas of access road courses. Favorable factors that appear to have contributed to low erosion rates include the limited grading used along the existing transmission line, the general conformance of access roads to topography, and the utilization of existing roads where possible. Also, the majority of the existing line crosses terrain of low topographic relief.

In Arizona, the highest sensitivity to surface water erosion along the existing transmission line was observed along the river terraces bordering the Colorado River floodplain. These locations are characterized by relatively high topographic relief where access roads cross ephemeral washes. Construction of the access roads has disrupted erodible Entisols on the slopes that border the washes; these slopes also are underlain by soft, erodible fine sands and silt river deposits. Fill slopes built from these materials also appear to be relatively highly erodible. Based on these observed conditions, it is anticipated that any new access roads sited within similar topographic and soil conditions may experience a similar degree of surface water erosion.

The medium category of sensitivity to surface water erosion was observed in the mountains or hills that are underlain by indurated bedrock. Roads graded in this setting commonly have sections with steep gradients. In these areas, gulleys and rills typically develop along the road course. Erosion was usually negligible in mountainous bedrock terrain where the roads had flat or shallow gradients. Surface run-off erosion also was found associated with the loose fills, which were pushed to the edges of the road during construction. Also included under the medium category are terrains underlain by desert pavement and Orthid and Argid soils where relatively high topographic relief exists due to deep incision of drainage channels. The slopes along the incised drainage channels typically have young Entisols. In order to construct a road gradient suitable to cross these drainage channels, the access road has to be cut into these slopes and into the edges of the desert pavement surfaces. Minor erosion was typically found on the road where it descends into the drainage channels. Headward erosion also typically progresses up the road and onto the pavement surfaces. In addition to the erosion of the road, small fills, which were commonly left in the drainage channels following grading of the roads, were sources of soil erosion.

The lowest category of sensitivity to surface water erosion was observed in areas of low relief across surfaces underlain by desert pavements and Orthid and Argid soils. Minimal erosion also was observed in Entisols on low relief terrain where access roads crossed the drainages at nearly right angles. In these areas, minor gulleys and rills have developed where small ephemeral drainages reestablished their channels through the graded path of the road or the small berms left on the sides of the road. In a few cases, somewhat accelerated erosion appears to have developed where the small roadside berm resulted in the convergence of two small ephemeral drainage channels.

4.1.4.2 California

Physiographic Setting

The study corridor for the proposed Devers-Harquahala transmission line lies within a broad continental physiographic division called the Intermontane Division. This division may be further classified into five physiographic provinces: Salton Trough, Transverse Ranges, Western Mojave Desert, Eastern Mojave Desert, and Sonoran Desert. All but the Sonoran Desert occur within California. The boundaries for the physiographic provinces, as shown in SCE's 1977 Environmental Report for the existing DPV1 500kV transmission line, are based on the work of Jenkins (1943) for California and Wilson (1962) for Arizona. The relationship of these provinces to the study area is shown on Plate 4 in Section 2.1.2 Physiography of the 1977 Environmental Report.

The following sections provide a general discussion of the characteristics for each of the physiographic provinces through which the proposed transmission line will pass.

Salton Trough

Approximately 35 miles of the study corridor (between Devers Substation and the Mecca Hills) are located within the Salton Trough Province. This province is characterized by low relief and elevations and is bounded by relatively high linear mountain ranges on the east and west. These ranges converge at San Gorgonio Pass, marking the northern end of the Salton Trough. The province encompasses the Coachella Valley, Salton Sea, and Imperial Valley, and is separated from the Gulf of California by the delta of the Colorado River.

The typical landforms that characterize the province are broad, coalescing alluvial fans (bajadas), which flank mountain ranges, isolated low hills, and extensive sand dune areas.

Transverse Ranges

The western portion of the proposed Devers-Harquahala study corridor (approximately 37 miles) extends into the southwestern margin of the Transverse Ranges Physiographic Province. This province is characterized by a complex chain of mountains and valleys trending east-west across southern California. The San Bernardino, Little San Bernardino, and Eagle mountains are located north of the corridor between Devers Substation and Desert Center. The Orocopia Mountains and Mecca Hills lie to the south of the preferred route in this same area. Elevations within this portion of the province generally range from 2,000 to 4,000 feet; rugged terrain is common in the mountains with local relief exceeding 2,000 feet. The study corridor crosses the Transverse Ranges Province in an east-west trending valley between the Eagle and Orocopia mountains; the high point of this valley is Shaver's Summit at an elevation of 1,710 feet (refer to Plate 5, Land Elevations in SCE's 1977 Environmental Report).

Western Mojave Desert and Eastern Mojave Desert (California and Arizona)

There are marked differences between the Western Mojave Desert and Eastern Mojave Desert physiographic provinces. In the western province, the terrain is influenced by major northwest trending fault zones. This influence is well-expressed by northwest-southeast trending mountain ranges; the principal ranges are the Coxcomb, Chuckwalla, and Chocolate mountains. Elevations generally vary between 2,000 to 3,000 feet; a few peaks and ridges exceed 4,000 feet (refer to Plates 4 and 5 in the 1977 Environmental Report).

The mountains of the Eastern Mojave Desert Province are extremely variable in shape, size, trend, and elevation. Most ranges are less than 4,000 feet in elevation. Major north-trending ranges in the Eastern Mojave Desert Province include the Riverside, West Riverside, Plomosa, and Dome Rock mountains. Northwest-trending ranges in the Eastern Mojave Desert Province include the Little Maria, Granite, and McCoy mountains. The Palen Mountains trend to the northeast. Major valleys vary in elevation from 250 feet in the Palo Verde Valley south of

Blythe, to 400 feet in the Chuckwalla Valley, and 800 feet in the Vidal Valley. All mountains, from isolated small hills to large mountain blocks, are greatly eroded and irregular in outline, indicative of more advanced stages in the erosion cycle. This contrasts with the youthful-appearing ranges in the Western Mojave Province.

Broad alluvial basins or valleys within both the Western Mojave Desert and the Eastern Mojave Desert are underlain by alluvial fans, stream wash deposits, sand dunes, playas, and locally large floodplains such as that bordering the Colorado River. Closer to mountain fronts, dissected alluvial piedmont slopes and pediments are active erosional surfaces. Pediments are less common in the Western Mojave Desert than in the Eastern Mojave Desert.

Regional Geology

The generalized geology of the study area shown on Plate 7 of the 1977 Environmental Report remains applicable to this study for the proposed transmission line project. Detailed descriptions of the geologic conditions characterizing each of the physiographic provinces along the existing DPV1 transmission line were also presented in Section A-1 of Appendix A in the 1977 report.

West of the Colorado River, the study corridor crosses through Quaternary alluvium as it goes through the Palo Verde Valley and non-indurated sedimentary as it crosses the Palo Verde Mesa. It continues through Quaternary alluvium to the Chuckwalla Mountains, where it crosses non-indurated sedimentary and granitic and volcanic igneous rock. Portions of the corridor cross granitic and volcanic igneous rock as it passes the Orocopia Mountains and indurated sedimentary rock as it passes the Mecca and Indio hills. The proposed alignment is underlain by soft, non-indurated sediments of the Indio Hills, in California. Soft sands and silts also underlie a thin cap of Pleistocene alluvium in the bluffs bordering the Colorado River and locally in the walls of gullies and washes near the Mule Mountains. The study corridor continues through Quaternary alluvium to Devers Substation.

Structure

Active and potentially active faults and earthquake epicenters within the study area are shown in Plate 8, Selected Faults and Seismicity, of SCE's 1977 Environmental Report. Since that report, the general distribution and rate of seismic activity apparently has not changed nor has the general geologic setting of active faults. In the following sections, the faults located within the study corridor are identified and reported. Discussions are provided as to the general level of seismic activity along the study corridor.

Quaternary Faults and Seismicity

Seismic activity is normally associated with active quaternary faults. All the known faults that might impact the proposed project are located in California and all but one of these are located in the Coachella Valley along the western portion of the study area. Portions of six faults occur within the study area. From the western end of the study area, these include: the Garnet Hill fault (which lies a few miles west of Devers Substation), the Banning Fault (to the southeast of Devers Substation), and the Mission Creek Fault (located to the east of Desert Hot Springs). These three faults are branches of the San Andreas Fault, which parallels CA 111 south of Indio to Bombay Beach on the northeastern shore of the Salton Sea. The Blue Cut Fault follows the Little San Bernadino Mountains in the northwest portion of the study area before heading east across the midsection of Joshua Tree National Park, and the Mecca Hills Fault zone crisscrosses the Mecca Hills. Finally, the Blythe Graben Fault parallels the southwest portion of the Big Maria Mountains, north of the town of Blythe. Each of these faults is described in greater detail in Section A-2 of Appendix A in the 1977 report.

The length of the southern segment of the San Andreas Fault, which includes the Banning and Mission Creek faults, is about 120 miles, and the total length of the fault is longer than 700 miles. In the Coachella Valley, the study corridor crosses the Banning Fault at a location southeast of Devers and northwest of the Indio Hills and crosses the Mission Creek Fault at a

location southwest of the Indio Hills (near the town of Indio). Numerous earthquakes have occurred in this area. The San Andreas Fault is the longest active fault in California. It is a right-lateral, strike-slip fault that represents the boundary between the Pacific and North American lithospheric plates. Historically, the San Andreas Fault has produced earthquakes in excess of Richter magnitude 8. The most recent earthquake of this magnitude in southern California was the 1857 Fort Tejon earthquake, which was centered northwest of Cajon Pass. Work by Sieh (1978) provides evidence of a large earthquake occurring approximately every 145 years on this segment.

The southern segment of the San Andreas Fault does not appear to be as recently active as the segment that is associated with the 1857 Fort Tejon earthquake. Sieh (1978) studied the southern segment of the fault, which has been dormant seismically in historic time (at least since 1769). His work suggests that the average interval between major recurrent earthquakes on the southern segment is probably on the same order as the south-central segment.

Most of the geologically rapid slip that is occurring on the San Andreas Fault north of San Bernardino appears to have been taken up by the San Jacinto and Imperial-Brawley faults. The San Jacinto Fault's closest approach to the study area is 20 to 30 miles to the southwest and is the source of several earthquakes with magnitudes of greater than six during this century.

The study corridor crosses the Mecca Hills Fault just southeast of the Indio Hills. The Mecca Hills Fault is located about 2 miles northeast of and parallel to the San Andreas Fault through most of the Mecca Hills. The level of recent or Holocene activity of the fault is not known, but late quaternary activity is suggested by fault scarps, linear valleys, and apparent offsets of late Pleistocene alluvial fans. Evidence of displacement along the fault indicates the fault has a right-lateral, southwest-side upward mode of displacement.

The only known fault outside the Coachella Valley within the study corridor is the Blythe Graben, which is located along the southwestern flank of the Big Maria Mountains about 5 miles north of Blythe, California (SCE 1974; SDG&E 1974). This fault strikes northwest, parallel to

the mountain front and is slightly arcuate with a mappable length of 3.5 miles and a width of 300 feet. Exploratory trenches across the graben revealed displaced older alluvial deposits covered by unbroken young alluvium. Based on estimated ages of the alluvial surfaces, the last displacement probably occurred within the last 30,000 years. No historic or recorded epicenters are associated with the Blythe Graben.

Seismicity levels decrease across the middle and eastern portions of the study area. The level of seismic activity in the Transverse Ranges Province may be characterized as moderate to high. Seismicity declines sharply across the Mojave Desert. The Western Mojave Desert contains numerous northwest-trending, right-lateral faults with some evidence of vertical displacement (1977 Environmental Report). This area is seismically active, but with only one major historic event (a magnitude 6.2 quake in 1947, outside of the study corridor). In contrast, the Eastern Mojave Desert has low seismic activity, little geological evidence of strike-slip faulting or breakage, and does not contain parallel northwest-trending linear mountain ranges and basins. The portion of the Mojave Desert that extends into Arizona and the Sonoran Desert has very low levels of seismic activity. Thus, the study area can be divided into two distinct tectonic zones. The western zone, which includes the Salton Trough, the Transverse Ranges, and the Western Mojave Desert, may be characterized as a strain-adjustment area associated with an active fault system (the San Andreas). The eastern zone, beginning approximately at the Colorado River, includes the Eastern Mojave Desert and the Sonoran Desert and lies outside of the strain adjustment area, and thus is relatively free of seismic activity.

Plate 8 of the 1977 Environmental Report shows the locations of 64 earthquakes with a Richter magnitude range of 4.0 to 8.0 that occurred within the Devers to Palo Verde portion of the study area from 1901 to 1975. Of these events, 56 were of magnitude 4.0 to 4.9; 7 were of magnitude 5.0 to 5.9; and 1 was of magnitude 6.0 to 6.9. Several significant earthquakes have been recorded within the study area since 1977. North Palm Springs experienced a magnitude 5.9 earthquake on July 8, 1986. A magnitude 6.1 earthquake shook Joshua Tree National Park on April 22, 1992 (SCEC 2004). A magnitude 4.0 earthquake was recorded 9.3 miles east of Indio July 13, 2004 (Riverside County 2004). The largest earthquake recorded within the study area occurred near

Desert Hot Springs on the Mission Creek Fault December 4, 1948. This event reached a magnitude of 6.5 on the Richter scale (1977 Environmental Report).

For the time period 1901 to 1975, a total of 1,812 events in the magnitude range of 2.0 to 3.9 were reported for the Devers-Harquahala portion of the study area; all of which were west of the Desert Center area (1977 Environmental Report). These small magnitude earthquake events were not included in Plate 8 of the 1977 Environmental Report because they conformed to the general distribution of seismic activity delineated by the larger magnitude earthquake events.

As seen on Plate 8 of the 1977 Environmental Report, the Salton Trough is one of the most seismically active regions within the study area. Ten events with magnitudes ranging from 6.0 to 7.1 were recorded in the Salton Trough between 1933 and 1977 (1977 Environmental Report).

No earthquakes have been reported for the seismically less active portion of the study area east of the Palen Mountains and including Arizona.

Economic Geology

Metallic and non-metallic mineral deposits occur within the study area. These resources are summarized in Table 4-24. Metallic mineral deposits are restricted primarily to the areas of exposed bedrock in mountain areas. Gold, copper, and iron are the predominant metallic minerals mined in California. Most of the metallic-mineral deposits in the California desert are no longer economically feasible to operate and have been abandoned (California Geology 1973). Sand, gravel, and rock products are the most important mineral resources in California and are still activity mined. Approximately five million short tons per year of sand and gravel have been mined from Riverside County alone.

There are no known economic deposits of oil, gas, or coal within the study area.

TABLE 4-24 MINERAL LOCALITIES IN CALIFORNIA	
Mineral Resource	**Locality**
Sand, gravel, rock products	Indio Hills, Coachella Valley
Barite and Bentotite	Mecca Hills, Palen Valley
Gold and Silver	Dome Rock Mountains, Plomosa Mountains, Harquahala Mountains, and New Water Mountains
Copper	Dome Rock Mountains, Plomosa Mountains, Little Harquahala Mountains
Iron	Big Maria Mountains, Plomosa Mountains
Manganese	Little Maria Mountains, Dome Rock Mountains, Plomosa Mountains, Ranegras Plain, Harquahala Mountains, Granite Wash Mountains
Source of Data: McCrory and O'Hare 1965; Saul, et al. 1968; SCE 1977 Environmental Report; Stipp, et al. 1967	

Soils

Soils for the California portion of the Devers-Harquahala study corridor are described under Section 4.1.4.1 with the Arizona portion of this study.

4.1.5 Hydrology

Hydrology for the study corridor is based on the 1977 Environmental Report for the DPV1 transmission line and remains applicable to this study.

4.1.5.1 Proposed Devers-Harquahala Study Corridor in Arizona and California

Surface Water

The study area is characterized by an arid climate with limited rainfall. With the exception of the Colorado River, all active drainages in the study area are intermittent or ephemeral, and flow only after a localized summer thunderstorm or, more commonly, during a strong winter storm. The flow in these ephemeral streams usually subsides rapidly following the passage of the storm.

Except for the gauging stations on the Colorado River, there are little or no data for surface run-off in the study area.

The study area is characterized by mountain ranges separated by broad valleys with coalescing alluvial fans. The valleys within the study area are normally drained by a main wash along the axis of the valley. On valley flanks, channels are entrenched within the older fans; their distributaries spread across younger fans toward basin centers. In some valleys, the main central drainage may be as much as 1 mile wide.

The names and locations of all major valleys within the study area, their main drainage, direction of flow, and termination points were discussed in SCE's 1977 Environmental Report for the existing DPV1 transmission line. Table 4-25, which has been modified from that report, provides a list of the major valleys and drainages within the study area. Generally, the drainage courses west of the Eagle Mountains in California drain toward the Salton Sea. East of the Eagle Mountains and west of the McCoy Mountains, the drainages empty into closed basins, the centers of which are formed by Palen Playa and Ford Dry lake in the Chuckwalla Valley. East of the McCoy Mountains and west of the Dome Rock Mountains in Arizona, the drainages flow directly to the Colorado River. East of the Dome Rock Mountains, all drainages flow toward the Colorado River via Tyson, Bouse, and Centennial washes. The latter wash flows toward the Gila River, which in turn flows to the Colorado River.

TABLE 4-25 DRAINAGES			
Valley	**Main Drainage**	**Direction of Flow**	**Termination**
Coachella, California	Whitewater River	SE	Salton Sea
Orocopia Valley, California	Box Canyon Wash	W	Salton Sea
Palen, California	Unnamed	S	Palen Dry Lake
Chuckwalla, California	Unnamed	SE-E	Ford Dry Lake and Colorado River
Palo Verde Mesa, California	Unnamed McCoy Wash	E SE	Colorado River Colorado River
Palo Verde Valley, California and Arizona	Colorado River	S	Gulf of California
La Posa Plain, Arizona	Tyson Wash	N-NW	Colorado River
Ranegras Plain, Arizona	Bouse Wash and Upper Bouse Wash	NW-W	Colorado River
Harquahala Plain, Arizona	Centennial Wash	SE	Gila River
Note: The Colorado River is the only permanent drainage; all others are ephemeral rivers, washes, and lakes. Source: Modified from Table 2.11-6, SCE Environmental Report for DPV1 Transmission Line, 1977.			

Groundwater

Groundwater within the study area is typically found in the sand and gravel layers within the thick sequence of sediments that underlie the alluvial valleys or basins. These alluvial basins generally are within structural troughs bounded by less permeable crystalline bedrock. These troughs can be several thousand feet deep. Depending on the geological conditions, the groundwater can range from a phreatic water table to confined artesian conditions. Wells drilled near the central portions of the basins typically encounter water at shallower depths than those near the mountain fronts where the water table is typically relatively deep.

Groundwater is a potential resource in most desert basins and valleys. However, recharge rates to these groundwater basins is typically low. Many desert groundwater basins have experienced a lowering of water levels. Typical of such areas is the Harquahala Plain of western Arizona, where pumping for irrigation purposes in the southern portion of the plain has caused a decline in the water level.

A summary of the groundwater characteristics of the major alluvial basins within the Arizona and California portions of the study area is presented in Table 4-26. The data contained in this table were largely generated from the California Department of Water Resources (1975) and U.S. Geological Survey (Denis 1976; Wilkens and Webb 1976) and was originally presented in SCE's 1977 Environmental Report for the existing DPV1 transmission line.

4.1.6 Air Quality

The proposed Devers-Harquahala study corridor is located in the southwestern United States, specifically extending from south-central Arizona to southern California. The meteorology for this region can be described as a typical desert climate and can be characterized by high daytime temperatures, low humidity, and low amounts of precipitation. The study area receives approximately 90 percent of the available annual sunshine. The seasons of the region are marked by hot dry summers and cool dry winters.

Temperature information has been collected from representative data stations throughout the project area. The data collection locations for the Devers-Harquahala transmission line study area are Buckeye, Blythe, and Palm Springs. The average maximum temperature for the study area in July is 108 degrees Fahrenheit, and in January is 68 degrees Fahrenheit. The average minimum temperature in July is 75 degrees Fahrenheit, and in January is 38 degrees Fahrenheit. The absolute maximum temperature found in the region was 125 degrees Fahrenheit, and the absolute minimum temperature was 11 degrees Fahrenheit (Western Regional Climate Center 2003).

TABLE 4-26
BASIN GROUNDWATER DATA FOR THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Basin Name County	Basin Description: Size, Major Stream, Water Bearing Material	Well Yields in gpm		Depth Zone in Feet	Storage Capacity in Acre-Feet	Usable Capacity in Acre-Feet	Development	Problems
		Maximum	Average					
Coachella Valley Imperial and Riverside Counties	A 690-square-mile basin drained by the Whitewater River; younger and older alluvium	3,000+	300	100-1,000	39,000,000	3,600,000	Moderate to high for municipal and irrigation use. Limited for domestic use. Natural recharge estimated at about 80,000 acre-feet per year. A potential for limited additional development.	Locally fluoride, sulfate and total dissolved solids (TDS) high for domestic use, boron high for irrigation. Poor quality semi-perched water.
Orcopia Valley Riverside County	A 140-square-mile basin drained by Box Canyon Wash	210	165	200-400	1,500,000	Unknown	Limited for domestic and irrigation use. Natural recharge estimated at about 500 acre-feet per year. A potential for moderate additional development.	Locally fluoride and TDS high for domestic use.
Chuckwalla Valley Imperial and Riverside Counties	A 870-square-mile basin; drainage internal under low surface water flows; younger alluvium	3,900	1,800	20-220	9,100,000	900,000 400-foot pumplift; 100-feet of saturated sediments	Limited for agricultural and domestic use. A potential for limited to moderate additional development.	Locally sulfate, chloride, fluoride, and TDS high for domestic use; boron, TDS, and percent sodium for irrigation use.
Palo Verde Valley, and Riverside Counties	A 200-square-mile basin with drainage to the Colorado River	2,180	670	0-300	4,960,000	Unknown	Moderate for domestic and irrigation use. Natural recharge est. at about 500 acre-feet per year. A potential for limited additional development.	Locally fluoride, chloride, TDS and sulfate high for domestic use, chloride and TDS high for irrigation use. Failing septic tank and leach field

TABLE 4-26
BASIN GROUNDWATER DATA FOR THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Basin Name County	Basin Description: Size, Major Stream, Water Bearing Material	Well Yields in gpm		Depth Zone in Feet	Storage Capacity in Acre-Feet	Usable Capacity in Acre-Feet	Development	Problems
		Maximum	Average					
								system.
Palo Verde Mesa Imperial and Riverside Counties	A 200-square-mile mesa drained by unnamed streams; younger alluvium	2,750	1,659	0-300	6,840,000	Unknown	Limited for domestic and irrigation use. National recharge est. at about 800 AFY. A potential for mod.	Locally arsenic, selenium fluoride, chloride, sulfate, and TDS high for domestic use chloride, buron, and TDS high for irrigation use. Overdraft.
Ranegras Plain and Butler Valley, Yuma County	A 575-square-mile basin drained by Bouse Wash to the Colorado River; younger alluvium	2,000	25 per foot of draw down	0-300	11,060,000	Unknown	Moderate for domestic and irrigation use.	Fluoride high for domestic use. Locally TDS high, only good for salt-tolerant crops.
Harquahala Plain Yuma and Maricopa Counties	A 520-square-mile basin drained by Centennial Wash	Unknown	Unknown	300-400	11,000,000	Unknown	Moderate for domestic and irrigation use.	Fluoride high for domestic use overdraft.

Precipitation data also were collected from the same three stations. Precipitation fluxes follow a general seasonal pattern. The annual average rainfall for the project area is 5.7 inches. A majority of the rain comes in the winter months, with additional localized heavy rain in the summer during the monsoon. Generally, the summer monsoon produces strong dust and electrical storms occasionally accompanied by precipitation in the form of rain. The monsoon is marked by high humidity, over 55 percent, during the summer months. Normally, the region has low humidity the rest of the year.

Finally, wind data were collected from the same three stations. The wind will dictate the amount of ventilation the area receives. A combination of wind speed and mixing depth will determine the amount of lateral and vertical air movement. For the Arizona portion of the study area, there are strong lateral and vertical winds developed from the storms associated with the monsoon. Near the Palm Springs area, the coastal effect forces air through the San Gorgonio Pass, causing sustained winds during the afternoon and evening hours. The average annual wind data are 8, 7.8, and 8.7 miles per hour for the Buckeye, Blythe and Palm Springs data stations, respectively. A summary of the climatology for the study corridor is presented in Table 4-27.

The proposed Devers-Harquahala study corridor is composed of numerous air basins and air quality regulation entities. The Arizona portion is governed by the Arizona Department of Environmental Quality (ADEQ) and contains two primary air quality districts—Maricopa County, governed jointly by ADEQ and Maricopa County, and La Paz County governed by ADEQ. The California portion of the Devers-Harquahala study corridor also crosses two major air basins in California—the Mojave Desert and Salton Sea air basins. The Mojave Desert air basin is governed by the Mojave Desert Air Quality Management District (MDAQMD), which has authority over most of San Bernardino County and an eastern portion of Riverside County. The Salton Sea air basin portion is governed by the South Coast Air Quality Management District (SCAQMD), which has authority over portions of Los Angeles, Riverside, San Bernardino and all of Orange counties.

TABLE 4-27 PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR - CLIMATOLOGY SUMMARY				
Temperature		**Buckeye, AZ**	**Blythe, CA**	**Palm Springs, CA**
Annual Average	max (F)	87.7	82.2	88.7
	min (F)	35.0	55.6	56.8
January	max (F)	67.8	67.6	69.5
	min (F)	34.6	38.2	42.0
July	max (F)	107.1	108.4	108.3
	min (F)	74.4	76.2	74.6
Absolute	max (F)	125.0	122.0	123.0
	min (F)	11.0	18.0	19.0
Precipitation				
Annual Average (inch)		7.6	3.8	5.6
Summer Average (inch)		2.1	0.9	0.6
Winter Average (inch)		2.4	1.5	3.0
Wind				
Annual Average (mph)		8.0	7.8	8.7
Source: Western Regional Climate Center, web page (accessed July 11, 2003).				

The Federal Clean Air Act of 1970 required the Environmental Protection Agency (EPA) to implement ambient air quality standards. The EPA developed a list of standards known as the National Ambient Air Quality Standards (NAAQS). The standards are a list of the maximum levels, given a margin of safety, of background pollution that is considered safe for the health and welfare of the public. The standards are divided into two categories—primary standards, which were developed to protect the health of humans, and secondary standards, which were developed to protect property and agriculture. States have been given the choice to enact air quality standards that are at least as strict as those developed at the federal level. The governing entities for the Arizona portion of the study area have adopted the standards set forth by the EPA. However, the California Air Resources Board (CARB) has implemented standards that are more stringent. A summary of the standards can be found in Table 4-28.

TABLE 4-28
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Air Pollutant	Averaging Time	California Standard	National and Arizona Primary	National and Arizona Secondary
Ozone (O_3)	1 hour	0.09 ppm (180 $\mu g/m^3$)	0.12 ppm (235 $\mu g/m^3$)	0.12 ppm (235 $\mu g/m^3$)
	8 hours		0.08 ppm (157 $\mu g/m^3$)	0.08 ppm (157 $\mu g/m^3$)
Carbon Monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	-
	8 hours	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	-
Nitrogen Dioxide (NO_x)	1 hour	0.25 ppm (470 $\mu g/m^3$)	-	-
	AAM	-	0.053 ppm (100 $\mu g/m^3$))	0.053 ppm (100 $\mu g/m^3$)
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm (655 $\mu g/m^3$)	-	-
	3 hours	-	-	0.5 ppm (1300 $\mu g/m^3$)
	24 hours	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (365 $\mu g/m^3$)	-
	AAM	-	0.03 ppm (80 $\mu g/m^3$)	-
Particulate Matter (PM_{10})	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$	65 $\mu g/m^3$
	AAM	20 $\mu g/m^3$	50 $\mu g/m^3$	15 $\mu g/m^3$
Fine Particulate Matter ($PM_{2.5}$)	24 hours	-	65 $\mu g/m^3$	65 $\mu g/m^3$
	AAM	12 $\mu g/m^3$	15 $\mu g/m^3$	15 $\mu g/m^3$
Lead (Pb)	30 day average	1.5 $\mu g/m^3$	-	-
	calendar quarter	-	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 $\mu g/m^3$)	-	-
Visibility-Reducing Particles	8 hours	Extinction coefficient of 0.23 per kilometer, visibility of 10 miles	-	-

NOTE:
ppm – parts per million by volume
AAM – annual arithmetic mean
$\mu g/m^3$ – micrograms per cubic meter
Source: Arizona Department of Environmental Quality 2003; California Air Resources Board 2003; Environmental Protection Agency 2003

The EPA is required to specially designate areas that fail to meet the standards listed in Table 4-28. The areas that fail to meet the standards are classified as non-attainment. When an area is classified as non-attainment, the regional air quality management agency is required to develop detailed plans to reduce the pollution in that area.

As of June 2003, two of the three counties crossed by the study corridor were listed as non-attainment. Maricopa and Riverside counties were both listed as non-attainment for ozone, carbon monoxide, and particulate matter. All three non-attainment definitions for Maricopa

County were redefined to the Phoenix metropolitan area. The non-attainment status for Riverside County was also redefined. Non-attainment for carbon monoxide is limited to the Los Angeles portion of the South Coast Air Basin (SCAB), and is out of the study area for the proposed Devers-Harquahala transmission line. Non-attainment for ozone was limited to the Los Angeles portion of SCAB and Southeast Desert Modified AQMD. Finally, the particulate matter non-attainment status was limited to SCAB and the Coachella Valley portions of Riverside County according to the EPA (2003); however, all of Riverside County exceeded the standards developed by the state of California (CARB 2003).

4.1.7 Traffic and Transportation

The proposed Devers-Harquahala transmission line route generally parallels I-10 for its entire length, from the Harquahala Switchyard in Arizona, to Devers in California. The proposed transmission line would cross I-10 and other highways and arterials, as described below.

4.1.7.1 Arizona

In Arizona, the proposed Devers-Harquahala study corridor would cross I-10 twice— once in Maricopa County about 5 miles west of Tonopah Road, and once in La Paz County about 4 miles west of the Maricopa County line. The study corridor also would cross SR 95 about 8.5 miles south of the Quartzsite and I-10 interchange. Traffic counts below (Table 4-29) demonstrate average annual daily traffic volume in the areas where the study corridor crosses state and interstate highways. Traffic counts also have been provided along key points of these major travel arterials near the study corridor.

TABLE 4-29 ARIZONA 2003 AVERAGE ANNUAL DAILY TRAFFIC (AADT)		
Road Name/Section	**Distance (in miles)**	**AADT**
SR 95		
County 53rd St. to I-10 frontage road*	5.5	1,700
I-10		
Exit 19 – Quartzsite to Exit 26 – Gold Nugget Road	6.9	21,600
Exit 26 – Gold Nugget Road to Exit 31 – US 60	4.5	25,800
Exit 31 – US 60 to Exit 45 – Vicksburg Road	14.2	26,400
Exit 45 – Vicksburg Road to Exit 81 – Salome Hwy.	35.9	25,400
Exit 81 – Salome Hwy. to Exit 94 – Tonopah*	13.0	25,800
Source: ADOT Transportation Planning Division (2003) *Indicates locations where proposed Devers-Harquahala study corridor crosses state or interstate highways		

4.1.7.2 California

In California, the study corridor passes just south of the town of Blythe, crossing CA 78 about 3 miles west of the Arizona border and generally paralleling the I-10 along the existing DPV1 500kV transmission line. About 7 miles west of the Cottonwood Springs Road exit, the study corridor crosses to the north side of I-10. The route closely parallels the northern side of I-10 before angling slightly north to continue following the existing DPV1 500kV transmission line into Devers. Table 4-30 provides traffic counts in the areas where the corridor crosses I-10 and CA 78, as well as traffic counts along key points of major travel arterials near the study corridor.

4.1.8 Biology

This section summarizes the results of the sensitive plant and wildlife surveys and lists the special status species that could be present within the proposed Devers-Harquahala 500kV transmission line study corridor in Arizona and California. It also describes existing biological conditions of plant and wildlife resources present within the study corridor.

TABLE 4-30
CALIFORNIA 2003 AVERAGE DAILY TRAFFIC (ADT)

Location	South or West of Intersection			North or East of Intersection		
	Peak Hour	Peak Month ADT	Annual ADT	Peak Hour	Peak Month ADT	Annual ADT
Blythe Area						
US Highway 95 –Palo Verde Diversion Dam exit	200	2,150	1,800	220	2,150	1,800
CA 78 – 28th Avenue to Neighbors Boulevard*	180	1,800	1,600	190	2,250	2,000
CA 78 – Palo Verde Road to 4th/Main Street	500	2,600	1,950	210	2,050	1,750
I-10 at Mesa Drive	2,400	25,000	21,700	2,300	25,000	21,700
I-10 at Wileys Well Rest Area	2,200	23,000	20,000	2,400	25,000	21,700
Coachella Valley						
I-10 at Dillon Road exit	2,700	29,000	25,000	2,400	25,000	22,000
I-10 at Cottonwood Springs Road exit (Box Canyon Road)	2,400	25,000	22,000	2,400	26,000	22,200
Dillon Road south of Landfill Road*	3,642 (daily average, 6/13/01)	NA	NA	NA	NA	NA

Source: CDOT Division of Traffic Operations 2003; Riverside County DOT, Engineering/Planning Division 2004
*Indicates locations where proposed Devers-Harquahalas study corridor crosses state or interstate highways

Methods

Field surveys for sensitive species in Arizona and California conducted in 2002 and 2003 were performed in a manner similar to that employed in previous surveys in 1987 and 1994 (Smith 1987 and EPG 2003). The survey method called for biologists to visit each tower site, laydown site, access road, and spur road along the proposed Devers-Harquahala transmission line corridor, and record observations of sensitive species. Sensitive species occurrences were plotted on field data sheets that depict tower locations on a grid in which each grid cell represents a distance of 6 feet. Surveys were conducted for a 10,000-square-foot (100 foot by 100 foot) area centered on the center survey stake for each proposed tower. In addition to recording data at road and tower sites, field biologists recorded pertinent wildlife observations. In Arizona, the primary concern along the route is protected native plant species including various species of cacti, ocotillo (*Fouquieria splendens*), ironwood (*Olneya tesota*), paloverde (*Parkinsonia* spp.), and

mesquite (*Prosopis* spp). Potential habitat for cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) in Arizona was noted. Sonoran population desert tortoise (*Gopherus agassizii*) sign also was noted when observed. The route also passes through desert bighorn sheep habitat in the New Water Pass area and the Dome Rock Mountains.

The Sonoran population of desert tortoise in Arizona is considered sensitive by the BLM. The BLM has designated three categories of desert tortoise habitat on BLM land. The following four criteria are used to group tortoise habitat into the three categories: (1) importance of the habitat to maintaining viable populations, (2) resolvability of conflicts, (3) desert tortoise density, and (4) population status (stable, increasing, or decreasing). BLM aims to maintain viable desert tortoise populations in Category 1 and 2 habitats, and limit population declines in Category 3 habitats (Arizona Interagency Desert Tortoise Team 1996). BLM designated desert tortoise habitat that falls within the study area is depicted in Maps 4-5a-c (end of Chapter 4).

In California, there are numerous species of state and federally listed plants and animals that could potentially be affected by construction of the proposed transmission line between the Colorado River and Devers. In California these include Mojave population desert tortoise and the Coachella Valley fringe-toed lizard (*Uma inornata*). USFWS has designated critical habitat for both of these species. Additionally, BLM has created ACECs for the management and protection of these two species. These areas of critical habitat and the ACECs within the study corridor are depicted in Maps 4-5c-e (end of Chapter 4).

An assessment of habitat conditions was also undertaken at the Valley Substation. The facilities would be installed within the existing substation property. The substation property has been previously disturbed, and no endangered or threatened wildlife or plant species, or otherwise sensitive species are present or would be expected to occur at the site.

New telecommunications system facilities (described in Section 3.4.2) would be installed at, or adjacent to, existing telecommunications sites. Facilities would be installed on existing properties at the Black Peak, Smith Peak, and Harquahala Mountain communication sites and

within existing properties at Devers, Mirage, and Harquahala Generating Station substations. The new Blythe Optical Repeater facility would be constructed within the proposed Devers-Harquahala 500kV right-of-way in California.

The new series capacitor bank sites in Arizona and California would be located adjacent to the existing DPV1 capacitor banks. Descriptions provided in Sections 4.1.8.1 and 4.1.8.2 of existing vegetation and wildlife resources within the Devers-Harquahala study corridor includes the telecommunication and series capacitor sites.

4.1.8.1 Arizona

Vegetation

The project study area lies within the Lower Colorado River Valley Subdivision of the Sonoran Desert and is frequently referred to as the "Colorado Desert" (Jaeger 1941; Raven and Axelrod 1978; Turner and Brown 1982). The Lower Colorado River Valley Subdivision characteristically covers broad alluvial valley floors and is usually dominated by creosote bush (*Larrea tridentata*) in association with white bursage (*Ambrosia dumosa*) on gravelly soils, and with big galleta grass (*Pleuraphis rigida*) on finer textured soils. Washes that dissect valley bottoms of creosote bush scrub may support woodland-like communities of blue paloverde (*Parkinsonia florida*), ironwood, and several species of shrubs where soils are coarse and rocky. Where soils are finer textured, mesquite may occur as a dominant. Washes may be dominated by more shrubby species such as white burrobrush (*Hymenoclea salsola*), smoketree (*Psorothamnus spinosus*), and sweetbush (*Bebbia juncea*).

In the western portions of the Sonoran Desert (i.e., western Arizona and eastern California), floral elements that are characteristic of the Lower Colorado River Valley Subdivision (e.g., creosote bush) are frequently the dominant species on rocky mountain slopes and bajadas as well

as in the alluvial valleys. This dominance is particularly true on hills derived from young, volcanic rock (Turner and Brown 1982).

In western Arizona, in the vicinity of mountain ranges (e.g., Dome Rock, New Water, Plomosa, and Eagletail mountains and associated uplands), elements of the Arizona Upland Subdivision of the Sonoran Desert become an integral part of the flora as mixed paloverde-cacti communities. Desert mountain ranges in western Arizona (i.e., west of a line drawn between Buckeye and Gila Bend and south of I-10) are largely ecotonal between the Lower Colorado River Valley and Arizona Uplands subdivisions of the Sonoran Desert. In these mountains, characteristic Arizona Upland community types (i.e., mixed paloverde-cacti) are rather strongly restricted to drainageways, with Lower Colorado River Valley Subdivision communities (i.e., creosote bush communities) dominating on interfluvial areas.

This distinction is clearly visible on the bajadas on the west side of the Dome Rock and Plomosa mountains, on the north side of the New Water Mountains, and on the east side of the Eagletail Mountains. In each of these ranges, there tends to be well-developed communities of foothill paloverde (*Parkinsonia microphylla*), ironwood, and a variety of cacti, including saguaro (*Carnegiea gigantea*), on the bajadas. Examination of the situation, however, reveals that these communities are almost wholly restricted to drainages, including the smallest runnels, rather than being evenly distributed. Between the drainageways, the landscape is dominated by Lower Colorado River Valley Subdivision communities of creosote bush and bursage, with several species of cholla (*Opuntia* spp.), small columnar cacti, and prickly pear cacti. The arborescent communities tend to follow drainages upslope, frequently giving hillsides the appearance of being true mixed paloverde-cacti communities, when in fact the interstitial landscape is dominated by creosote bush, bursage, and white brittlebush (*Encelia farinosa*). Perhaps the finest example of this situation in the study area occurs on the west slope of the southern Plomosa Mountains (west New Water Mountains), between Gold Nugget Road and Quartzsite, where one has the distinct impression that lands south of I-10 are wholly dominated by woodlands of paloverde, ironwood, and saguaro. Viewed from the air, however, it is clear that these species are totally riparian and do not occur on interwash sites.

Creosote bush communities in the Arizona study area strongly dominate alluvial valley bottoms and are often the dominant vegetation type on mountain slopes. In the western part of the Arizona study area, west from approximately the central Plomosa/New Water Mountain complex, creosote bush communities are found on highly varnished desert pavement, while in the eastern part of the study area (e.g., the Harquahala and Ranegras plains), they occur on fine textured to gravelly soils.

Wash communities in the Arizona study area vary in species dominance depending on soil type. Washes that traverse broad creosote bush flats on fine soils (e.g., Centennial Wash) tend to be dominated by mesquite. Washes traversing rockier soil types support communities of ironwood, paloverde, saguaro, and a variety of shrubs. Smoketree, white burrobrush, and sweetbush are common in larger washes away from major mountain masses. For example, the large washes that drain the west side of the Dome Rock Mountains are dominated by smoketree and burrobrush at their lower ends.

Cacti are a common feature within the Arizona study area. Most species are restricted to rockier, upland conditions, although at least one, the night-blooming cereus, is rather strongly restricted to creosote bush flats with fine soils. Mountain slopes, hills, and rocky outcrops provide habitat for several species of cholla, prickly pear , and columnar cacti. The saguaro tends to become less common from east to west in the study area, and it probably does not occur at all in the study area west of the Colorado River. This obvious decrease in saguaro density is probably related to the diminution of summer rainfall from east to west in Arizona.

Special Status Plant Species – Arizona

The federal government uses the following definitions in its current or proposed listings of plants and animals (Endangered Species Act 1973).

Endangered: A species that is in danger of extinction throughout all or a significant portion of its range.

Threatened: A species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Proposed: A species that has been proposed for listing as threatened or endangered, but the status has not been finalized.

Species of Concern: Species that are believed to be declining in population, but insufficient data exist for classification as threatened or endangered (includes most species that were listed as candidates under the former classification system).

The State of Arizona has four categories for special status plants as follows.

Highly Safeguarded: Species of native plants whose prospects for survival in Arizona are in jeopardy or those that are in danger of extinction.

Salvage Restricted: Species of native plants that are not included in the highly safeguarded category but are subject to damage by theft or vandalism. All species in the families Agavaceae, Cactaceae, Liliaceae, and Orchidaceae are salvage restricted protected native plants, unless listed as highly safeguarded.

Salvage Assessed: Species of native plants that are not included in either the highly safeguarded or salvage restricted categories but have a sufficient value if salvaged to support the cost of salvage.

Harvest Restricted: Species of native plants that are not included in the highly safeguarded category but are subject to excessive harvesting or overcutting because of their intrinsic value.

The ANPL extends protection to nearly 200 species of plants, including all Liliaceae (including *Yucca*, *Nolina*, *Hesperocallis*, and *Allium*) and all plants within the families Agavaceae, Crassulaceae, Cactaceae and Orchidaceae. Also protected by the ANPL are ocotillo, desert holly (*Atriplex hymenelytra*), smoketree (*Psorothamnus spinosus*), crucifixion thorn (*Castela emoryi*), Mexican jumping bean (*Sebastiana bilocularis*), mesquite, paloverde, ironwood, and elephant tree (*Bursera microphylla*).

The ANPL does not prevent the clearing of land for a project such as the proposed transmission line, provided the Arizona Department of Agriculture is notified at least 60 days prior to the clearing of land so that affected plants may be salvaged.

Following literature review and consultation with the BLM and Arizona Game and Fish Department (AGFD), initial field surveys for sensitive plant species were conducted in 1985 within the Arizona portions of the preferred and alternate transmission line corridors. Five species considered sensitive at that time were found during field surveys along the preferred corridor in Arizona. These species were California snake bush (*Colubrina californica*), woollyheads (*Nemacaulis denudata*), Wiggins cholla (*Opuntia wigginsii*), night-blooming cereus (*Peniocereus greggii*), and Hall shrub spurge (*Tetracoccus hallii*). None of these species is currently included on the sensitive species lists for Maricopa or La Paz counties in Arizona (AGFD 2003).

Plant species currently listed as threatened, endangered, or sensitive and known to occur in Maricopa or La Paz counties are listed in Table 4-31 (AGFD 2003). This list includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. This list includes numerous species that were not considered sensitive in 1985. Several species from that time are no longer listed as sensitive, and are not included in Table 4-31. Species for which pre-construction surveys are recommended, or may be required, are noted.

TABLE 4-31
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN MARICOPA OR LA PAZ COUNTIES, ARIZONA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Abutilon parishii	Pima Indian mallow	FSC, BLM, SR	None	No
Agave arizonica	Arizona agave	FE, HS	None	No
Agave delamateri	Tonto Basin agave	FSC, HS	None	No
Agave murpheyi	Hohokam agave	FSC, BLM, HS	None	No
Agave toumeyana var. *bella*	Toumey agave	SR	None	No
Allium bigelovii	Bigelow onion	SR	None	No
Berberis harrisoniana	KOFA barberry	BLM	Low	No
Cirsium mohavense	Mojave thistle	BLM	Low	No
Ephedra funerea	Death Valley Mormon tea	BLM	Moderate	Yes
Erigeron piscaticus	Fish Creek fleabane	FSC, BLM, SR	None	No
Eriogonum ripleyi	Ripley wild buckwheat	FSC, SR	None	No
Fremontodendron californicum	Flannel bush	BLM, SR	Low	No
Mammillaria viridiflora	Varied fishhook cactus	SR	None	No
Opuntia echinocarpa	Straw-top cholla	SR	High	No
Opuntia engelmannii var. *flavispina*	Engelmann prickly pear	SR	Low	No
Peniocereus greggii var. *transmontanus*	Night-blooming cereus	SR	High	No
Perityle saxicola	Fish Creek rock daisy	FSC	None	No
Pholisma arenarium	Scaly sandplant	BLM, HS	Low	No
Purshia subintegra	Arizona cliffrose	FE, HS	None	No
Tumamoca macdougalii	Tumamoc globeberry	BLM, SR	None	No
Vauquelinia californica ssp. *Sonorensis*	Arizona rosewood	BLM	Low	No

Status Codes:
BLM - BLM (Arizona) Sensitive species.
FE – Federally Endangered
FSC – Federal Species of Concern
HS - Highly Safeguarded (ANPL, 1993)
SR - Salvage Restricted (ANPL, 1993)

Probability of Presence:
High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable habitat, or far from known distribution.

Survey Results of the 2003 Special Status Plant Survey within the Proposed Devers-Harquahala Study Corridor in Arizona

In Arizona, 19 plant species that receive protection under the Arizona Native Plant Law (ANPL) were found on tower sites and access roads within the proposed DPV2 corridor. These species were recorded during field surveys in 2002 and 2003 (see Table 4-32 for the total number of individuals of each species found). It is quite likely that many of these individuals could be avoided during construction of the proposed transmission line.

TABLE 4-32
TOTAL NUMBER OF ANPL-LISTED PLANTS, BY SPECIES, FOUND ALONG THE ARIZONA PORTION OF THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Number of Individuals
Agave deserti	Desert agave	10
Carnegiea gigantea	Saguaro	360
Castela emoryi	Crucifixion thorn	1
Coryphantha sp.	Beehive cactus	12
Echinocereus engelmannii	Engelmann's hedgehog cactus	51
Ferocactus cylindraceus	California barrel cactus	47
Fouquieria splendens	Ocotillo	1,044
Hesperocallis undulata	Desert lily	5
Mammillaria grahamii var. *grahamii*	Fishhook pincushion	27
Olneya tesota	Ironwood	529
Opuntia basilaris	Beavertail prickly pear	14
Opuntia bigelovii	Teddy bear cholla	1,289
Opuntia echinocarpa	Straw-top cholla	1,544
Opuntia leptocaulis	Christmas cactus	30
Opuntia ramosissima	Diamond cholla	342
Opuntia sp.	Cholla	2
Parkinsonia florida	Blue paloverde	11
Parkinsonia microphylla	Foothill paloverde	853
Prosopis velutina	Velvet mesquite	1,122

Source: EPG 2003

In addition to the special status plant species, other significant resources were also recorded. Existing DPV1 towers were noted when either raptors or ravens (*Corvuscorax*) had built stick nests in them. If any additional detail was observed, such as which species of bird was nesting or

the number of individuals present, this was recorded as well. Sonoran desert tortoise sign was also noted when found.

Wildlife

Vertebrate wildlife that is present within the Devers-Harquahla study corridor in Arizona consists of mammals, birds, amphibians, and reptiles that are characteristic of arid Sonoran Desert lowland and low mountain range plant communities and soil types.

Mammals

The mammalian fauna of the Devers-Harquahala study corridor in Arizona is composed primarily of small, nocturnal species of bats and rodents, including the highly desert-adapted Heteromyid pocket mice (*Perognathus* sp. and *Chaetodipus* sp.) and kangaroo rats (*Dipodomys* sp.). Owing to the presence of many mine shafts, adits, other prospects, natural caves, cliffs, and clefts in rock walls, it is likely that several species of bats are residents of portions of the study corridor. Bats certainly forage throughout the length of the corridor in Arizona. Diurnal species present include black-tailed jack rabbit (*Lepus californicus*), Harris antelope ground squirrel (*Ammospermophilus harrisii*) and rock squirrel (*Spermophilus variegatus*). Desert mule deer (*Odocoileus hemionus*) are present sparingly in foothills and along major washes. Desert bighorn sheep (*Ovis canadensis mexicana*) are fairly common in the KOFA, New Water, and Plomosa Mountains. Smaller populations occupy the Livingston Hills and the Dome Rock Mountains. The ubiquitous coyote (*Canis latrans*) is likely to be encountered almost anywhere within the Arizona portion of the study corridor.

Birds

It is likely that more than 75 species of birds could be found in the Sonoran Desert portions of the study corridor over the course of a year's time including vultures, hawks, quail, doves, roadrunner, owls, goatsuckers, swifts, hummingbirds, woodpeckers, and a fairly diverse array of songbirds (flycatchers, larks, swallows, wrens, gnatcatchers, mockingbird, thrashers, shrike, vireos, warblers, orioles, tanagers, grosbeaks, finches, and sparrows). The presence of the Colorado River with its associated aquatic, wetland, and riparian habitats adds tremendously to the overall diversity of the avifauna of the Arizona portion of the study corridor. Many species of waterfowl, shorebirds, wading birds, and piscivores are present because of the river.

Amphibians

Away from the Colorado River, the only amphibians likely to be present in the Devers-Harquahala study corridor are the highly adapted toads and spadefoot toads that appear on the desert floor in response to summer monsoon rainfall. These species spend most of the year sequestered in rodent burrows or well dug into the soil awaiting the summer rains. When rainfall is sufficient, the toads emerge to breed in temporary rainfall pools and stock tanks. Species likely to be present include Couch's spadefoot (*Scaphiopus couchii*), Great Plains toad (*Bufo cognatus*), Sonoran Desert toad (*B. alvarius*), and red-spotted toad (*B. punctatus*). Owing to the presence of the Colorado River, very aquatic species such as the introduced bullfrog (*Rana catesbiana*) occur in the project area.

Reptiles

Depending on substrate, a fairly diverse group of lizards and snakes may be found in habitats traversed by the Devers-Harquahala study corridor. Fine, sandy soils are likely to host such species as banded sand snake (*Chilomeniscus cinctus*), sidewinder (*Crotalus cerastes*), and

desert iguana (*Dipsosaurus dorsalis*). Rocky slopes, outcrops, and washes support a different herpetofauna that includes such species as long-tailed brush lizard (*Urosaurus graciosus*), chuckwalla (*Sauromalus obsesus*), desert spiny lizard (*Sceloporus magister*), desert horned lizard (*Phrynosoma platyrhinos*), western whiptail (*Cnemidophorus tigris*), desert glossy snake (*Arizona elegans*), and many more. The aquatic habitats associated with the Colorado River make possible the presence of introduced aquatic species such as the spiny softshell (*Trionyx spinifera*).

Special Status Wildlife – Arizona

A number of wildlife species that have been accorded special status, highlighting concern for their continued existence in the state and/or nation, are known to occur within the Arizona portion of the Devers-Harquahala study corridor. In addition to the federal lists of threatened, endangered, and status review species, the AGFD maintains a list of threatened native wildlife in Arizona. Formerly, this list included several different categories reflecting varying degrees of concern, but the current list recognizes only a single category, wildlife of special concern.

Wildlife species currently listed as threatened, endangered, or sensitive and known to occur in Maricopa or La Paz counties are listed in Table 4-33 (AGFD 2003). This list includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. This list includes numerous species that were not listed in 1985, and several species from that time are no longer listed. Species accounts for wildlife that have some probability of presence within the study corridor are found in Appendix H. Species for which pre-construction surveys are recommended, or may be required, are noted in the table.

TABLE 4-33
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO EXIST IN MARICOPA OR LA PAZ COUNTIES, ARIZONA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
INVERTEBRATES				
Sonorella allynsmithi	Squaw peak talussnail	FSC	None	No
Cicindela oregona maricopa	Maricopa tiger beetle	FSC, BLM	None	No
FISH				
Gila robusta	Roundtail chub	FSC, WSC	None	No
Gila elegans	Bonytail chub	FE, WSC	Low	No
Agosia chrysogaster	Longfin dace	FSC, BLM	None	No
Rhinichthys osculus	Speckled dace	FSC, BLM	None	No
Catostomus insignis	Sonora sucker	FSC, BLM	None	No
Catostomus clarki	Desert sucker	FSC, BLM	None	No
Xyrauchen texanus	Razorback sucker	FE, WSC	Low	No
Poeciliopsis occidentalis occidentalis	Gila topminnow	FE, WSC	None	No
AMPHIBIANS				
Bufo microscaphus microscaphus	Arizona toad	FSC	None	No
Pternohyla fodiens	Lowland burrowing treefrog	WSC	None	No
Rana yavapaiensis	Lowland leopard frog	FSC, WSC	Low	No
Gastrophryne olivacea	Great Plains narrowmouth toad	WSC	None	No
REPTILES				
Gopherus agassizii	Desert tortoise (Sonoran population)	FSC, WSC	High	No[1]
Sauromalus ater	Arizona chuckwalla	FSC, BLM	Moderate	No
Uma scoparia	Mojave fringe-toed lizard	WSC	Moderate	No
Eumeces gilberti arizonensis	Arizona skink	FSC, WSC, BLM	Low	No
Cnemidophorus xanthonotus	Red-backed whiptail	FSC, BLM	Low	No
Heloderma suspectum cinctum	Banded Gila monster	FSC, P	Moderate	No
Charina trivirgata gracia	Desert rosy boa	FSC, BLM	Moderate	No
Thamnophis eques megalops	Mexican garter snake	FSC, WSC	None	No
BIRDS				
Ixobrychus exilis hesperis	Western least bittern	FSC, WSC	Moderate	No
Ardea alba	Great egret	WSC	High	No
Egretta thula	Snowy egret	FSC, WSC	Moderate	No
Plegadis chihi	White-faced ibis	FSC	Moderate	No

TABLE 4-33
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO EXIST IN MARICOPA OR LA PAZ COUNTIES, ARIZONA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Dendrocygna autumnalis	Black-bellied whistling duck	WSC	None	No
Ictinia mississippiensis	Mississippi kite	WSC	None	No
Haliaeetus leucocephalus	Bald eagle	FT, WSC	Moderate	No
Buteogallus anthracinus	Common black hawk	WSC	None	No
Falco peregrinus anatum	Peregrine falcon	FSC, WSC	Low	No
Laterallus jamaicensis coturniculus	California black rail	FSC, WSC	None	No
Rallus longirostris yumanensis	Yuma clapper rail	FE, WSC	Low	No
Charadrius alexandrinus nivosus	Western snowy plover	FT, WSC	Low	No
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC, WSC	Low	No
Glaucidium brasilianum cactorum	Cactus ferruginous pygmy-owl	FE, WSC	Low	Yes
Athene cunicularia hypugaea	Western burrowing owl	FSC, BLM	Low	No
Strix occidentalis lucida	Mexican spotted owl	FT, WSC	None	No
Empidonax traillii extimus	Southwestern willow flycatcher	FE, WSC	Low	No
Lanius ludovicianus	Loggerhead shrike	FSC, BLM	Moderate	No
MAMMALS				
Macrotus californicus	California leaf-nosed bat	FSC, WSC, BLM	Moderate	No
Leptonycteris curasoae yerbabuenae	Lesser long-nosed bat	FE, WSC	None	No
Myotis yumanensis	Yuma myotis	FSC	Low	No
Myotis velifer	Cave myotis	FSC, BLM	Low	No
Myotis lucifugus occultus	Occult little brown bat	FSC, BLM	Low	No
Lasiurus borealis	Red bat	WSC	Low	No
Lasiurus xanthinus	Western yellow bat	WSC	Moderate	No
Euderma maculatum	Spotted Bat	FSC, WSC, BLM	Low	No
Plecotus townsendii pallescens	Pale big-eared bat	FSC, BLM	Moderate	No
Nyctinomops femorosaccus	Pocketed free-tailed bat	BLM	Low	No
Eumops perotis californicus	Greater western mastiff bat	FSC, BLM	None	No
Lontra canadensis sonora	Southwestern river otter	FSC, WSC	Low	No
Puma concolor browni	Yuma puma	FSC, WSC	Low	No
Antilocapra americana sonoriensis	Sonoran pronghorn	FE, WSC	None	No

TABLE 4-33
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO EXIST IN MARICOPA OR LA PAZ COUNTIES, ARIZONA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Ovis canadensis mexicana	Desert bighorn sheep	None	High	No[2]

Status Codes:
BLM - BLM Sensitive Species
FE – Federally Endangered
FT – Federally Threatened
FSC – Federal Species of Concern
WSC – Wildlife of Special Concern in Arizona
P – Proposed BLM Sensitive Species

Probability of Presence:
High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable or potential habitat, or far from known distribution.
[1] Pre-construction surveys for tortoises would not be required since tortoises are known to be present along the corridor, and a biological monitor will be present during construction within tortoise habitat. All project personnel will attend a pre-construction tortoise training class.
[2]Bighorn currently have no listed status in Arizona, but are a managed big game animal species.

4.1.8.2 California

Vegetation

Within the California study area, the primary native vegetation type is creosote bush scrub, which is present along the entire length of the preferred route. On rocky hills and mountain slopes, creosote bush is also a dominant species, but it is frequently replaced by aspect-dominant species such as white brittlebush on south-facing slopes and white bursage on north-facing slopes. Common associates of creosote bush are white bursage on coarse soils and big galleta grass on finer soils.

Ocotillo is common on stony bajadas, which are present from the Little San Bernardino Mountains eastward through the Chuckwalla Mountains. On the finer soils of the Coachella Valley, desert croton (*Croton californicus*), Palmer coldenia (*Tiquilia palmeri*), plicate coldenia (*Tiquilia plicata*), indigo bush (*Psorothamnus schottii*), and Emory dalea (*Psorothamnus emoryi*)

are co-dominants with creosote bush. Tall dunes of windblown sand, dominated by mesquite, occur locally southeast and northwest of the Indio Hills and just west of Myoma.

Washes that dissect creosote bush scrub habitat in the western part of the California study area, (e.g., west of Cactus City) are dominated by white burrobrush and desert lavender (*Hyptis emoryi*) on rocky soils and by white burrobrush and smoketree on finer soils. In the eastern portions of the California study area, the same species occur in washes, but there tends to be a much greater presence of arborescent species (blue paloverde, ironwood, and some mesquite). This setting often creates the impression that valley bottoms are wholly dominated by woodlands of such species as at Shavers Valley near Chiriaco Summit, Desert Center turnoff at I-10, and in the eastern Chuckwalla Valley north of the Little Chuckwalla Mountains. However, examination of such woodlands shows that the trees are largely restricted to washes, including the numerous, anastomosing minor washes and runnels that drain into larger washes. Creosote bush and its associates generally dominate interwash portions of these areas. In areas where washes are particularly abundant, such as portions of the eastern Chuckwalla Valley, major wash complexes dominated by paloverde and ironwood are present.

In the Palo Verde Valley, where the proposed route crosses the Colorado River, riparian habitats dominated by salt cedar (*Tamarix ramosissima*) and honey mesquite (*Prosopis glandulosa*) are present in areas that have not been developed for agricultural uses. Saltbush (*Atriplex* spp.) communities also occur locally in the Palo Verde Valley, but most of these have been removed as the land was converted to agricultural use. Local wetlands, mostly created by irrigation water and other agriculturally related activities, also exist in the Palo Verde Valley. Such wetlands often take the form of small ponds, sloughs, and ditches, and they often support stands of southern cattail (*Typha domingensis*) and/or bulrush (*Scirpus* spp.).

Vegetation along the Colorado River at the crossing of the proposed route is generally dominated either by mesquite or salt cedar. There are local occurrences of Fremont cottonwood (*Populus fremontii*) and willow (*Salix* sp.) along the river in the general vicinity. Honey mesquite is the most common mesquite along the river, but screwbean mesquite (*Prosopis pubescens*) is present

locally. Common associates of salt cedar and mesquite are arrowweed (*Pluchea sericea*) and saltbush.

Accompanying the short tree to shrub-dominated salt cedar and mesquite communities, there are some local occurrences of emergent plant communities associated with sloughs, ponds, and isolated oxbows of the Colorado River. These emergent communities are dominated by cattail (*Typha* sp.) and bulrush. There are no major emergent or marshland communities within 1 mile of the proposed Devers-Harquahala 500kV transmission line crossing of the Colorado River.

In addition to perennial plant species, both the California and Arizona portions of the study area are hosts to a large number of annual or ephemeral species of plants. Most of these species appear in the late winter and early spring following periods of suitable rainfall. Shreve and Wiggins (1964) list 109 ephemeral species that occur in the Arizona Upland Subdivision of the Sonoran Desert and 44 that are characteristic of the Lower Colorado River Valley Subdivision. There is some overlap in these two lists, which include members of the families Poaceae, Polygonaceae, Papaveraceae, Crassulaceae, Fabaceae, Onagraceae, Polemoniaceae, Hydrophyllaceae, Boraginaceae, and Asteraceae. During particularly favorable years, spectacular blooms of ephemeral species may occur locally in the study area. In years of little rainfall, the bloom may not occur at all.

Special Status Plant Species – California

Special status plant species in the California portion of the Devers-Harquahala study corridor fall into the following categories:

- species listed by the federal government as threatened, endangered, or under review for inclusion on lists as threatened or endangered species

- species listed by the State of California as rare, threatened, or endangered under the California Endangered Species Act

- species considered species of concern by the CDFG

- species included on one or more of the lists published by the CNPS and CDFG

- species included for protection under the CDNPA

In addition to state and federal listings of sensitive plant species, the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) includes five species of plants all of which are included in Table 3-34. Of these plants, only the Mecca aster has status under the CVMSHCP only; all others have state and/or federal status as well. The Western Riverside County MSHCP addresses nearly 120 species of plants many of which also appear in Table 3-34.

The CNPS maintains lists of extant plant species of different degrees of sensitivity. List 1B includes plant species that are rare and endangered in California, and they also are rare elsewhere. Plant species in List 2 are rare or endangered in California, but they are more common elsewhere. Plants species for which more information is needed are included in List 3. List 4 includes those plant species with limited distribution.

The CDNPA was enacted in 1981 with the intent of protecting native desert plants from unlawful harvesting on both public and private land, and to provide the people of California with the necessary information to legally harvest native plants so as to ultimately transplant such plants with the greatest possibility of success. The CDNPA specifically extends protection to ironwood, mesquite, and paloverde trees, most Cactaceae, all Burseraceae, Agavaceae, Fouquieriaceae, and the following species not included in one of the preceding families: crucifixion thorn, Panamint dudleya (*Dudleya saxosa*), fan palm (*Washingtonia filifera*), catclaw acacia (*Acacia greggii*), desert holly, and smoketree.

As with the ANPL, the CDNPA is aimed primarily at preventing the commercial exploitation of native plants. It is expressly stated that the provisions of the CDNPA are not intended to prevent public or private utility companies from acting in the performance of their obligations to provide services to the public (California State Food and Agriculture Code, Division 23, Chapters 1-8).

Following literature reviews and consultation with the BLM, USFWS, National Park Service, and Rancho Santa Ana Botanical Gardens, initial field surveys for sensitive plants were conducted in 1985 within the California portions of the proposed and alternate transmission line corridors. Five of the species considered sensitive at that time were found during field surveys conducted in 1985 within 500 feet on either side of the centerline of the existing DPV1 transmission line in California. These species were cushion foxtail cactus, California barrel cactus (*Ferocactus cylindraceus*), Coachella Valley milkvetch (*Astragalus lentiginosus coachellae*), California silverbush (*Argythamnia californica*), and desert unicorn plant (*Proboscidea althaeifolia*). Of these species, only the Coachella Valley milkvetch is on the current list of sensitive species in Riverside County (CDFG 2003).

Plant species currently listed as threatened, endangered, or sensitive and known to occur in Riverside County are listed in Table 4-34 (CDFG 2003). This table includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. This table includes numerous species that were not listed as sensitive in 1985. Species accounts for plants that have some probability of presence within the study corridor are found in Appendix H. Species for which pre-construction surveys are recommended, or may be required, are noted on the table.

TABLE 4-34
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Allium munzii	Munz's onion	FE, CT, WR	None	No
Ambrosia pumila	San Diego ambrosia	FE, BLM, WR	None	No
Arenaria paludicola	Marsh sandwort	FE, CE,	None	No
Astragalus lentiginosus var. *coachellae*	Coachella Valley milk-vetch	FE, CEQA, CV	High	Yes
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	CEQA, WR	None	No
Astragalus tricarinatus	Triple-ribbed milk-vetch	FE, CEQA, CV	Low	Yes
Atriplex coronata var. *notatior*	San Jacinto Valley crownscale	FE, WR	None	No
Brodiaea filifolia	Thread-leaved brodiaea	FT, CE	None	No
Brodiaea orcuttii	Orcutt's brodiaea	BLM, WR	None	No
Calochortus palmeri var. *palmeri*	Palmer's mariposa lily	FSC, WR	None	No
Calochortus plummerae	Plummer's mariposa	CEQA, WR	None	No
Ceanothus ophiochilus	Vail Lake ceanothus	FT, CE, WR	None	No
Chamaesyce platysperma	Flat-seed sandmat	BLM	Low	No
Chorizanthe parryi var. *parryi*	Parry's spineflower	CEQA, WR	None	No
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	CEQA, WR	None	No
Chorzanthe xantii var. *leucotheca*	White-bracted spineflower	CEQA, WR	Low	No
Delphinium hesperium ssp. *cuyamacae*	Cuyamaca larkspur	CR	None	No
Dodecahema leptoceras	Slender-horned spineflower	FE, CE, WR	None	No
Dudleya multicaulis	Many stem live-forever	CEQA, BLM, WR	None	No
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	FE, CE, WR	None	No
Erigeron parishii	Parish's daisy	FT, WR	None	No
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE, CE, WR	None	No
Escobaria alversonii	Cushion foxtail cactus	FSC	High	Yes[1]
Euphorbia misera	Cliff spurge	CEQA, WR	None	No
Galium californicum ssp. *primum*	California bedstraw	BLM, WR	None	No
Gilia maculata	Little San Bernardino Mts. linanthus	CEQA, BLM, CV	Low	Yes
Hemizonia mohavensis	Mojave tarplant	FSC, CE, WR	None	No
Ivesia callida	Tahquitz ivesia	CR, WR	None	No
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CEQA, WR	None	no
Limnanthes gracilis ssp. *parishii*	Parish's meadowfoam	FSC, CE, WR	None	No
Linanthus orcuttii	Orcutt's linanthus	BLM, WR	None	No
Mahonia nevinii	Nevin's barberry	FE, CE, WR	None	No
Mondardella pringlei	Pringle's coyote-mint	CEQA, WR	None (Extinct?)	No
Monardella robisonii	Robison monardella	BLM	None	No

TABLE 4-34
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Myosurus minimus ssp. *apus*	Little mousetail	FSC, WR	None	No
Navarretia fossalis	Spreading navarretia	FT, WR	None	No
Navarretia prostrata	Prostrate navarretia	FSC	None	No
Nemacaulis denudata var. *gracilis*	Slender woollyheads	CEQA	None	No
Opuntia munzii	Munz cholla	BLM	None	No
Orcuttia californica	California Orcutt grass	FE, CE, WR	None	No
Salvia greatae	Orocopia sage	CEQA, CV	None	No
Sidalcea neomexicana	Salt-spring checkerbloom	CEQA, WR	None	No
Tetracoccus dioicus	Parry's tetracoccus	BLM, WR	None	No
Trichocoronis wrightii var. *wrightii*	Wright's button	CEQA, WR	None	No
Trichostema austromontanum ssp. *Compactum*	Hidden Lake bluecurls	FT, WR	None	No
Xylorhiza cognata	Mecca Aster	CVMSHCP	None	No

Status Codes:
FE – Federally Endangered
FT – Federally Threatened
FSC – Federal Species of Concern
CE – California Endangered
CT – California Threatened
CR – California Rare
CVMSHCP – Coachella Valley Multiple Species Habitat Conservation Plan listing only
CV – Coachella Valley Multiple Species Habitat Conservation Plan
WR – Western Riverside County Multiple Species Habitat Conservation Plan

Probability of Presence:
High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable habitat, or far from known distribution.

[1]A pre-construction survey for this species is recommended since its presence along the corridor is known, and locating individual plants would allow for adjustment of tower foundations to avoid the plants. Alternatively, plants could be moved.

Survey Results of 2003 Special Status Plant Survey within the Proposed Devers-Harquahala Study Corridor in California

In California, 14 species of plants protected under the California Desert Native Plant Act (CDNPA) were found in surveys of tower sites and access roads along the proposed Devers-

Harquahala study corridor in 2002 and 2003. See Table 4-35 for the total number of individuals of each species found.

TABLE 4-35
TOTAL NUMBER OF CDNPA-LISTED PLANTS, BY SPECIES, FOUND ALONG THE CALIFORNIA PORTION OF THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Number of Individuals
Acacia greggii	Catclaw acacia	97
Echinocereus engelmannii	Engelmann's hedgehog cactus	10
Echinocactus polycephalus	Cottontop barrel cactus	4
Ferocactus cylindraceus	California barrel cactus	40
Fouquieria splendens	Ocotillo	128
Mammillaria grahamii var. *grahamii*	Fishhook pincushion	2
Olneya tesota	Ironwood	230
Opuntia basilaris	Beavertail prickly pear	103
Opuntia bigelovii	Teddybear cholla	81
Opuntia echinocarpa	Straw-top cholla	279
Opuntia ramosissima	Diamond cholla	547
Opuntia wigginsii	Wiggins' cholla	66
Parkinsonia florida	Blue paloverde	394
Psorothamnus spinosus	Smoketree	127

In addition to CDNPA-listed plants, the survey also included a search for federal and state protected plant species. Four individuals of Coachella Valley milkvetch, a federally listed endangered species, were found in areas of aeolian sands in Coachella Valley. Twenty-nine individuals of the cushion foxtail cactus (*Escobaria alversonii*), a federal species of concern, were found in cobbly rocky areas near the Cottonwood and Chuckwalla mountains. Burrows, sign, and live sightings of Mojave desert tortoise were recorded as well. Also, all existing DPV1 towers were noted when either raptors or ravens had built stick nests in them. When the status of the nest could be determined, this information was collected as well.

Wildlife

The California portion of the Devers-Harquahala study corridor begins on the west bank of the Colorado River. The wildlife of this portion of the study corridor is composed of mammals, birds, amphibians, and reptiles that are adapted to life in the harsh, arid deserts that characterize eastern and southern California.

Mammals

The mammalian fauna of the California portion of the Devers-Harquahala study corridor is dominated by small, nocturnal species of rodents and bats. As in the Arizona portion of the corridor, the Heteromyid pocket mice and kangaroo rats are the most common rodents. Owing to an absence of caves, mines, or other structures that would provide nursery or roost sites within the study corridor, it is likely that most bats occurring there would be foraging individuals. Black-tailed jack rabbit, desert cottontail (*Sylvilagus auduboni*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and round-tailed ground squirrel (*Spermophilus tereticaudus*) are the most common, small, diurnal species. Mule deer (*Odocoileus hemionus*) occur sparingly in larger wash woodland complexes. There is no suitable habitat for desert bighorn along the corridor in California. As in Arizona, the coyote is a common predator, but it is probably outnumbered in California by kit foxes (*Vulpes macrotis*).

Birds

The avifauna of the California portion of the study corridor is likely dominated by small, diurnal songbirds including classic desert species such as black-tailed gnatcatcher (*Polioptila melanura*), cactus wren (*Campylorhynchus brunniecapillus*), LeConte's thrasher (*Toxoxtome lecontei*), verdin (*Auriparus flaviceps*), and black-throated sparrow (*Amphispiza bilineata*). Larger, more conspicuous species are turkey vulture (*Cathartes aura*) and red-tailed hawk (*Buteo jamaicensis*).

Reptiles

The reptile fauna of the California portion of the study corridor is quite diverse and varies locally depending on substrate. Ammophilus species such as western shovel-nosed snake (*Chionactis occipitalis*), sidewinder, Mohave fringe-toed lizard (*Uma scoparia*), and Coachella Valley

fringe-toed lizard are found in areas of Aeolian or semi-consolidated sand dunes. Species like chuckwalla, collared lizard (*Crotaphytus collaris*), lyre snake (*Trimorphodon biscutatus*), and speckled rattlesnake (*Crotalus mitchellii*) are more likely to be found in rocky areas. Species that are more habitat generalists and likely to be found nearly anywhere in the study corridor include side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*Sceloporus magister*), western whiptail (*Cnemidophorus tigris*), gopher snake (*Pituophis catenifer*), and western diamond-backed rattlesnake (*Crotalus atrox*).

Amphibians

The amphibian fauna of the California portion of the study corridor is very limited owing to the extreme aridity of the area. Summer monsoon rains only occasionally reach eastern and southern California and this is reflected in the paucity of amphibian species. The red-spotted toad is probably the most common amphibian in rocky canyons and arroyos. The Sonoran Desert toad barely extends into California. Couch's spadefoot and Great Plains toad also reach eastern and southern California, but just barely.

Special Status Wildlife – California

In addition to the special status categories previously defined for federally listed species and species listed by the California Natural Diversity Database (CNDDB), the State of California and the CDFG declare wildlife species to be endangered under the following sets of criteria.

Endangered

- when mortality rates consistently exceed birth rates
- when the species is incapable of adapting to environmental change
- when habitat is threatened by destruction or serious disturbance
- when the survival of a species is threatened by the unwanted introduction of other species through predation, competition, or disease
- when environmental pollution threatens the survival of a species

Threatened

- when a species is confined to a relatively small and specialized habitat and is incapable of adapting to different environmental conditions
- when a species is nowhere abundant, although it may be found in other parts of the world
- when a species is so limited that any appreciable reduction in range, numbers, or habitat could cause it to become endangered
- when a species may become endangered if current management and protection programs were diminished in any degree

Wildlife species currently listed as threatened, endangered, or sensitive and known to occur in Riverside County are listed in Table 4-36 (CDFG 2003). This list includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. Species afforded status under the CVMSHCP are also included in this table. Many of the 120 wildife

species included in the Western Riverside County MSHCP are also included in Table 4-36. This list includes numerous species that were not listed as sensitive species in 1985. Species for which pre-construction surveys are recommended, or may be required, are noted in the table.

TABLE 4-36
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
INVERTEBRATES				
Macrobaenetes valgum	Coachella giant sand treader cricket	FSC, CV	High	No
Stenopelmatus cahuilaensis	Coachella Valley jerusalem cricket	FSC, CV	High	No
Branchinecta lynchi	Vernal pool fairy shrimp	FT, WR	None	No
Streptocephalus woottoni	Riverside fairy shrimp	FE, WR	None	No
Euphydryas editha quino	Quino checkerspot butterfly	FE, WR	None	No
Raphiomidas terminatus abdominalis	Delhi sands flower-loving fly	FE, WR	None	No
FISH				
Oncorhynchus mykiss irideus	Coastal rainbow trout	FE, CSC	None	No
Catostomus santaanae	Santa Ana sucker	FT, CSC	None	No
Xyrauchen texanus	Razorback sucker	FE, CE	Low	No
Cyprinodon macularius	Desert pupfish	FE, CE, CV	None	No
AMPHIBIANS				
Ambystoma californiense	California tiger salamander	FE, CSC	None	No
Batrachoseps aridus	Desert slender salamander	FE, CE, CV	None	No
Spea hammondii	Western spadefoot	FSC, CSC, WR BLM	Low	No
Scaphiopus couchii	Couch's spadefoot	CSC, BLM	Low	No
Bufo californicus	Arroyo toad	FE,CSC, WR	None	No
Rana aurora draytonii	California red-legged frog	FT, CSC, WR	None	No
Rana muscosa (DPS)	Mountain yellow-legged frog	FE, CSC, WR	None	No
REPTILES				
Clemmys marmorata pallida	Southwestern pond turtle	FSC, CSC, BLM, WR	None	No
Gopherus agassizii	Desert tortoise (Mojave population)	FT, CT, CV	High	Yes[1]
Sauromalus ater	Chuckwalla	BLM	Moderate	No
Uma inornata	Coachella Valley fringe-toed lizard	FT, CE, CV	High	Yes[2]
Uma scoparia	Mojave fringe-toed lizard	BLM	Moderate	No
Phrynosoma coronatum blainvillei	San Diego horned lizard	CSC	None	No

TABLE 4-36
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Phrynosoma mcallii	Flat-tailed horned lizard	FPT, CSC, BLM, CV	Low	Yes
Eumeces skiltonianus interparietalis	Coronado skink	CSC, BLM	None	No
Anniella pulchra pulchra	Silvery legless lizard	FSC, CSC	None	No
Charina bottae umbratica	Southern rubber boa	FSC, CT, WR	None	No
Charina trivirgata	Desert rosy boa	FSC, BLM	Moderate	No
Thamnophis hammondii	Two-striped garter snake	CSC, BLM, WR	None	No
BIRDS				
Ixobrychus exilis hesperis	Western least bittern	FSC, CSC, WR	Moderate	No
Egretta thula	Snowy egret	FSC	Moderate	No
Plegadis chihi	White-faced ibis	FSC, CSC, WR	Moderate	No
Elanus leucurus	White-tailed kite	FSC, WR	None	No
Haliaeetus leucocephalus	Bald eagle	FT, CE, WR	Moderate	No
Buteo regalis	Ferruginous hawk	FSC, CSC, WR	Moderate	No
Buteo swainsonii	Swainson's hawk	FSC, WR	Moderate	No
Laterallus jamaicensis coturniculus	California black rail	FSC, CT, WR	Moderate	Yes[2]
Rallus longirostris yumanensis	Yuma clapper rail	FE, CT, CV	Moderate	No
Charadrius alexandrinus nivosus	Western snowy plover	FT, CSC	Low	No
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC, CE, WR	Low	No
Micrathene whitneyi	Elf owl	CE	Low	No
Athene cunicularia hypugaea	Western burrowing owl	FSC, CSC, BLM, WR, CV	High	No
Cypseloides niger	Black swift	FSC, CSC	None	No
Melanerpes uropygialis	Gila woodpecker	CE	Moderate	No
Colaptes chrysoides	Gilded flicker	CE	Low	No
Empidonax traillii extimus	Southwestern willow flycatcher	FE, CE, WR, CV	Low	No
Lanius ludovicianus	Loggerhead shrike	FSC, CSC	Moderate	No
Vireo bellii pusillus	Least Bell's vireo	FE, CE, WR, CV	None	No
Vireo bellii arizonae	Arizona Bell's vireo	CE	Low	No
Vireo vicinior	Gray vireo	CSC, CV	Low	No
Polioptila californica californica	Coastal California gnatcatcher	FT, CSC	None	No

TABLE 4-36
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Toxostoma lecontei	LeConte's thrasher	FSC, CSC, BLM, WR, CV	Moderate	No
Toxostoma crissale	Crissal thrasher	CSC, CV	Low	No
Icteria virens	Yellow-breasted chat	CSC, CV, WR	Moderate	No
Dendroica petechia brewsteri	Yellow warbler	CSC, CV, WR	Moderate	No
Piranga rubra cooperi	Summer tanager	CSC, CV	Low	No
Amphispiza belli belli	Bell's sage sparrow	FSC, CSC, WR	None	No
Agelaius tricolor	Tricolored blackbird	FSC, CSC, S, WR	None	No
MAMMALS				
Macrotus californicus	California leaf-nosed bat	FSC, CSC, BLM, WR	Moderate	No
Myotis velifer	Cave myotis	FSC, CSC, BLM	Low	No
Myotis thysanodes	Fringed myotis	FSC, BLM, WR	Low	No
Myotis leibii (ciliolabrum)	Western small-footed bat	FSC, BLM, WR	Low	No
Lasiurus ega	Southern yellow bat	SCS, CV	Low	No
Euderma maculatum	Spotted bat	FSC, CSC, BLM, WR	Low	No
Plecotus townsendii pallescens	Pale big-eared bat	FSC, CSC, BLM	Moderate	No
Antrozous pallidus	Pallid bat	CSC, BLM, WR	Moderate	No
Eumops perotis californicus	Greater western mastiff bat	FSC, CSC, BLM	None	No
Spermophilus tereticaudus chlorus	Palm Springs round-tailed ground squirrel	FC, CSC, CV	High	Yes
Perognathus longimembris bangsi	Palm Springs pocket mouse	CSC, CV	High	No
Dipodomys merriami parvus	San Bernardino kangaroo Rat	FE, CSC, WR	None	No
Dipodomys stephensi	Stephens' kangaroo rat	FE, CT, WR	None	No
Ovis canadensis nelsoni (DPS)	Peninsular bighorn sheep	FE, CT, BLM, WR	None	No

TABLE 4-36
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended

Status Codes:

FE – Federally Endangered
FT – Federally Threatened
FC – Federal Candidate
FSC – Federal Species of Concern
FPT – Federally Proposed for Listing as Threatened

BLM - BLM (California) Sensitive species

CE – California Endangered
CT – California Threatened
CSC – CDFG Species of Concern
WR – Western Riverside County MSHCP
CV – Coachella Valley MSHCP

[1] Pre-construction surveys for tortoises will be performed, but protocol surveys would not be required in the general area of the transmission line since tortoises are known to be present along the corridor, and a biological monitor will be present during construction within tortoise habitat. All project personnel will attend a pre-construction tortoise training class.

[2] Surveys for this species should be conducted in areas of suitable habitat.

4.1.8.2 California

Existing Biological Conditions

Flora

Within California, the primary native vegetation type is creosote bush scrub, which is present along the entire length of the study corridor. On rocky hills and mountain slopes, creosote bush is also a dominant species, but it is frequently replaced by aspect-dominant species such as white brittlebush on south-facing slopes and white bursage on north-facing slopes. Common associates of creosote bush are white bursage on coarse soils and big galleta grass on finer soils.

Ocotillo is common on stony bajadas, which are present from the Little San Bernardino Mountains eastward through the Chuckwalla Mountains. On the finer soils of the Coachella Valley, desert croton (*Croton californicus*), Palmer coldenia (*Tiquilia palmeri*), plicate coldenia (*Tiquilia plicata*), indigo bush (*Psorothamnus schottii*), and Emory dalea (*Psorothamnus emoryi*) are co-dominants with creosote bush. Tall dunes of windblown sand, dominated by mesquite, occur locally southeast and northwest of the Indio Hills and just west of Myoma.

Washes that dissect creosote bush scrub habitat in the western part of the California study area, (e.g., west of Cactus City) are dominated by white burrobrush and desert lavender (*Hyptis emoryi*) on rocky soils and by white burrobrush and smoketree on finer soils. In the eastern portions of the California study area, the same species occur in washes, but there tends to be a much greater presence of arborescent species (blue paloverde, ironwood, and some mesquite). This setting often creates the impression that valley bottoms are wholly dominated by woodlands of such species as at Shavers Valley near Chiriaco Summit, Desert Center turnoff at I-10, and in the eastern Chuckwalla Valley north of the Little Chuckwalla Mountains. However, examination of such woodlands shows that the trees are largely restricted to washes, including the numerous, anastomosing minor washes and runnels that drain into larger washes. Creosote bush and its associates generally dominate interwash portions of these areas. In areas where washes are particularly abundant, such as portions of the eastern Chuckwalla Valley, major wash complexes dominated by paloverde and ironwood are present.

In the Palo Verde Valley, where the study corridor crosses the Colorado River, riparian habitats dominated by salt cedar (*Tamarix ramosissima*) and honey mesquite (*Prosopis glandulosa*) are present in areas that have not been developed for agricultural uses. Saltbush (*Atriplex* spp.) communities also occur locally in the Palo Verde Valley, but most of these have been removed as the land was converted to agricultural use. Local wetlands, mostly created by irrigation water and other agriculturally related activities, also exist in the Palo Verde Valley. Such wetlands often take the form of small ponds, sloughs, and ditches, and they often support stands of southern cattail (*Typha domingensis*) and/or bulrush (*Scirpus* spp.).

Vegetation along the Colorado River at the crossing of the study corridor is generally dominated either by mesquite or salt cedar. There are local occurrences of Fremont cottonwood (*Populus fremontii*) and willow (*Salix* sp.) along the river in the general vicinity. Honey mesquite is the most common mesquite along the river, but screwbean mesquite (*Prosopis pubescens*) is present locally. Common associates of salt cedar and mesquite are arrowweed (*Pluchea sericea*) and saltbush.

Accompanying the short tree to shrub-dominated salt cedar and mesquite communities, there are some local occurrences of emergent plant communities associated with sloughs, ponds, and isolated oxbows of the Colorado River. These emergent communities are dominated by cattail (*Typha* sp.) and bulrush. There are no major emergent or marshland communities within 1 mile of the proposed Devers-Harquahala 500kV transmission line crossing of the Colorado River.

In addition to perennial plant species, both the California and Arizona portions of the study corridor are hosts to a large number of annual or ephemeral species of plants. Most of these species appear in the late winter and early spring following periods of suitable rainfall. Shreve and Wiggins (1964) list 109 ephemeral species that occur in the Arizona Upland Subdivision of the Sonoran Desert and 44 that are characteristic of the Lower Colorado River Valley Subdivision. There is some overlap in these two lists, which include members of the families Poaceae, Polygonaceae, Papaveraceae, Crassulaceae, Fabaceae, Onagraceae, Polemoniaceae, Hydrophyllaceae, Boraginaceae, and Asteraceae. During particularly favorable years, spectacular blooms of ephemeral species may occur locally in the study area. In years of little rainfall, the bloom may not occur at all.

Special Status Plant Species – California

Special status plant species in the California portion of the Devers-Harquahala study corridor fall into the following categories:

- species listed by the federal government as threatened, endangered, or under review for inclusion on lists as threatened or endangered species

- species listed by the State of California as rare, threatened, or endangered under the California Endangered Species Act

- species considered species of concern by the CDFG

- species included on one or more of the lists published by the California Native Plant Society (CNPS) and CDFG

- species included for protection under the California Desert Native Plant Act (CDNPA)

In addition to state and federal listings of sensitive plant species, the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) includes five species of plants, all of which are included in Table 3-37. Of these plants, only the Mecca aster has status under the CVMSHCP alone; all others have state and/or federal status as well. The Western Riverside County MSHCP addresses nearly 120 species of plants, many of which also appear in Table 3-34.

The CNPS maintains lists of extant plant species of different degrees of sensitivity. List 1B includes plant species that are rare and endangered in California, and they also are rare elsewhere. Plant species in List 2 are rare or endangered in California, but they are more common elsewhere. Plants species for which more information is needed are included in List 3. List 4 includes those plant species with limited distribution.

The CDNPA was enacted in 1981 with the intent of protecting native desert plants from unlawful harvesting on both public and private land, and to provide the people of California with the necessary information to legally harvest native plants so as to ultimately transplant such plants with the greatest possibility of success. The CDNPA specifically extends protection to ironwood, mesquite, and paloverde trees, most Cactaceae, all Burseraceae, Agavaceae, Fouquieriaceae, and

the following species not included in one of the preceding families: crucifixion thorn, Panamint dudleya (*Dudleya saxosa*), fan palm (*Washingtonia filifera*), catclaw acacia (*Acacia greggii*), desert holly, and smoketree.

As with the ANPL, the CDNPA is aimed primarily at preventing the commercial exploitation of native plants. It is expressly stated that the provisions of the CDNPA are not intended to prevent public or private utility companies from acting in the performance of their obligations to provide services to the public (California State Food and Agriculture Code, Division 23, Chapters 1-8).

Following literature reviews and consultation with the BLM, USFWS, National Park Service, and Rancho Santa Ana Botanical Gardens, initial field surveys for sensitive plants were conducted in 1985 within the California portions of the proposed Devers-Harquahala study corridor. Five of the species considered sensitive at that time were found during field surveys conducted in 1985 within 500 feet on either side of the centerline of the existing DPV1 transmission line in California. These species were cushion foxtail cactus, California barrel cactus (*Ferocactus cylindraceus*), Coachella Valley milkvetch (*Astragalus lentiginosus coachellae*), California silverbush (*Argythamnia californica*), and desert unicorn plant (*Proboscidea althaeifolia*). Of these species, only the Coachella Valley milkvetch is on the current list of sensitive species in Riverside County (CDFG 2003).

Plant species currently listed as threatened, endangered, or sensitive and known to occur in Riverside County are listed in Table 4-37 (CDFG 2003). This table includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. This table includes numerous species that were not listed as sensitive in 1985. Species accounts for plants that have some probability of presence within the study corridor are found in Appendix H. Species for which pre-construction surveys are recommended, or may be required, are noted on the table.

TABLE 4-37
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Allium munzii	Munz's onion	FE, CT, WR	None	No
Ambrosia pumila	San Diego ambrosia	FE, BLM, WR	None	No
Arenaria paludicola	Marsh sandwort	FE, CE,	None	No
Astragalus lentiginosus var. *coachellae*	Coachella Valley milk-vetch	FE, CEQA, CV	High	Yes
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	CEQA, WR	None	No
Astragalus tricarinatus	Triple-ribbed milk-vetch	FE, CEQA, CV	Low	Yes
Atriplex coronata var. *notatior*	San Jacinto Valley crownscale	FE, WR	None	No
Brodiaea filifolia	Thread-leaved brodiaea	FT, CE	None	No
Brodiaea orcuttii	Orcutt's brodiaea	BLM, WR	None	No
Calochortus palmeri var. *palmeri*	Palmer's mariposa lily	FSC, WR	None	No
Calochortus plummerae	Plummer's mariposa	CEQA, WR	None	No
Ceanothus ophiochilus	Vail Lake ceanothus	FT, CE, WR	None	No
Chamaesyce platysperma	Flat-seed sandmat	BLM	Low	No
Chorizanthe parryi var. *parryi*	Parry's spineflower	CEQA, WR	None	No
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	CEQA, WR	None	No
Chorzanthe xantii var. *leucotheca*	White-bracted spineflower	CEQA, WR	Low	No
Delphinium hesperium ssp. *cuyamacae*	Cuyamaca larkspur	CR	None	No
Dodecahema leptoceras	Slender-horned spineflower	FE, CE, WR	None	No
Dudleya multicaulis	Many stem live-forever	CEQA, BLM, WR	None	No
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	FE, CE, WR	None	No
Erigeron parishii	Parish's daisy	FT, WR	None	No
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE, CE, WR	None	No
Escobaria alversonii	Cushion foxtail cactus	FSC	High	Yes[1]
Euphorbia misera	Cliff spurge	CEQA, WR	None	No
Galium californicum ssp. *primum*	California bedstraw	BLM, WR	None	No
Gilia maculata	Little San Bernardino Mts. linanthus	CEQA, BLM, CV	Low	Yes
Hemizonia mohavensis	Mojave tarplant	FSC, CE, WR	None	No
Ivesia callida	Tahquitz ivesia	CR, WR	None	No
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CEQA, WR	None	no
Limnanthes gracilis ssp. *parishii*	Parish's meadowfoam	FSC, CE, WR	None	No
Linanthus orcuttii	Orcutt's linanthus	BLM, WR	None	No
Mahonia nevinii	Nevin's barberry	FE, CE, WR	None	No
Mondardella pringlei	Pringle's coyote-mint	CEQA, WR	None (Extinct?)	No
Monardella robisonii	Robison monardella	BLM	None	No

TABLE 4-37
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Myosurus minimus ssp. *apus*	Little mousetail	FSC, WR	None	No
Navarretia fossalis	Spreading navarretia	FT, WR	None	No
Navarretia prostrata	Prostrate navarretia	FSC	None	No
Nemacaulis denudata var. *gracilis*	Slender woollyheads	CEQA	None	No
Opuntia munzii	Munz cholla	BLM	None	No
Orcuttia californica	California Orcutt grass	FE, CE, WR	None	No
Salvia greatae	Orocopia sage	CEQA, CV	None	No
Sidalcea neomexicana	Salt-spring checkerbloom	CEQA, WR	None	No
Tetracoccus dioicus	Parry's tetracoccus	BLM, WR	None	No
Trichocoronis wrightii var. *wrightii*	Wright's button	CEQA, WR	None	No
Trichostema austromontanum ssp. *Compactum*	Hidden Lake bluecurls	FT, WR	None	No
Xylorhiza cognata	Mecca Aster	CVMSHCP	None	No

Status Codes:
FE – Federally Endangered
FT – Federally Threatened
FSC – Federal Species of Concern
CE – California Endangered
CT – California Threatened
CR – California Rare
CVMSHCP – Coachella Valley Multiple Species Habitat Conservation Plan listing only
CV – Coachella Valley Multiple Species Habitat Conservation Plan
WR – Western Riverside County Multiple Species Habitat Conservation Plan

Probability of Presence:

High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable habitat, or far from known distribution.

[1]A pre-construction survey for this species is recommended since its presence along the corridor is known, and locating individual plants would allow for adjustment of tower foundations to avoid the plants. Alternatively, plants could be moved.

Survey Results of 2003 Special Status Plant Survey within the Proposed Devers-Harquahala Study Corridor in California

In California, 14 species of plants protected under the California Desert Native Plant Act (CDNPA) were found in surveys of tower sites and access roads along the proposed Devers-

Harquahala study corridor in 2002 and 2003. See Table 4-38 for the total number of individuals of each species found.

TABLE 4-38
TOTAL NUMBER OF CDNPA-LISTED PLANTS, BY SPECIES, FOUND WITHIN THE CALIFORNIA PORTION OF THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Number of Individuals
Acacia greggii	Catclaw acacia	97
Echinocereus engelmannii	Engelmann's hedgehog cactus	10
Echinocactus polycephalus	Cottontop barrel cactus	4
Ferocactus cylindraceus	California barrel cactus	40
Fouquieria splendens	Ocotillo	128
Mammillaria grahamii var. *grahamii*	Fishhook pincushion	2
Olneya tesota	Ironwood	230
Opuntia basilaris	Beavertail prickly pear	103
Opuntia bigelovii	Teddybear cholla	81
Opuntia echinocarpa	Straw-top cholla	279
Opuntia ramosissima	Diamond cholla	547
Opuntia wigginsii	Wiggins' cholla	66
Parkinsonia florida	Blue paloverde	394
Psorothamnus spinosus	Smoketree	127

In addition to CDNPA-listed plants, the survey also included a search for federal and state protected plant species. Four individuals of Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*), a federally listed endangered species, were found in areas of aeolian sands in Coachella Valley. Twenty-nine individuals of the cushion foxtail cactus (*Escobaria alversonii*), a federal species of concern, were found in cobbly rocky areas near the Cottonwood and Chuckwalla mountains. Burrows, sign, and live sightings of Mojave desert tortoise were recorded as well. Also, all existing DPV1 towers were noted when either raptors or ravens had built stick nests in them. When the status of the nest could be determined, this information was collected as well.

Wildlife

Special Status Wildlife – California

In addition to the special status categories previously defined for federally listed species and species listed by the California Natural Diversity Database (CNDDB), the State of California and the CDFG declare wildlife species to be endangered under the following sets of criteria.

Endangered

- when mortality rates consistently exceed birth rates
- when the species is incapable of adapting to environmental change
- when habitat is threatened by destruction or serious disturbance
- when the survival of a species is threatened by the unwanted introduction of other species through predation, competition, or disease
- when environmental pollution threatens the survival of a species

Threatened

- when a species is confined to a relatively small and specialized habitat and is incapable of adapting to different environmental conditions
- when a species is nowhere abundant, although it may be found in other parts of the world
- when a species is so limited that any appreciable reduction in range, numbers, or habitat could cause it to become endangered

- when a species may become endangered if current management and protection programs were diminished in any degree

Wildlife species currently listed as threatened, endangered, or sensitive and known to occur in Riverside County are listed in Table 4-39 (CDFG 2003). This list includes state and federally listed threatened and endangered species, species of concern, and BLM sensitive species. Species afforded status under the CVMSHCP are also included in this table. Many of the 120 wildife species included in the Western Riverside County MSHCP are also included in Table 4-39. This list includes numerous species that were not listed as sensitive species in 1985. Species accounts for wildlife that have some probability of presence within the study corridor are found in Appendix H. Species for which pre-construction surveys are recommended, or may be required, are noted in the table.

TABLE 4-39
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
INVERTEBRATES				
Macrobaenetes valgum	Coachella giant sand treader cricket	FSC, CV	High	No
Stenopelmatus cahuilaensis	Coachella Valley jerusalem cricket	FSC, CV	High	No
Branchinecta lynchi	Vernal pool fairy shrimp	FT, WR	None	No
Streptocephalus woottoni	Riverside fairy shrimp	FE, WR	None	No
Euphydryas editha quino	Quino checkerspot butterfly	FE, WR	None	No
Raphiomidas terminatus abdominalis	Delhi sands flower-loving fly	FE, WR	None	No
FISH				
Oncorhynchus mykiss irideus	Coastal rainbow trout	FE, CSC	None	No
Catostomus santaanae	Santa Ana sucker	FT, CSC	None	No
Xyrauchen texanus	Razorback sucker	FE, CE	Low	No
Cyprinodon macularius	Desert pupfish	FE, CE, CV	None	No
AMPHIBIANS				
Ambystoma californiense	California tiger salamander	FE, CSC	None	No
Batrachoseps aridus	Desert slender salamander	FE, CE, CV	None	No
Spea hammondii	Western spadefoot	FSC, CSC, WR BLM	Low	No

TABLE 4-39
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Scaphiopus couchii	Couch's spadefoot	CSC, BLM	Low	No
Bufo californicus	Arroyo toad	FE,CSC, WR	None	No
Rana aurora draytonii	California red-legged frog	FT, CSC, WR	None	No
Rana muscosa (DPS)	Mountain yellow-legged frog	FE, CSC, WR	None	No
REPTILES				
Clemmys marmorata pallida	Southwestern pond turtle	FSC, CSC, BLM, WR	None	No
Gopherus agassizii	Desert tortoise (Mojave population)	FT, CT, CV	High	Yes[1]
Sauromalus ater	Chuckwalla	BLM	Moderate	No
Uma inornata	Coachella Valley fringe-toed lizard	FT, CE, CV	High	Yes[2]
Uma scoparia	Mojave fringe-toed lizard	BLM	Moderate	No
Phrynosoma coronatum blainvillei	San Diego horned lizard	CSC	None	No
Phrynosoma mcallii	Flat-tailed horned lizard	FPT, CSC, BLM, CV	Low	Yes
Eumeces skiltonianus interparietalis	Coronado skink	CSC, BLM	None	No
Anniella pulchra pulchra	Silvery legless lizard	FSC, CSC	None	No
Charina bottae umbratica	Southern rubber boa	FSC, CT, WR	None	No
Charina trivirgata	Desert rosy boa	FSC, BLM	Moderate	No
Thamnophis hammondii	Two-striped garter snake	CSC, BLM, WR	None	No
BIRDS				
Ixobrychus exilis hesperis	Western least bittern	FSC, CSC, WR	Moderate	No
Egretta thula	Snowy egret	FSC	Moderate	No
Plegadis chihi	White-faced ibis	FSC, CSC, WR	Moderate	No
Elanus leucurus	White-tailed kite	FSC, WR	None	No
Haliaeetus leucocephalus	Bald eagle	FT, CE, WR	Moderate	No
Buteo regalis	Ferruginous hawk	FSC, CSC, WR	Moderate	No
Buteo swainsonii	Swainson's hawk	FSC, WR	Moderate	No
Laterallus jamaicensis coturniculus	California black rail	FSC, CT, WR	Moderate	Yes[2]
Rallus longirostris yumanensis	Yuma clapper rail	FE, CT, CV	Moderate	No
Charadrius alexandrinus nivosus	Western snowy plover	FT, CSC	Low	No
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC, CE, WR	Low	No

TABLE 4-39
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Micrathene whitneyi	Elf owl	CE	Low	No
Athene cunicularia hypugaea	Western burrowing owl	FSC, CSC, BLM, WR, CV	High	No
Cypseloides niger	Black swift	FSC, CSC	None	No
Melanerpes uropygialis	Gila woodpecker	CE	Moderate	No
Colaptes chrysoides	Gilded flicker	CE	Low	No
Empidonax traillii extimus	Southwestern willow flycatcher	FE, CE, WR, CV	Low	No
Lanius ludovicianus	Loggerhead shrike	FSC, CSC	Moderate	No
Vireo bellii pusillus	Least Bell's vireo	FE, CE, WR, CV	None	No
Vireo bellii arizonae	Arizona Bell's vireo	CE	Low	No
Vireo vicinior	Gray vireo	CSC, CV	Low	No
Polioptila californica californica	Coastal California gnatcatcher	FT, CSC	None	No
Toxostoma lecontei	LeConte's thrasher	FSC, CSC, BLM, WR, CV	Moderate	No
Toxostoma crissale	Crissal thrasher	CSC, CV	Low	No
Icteria virens	Yellow-breasted chat	CSC, CV, WR	Moderate	No
Dendroica petechia brewsteri	Yellow warbler	CSC, CV, WR	Moderate	No
Piranga rubra cooperi	Summer tanager	CSC, CV	Low	No
Amphispiza belli belli	Bell's sage sparrow	FSC, CSC, WR	None	No
Agelaius tricolor	Tricolored blackbird	FSC, CSC, S, WR	None	No
MAMMALS				
Macrotus californicus	California leaf-nosed bat	FSC, CSC, BLM, WR	Moderate	No
Myotis velifer	Cave myotis	FSC, CSC, BLM	Low	No
Myotis thysanodes	Fringed myotis	FSC, BLM, WR	Low	No
Myotis leibii (ciliolabrum)	Western small-footed bat	FSC, BLM, WR	Low	No
Lasiurus ega	Southern yellow bat	SCS, CV	Low	No
Euderma maculatum	Spotted bat	FSC, CSC, BLM, WR	Low	No
Plecotus townsendii pallescens	Pale big-eared bat	FSC, CSC, BLM	Moderate	No
Antrozous pallidus	Pallid bat	CSC, BLM, WR	Moderate	No

TABLE 4-39
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO OCCUR IN RIVERSIDE COUNTY, CALIFORNIA AND PROBABILITY OF PRESENCE WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Eumops perotis californicus	Greater western mastiff bat	FSC, CSC, BLM	None	No
Spermophilus tereticaudus chlorus	Palm Springs round-tailed ground squirrel	FC, CSC, CV	High	Yes
Perognathus longimembris bangsi	Palm Springs pocket mouse	CSC, CV	High	No
Dipodomys merriami parvus	San Bernardino kangaroo Rat	FE, CSC, WR	None	No
Dipodomys stephensi	Stephens' kangaroo rat	FE, CT, WR	None	No
Ovis canadensis nelsoni (DPS)	Peninsular bighorn sheep	FE, CT, BLM, WR	None	No

Status Codes:

FE – Federally Endangered
FT – Federally Threatened
FC – Federal Candidate
FSC – Federal Species of Concern
FPT – Federally Proposed for Listing as Threatened

BLM - BLM (California) Sensitive species

CE – California Endangered
CT – California Threatened
CSC – CDFG Species of Concern
WR – Western Riverside County MSHCP
CV – Coachella Valley MSHCP

[1] Pre-construction surveys for tortoises will be performed, but protocol surveys would not be required in the general area of the transmission line since tortoises are known to be present along the corridor, and a biological monitor will be present during construction within tortoise habitat. All project personnel will attend a pre-construction tortoise training class.

[2] Surveys for this species should be conducted in areas of suitable habitat.

4.1.9 Noise

Noise can be interpreted as an unwanted or disagreeable sound. Sound travels as waves of slight fluctuations in air pressure. Generally, sound waves travel in a spherical pattern and diminish in intensity in a logarithmic fashion away from the source. Noise, therefore, decreases as the distance from the source increases.

An electrical field is produced in the air surrounding conductors as electricity flows through them. As the electrical field increases, the air surrounding the conductors becomes ionized. The dielectric breakdown point of air is 15 kilovolts per centimeter (kV/cm). In other words, when a conductor is charged with more than 15kV/cm a high-voltage phenomenon known as corona discharge occurs. Corona formation factors depend on both the surrounding environment and the electrical components themselves. The breakdown strength of air is dependent on air pressure, electrode material, presence of water vapor, incident photoionization, and voltage level. The intensity of the electric field also depends on conductor surface conditions, the number of conductors and spacing per phase, and the shape of the hardware. The presence of dust particles or water on conductors also will cause corona discharge. Corona discharge is the main cause of audible noise associated with transmission and substation operation.

The audible noise consists mainly of two components. The first component is broadband or random noise that has a crackling characteristic. The second component is pure-tone or noise found at frequencies of 120-hertz intervals. The combination of the broadband and pure-tone produces the audible noise with the most noticeable tone being the 120-hertz hum. Varying weather conditions produce different audible results.

When studying the effects of audible noise on humans, it is important to consider the range of response of the human ear. The human ear does not respond equally to all sound frequencies. Sound is measured in decibels (dB) and is a measure of sound pressure on a logarithmic scale. When measuring sound and the effects on humans the frequency scale is A-weighted. A-weighting is intended to duplicate the human response by reducing low-frequency sounds and slightly increasing high-frequency sounds. When a study is done using A-weighted decibels the measurements are expressed as dBA. Table 4-40 shows noise sources along with corresponding sound levels.

Weather also plays a role in the audible noise that conductors produce. Inclement weather such as rain, fog, or snow will all substantially increase audible noise levels. However, during heavy rain the actual audible noise from conductors is masked by the ambient noise produced by the

wind and rain. Ambient noise produced during heavy rain is generally 6 dBA above that produced during fog, drizzling rain, or snow. The lower production of weather-induced ambient noise in combination with the wet-conductor conditions produces a more noticeable audible level due to corona discharge. Under foggy conditions, the maximum levels of audible noises are not attained for a number of hours as water accumulates on the conductors.

TABLE 4-40
WEIGHTED SOUND LEVELS OF COMMON SOURCES

dB(A)	Overall Level	dB(A)	Relative Level
140	Threshold of pain	140	Jet engine (50 ft)
120	Uncomfortably loud	120	Jet take off (200 ft)
		114	Rock concert
100	Very loud		
		96	Power mower
		88	Heavy truck (40 mph at 50 ft)
		80	Garbage disposal
		75	Freeway traffic (50 ft)
70	Moderately loud		
		65	Business office
		60	Normal conversation
50	Quiet		
		43	Bird calls
		32	Library
20	Almost silent		
0	Threshold of hearing		

Source: Federal Interagency Committee on Noise, August 1992

4.1.9.1 Proposed Devers-Harquahala Study Corridor in Arizona and California

The proposed Devers-Harquahala study corridor crosses sparsely populated desert land; however, occasional residential area crossings do occur. It is anticipated that construction activities will comply with local noise ordinances. Typical municipal ordinances stipulate that activities should not produce ambient noise exceeding 55-50 dBA during nighttime hours (10 p.m. to 7 a.m.) and 60-55 dBA during daytime hours (7 a.m. to 10 p.m.) at receiving residential property lines or sensitive areas.

Major sources of ambient noise at and near the existing corridor include I-10, which would parallel the proposed Devers-Harquahala transmission line, within 2 miles, for most of its length. The area has a desert climate and is subject to inclement weather only 9 percent of the time.

4.1.10 Public Services and Utilities

4.1.10.1 Arizona

Within Maricopa County, the unincorporated community of Tonopah is nearest to the proposed Devers-Harquahala study corridor. Tonopah has a fire station, the Harquahala Valley Fire District, located within 10 miles of the route at 51501 W. Tonto Street. Police presence in the area is provided by the Maricopa County Sheriff's Office through a District II substation located in the town of Buckeye at 100 North Apache Road. Tonopah is served by medical facilities in the town of Buckeye (two clinics are available) and the city of Goodyear, which has numerous medical facilities.

In La Paz County, the nearest community to the transmission line would be the town of Quartzsite, located about 8 miles north of the study corridor. The town of Quartzsite has three medical centers, two with seasonal staff and one with a year-round staff of four. Full medical facilities are available in Blythe, California and Parker, Arizona. Year-round ambulance, medivac heliport, and emergency medical technician service is available through the local fire department. Quartzsite also has a city police department with 10 full-time police officers.

4.1.10.2 California

The Coachella Valley and Blythe areas are large enough to provide adequate public services and housing accommodations. However, public services are limited along the central portion of the proposed route, which traverses sparsely populated desert land. The easternmost California city

near the study corridor is the city of Blythe, situated on the California/Arizona border. The cities of Coachella, Indio, Cathedral City, Palm Springs, and Desert Hot Springs are located at the western end of the proposed Devers-Harquahala study corridor, and are part of the Coachella Valley, which is 50 miles long and runs from Desert Hot Springs to the Salton Sea. There are numerous hotels and recreational vehicle resorts in each community, as well as several small airports and the Palm Springs International Airport. Available public services in these communities are described below.

Blythe – Blythe has one hospital with a 55 total bed capacity and a 24-hour-a-day staffed emergency room. The police department has 28 sworn personnel and 12 non-sworn personnel, with support service available from Riverside County Sheriff's Department. The fire department has a part-time chief, 33 trained paid volunteers, 1 full-time fire marshal, and a mutual aid agreement with the Riverside County Fire Department.

Coachella – Coachella is served by hospitals in the nearby communities of Rancho Mirage, Indio, La Quinta, and Palm Springs. The police department operates out of a single facility staffed by 25 sworn officers. The Riverside County Sheriff's Department provides limited services to local unincorporated areas out of its Indio Station. The city contracts with the Riverside County Fire Department for fire protection and emergency medical services. Fire Station #79 is located within the city of Coachella, and is staffed by about six firefighters (General Plan 1997).

Indio – Indio's fire department has three fire stations staffed by 30 professional firefighters and 22 volunteer firefighters. The project would likely be served by North Indio Fire Station #87, located about 4 miles south of the study corridor. The police department has more than 50 officers available, not including the community service and animal control officers. The John F. Kennedy Memorial Hospital is located in Indio and contains 162 beds.

Cathedral City – Cathedral City's fire station has 33 full-time firefighters and 2 medical ambulances. The Police Department has 47 full-time officers. The city is served by two general hospitals, which have a total of 659 beds.

Palm Springs – The Palm Springs police department consists of one police station and one substation, which are staffed by more than 125 full-time personnel. Both police stations are roughly the same distance (approximately 5 miles) from the study corridor. The fire department contains five stations. The project would likely be served by Station # 445, located about 1 mile north of CA 111. Medical services are provided by the Desert Regional Medical Center, a full-service hospital with 393 beds.

Desert Hot Springs – Police service is provided by the local city police department. Fire protection services are provided by the Riverside County Fire Department, Station # 37, located in the city and about 2 miles north of the study corridor. Medical services are provided in the adjacent cities of Palm Springs and Indio.

4.1.11 Visual Resources Inventory

This section describes the visual resource inventory for the proposed Devers-Harquahala 500kV transmission line. The methodology used to inventory visual resources and analyze visual impacts in response to CEQA environmental criteria for aesthetics is consistent with the BLM Visual Resources Management (VRM) 8400 Series Manual (BLM 1986). This study also tiers off of previous environmental studies including the 1988 DPV2 PEA (SCE) and Final SEIS (BLM 1988). The visual resource studies were conducted by reviewing aerial photographs, maps, and planning documents; contacting agencies; and conducting field reconnaissance within the proposed study corridor. The visual resource inventory includes the consideration of visual quality, scenic vistas, and agency management objectives as described below.

4.1.11.1 Inventory Elements

Visual Quality

Landscape Setting

The Devers-Harquahala study corridor is located primarily in the Basin and Range Province, including sections of the Sonoran Desert and Salton Trough (Fennemen 1951). This area is characterized by widely separated short mountain ranges in desert plains, often consisting of desert alluvial slopes, locally known as bajadas. Vegetation varies depending on landforms, ranging from creosote flats to saguaro forests. The Colorado River, the only perennial river crossed by the proposed Devers-Harquahala study corridor, separates the states of Arizona and California.

The landscape in Arizona is primarily natural, with areas of agricultural use near the eastern terminus of the study corridor at Harquahala. In California, similar to Arizona, a majority of the study area is natural; however, there also are areas of agricultural use associated with the Colorado River near Blythe. Mixed use (including a large windmill farm) and residential developments have modified the natural landscape in the Desert Hot Springs and Palm Springs areas.

The inventory of visual quality within a natural setting was based on the premise that each landscape character type (e.g., desert mountains, foothills, bajadas) exhibits its own type of scenic quality and encompasses a variety of sensitive viewers. Within rural and suburban settings visual quality is based primarily on the image of the built environment and associated sensitive viewers. The inventory includes landscape settings that are both natural and developed (built). Existing conditions (e.g., the presence of existing transmission lines) that may affect the scenic quality or visual image of an area also were considered in the evaluation of landscape scenery.

Natural Setting - Scenic Quality

In a natural setting, landscape character types are defined by areas of land that have similar characteristics of landform, water related features, vegetative communities, and patterns of these landscape elements. In the natural setting, scenic quality was determined by evaluating landscape character type based upon the uniqueness and diversity of landform, water, vegetation, cultural features, and influence of adjacent scenery. Landscapes with greater diversity of features are typically considered to have higher scenic value. For purposes of this study, landscape character types were assigned one of the following scenic quality classifications:

Class A – lands of outstanding or distinctive diversity or interest
Class B – lands of common or average diversity or interest
Class C – lands of minimal diversity or interest

Developed Settings – Visual Image Types

The purpose of characterizing existing and planned visual image types within the study corridor was to determine potential visual quality impacts. This is especially important in portions of the area crossed by the study corridor that include suburban and rural community development.

In developed rural and suburban settings, landscape scenery consists of the visual features of the built environment and is defined by visual image types. Visual image types consist of development patterns that are defined by existing and planned land use, planning concepts (circulation and building types) and visual character (landscape design and architecture). Three major image types were identified in the study area: (1) residential, (2) industrial, and (3) agricultural areas.

Existing Visual Conditions

The scenic quality of natural settings and the visual image of rural and suburban settings may be modified locally by the presence of facilities including transmission lines, distribution lines, overhead lighting, signs, pipelines, highways, railroads, canals, and other features that affect visual quality. The existing condition within the study corridor was evaluated through mapping and field review in order to determine those locations where modifications would influence scenery and views. In this regard, the presence of the existing DPV1 500kV transmission line, parallel to the proposed Devers-Harquahala 500kV line, has created an existing utility corridor that has modified the local landscape setting along the entire length of the study corridor.

Visual Quality

Views

The inventory of views included three components: (1) the identification of key viewpoints and visual sensitivity, (2) distance zones, and (3) viewing conditions.

Key Viewpoints and Sensitive Viewers

Numerous key viewpoints associated with sensitive viewers were identified including individual residential, community, recreation area, and travelway viewpoints. Of particular importance are those locations where viewers have undisturbed open, permanent views.

Visual sensitivity reflects the degree of concern for change in the scenic quality of the natural landscape, or to the visual image of the rural (agricultural areas) and suburban setting (residential, commercial, and industrial areas). Visual sensitivity levels (high, moderate, or low) reflect the type of viewpoint/viewer (residential, recreational, or travel) and viewer concern for

change, volume of use, public and agency concerns, influence of adjacent land use, and viewing duration.

Distance Zones

The distance from the viewer to the proposed transmission line also was considered in the analysis. Typically, individual objects are seen in greater detail in the foreground (0 to 0.5 mile), whereas the middleground (0.5 to 1 mile) is an area where objects are typically viewed in relationship to patterns rather than an emphasis on individual features. In background areas (3 to 15 miles) landscapes are viewed as horizon lines and tones where atmospheric conditions often dominate.

Viewing Conditions

Viewing conditions address viewer orientation (parallel, perpendicular, elevated, or depressed), the potential for screening from sensitive view locations, and the potential for skylining of facilities. Three levels of screening were identified during the inventory including open viewing conditions that exhibit minimal to no screening; partially screened views including areas where viewing opportunities are intermittent; and screened views including areas where terrain, vegetation, buildings, or other built elements (walls and fences) obscure views. Skyline conditions may range from fully or partially skylined to back-dropped by adjacent terrain, vegetation, or structures.

Scenic Vistas

Scenic vistas are designated viewpoints associated with scenic views that typically occur along highways or other travel routes.

Agency Management Objectives

There are no formal guidelines for managing visual resources on state, county, city or private land within the study corridor. Visual resources on land administered by the BLM are managed based on established RMPs, including VRM classes. In this regard, the RMP establishes acceptable uses, and the VRM classes assist in defining the acceptable degree of visual change in the natural landscape on public land. There are four VRM classes (I, II, III, and IV). Class I areas are afforded the highest level of protection and Class IV the lowest.

4.1.11.2 Arizona

This section describes the results of the visual resource inventory for the proposed project in Arizona including visual quality, scenic vistas, and agency management objectives.

Visual Quality

For purposes of this study, visual quality is a term used to describe the setting and the viewers that may be affected by the proposed project.

Landscape Character Types – Natural Setting

The study area in Arizona predominantly consists of a natural setting represented by five distinct landscape character types: desert mountains, desert foothills, bajadas, desert plains, and riparian areas. For examples of these landscape types refer to Figure 4-1.

Desert Mountain Character Type

Desert Foothill Character Type

Bajada Character Type

Figure 4-1
Proposed Devers-Harquahala Study Corridor in Arizona
Landscape Character and Image Types

Desert Plain Character Type

Riparian Character Type

Agriculture Image Type

Figure 4-1 (cont.)
Proposed Devers-Harquahala Study Corridor in Arizona
Landscape Character and Image Types

Desert mountains are generally north and northwest trending ridges that are steep, rugged, rocky, and surrounded by alluvial fans at their base. These alluvial fans coalesce to form the bajada, a gentle rolling terrain dissected by arroyos with a rocky soil including a greater diversity in vegetation as opposed to the sparsely vegetated desert plains. Foothills typically occur adjacent to or within the bajada, exhibiting rolling forms and a variety of vegetation and color.

Between the mountain ridges and foothills lies the contrasting landscape of the broad, relatively flat alluvial basins. Ephemeral streams or arroyos with their xeroriparian vegetation often traverse these plains, providing texture, color, and interest in the sparsely vegetated plain.

The Colorado River, located on the Arizona/California border, is a unique and distinct visual feature in the desert landscape, exhibiting a diversity of associated riparian vegetation in an otherwise arid setting.

Scenic Quality - Scenic quality was inventoried within a 2-mile-wide study corridor centered on the proposed Devers-Harquahala transmission line, as shown on Map 4-6a-b (end of Chapter 4). Scenic Quality Rating Forms were developed for the landscape types previously described, consistent with BLM methods, and used to determine levels of scenic quality within the corridor as described below.

The majority of land crossed by the proposed Devers-Harquahala 500kV transmission line have been designated as Class C landscapes. These areas are generally associated with low, isolated desert hills and desert plains (typically with a low diversity of vegetation). Examples of Class C scenery include the Ranegras, Harquahala, and La Posa plains.

Class B scenery is associated with landscapes having average visual variety (e.g., portions of the New Water, Eagletail, Big Horn, and Saddle mountains), and the foothills of the KOFA NWR, where terrain features are more subtle; however, special vegetation features such as saguaros are present.

Areas designated as Class A scenery, while limited, include mountainous terrain containing a variety of distinctive rock formations including Burnt Mountain, and the Dome Rock Mountains. The Colorado River with its flowing waters, associated riparian vegetation, and tamarisk flora also received an A ranking.

Visual Image Types – Developed Settings

In Arizona, only a limited amount of the area has been developed within or adjacent to the study corridor. In general, these changes are associated with rural agricultural land that is located within the study corridor, primarily in the Harquahala Valley. Landscapes characterized by agricultural image types have been modified for crop production and display patterns that are organized and predominantly based on a grid. Variations in landform are extremely limited and vegetation is seasonal, consisting primarily of cultivated crops. Cultural modifications, especially irrigation canals, have introduced water to the landscape in these areas. An example of the agricultural image type is shown on Figure 4-1, and the location of these image types within the study area are illustrated on Map 4-6a.

Existing Conditions

All land adjacent to the proposed Devers-Harquahala study corridor, in Arizona, exhibit visual conditions that have been locally modified by the presence of the existing DPV1 and Harquahala-Hassayampa 500kV transmission lines, access roads, and other forms of disturbance associated with the existing transmission line. The existing transmission lines would be adjacent to the proposed Devers-Harquahala 500kV line as it crosses Arizona, from the Harquahala switchyard to the Colorado River.

Views

The following discussion addresses viewer sensitivity and viewing conditions specific to sensitive viewpoints including residential, recreational, and travelway viewers within the Devers-Harquahala study corridor.

Residential Viewers - Isolated dispersed residences are limited and located along Links 1a, 1b, and 2 (Map 4-3a). Views from these residences to the proposed Devers-Harquahala study corridor would have mostly middleground to background views that are primarily open, with conditions that range from skylined to views that are partially skylined and backdropped by adjacent or intermediate terrain.

Recreational Viewers - In Arizona, high sensitivity recreational viewers include dispersed views that occur in wilderness areas including Hummingbird Springs (Link 1b), Big Horn Mountains (Link 1b), Eagletail Mountains (Link 1b), KOFA National Wildlife Refuge (Link 2), and New Water Mountains (Link 2). Additionally, the La Posa Recreation Area (Link 2) and Colorado River (Link 8) are identified as high sensitivity areas. Views from these locations range from foreground to background and may be open to screened and skylined, to backdropped, depending upon specific viewer location. Views from recreational users on the Colorado River are primarily limited to the foreground to middleground area and range from open and partially skylined, at the transmission line crossing of the river, to partially and fully screened from more distant views. Viewers on the proposed recreation trail along the CAP (Link 1b) would have foreground and open views.

Travelway Viewers - Areas of moderate sensitivity include I-10, where views range from foreground to background. In many cases, these views to the proposed and existing 500kV transmission line, while open, are often either back-dropped or partially backdropped by distant terrain (e.g., areas located within the Harquahala, Rangeras, and La Posa plains). In areas where the proposed Devers-Harquahala study corridor crosses the New Water and Dome Rock mountains, views may often be partially, if not wholly screened from I-10.

Scenic Vistas

There are no designated scenic vistas within the Devers-Harquahala study corridor in Arizona.

Agency Management Objectives

The majority of the proposed Devers-Harquahala transmission line is located within designated BLM utility corridors in the Lower Gila Resource Management Plan and the Yuma District RMP areas. Within these corridors, the majority of BLM land has been designated as either Class II, Class III, or Class IV areas. The proposed Devers-Harquahala study corridor does not cross any Class I lands (i.e., WAs). The KOFA WA, New Water Mountains WA, Eagletail Mountains WA, Big Horn Mountains WA, and Hummingbird Springs WA were identified as Class I. Areas designated as Class II include the KOFA Mountains and the Colorado River.

The majority of land crossed by the study corridor has been designated as Class III including portions of the La Posa, Ranegras, and Harquahala plains; Tonopah Desert; Dome Rock and Plomosa mountains; and Plomosa Pass. In addition, Class III areas are interspersed among the agricultural plains near Harquahala, Plomosa and Saddle mountains, and in a small portion of the Dome Rock Mountains. The remainder of the study corridor crosses land designated as Class IV.

4.1.11.3 California

This section describes the results of the visual resource inventory for the proposed Devers-Harquahala 500kV transmission line study corridor in California including visual quality, scenic vistas, and agency management objectives.

Visual Quality

Landscape Character Types – Natural Setting

The study area in California is characterized by seven landscape types: desert mountains, desert foothills, bajadas, desert plains, riparian areas, playas, and sand dunes. For examples of these landscape character types, refer to Figure 4-2.

Desert mountains are generally north and northwest trending ridges that are steep, rugged, rocky, with alluvial fans and/or foothills located at their base and at lower elevations. The alluvial fans coalesce to form the bajada, which is gentle rolling terrain dissected by arroyos with rocky soil and greater diversity in vegetation, as opposed to the sparsely vegetated mountains at lower elevations, with gentle slopes and finer soil texture. These foothills are generally associated with adjacent mountains, although the Indio Hills occur as a separate landscape feature.

Between the mountain ridges and foothills lies the landscape of the broad, relatively flat, alluvial basins. Ephemeral streams or arroyos traverse the plains, providing texture, color, and interest in the sparsely vegetated plain. Many of the basins are closed drainage systems that contain broad, flat, dry lakebeds or playas, often identified by colorful alkali soil. These playas are normally dry, becoming large shallow lakes during brief, wet periods. Sand dunes are a rare physiographic feature located in the Chuckwalla Valley. Their light color provides contrast to the predominantly dark olive colored desert plains.

The Colorado River, located on the Arizona/California border, provides a unique and distinct visual feature in the desert landscape. Associated with the river are the vegetated riparian zones and the barren, light-colored bluffs bordering the floodplain to the west. The area west of the Colorado River has been developed for agriculture.

Scenic Quality - Scenic quality was inventoried for the study area within a 2-mile-wide study corridor centered on the proposed Devers-Harquahala transmission line as shown on Map 4-6 c-e

(end of Chapter 4). Scenic Quality Rating Forms were developed for the landscape types described above, consistent with BLM methods, and used to characterize scenic quality within the corridor as desribed below.

The only Class A landscape occurring in the study corridor is associated with the Colorado River, its flowing waters and associated vegetation making it a distinctive feature in the otherwise arid landscape.

Mountain ranges in the study area identified as Class B scenery include the Little San Bernardino, Cottonwood, Orocopia, and Chuckwalla mountains. Other areas identified as Class B scenery include sand dunes and the Indio and Mecca hills. The characteristics of these areas exhibit diversity in color, contributing to the scenic quality. Native palm oases located on the San Andreas fault, both north and south of the Indio Hills, also were considered Class B scenery.

Class C landscapes including other foothills, bajadas, and plains are considered to be common to the area. Class C scenery includes the Chuckwalla and Shaver valleys, and the Coachella Valley Preserve.

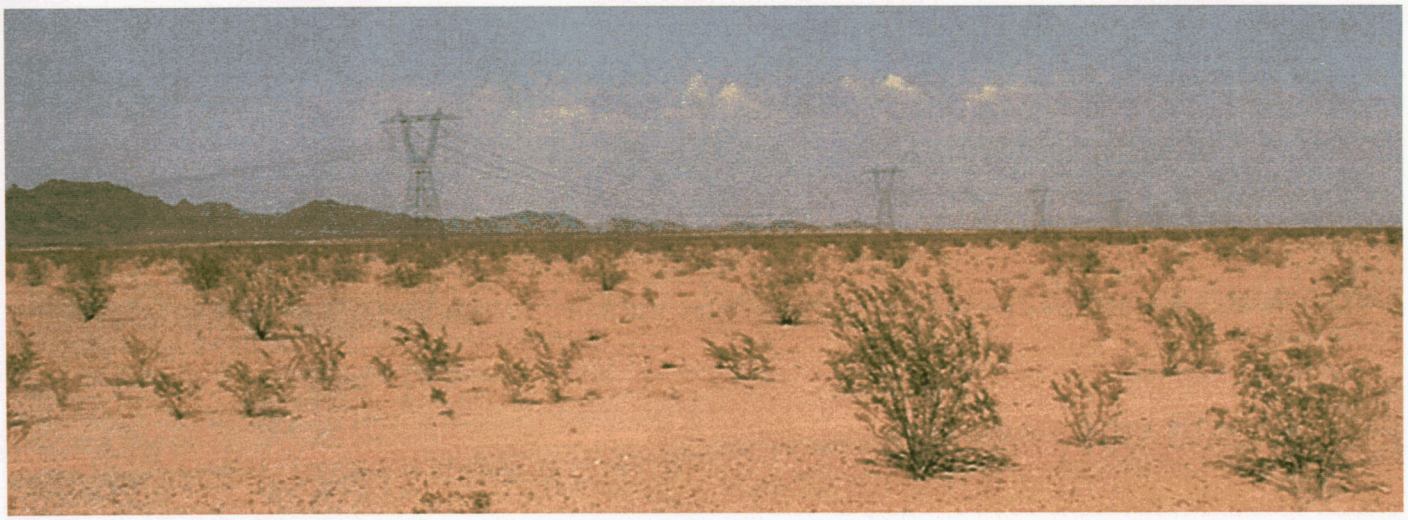
Visual Image Types – Developed Areas

Developed areas crossed by the study corridor include land within the incorporated boundaries of Coachella and Cathedral City. Other developed areas in the vicinity include Palm Springs, North Palm Springs, Desert Hot Springs, Thousand Palms, Indio, and Blythe. These developed landscapes include agricultural, residential, and industrial image types within the proposed Devers-Harquahala study corridor. Examples of these image types are shown on Figure 4-2, and their locations are depicted on Map 4-6c-e (end of Chapter 4).

Agricultural Image Types – These include lands that are crossed immediately to the west of the Colorado River, in the Palo Verde Valley south of Blythe. These areas have been modified for

Desert Mountain / Bajada Character Type

Desert Foothill Character Type



Desert Plain Character Type

Figure 4-2
Proposed Devers-Harquahala Study Corridor in California
Landscape Character and Image Types

Riparian Character Type

Playa Character Type

Sand Dune Character Type

Figure 4-2 (cont.1)
Proposed Devers-Harquahala Study Corridor in California
Landscape Character and Image Types

Agricultural Image Type

Residential Image Type

Industrial Image Type

Figure 4-2 (cont.2)
Proposed Devers-Harquahala Study Corridor in California
Landscape Character and Image Types

crop production and display patterns that are organized and predominantly based on a grid, including dispersed rural residences and farmsteads. Other cultural modifications include facilities in support of agricultural production including canals and irrigation systems. Variations in landform are extremely limited and vegetation is seasonal, consisting primarily of alfalfa and cotton.

Residential Image Types – These consist of low- to medium-density, single-family detached units ranging from scattered to regularly ordered patterns. The development patterns for medium-density residential image types tend to display a strong sense of continuity in housing and street patterns, which are repeated throughout the development. These patterns are often arranged on an internal geometric grid with a loop road system, providing a perimeter of housing which serves as a separation or seam to surrounding uses. Low-density residential image types exhibit large individual lots and curvilinear circulation patterns with no centralized focus. In these areas housing character is non-unified, with random building orientations generating inward and outward views. Pockets of low- to medium-density residential areas are located adjacent to the study corridor west of Indio, and in the vicinity of the north Cathedral City and Palm Springs area.

Industrial Image Types – These include developments, which have active industrial uses including resource extraction and are found south of the Indio Hills along the western portion of the study corridor. Facilities, buildings and land modifications in this image type are centralized, often large, and may dominate the local setting in terms of complexity, scale, and layout concept. Landscape treatment (often limited) may include screening used on the perimeter of the industrial development to block views.

Existing Conditions

All of the land crossed by the proposed Devers-Harquahala study corridor in California has been locally modified by the presence of the existing DPV1 500kV and other transmission lines, access roads, and other forms of associated disturbance. This DPV1 transmission line will be

adjacent to the proposed Devers-Harquahala transmission line as it crosses California from the Palo Verde and Chuckwalla valleys, west through Coachella Valley, and into Devers. In the vicinity of Devers, two additional 230kV lines and up to two 115kV lines, and several hundred large windmills, further modify the existing landscape setting.

Views

The following discussion addresses viewer sensitivity and viewing conditions specific to sensitive viewpoints including residential, recreational, and travelway viewers within the Devers-Harquahala study corridor.

Residential Viewers - Residences in the vicinity of North Palm Springs, Desert Hot Springs, North Palm Desert, Thousand Palms, Indio, Cathedral City and dispersed residences near Indio Hills and Blythe were considered high sensitivity viewpoints (Links 10, 14, and 16). In medium- to high-density areas, views may range from open to screened depending upon the amount and type of landscaping, location of other residences, and fences and walls. In low-density residential areas, views tend to be more open. A majority of the views from residences range from middleground to background; however, in select locations including south of Blythe, and between the Indio area and North Palm Springs (Map 4-3c-e), residences will have foreground views ranging from sky-lined to back-dropped.

Recreational Viewers - High sensitivity viewers were identified for the area along the Colorado River due to the intensive water-based recreational uses found in county parks along and on the river (Link 10). Other dispersed recreational areas with high sensitivity include the Edmund C. Jaeger Preserve (Link 13), Indio Hills Palms Park (Link 14), Joshua Tree National Park (Link 13), and all WAs including the Chuckwalla Mountains WA (Link 13), Joshua Tree National Park WA (Links 13 and 14), Orocopia Mountains WA (Link 13), and Mecca Hills WA (Link 13). Moderate sensitivity viewpoints include Riverside County's proposed and existing hiking trails along the Whitewater and Colorado rivers (Links 10 and 14). Potential views from these areas

range primarily from middleground and beyond and are open to partially or fully screened, based on the location of the viewer.

Travelway Viewers - Scenic highways with high visual sensitivity include CA 62, a state designated scenic highway located west of Devers Hill and the Devers Substation (Link 16). CA 111, from SR 74 near Palm Desert to I-10, which is eligible for State Scenic Highway designation, also provides views to the study corridor (Link 16).

Several eligible Riverside County scenic highways are also found in the study area including I-10, Indian Avenue from its junction with CA 62 to Pierson Boulevard, Pierson Boulevard from Indian Avenue east to Palm Drive, Palm Drive south to Dillon Road, Dillon Road east to I-10, and CA 95 from I-10 north (Links 13, 14, and 16). Portions of I-10 that are not eligible for scenic designation were assigned a moderate sensitivity level.

Agency Management Objectives

The BLM land in California within the proposed Devers-Harquahala study corridor are managed through the CDCA Plan Amendment (USDI 2002) for the Coachella Valley, and the NECO plan (USDI 2002). These two documents provide direction on visual resources (the proposed Devers-Harquahala study corridor would be within a designated utility corridor). In the study corridor, land within the NECO planning area has not been assigned VRM classifications. This includes the eastern portion of the corridor from the vicinity of Blythe, to the eastern edge of the Chuckwalla Mountains, and the central portion of the corridor from the Chuckwalla Mountains to the CVPA Planning Area boundary in the eastern Coachella Valley. Interim VRM classifications were established as reported in the Draft Desert Southwest Transmission Line Project EIS/EIR (Foote 2003). These interim classifications were developed using the guidelines in BLM VRM Manual Section 8410 and 8411 and conform to the land use allocations set forth in the RMP, which includes the Devers-Harquahala study corridor. In this regard, the eastern end

of the corridor to the Chuckwalla Mountains was designated Class IV. The central corridor, from the Chuckwalla Mountains to the CVPA Planning Area, was designated Class III.

The remaining BLM land within the study corridor have been designated as either Class II, III, or IV . Class II areas were designated in parts of the following mountain ranges: Cottonwood, Little San Bernardino, and Alligator Rock in the Chuckwallas. Class III includes portions of the Coachella, Shavers, and Chuckwalla valleys; Palo Verde Mesa; and Indio Hills. The palm oases in the Indio Hills and the riparian zone surrounding the Colorado River were also identified as Class III. The remainder of the proposed transmission line would cross land designated as Class IV.

All WAs were identified as Class I including Paulen/McCoy WA, Joshua Tree National Park WA, Chuckwalla Mountains WA, Orocopia Mountains WA, and the Mecca Hills WA. Class I land, however, would not be crossed by the study corridor.

4.1.12 Cultural Resources

Cultural resources are defined herein as all evidence of past human activity. Included within this category are geographic places and tangible resources studied in the disciplines of archaeology (both prehistoric and historic), ethnography, and history. Although sometimes referred to as natural resources, values pertaining to the field of paleontology (i.e., the study of plant and animal fossil remains) also are included under the cultural resources heading.

Cultural resource discussion in this section is limited to information concerning (1) resource discovery methods, and (2) delineation of the area of potential effect (APE) for the proposed project, Historic Properties (i.e., resources eligible for or listed on the National Register of Historic Places [NRHP] within the APE). Potential project effects on historic properties, and proposed measures to mitigate adverse effects to historic properties associated with the proposed project are discussed in Chapters 5 and 6. Precise location of cultural resource sites will not be

disclosed in this document in accordance with provisions of the federal Archaeological Resources Protection Act of 1979 (16 U.S.C., Secs. 470aa to 47011, inclusive) regarding confidentiality. If additional information is desired, the reader is encouraged to contact the California and Arizona offices of the BLM and Office of Historic Preservation.

The cultural resource files of the California Historical Resources Inventory System, BLM California Palm Springs/South Coast Field Office, BLM Arizona State Office, Arizona State Historic Preservation Officer, AZSITE electronic database, and Arizona State Museum (ASM) were consulted for this assessment. Recent cultural resource studies of the DPV2 APE and Arizona alternatives were conducted by EPG (Dobschuetz et al. 2004; Luhnow 2004; Luhnow and Dickinson 2004), San Bernardino County Museum (Scott 2003), and Mooney-Hayes, LLP (Eckhardt and Walker 2004a; 2004b). These studies built upon numerous previous studies for the original DPV1 that included the design for a second line (Carrico et al. 1980; Carrico and Quillan 1982) and subsequent resurveys of the DPV2 tower sites and access roads for later regulatory re-filings (Swartz and Dongoske 1987). The result of this work is an extraordinarily detailed knowledge-base of cultural resources within the project APE that meets all state and federal criteria for a thorough, accurate, and intensive class III-type inventory.

Archaeological surveys within the proposed Devers-Harquahala 500kV transmission line corridor were facilitated by staked tower locations and access roads, which focused assessment work on areas of direct project effect.

Archaeology – Evidence of human presence in the study area extends from the Late Pleistocene/Early Holocene to present times. As used here, archaeology refers to the study of evidence of past human activity dating from the earliest prehistoric period to the latest historic period. Archaeologists have organized this evidence into cultural chronologies reflecting perceived cultural and occasionally environmental changes and site typologies. These typologies reflect the subsistence/settlement and cultural diversity practiced by aboriginal and historic era peoples. Synthesis of these chronologies are contained in technical documents prepared for the present analysis (Dobschuetz et al. 2004:8-13; Eckhardt and Walker 2004a, 2004b), as well as

published resources (e.g., the BLM Cultural Resource Overview of the Colorado Desert Planning Units [von Till Warren and Roske 1981] and Handbook of North American Indians, Volumes 8 and 9 [Sturtevant and Heizer 1978; Sturtevant and Ortiz 1979]). This information will not be repeated here.

Ethnography – As used here, ethnography refers to the description of aboriginal Native American peoples and incorporates aspects of ethnology dealing not only with human demographics at the time of European contact but changes that have occurred between then and the present time. The study area encompasses two major native language families and nine representative groups (Kroeber 1925).

Data presented here regarding ethnographic resources are drawn from the landmark study titled Persistence and Power (Bean and Vane 1978), which was prepared in support of the DPV1 transmission line project. This study is still considered to reflect an accurate assessment of traditional Native American values in the study corridor. The ethnographic work documented in Persistence and Power included (1) archival research and review of secondary sources to identify Native American groups associated with the study area, (2) ethnographic fieldwork among the identified Native American groups to ascertain traditional and contemporary attitudes and values associated with the study area, (3) data interpretation and an assessment of project effects on traditional Native American values associated with the study area, and (4) development of a set of suggestions to mitigate potential adverse effects to traditional values as a result of construction and operation of the project.

In Arizona, protohistoric groups in the study area were primarily Yuman speakers. Within that language family, four groups were more prominent than any other. The Mojave seem to have reflected an agricultural tradition established within the Colorado Basin by early Patayans. At the time of initial European contact, the Mojave were principally floodwater farmers, more densely settled in the Mojave Valley to the north of the study area, but extending south into the area around Parker, Arizona. An extension of that tradition may be witnessed in spring planting patterns of the Havasupai. However, this latter group was of a more arid upland adaptation

similar to the nomadic Walapai and Yavapai. Unlike the Mojave, the Walapai, Yavapai, and to some extent the Havasupai, were an extension of the very seasonal earlier Desert Archaic patterns.

Prior to having been assimilated by the Maricopa in California, the Halchidhoma occupied portions of the Colorado and Gila River basins. Along with occasional Mojave inroads, they were the only full Yuman speakers that may represent a direct historic tie with river Patayans within the study area.

West of the primary basin of the Colorado River in California, regions of largely internal drainage were the domain of inland Shoshonean speakers. Yuman speakers occupied the Colorado Desert west to Coachella Valley.

In the Transverse Range west of the Mojave Desert, the Serrano represented a mountain adaptation within the San Bernardino Mountains. Though much more oriented to higher elevations and timbered valleys, the Serrano are known to have extended their range to lower fertile valleys in the western end of the study area.

South of the Serrano, two of three Cahuilla groups were associated with the study area. The more northerly Pass Cahuilla were principally associated with the San Gorgonio Pass area. Within the Coachella Valley area, the Desert Cahuilla were found.

West of the Serrano and Cahuilla, the Gabrielino occupied the greater Los Angeles Basin. Although primarily associated with the coastal areas and Channel Islands, Gabrielino utilized territory that extended as far east as the vicinity of San Bernardino and Mount Rubidoux.

History – As used here, the term history refers to documentation of primarily non-Native American use of the study area. It is reflective of the period dating from initial European exploration of this region to approximately 50 years before present.

Spanish explorers were the first Europeans to enter the study area. Padre Marcos de Niza entered what is now Arizona from Mexico in 1539, but did not travel into the study area. De Niza was followed by Hernando de Alarcon in 1540. De Alarcon explored the lower portions of the Colorado River, but did not get very far north of Yuma, Arizona.

Juan de Oñate was probably the first white man to enter the study area. In 1604-1605 he traveled up the Colorado River as far as the Rio Azul (the Bill Williams River). In 1691 Padre Esubio Kino began missionary work in southern Arizona and founded the Mission San Xavier del Bac near Tucson in 1700. Padre Kino may have entered the study area, but most of his activities were to the south, and he probably had little effect on the Native Americans inhabiting the study area.

The first real impact of white culture on the study area came in the mid 1800s with the advent of mining in the mountains of the central portion of the study area. The towns of La Paz and Ehrenberg sprang up as a result of the mining activity. This was followed by the opening of the Bradshaw Trail through the study area in 1862. Steamer traffic on the Colorado River developed as a means of transportation and a method of getting supplies to the mines. This traffic remained high until 1909 when construction of Laguna Dam closed the river to navigation for all practical purposes.

Mining in the study area continued into the 1900s, but was almost completely phased out by World War I. Ranching and agriculture gradually developed beginning in the mid 1800s. Agriculture is presently well developed along the Colorado River, in some eastern portions of the study area, and in the Coachella Valley in the western end of the study area.

The traditional Native American cultures were gradually overwhelmed by these activities, and by the early 1900s the original inhabitants had been largely driven from the area and confined on reservations.

Some of the most recent historic resources in the study area are the result of the establishment of Camp Young (also known as the Desert Training Center and the California/Arizona Maneuver

Area). This training camp was the largest ever established by the U.S. Army, and covered 55,000 square miles in California and Arizona. Camp Young acquired much of its fame by association with General George S. Patton, who selected the area as the training center for his World War II North Africa campaign. Several Camp Young headquarters were established; the best preserved is near the northern portion of the study area in the vicinity of the Iron Mountains in California. Another headquarters location is near Desert Center, California, in the vicinity of the existing DPV1 transmission line. Roads and rock alignments with associated discarded materials can still be seen there.

Another military maneuver, Operation Desert Strike, took place within the study area in 1964. Remnants of Operation Desert Strike, including tank tracks, discarded military materials, and temporary camps, can be found scattered throughout the study area. Several well preserved rock alignments and camp areas left from Operation Desert Strike are located near Quartzsite, Arizona.

Paleontology – The paleontological resource inventory presented here is derived from a paleontological literature and records review for both the California and Arizona sections of the proposed Devers-Harquahala 500kV transmission line study corridor, prepared by the Division of Geological Sciences of the San Bernardino County Museum, California (Scott 2003). That study was based on previous geologic mapping (Jennings 1967; Richard, et al. 2000; Rogers 1965). A variety of geologic rock units are traversed by the project alignment that range in age from Proterozoic metamorphic rocks to Holocene alluvium and sand dune deposits. Potentially fossiliferous sedimentary and metasedimentary rock units located within the study area range in age from Late Jurassic–Cretaceous nonmarine sedimentary rocks to Late Pleistocene deposits. Appendix L and Appendix M provide a brief description of these rock units in order from oldest to youngest.

4.1.12.1 Arizona

Archaeology

The Class I records review of the Arizona study corridor identified 56 documented archaeological studies and 221 previously recorded sites located within 1 mile of the study corridor. Locations of those sites identified through the records review to be within the project APE (defined as within 100 feet of the proposed tower and access road locations) were revisited in the field for this project (Dobschuetz et al. 2004). A total of 15 archaeological site locations were visited in this attempt. Many of the revisited sites were recorded by Carrico and Quillan (1982) as part of the original DPV1 project.

Site definition and recordation standards have evolved over the 20+ years since the Carrico and Quillan (1982) assessment. It was discovered during the Class III survey (Dobschuetz et al. 2004) that some of the 15 sites revisited did not meet the criteria for site definition as currently defined by the ASM (AZ R:7:49 [ASM], AZ R:8:60 [ASM], AZ S:5:15 [ASM], and AZ S:7:15 [ASM]). Some were erroneously mapped as within the APE when they were not in the APE (AZ S:5:15 [ASM], AZ S:5:18 [ASM, AZ S:6:12 [ASM], AZ S:8:12 [ASU]/AZ S:8:10 [ASM], and AZ S:8:17 [ASM]), and one (AZ S:10:14 [ASM]) was recorded apparently outside the APE but was found to be in the APE. Four other sites (AZ R:8:37 [ASM], AZ R:8:44 [ASM], AZ S:6:21 [ASM], AZ S:7:1 [ASM]/AZ S:7:1 [ASU]) could not be relocated and documentation indicates they were collected as part of earlier projects and no longer exist within the APE. Of the 15 previously recorded sites in or near the APE, only five were relocated (AZ R:7:66 [ASM], AZ-S:5:18 [ASM], AZ S:6:12 [ASM], AZ S:8:1 [ASM], and AZ S:8:14 [ASM]), and of these only two (AZ S:8:1 [ASM] and AZ S:8:14 [ASM]) were found to be within the APE.

Of the two prehistoric archaeological sites confirmed by way of the Class III survey to be located within the project APE (AZ S:8:1 [ASM] and AZ S:8:14 [ASM]), only one (AZ S:8:1 [ASM]) has been assessed eligible to the NRHP. AZ S:8:1 (ASM) was confirmed by Carrico and Quillan (1982) and Stone (1979) to have no subsurface component. Artifacts from this site were

collected and analyzed as part of the original DPV1 project (Carrico and Quillan 1982) and the site artifacts identified during the Class III survey (Dobschuetz et al. 2004) were similar to those previously collected and analyzed. Thus, the data potential for the portion of AZ S:8:1 (ASM) located within the project APE now appears exhausted.

During the Class III archaeological survey of the project tower pads and access roads, 29 isolated archaeological occurrences were recorded (Dobschuetz et al. 2004). Of these occurrences, 13 were prehistoric and 5 were indeterminate features. Of the prehistoric isolated occurrences, 11 were chipped stone artifacts and 2 were ceramic sherds. Distribution of these artifacts across the landscape indicates that they increase in frequency with proximity to the bajada slopes of the mountains in the study area, and likely represent limited use of these areas during prehistory. Isolated artifacts do not meet criteria for listing on the NRHP.

Ethnography

Previous ethnographic research conducted for the DPV1 project resulted in the identification of several areas of ethnographic concern in the vicinity of the project area (Bean and Vane 1978). Some of these places may meet criteria for designation as traditional cultural properties (TCPs). These places are the Dome Rock Mountains, Tyson Wash, Dripping Spring, La Posa Plain, Kofa Mountains, Little Horn Mountains, Gunsight Notch Ridge, Ranegras Plain, Eagletail Mountains, and the Harquahala Plain (ibid). In addition, Native Americans have interest in prehistoric archaeological sites that represent evidence of the presence of their ancestors.

Native American groups such as the Chemehuevi, Mojave, Yavapai, Tohono O'odham, Hia-Ced O'odham, and Cocopah may have affiliation with these areas. BLM staff have indicated that they will consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project (personal communication, Wanda Raschkow 2004).

History

The Class I research identified 16 historic-era sites within the 1-mile-wide study area. None of these sites are located in the project APE. One new archaeological site, AZ R:7:113 (ASM), was recorded during the Class III survey (Dobschuetz et al. 2004). This site is described as a historic-era artifact scatter, and was not deemed NRHP eligible.

During the Class III archaeological survey of the project tower pads and access roads, 16 historic-era isolated archaeological occurrences were recorded (Dobschuetz et al. 2004). Of these resources, 7 were historic artifacts, 4 were historic GLO survey markers, and 5 were indeterminate features. Isolated artifacts do not meet criteria for listing on the NRHP.

Paleontology

Between the Harquahala Switchyard and the Arizona/California border (Links 1A, 1B, 2, 6, and 8) the study corridor crosses approximately 88.7 miles of high or undetermined areas of paleontological sensitivity. The remainder of the area is low paleontological sensitivity. The undetermined or high sensitivity areas include Pleistocene older alluvium and Holocene alluvium in Links 1A, 1B, and 2, Proterozoic metamorphics (overlain intermittently by Pleistocene and/or Holocene sediments) occur in Link 1B, Cretaceous nonmarine and undivided Quaternary sedimentary rocks in Link 2, and undivided Jurassic and Cretaceous nonmarine sedimentary rocks and Plio-Pleistocene alluvium in Link 6 (Scott 2003).

4.1.12.2 California

Archaeology

A records search identified 31 previously recorded archaeological resources and 34 isolated occurrences within the project APE (defined as within 100 feet of the project tower pads and access roads). Many of these resources were recorded as part of the original DPV1 project in 1980 (Carrico et al. 1980). Of these resources, five archaeological sites (RIV-183T, RIV-772T, RIV-893T, RIV-1808 and RIV-1812) could not be relocated during the Class III survey (Eckhardt and Walker 2004b).

In addition to the 26 previously recorded archaeological sites relocated during the Class III survey (RIV-53T(b), RIV-53T(c), RIV-53T(d), RIV-164T, RIV-250T, RIV-343T(b), RIV-343T(c), RIV-650T, RIV-673T, RIV-1018, RIV-1115T, RIV-1118, RIV-1119, RIV-1383, RIV-1811, RIV-1813, RIV-1814, RIV-1815, RIV-1816, RIV-1817, RIV-1818, RIV-1819, RIV-1820, RIV-1821, RIV-1822, and RIV-1823), another 11 archaeological sites and 8 isolated occurrences were identified. Of these resources, 18 are listed on or potentially eligible for listing on the NRHP. These NRHP eligible or potentially eligible resources include previously recorded RIV-53T(c), RIV-53T(d), RIV-250T, RIV-343T(b), RIV-343T(c), RIV-650T, RIV-673T, RIV-1119, RIV-1383, RIV-1813, RIV-1814, RIV-1815, RIV-1816, RIV-1819, RIV-1821, RIV-1822, P33-13574 and P33-13576.

The 8 isolated prehistoric archaeological occurrences consist of 1 flake, 2 lithic flake or tool occurrences, and 5 ceramic sherd occurrences. Isolated artifacts do not meet criteria for listing on the NRHP (Eckhardt and Walker 2004a).

Ethnography

Previous ethnographic research conducted for the DPV1 project resulted in the identification of areas of cultural concern to contemporary Cahuilla, Chemehuevi, and Mojave Native American groups between Devers and the Colorado River. These are archaeological sites and aboriginal trails in the north Palm Springs/Whitewater River areas; Edom Hill; the extensive complex of archaeological sites, trails, and Native plant and animal resources associated with the numerous palm oasis in the Indio Hills; archaeological sites and aboriginal trails in the Cottonwood Springs/Desert Center areas; archaeological sites and aboriginal trails in the Chuckwalla Valley area; and archaeological sites and aboriginal trails in the Colorado River area. With the exception of Edom Hill, none of the areas with direct Native American cultural association are located within the project APE. Edom Hill may qualify as a NRHP eligible traditional cultural property. In addition, Native Americans have interest in prehistoric archaeological sites that represent evidence of the presence of their ancestors (Bean and Vane 1978).

BLM staff have indicated that they will consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project (personal communication, Wanda Raschkow 2004).

History

A records search identified five previously recorded historic-era resources within the project APE (defined as within 100 feet of the project tower pads and access roads). Many of these resources were recorded as part of the original DPV1 project in 1980 (Carrico et al. 1980). All were relocated during the Class III survey (Eckhardt and Walker 2004a).

In addition to the five previously recorded sites relocated during the Class III survey (RIV-1117H(a), RIV-1117H(b), RIV-1635H, RIV-1809H, and RIV-1810H), another 18 historic-era

sites and 12 isolated occurrence were identified. Of these sites, 13 are listed on or potentially eligible for listing on the NRHP. These NRHP eligible or potentially eligible resources are RIV-1117H(a), RIV-1117H(b),RIV-1809H, RIV-1810H, RIV-7489H, RIV-7490, P33-13588, P33-13596, P33-13598, P33-13600, P33-13601, P33-13602, and P33-13603.

The single historic-era isolated occurrence is a historic glass bottle. Isolated artifacts do not meet criteria for listing on the NRHP (Eckhardt and Walker 2004a).

Paleontology

Between the California border and Devers (Links 10, 12, 13, 14, and 16) the study corridor traverses approximately 30.9 miles of high or undetermined areas of paleontological sensitivity. The remainder of the area is low paleontological sensitivity. The undetermined or high sensitivity areas include Pleistocene older alluvium in Links 10, 13, and 14; Eocene Maniobra Formation rocks in Link 13; and Ocotillo Conglomerate and Pliocene nonmarine sediments in Link 14 (Scott 2003).

4.1.13 Public Health and Safety

4.1.13.1 Arizona

School Facilities

Within Arizona, there are no existing or proposed schools located within the study corridor.

Airport and Airstrip Operations

The Mauldin Airstrip is located approximately 1.6 miles east of the existing DPV1 transmission line within the study corridor , near I-10 north of Saddle Mountain. There are no other airports or airstrips located within 2 miles of the study corridor.

4.1.13.2 California

School Facilities

Within California there are no existing schools located within ¼ mile of the existing DPV1 transmission line within the study corridor. Contacts with the Desert Sands and Palm Springs Unified School Districts indicate that no schools are planned for construction within the corridor.

Airport and Airstrip Operations

The Chiriaco Summit Airport is located about 1 mile north of the existing DPV1 transmission line within the study corridor, between the Orocopia and Cottonwood mountains.

4.2 WEST OF DEVERS 230KV TRANSMISSION UPGRADE

4.2.1 Introduction

The proposed 230kV transmission line upgrade route includes approximately 48 lineal miles of existing right-of-way between the Devers Substation, located north of Palm Springs, California and the Vista Substation located in Grand Terrace, California, with an interconnection at the San Bernardino Substation in unincorporated San Bernardino County. The following sections present

information about the proposed study corridor pertaining to land use, socioeconomics, population and housing, geology and soils, hydrology, air quality, traffic and transportation, biology, noise, mineral resources/energy, hazards and hazardous materials, public services and utilities, visual resources, cultural resources, and recreation.

4.2.2 Land Use

For the purposes of the land use study, a 2-mile-wide study corridor, centered on the proposed transmission line upgrade right-of-way, was inventoried.

The majority of the west of Devers study corridor is composed of private land. A small amount of BLM land is crossed to the west of Devers. Additionally, a small portion of BLM land is located within the corridor to the west of the city of Beaumont. The Morongo Indian Reservation also is within the west of Devers study corridor.

Incorporated cities within the west of Devers study corridor include Palm Springs, Desert Hot Springs, Banning, Beaumont, Calimesa, Redlands, Loma Linda, San Bernardino, Colton, and Grand Terrace. Other population centers include unincorporated communities (White Water, Cabazon, and Cherry Valley), and large-lot rural residential areas.

Other land uses within the study corridor not associated with incorporated population centers include energy facilities, mining operations, farms, ranches, rural residences, communication sites, and agriculture.

4.2.2.1 Methodology

The inventory was compiled through interpretation of existing maps and aerial photographs within and adjacent to the west of Devers right-of-way comprising a 2-mile-wide study corridor.

The mapped information was then field verified by air and ground reconnaissance. In addition, key federal, state, county, and local land resource agencies were contacted to update official information and identify planned land uses.

Land use inventory results are described in the following sections and displayed on the following maps (at the end of Chapter 4):

- Map 4-1c: Land Ownership
- Map 4-2e: Land Jurisdiction
- Map 4-3e: Land Use – Existing
- Map 4-4e: Land Use – Future

4.2.2.2 Land Ownership/Jurisdiction

Land ownership and jurisdiction status were identified and mapped within the west of Devers study corridor, primarily from secondary data sources. Descriptions of the major data categories follow, and the information is listed in Table 4-41 and 4-42 and shown on Maps 4-1c, and 4-2e.

TABLE 4-41
LAND OWNERSHIP CROSSED BY THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Ownership	Total Miles Crossed
Bureau of Land Management	1.0
Bureau of Indian Affairs (Morongo)	4.4
Private Land	42.7
Total	**48.1**

Note: Totals may not check due to rounding.

TABLE 4-42 LAND JURISDICTION CROSSED BY THE PROPOSED WEST OF DEVERS STUDY CORRIDOR	
Jurisdiction	**Total Miles Crossed**
Morongo Reservation	4.4
Unincorporated Riverside County	19.9
Unincorporated San Bernardino County	2.9
City of Banning	5.0
City of Beaumont	3.8
City of Calimesa	2.9
City of Colton	1.8
City of Grand Terrace	0.8
City of Loma Linda	3.8
City of Redlands	2.9
Total	**48.2**
Note: Totals may not check due to rounding.	

Bureau of Land Management

A small portion of the west of Devers study corridor contains BLM-managed land. BLM land is primarily found in the eastern portions of the San Gorgonio Pass near Palm Springs. The proposed west of Devers 230kV upgrade right-of-way crosses 1 mile of BLM land in the northern half of Section 10, Township 3S Range 3E, along Link 100 near Milepost 4. Another portion of BLM land is within and adjacent to the study corridor south of Calimesa, south of Link 102 at Milepost 12.5.

Native American Lands

The Morongo Indian Reservation is located west of Palm Springs within the San Gorgonio Pass and is crossed by Link 100.

Incorporated Areas

Ten incorporated areas are located within the west of Devers study corridor—Palm Springs, Desert Hot Springs, Banning, Beaumont, Calimesa, Redlands, Loma Linda, San Bernardino, Colton, and Grand Terrace. The proposed west of devers upgrade corridor would cross through the cities of Banning, Beaumont, Calimesa, Redlands, Loma Linda, Colton, and Grand Terrace.

Private Land

Private land is found throughout the study corridor, and is the primary ownership category.

4.2.2.3 Existing Land Use

The following categories of existing land uses within the west of Devers study corridor were identified and mapped based on aerial photographs, existing maps, public documents, and field reconnaissance. Results are shown in Map 4-3e. A summary of land uses crossed by the study corridor is presented in Table 4-43.

TABLE 4-43
EXISTING LAND USES CROSSED
BY THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Land Use Category	Link	Milepost	Miles Crossed
Extraction Mining	100	3.5	0.2
Extraction Mining	101	8	0.4
Cemetery	102	1	0.1
Regional Park (Noble Creek)	102	7	0.1
Community Park	102	7.2	0.3
Golf Course (Oak Valley)	102	7.5 and 8	0.2
Orchard	102	9.5	0.2
Various Rural Residential	102	15 to 20	0.2
Orchard	102	18.5	0.1
Residential	103	3 to 5	1.0
Agriculture	104	1.5	0.3
Orchard	104	2	0.7
Agriculture	104	3	0.8

Note: Mileposts which depict ranges indicate a portion of corridor along which small sections of a land use category are crossed. The sum of these sections is shown under the column titled miles crossed.

Residential

Residential land uses are primarily associated with the developed communities located within and adjacent to the west of Devers study corridor. Developed areas include the incorporated cities of Palm Springs, Desert Hot Springs, Banning, Beaumont, Calimesa, Redlands, Loma Linda, San Bernardino, Colton, and Grand Terrace, and the unincorporated rural communities of Whitewater, Cabazon, and Cherry Valley. In addition, trailer/mobile home parks and large-lot residential subdivisions found throughout the study corridor have been classified as residential use.

Numerous areas of low-density residential use are found in the vicinity of Link 100, north of *Mileposts* 1.5 and 6.5, associated with Whitewater, and also near Link 101, north of Mileposts 4.5 to 6, on the Morongo Reservation. Medium-density residential areas are located near Link 102, Milepost 0.5 near Banning and Link 102, Milepost 6 near Beaumont. The medium-density residential community of Oak View is crossed by Link 102 from Milepost 7 to 8 and is in the western portion of Beaumont. Generally, along Link 102 north of Mileposts 18 to 21 in the San Timoteo Canyon, is low-density rural residential housing. Link 104 crosses Loma Linda through low-, medium-, and high-density residential areas from Milepost 0.5 to 2.5. Link 103 crosses Reche Canyon to the south of a low- to medium-density residential area from Milepost 2 to 3. Finally, Link 103 passes through a low- and medium-density residential area in Grand Terrace from Milepost 4 to 5.

Commercial and Industrial

Commercial uses correlate with urbanized areas and are associated with the major transportation routes found in rural areas throughout the west of Devers study corridor. Link 101 passes to the north of a Cabazon Morongo outlet mall near Milepost 5. Link 104 passes through a commercial area in Loma Linda south of I-10 near Milepost 2. Link 103 passes to the south of a commercial center in Grand Terrace near Milepost 4.5.

Light and heavy industrial uses are situated throughout the study corridor. Heavy industrial sites are primarily located in the urbanized areas such as in the city of Colton, west of the Vista Substation. Large-scale commercial wind energy facilities are located in the vicinity of the Devers (Link 100 from Milepost 2 to 3). Light industrial warehousing is located on county land to the east of Link 104 near Milepost 3. Sand and gravel operations also are found throughout the study corridor and are crossed by Link 100 at Milepost 3.5 and 7.5. Communication sites within the west of Devers study corridor mainly consist of microwave, radio, and cellular towers and are usually located atop mountain peaks and hillsides. Cellular equipment also is located on SCE's existing transmission lines.

Public/Quasi-Public

SCE's existing right-of-way and the proposed west of Devers 230kV upgrade corridor crosses through the Summit Cemetery, located on San Gorgonio Avenue in Banning, at Milepost 1 of Link 102. There are three other cemeteries within the study corridor in varying proximity to the existing right-of-way as follows: (1) in Colton City, about ½ mile north; (2) in Beaumont, about ⅓ mile south; and (3) in an unincorporated area near Beaumont, about 1/10 mile south of the right-of-way.

Agriculture

Agriculture within the west of Devers study corridor is located within the San Gorgonio Pass, within San Timoteo Canyon, and north of I-10 near Loma Linda. Agricultural production includes citrus and field crops in most agricultural areas.

Agricultural land located in southern California consists of the following four classifications, as established by federal and state agencies: Prime Irrigated Farmland, Statewide Important Farmland, Unique Farmland, and Local Important Farmland. A total of 0.3 mile of agricultural

land is crossed by Link 102, and includes all four of the farmland classifications. Link 104 crosses about 1.8 miles of Prime Irrigated Farmland that includes both cropland and orchards.

Air Facilities

Air facilities with FAA recognized airspace were identified. Other such facilities may exist in the vicinity of the study corridor as agricultural operations, and may utilize sparsely traveled roads as take-off and landing strips.

There are two airports located in the west of Devers study corridor. San Bernardino International Airport is situated 1 mile north of the San Bernardino Substation corresponding to Link 104. The Banning Airport is 1 mile south of Link 101 Milepost 7. FAA designated interference zones were identified around airports and airstrips within the study corridor, although the proposed transmission upgrade right-of-way would not be located within any of these zones.

Vacant/Undeveloped and Grazing Land

The vacant land use category includes all of the land within the west of Devers study corridor that does not contain a specific land use. Limited livestock grazing occurs on undeveloped land within the west of Devers study corridor.

Linear Features

Numerous utilities cross the study corridor and include pipelines, transmission lines, aqueducts, canals, transportation routes, and railroads. The proposed west of Devers transmission upgrade would include the Devers-San Bernardino No. 1 and No. 2 230kV, and the Devers-Vista No. 1 and No. 2 230kV transmission lines. The four lines cross and parallel one another at varying

distances throughout the study corridor. Other existing linear utility features, such as pipelines and transmission lines, parallel and cross the study corridor, as presented in Table 4-44.

TABLE 4-44
SUMMARY OF TRANSMISSION LINES THAT PARALLEL OR CROSS THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Transmission Line Name
Devers-Banning-Garnet Wind Park to Zanja 115kV
Devers-Capwind to Concho to Mirage 115kV
Devers-Carodean to Hi Desert to Yucca 115kV
Devers-Eisenhower 115kV
Devers-Farrell to Windland 115kV
Devers-Garnet to Indigo 115kV
Devers-Hi Desert to Terawind to Yucca 115kV
Devers-Mirage 230kV
Devers-Valley 500kV
Banning-Garnet to Marachino Wind Farm 115kV
Coachella Valley-Devers 230kV
Coachella Valley-Mirage 230kV
Etiwanda-Vista 230kV
Etiwanda-San Bernardino 230kV
Garnet-Santa Rosa 115kV
Julian Hinds-Mirage 230kV
Maraschino-San Bernardino 115kV
Mira Loma-Vista #1 230kV
Mira Loma-Vista #2 230kV
Mirage-Tamarisk 115kV
San Bernardino-Vista 230kV
Valley-Mayberry-Moreno-Vista 115kV
Valley-Moreno-Vista 115kV
Vista-Highgrove #2 115kV
Vista-Highgrove #1 115kV
Vista-Calelectric 115kV

Major transportation routes in the west of Devers study corridor include I-10, I-215, CA 62, and San Timoteo Canyon Road, and are shown in Table 4-45.

TABLE 4-45 SUMMARY OF MAJOR TRANSPORTATION ROUTES CROSSED BY PROPOSED WEST OF DEVERS STUDY CORRIDOR		
Transportation Routes Crossed by Study Corridor	**Link**	**Milepost**
I-10	102 104	9.0 2.5
I-215	103	4.5
CA 62	100	1.0
San Timoteo Canyon Road	102	12.0

4.2.2.4 Future Land Use

General Comprehensive and Land Management Plans

General comprehensive and land-management planning documents were reviewed to identify future land uses within the west of Devers study corridor. Table 4-46 lists these documents by jurisdiction with their adoption status. The future land uses identified in the west of Devers study corridor is shown on Map 4-4e.

TABLE 4-46 LAND MANAGEMENT AND GENERAL PLANS FOR PROPOSED WEST OF DEVERS STUDY CORRIDOR			
	General Plan Title/Location of Information	**Managing District**	**Date of Adoption**
County	Riverside County Comprehensive General Plan	Riverside County	Oct 2003
	San Bernardino County General Plan	San Bernardino County	Aug 1999 (revised)
Local	City of Grand Terrace General Plan Map of General Land Use	City of Grand Terrace	1997 Mar 2003
	City of Colton General Plan	City of Colton	Feb 2005
	City of Loma Linda Draft General Plan	City of Loma Linda	Oct 2004
	City of San Bernardino Draft General Plan	City of San Bernardino	Jan 2005
	City of Redlands General Plan	City of Redlands	Aug 1995 as amended
	City of Calimesa General Plan	City of Calimesa	Apr 1994
	City of Beaumont General Plan Map of General Land Use	City of Beaumont	1995 Oct 2000
	City of Banning Draft General Plan	City of Banning	Apr 2004
	City of Desert Hot Springs Comprehensive General Plan	City of Desert Hot Springs	Sept 2000
	City of Palm Springs General Plan	City of Palm Springs	Mar 2003

Riverside County

The Riverside County Comprehensive General Plan policy format provides a means for meeting State General Plan requirements and county needs for long-range direction, while providing the County with sufficient flexibility to respond to future changes. Riverside County has established land use categories that define the intensities and extent of future land uses. These categories are agricultural, rural, open space, and community development. Each of these is subdivided into more detailed land use designations at the area plan level. riverside county has been divided into 19 Land Use Planning Areas, and 3 of the 19 encompass the proposed transmission line corridor: Western Coachella Valley, The Pass, and Reche Canyon/Badlands.

Palm Springs

The proposed study corridor begins at Devers, north of the city limits of Palm Springs. The west of Devers corridor crosses through the Palm Springs sphere of influence as it passes to the west. The land use designations within the study corridor include low-density residential, open space, and energy-related industrial. Link 100 passes north of Palm Springs from Milepost 0 to 7.

Desert Hot Springs

The southwestern corner of the city falls within the west of Devers study corridor and is planned for industrial use and mountain reserve (preservation). The corridor crosses through a portion of the city's sphere of influence. The land use designations crossed include low-density residential and energy-related industrial. Link 100 passes south of Desert Hot Springs to the south from Milepost 1 to 3.

Banning

The west of Devers study corridor passes within the city limits of Banning, through the northern portion of the city. The land uses within the corridor are designated as low-density residential, agricultural, industrial, recreation, and open space. Link 101 at Milepost 6 and Link 102 from approximately Milepost 0 to 5, for a total of 5 miles, crosses through the city of Banning.

There are two active proposed developments in the city of Banning along the proposed west of Devers corridor and existing 230kV transmission line right-of-way. The Loma Linda Property specific plan and Draft EIR are in the review process for a 600-acre project at Milepost 2 of Link 102. The Deutsch Property is a 1,552-acre proposed development with an approved specific plan, located along Link 102 at Milepost 4.

Beaumont

The west of Devers study corridor crosses through approximately 4 miles of the northern portion of the city of Beaumont, from Milepost 6 to 9, along Link 102 . The land use designation for the existing 230kV transmission line right-of-way identifies a recreational greenbelt through which the proposed transmission upgrade would cross. Other land use elements identified by the city within the study corridor are low-, medium-, and high-density residential, commercial, business park industrial, and public facilities.

Four proposed project developments are located within the city of Beaumont along the 230kV transmission line right-of-way. The Sundance residential development is approximately 1,200 acres and located at Milepost 5 of Link 102. The Sundance Specific Plan was approved in June 2004 and the development is now under construction. The planned 330-acre Noble Creek residential development, located at Milepost 7 of Link 102, is pending city approval. The 76-acre Corman Leigh residential development, located at Milepost 9 of Link 102, is is under

construction. SunCal Corporation's 1,556-acre Oak Valley Champions residential development is also under construction, located along Link 102 from Milepost 10 to Milepost 12.

Calimesa

The Calimesa General Plan is a long-range comprehensive plan designated to regulate growth in the area and maintain environmental quality. The general plan indicates that a recognized utility easement runs along the southern portion of the city and sphere of influence. The proposed west of Devers upgrade would be located within the recognized utility easement. Other land use elements within the study corridor include low- and high-density residential, public/quasi-public, agricultural/ranching, and vacant/undeveloped. Link 102 crosses about 3 miles of the city of Calimesa from Mileposts 9 to 12. The Oak Valley Development is located in the southern portion of Calimesa, north of the existing right-of-way at Milepost 10 to Milepost 12.

San Bernardino County

The San Bernardino County General Plan represents the county's official position on future development and provides guidance in the form of goals and policies that span from 5 to 20 years.

The plan divides the region into subregional planning areas that focus on natural and man-made resources. The proposed west of Devers study corridor crosses subregion RSA-29, which is located in the eastern portion of the Valley Region of the San Bernardino County General Plan. The unincorporated land within the study corridor falls within the spheres of influence of those nearby cities located in San Bernardino County.

Redlands

The Redlands General Plan is a set of policies that guide development regulations and decisions. The plan has designated much of the southern portion of the city as resource preservation. The west of Devers study corridor crosses through Redlands within this resource preservation area. Other land use designations within the study corridor include low-density residential and public. The San Bernardino Substation is located within the city of Redlands. Link 102 crosses within Redlands for 2 miles from Milepost 19 to 21, and Link 104 also crosses within the City for 1 mile from Milepost 2.5 to 3.5.

Loma Linda

The Loma Linda General Plan contains a comprehensive plan for managing the community's future. The west of Devers study corridor crosses through the southern portion of the city. Links 103 and 104 cross Loma Linda. The land use designations for that portion include low-density residential and preservation. Link 103 proceeds west through Loma Linda for 1.5 miles.

San Bernardino Junction is located east of the Loma Linda city limits. Link 104 proceeds north for 2 miles through a public open space designated as a riding and hiking trail to the San Bernardino Substation. The other land uses within the study corridor for the proposed line include low-, medium-, and high-density residential, commercial, business park industrial, industrial, and public.

Colton

The west of Devers study corridor crosses through approximately 2 miles of the eastern portion of Colton along Link 103. The designated land uses within the study corridor include low- and high-density residential, commercial, planned community development, and public.

Grand Terrace

The west of Devers study corridor passes through 1 mile of the city of Grand Terrace along Link 103 and terminates at the Vista Substation. The proposed line crosses low-density residential and industrial. The other categories within the study corridor include medium-density residential, commercial, industrial, public, and open space.

4.2.2.5 Park, Recreation, and Preservation Land Uses

Park, recreation, and preservation land uses within the west of Devers study corridor are presented on the Existing Land Use Map (Map 4-3e) and summarized in this section.

BLM Areas of Critical Environmental Concern

The Whitewater Canyon Area of Critical Environmental Concern (ACEC) is located ½ mile north of Milepost 5 of Link 100 within the west of Devers study corridor. The 16,400-acre Whitewater Canyon ACEC was designated by the BLM in September 1980 for fish and wildlife, botanical, and cultural value.

State and County Parks

The state has acquired land within San Timoteo Canyon in Riverside County for future recreation use. The property may not be available for public use until the necessary planning, staffing, and facility development occurs.

There are four Riverside County parks within the west of Devers study corridor. Of these, only the Noble Creek Regional Park would be crossed by the proposed west of Devers transmission

upgrade, along Link 102 at Milepost 7 (approximately 0.1 mile). Noble Creek provides athletic and outdoor opportunities.

Three other parks are located within the study corridor, but would not be crossed by the west of Devers upgrade. Bogart Park is located north of Beaumont in Cherry Valley and supports horseback riding, camping, hiking, and picnicking. Bogart Park is north of Milepost 25 on Link 102. The Gilman Historic Ranch and Wagon Museum is located in Banning on Wilson and 16th Street and has historical interpretive programs. The Gilman Historic Ranch and Wagon Museum is south of Milepost 1 on Link 102. Norton Younglove Reserve is located 5 miles east of Moreno Valley off Highway 60 and Theodore Street and is designated as an off-road vehicle park. The Norton Younglove Reserve is south of Milepost 30 of Link 102.

San Bernardino County does not have any parks within the study corridor.

Scenic Roads

There are two scenic highways designated by the California Department of Transportation within the west of Devers study corridor. They are CA 62, between I-10 and the San Bernardino County line, and CA 243 between CA 74 and the city limits of Banning. The study corridor near Milepost 1 on Link 100 crosses CA 62. CA 243 has a view of the study corridor to the south from the junction between Links 101 and 102.

In addition to the state-designated scenic highways, highways eligible for scenic designation include CA 111 between CA 74 and I-10 near Whitewater, and I-10 between CA 38 near Redlands and CA 62 near Whitewater. CA 111 is located near Milepost 5 on Link 100. I-10 is parallel to the study corridor for approximately 30 miles along Links 100, 101 and 102 and crosses the study corridor near Milepost 20 of Link 102.

Recreational Areas

Hiking and Riding Trails

The California State Parks department developed the 2002 California Recreational Trails Plan. Appendix B of the plan contains a map of the proposed and developed California Trail Corridors up to the year 2000. The west of Devers study corridor contains two trails listed in the plan. The Pacific Crest National Scenic Trail passes through the study corridor crossing Link 100 at Milepost 7. The Santa Ana River Trail corridor was proposed for establishment in 2002. The Santa Ana River Trail connects Huntington Beach to the Pacific Crest Trail. The trail is approximately 110 miles in length and is partially complete. The Santa Ana River Trail passes within the study corridor to the north of Links 103 and 104.

Campgrounds

Bogart Park is located north of Beaumont in Cherry Valley and supports camping, horseback riding, hiking, and picnicking. Fisherman's Retreat is located within San Timoteo Canyon and provides opportunities for camping and fishing. Fisherman's Retreat is located north of Milepost 14 of Link 102.

Golf Courses

Four golf courses are within the west of Devers study corridor and include Calimesa Country Club, PGA Southern California Golf Club, Oak Valley Golf Club, and the Palm Meadows Golf Course. The corridor crosses the Oak Valley Golf Club at Milepost 7.5 and 8.0 at Link 102 (approximately 0.2 mile).

Roadside Rest Areas

Two roadside rest areas are located within the west of Devers study corridor. The Whitewater Rest Area is located on I-10, 1 mile west of Whitewater and located approximately at Milepost 4 on Link 100. The Brookside Rest Area is located 3 miles west of Beaumont and is only accessible in the westward direction. The Brookside Rest Area is located near Milepost 9 on Link 102.

4.2.3 Socioeconomics, Population, and Housing

From the Devers Substation, the study corridor travels west through the Riverside County communities of Banning, Beaumont, and Calimesa. The corridor then proceeds northwest into San Bernardino County and the communities of Redlands, Loma Linda, Colton, and Grand Terrace enroute to the Vista Substation.

4.2.3.1 Riverside County

Riverside County encompasses 7,200 square miles with a population density of 214 persons per square mile. Riverside County has experienced a high growth rate for the past 20 years, increasing 76.5 percent between 1980 and 1990. Between 1990 and 2000, Riverside County experienced a 32 percent growth rate in county population, the fifth highest of all 58 California counties (SCAG 2000). The County's aggregate household income was $28 billion in 1999, comprising about 3.8 percent of the state aggregate household income (U.S. Census Bureau 2000).

The area through which the proposed west of Devers study corridor passes, including Banning, Beaumont, and Calimesa, is primarily rural, agricultural, and light urban in nature. Banning covers 22 square miles and has 11 hotels and 15 mobile home/recreational vehicle parks with a

total of 1,007 spaces. Because it is situated on I-10, the area receives a large amount of traffic, and the city estimates that on a normal day (excluding holidays and weekends), over 110,000 cars pass through the community. The city of Beaumont encompasses 26 square miles and has six motels and four mobile home/recreational vehicle parks. The city of Calimesa encompasses 16 square miles and was incorporated in 1990 (COC 2003). Calimesa has one hotel and eight mobile home/recreational vehicle parks.

The proposed 230kV upgrade also would pass through a portion of the Morongo Indian Reservation, which encompasses 32,000 acres (www.morongonation.org 2003) and has a population of 960 and a median household income of $51,071 for the 234 households (U.S. Census Bureau 2000). The unemployment rate for 2000 was 10 percent (U.S. Census Bureau 2000).

4.2.3.2 San Bernardino County

San Bernardino County encompasses 20,052 square miles with a population density of 85.2 persons per square mile. Between 1990 and 2000, San Bernardino County experienced the fifteenth highest county population growth rate in California at 20.5 percent (SCAG 2000). This growth rate is less than half that experienced between 1980 and 1990, when the County grew by 56 percent. The aggregate household income in 1999 was $28.1 billion, comprising about 3.7 percent of the state aggregate household income of $755.5 billion (U.S. Census Bureau 2000).

In San Bernardino County, the proposed west of Devers corridor crosses through the communities of Redlands, Loma Linda, Colton, and Grand Terrace enroute to the Vista Substation. There are numerous hotels, mobile home parks, and recreational vehicle parks in these communities. The city of Redlands is the largest city traversed by the proposed upgrade corridor, with a population of 63,590 and a geographic area of 36 square miles. Loma Linda is a small university town and covers 8 square miles, with a population density of 2,700 people per square mile. The backbone of the local economy is healthcare, provided largely by the Loma

Linda University Medical Center, a combination of medical, research, and educational facilities that draws patients and students from around the country. The city of Colton encompasses approximately 18 square miles. The city of Grand Terrace is 3.6 square miles, and has the highest median household income of any community through which the proposed study corridor crosses. Grand Terrace also has a low crime rate, with only 321 incidents reported in 2001.

Tables 4-47 through 4-50 present current and future population, housing data, and labor force statistics for Riverside and San Bernardino counties, as well as for the communities traversed by the west of Devers study corridor.

TABLE 4-47
YEAR 2000 POPULATION AND DEMOGRAPHICS

	Riverside County	Banning	Beaumont	Calimesa	San Bernardino County	Loma Linda	Redlands	Colton	Grand Terrace
Total Population	1,545,387	23,562	11,384	7,139	1,709,434	18,681	63,591	47,662	11,626
Gender:									
Male	769,384	11,220	5,443	3,354	853,024	8,659	30,024	23,492	5,479
Female	776,003	12,342	5,941	3,785	856,410	10,022	33,567	24,170	6,147
Race:									
White	65.6%	64.2%	68.1%	89.1%	58.9%	54.2%	73.7%	42.7%	73.8%
African American	6.2%	8.5%	2.9%	.6%	9.1%	7.2%	4.3%	11.0%	4.6%
Native American	1.2%	2.5%	2.3%	.7%	1.2%	.5%	.9%	1.3%	.7%
Asian or Pacific Islander	4%	5.5%	1.7%	1.2%	5.0%	24.6%	5.4%	5.5%	5.9%
Other	23%	19.3%	25.0%	8.4%	25.8%	13.5%	15.7%	39.5%	15.0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Hispanic Heritage	36.2%	30.2%	36.2%	14.1%	39.2%	16.3%	24.1%	60.7%	25.4%

Source: U.S. Census Bureau 2000 Census; SCAG 2001

TABLE 4-48
HISTORIC AND ESTIMATED FUTURE POPULATION GROWTH

Year	Population								
	Riverside County	Banning	Beaumont	Calimesa	San Bernardino County	Loma Linda	Redlands	Colton	Grand Terrace
1980	663,172	14,020	6,818	NA*	895,016	10,694	43,619	21,310	8,498
1990	1,170,413	20,570	9,685	4,647	1,396,600	17,400	60,394	40,213	10,946
2000	1,545,387	23,562	11,384	7,139	1,709,434	18,681	63,591	47,662	11,626
2002	1,645,300	25,736	12,212	7,276	1,788,479	19,735	66,313	49,330	11,975
2005	1,864,700	31,401	18,115	8,663	1,980,000	25,415	69,229	51,575	13,768
2010	2,159,700	34,658	26,074	12,473	2,231,600	28,281	70,817	56,425	14,237
2015	2,459,600	37,723	33,573	16,073	2,487,700	31,529	72,642	61,626	15,142
2020	2,817,600	42,027	44,103	21,144	2,800,900	35,378	74,804	67,770	16,213

Source: U.S. Census Bureau, 2000 Census; California Department of Finance 2000, 2001; SCAG 2001, 2003
*Calimesa was incorporated in 1990

TABLE 4-49
YEAR 2000 HOUSING DATA

	Riverside County	Banning	Beaumont	Calimesa	San Bernardino County	Loma Linda	Redlands	Colton	Grand Terrace
Total Housing Units	584,674	9,761	4,258	3,248	601,369	8,084	24,790	15,680	4,458
Occupied	506,218	8,923	3,881	2,982	528,594	7,536	23,593	14,520	4,221
Owner occupied	348,532	6,426	2,097	2,474	340,933	2,883	14,259	7,545	2,745
Rented	157,686	2,497	1,784	508	187,661	4,653	9,334	6,975	1,476
Vacant	78,456	838	377	266	72,775	548	1,197	1,160	237
Single unit	398,747	7,575	2,865	1,872	442,954	3,835	16,723	9,699	3,038
Multiple unit	103,066	1,030	1,046	121	116,581	3,687	7,162	5,166	1,170
Mobile	82,861	1,156	347	1,255	41,834	562	905	815	250
Median Value	$146,500	$110,000	$98,600	$131,900	$131,500	$165,200	$159,300	$105,200	$142,600

Source: U.S. Census Bureau, 2000 Census; SCAG 2001.

TABLE 4-50
YEAR 2000 EMPLOYMENT BY OCCUPATION

	Riverside County	Banning	Beaumont	Calimesa	San Bernardino County	Loma Linda	Redlands	Colton	Grand Terrace
Total Civilian Labor Force	651,952	8,248	4,843	3,071	721,185	8,644	31,985	20,758	6,192
Total Unemployment	49,096 7.5%	741 9%	449 9.3%	246 8%	59,913 8.3%	436 5%	2,043 6.4%	1,831 8.8%	275 4.4%
Total Employment	602,856	7,507	4,394	2,825	661,272	8,208	29,942	18,927	5,917
Management, professional, and related	167,739	1,551	825	884	186,096	4,512	13,719	4,194	2,261
Service	105,446	1,518	1,014	439	104,728	1,258	4,290	3,239	683
Sales and office	163,095	2,465	1,169	907	180,447	1,662	7,167	5,098	1,764
Farming, fishing, forestry	9,499	32	22	0	3,040	9	26	71	13
Construction, extraction, maintenance	70,974	818	590	217	74,519	264	2,097	2,159	545
Production, transportation, material moving	86,103	1,123	774	378	112,442	503	2,643	4,166	651
Median Household Income	$42,887	$32,076	$29,721	$37,849	$42,066	$38,204	$48,155	$35,777	$53,649

Source: US Census Bureau, 2000 Census

4.2.4 Geology and Soils

4.2.4.1 Geology

The proposed west of Devers 230kV transmission upgrade would be located within an existing utility corridor from Devers west through San Gorgonio Pass, north of the San Jacinto Mountains and south of the San Bernardino Mountains. The study corridor continues northwest through the San Timoteo Canyon to the Vista Substation, with an interconnection to San Bernardino Substation.

San Gorgonio Pass is an east-trending lowland between the San Bernardino and San Jacinto mountains. The surface of this lowland is covered by multiple generations of alluvial-fan deposits that are mainly derived from the San Bernardino Mountains. The northern foothills are underlain by upper Cenozoic nonmarine and marine sedimentary deposits with basalt flows and small intrusive bodies occurring locally in the sedimentary sequence. The east-trending right-lateral Banning Fault separates the sedimentary section from crystalline rocks of the San Bernardino Mountains to the north. To the east, crystalline rocks of the San Bernardino Mountains block descend beneath the Coachella Valley (USGS 2004).

The San Bernardino Mountains consist of a high, east-trending block that has been uplifted to its present elevation during the last few million years. The southwestern and southeastern margins of the San Bernardino Mountains are traversed by several strands of the San Andreas Fault zone.

From Devers, the study corridor passes through alluvium in the San Gorgonio Pass to a point west of the Morongo Indian Reservation, where the corridor would pass through QPC in the foothills of the San Bernardino Mountains. The corridor then proceeds west into San Timoteo Canyon, crossing Plio-Pleistocene non-marine sedimentary rock and alluvium until it terminates at Vista Substation.

4.2.4.2 Seismic Activity

Eleven earthquakes of magnitudes raging from 4.0 to 4.9 were recorded through year 2000 in the west of Devers study corridor (California Geological Survey 2001). The proposed west of Devers study corridor falls with the San Jacinto Fault zone as well as the San Andreas Fault zone. The San Jacinto Fault zone separates the San Jacinto Mountains and San Timoteo Badlands from the Perris Block. The main strand of the San Andreas Fault in southern California consists of two segments: the Mojave Desert segment that mainly separates rocks of San Gabriel Mountains from rocks of San Bernardino Mountains, and the Coachella Valley segment that separates rocks of Peninsular Ranges from rocks of the San Bernardino and San Gabriel mountains.

4.2.4.3 Soils

Soils in the San Gorgonio Pass generally consist of very deep, well-drained to excessively drained, nearly level to moderately steep soils that have a surface layer of sand to sandy loam. Soils in the San Timoteo Canyon area consist of well-drained, rolling to very steep, moderately deep calcareous loam, and very shallow soils.

Soil Collapse and Consolidation

Soil collapse and consolidation result from hydrocompaction and loading of the surface. Hydrocompaction is a condition that occurs when water is introduced into some moisture deficient fine-grained soils (typically silts and clay) of arid environments. The introduction of water causes a collapse of the soils intergranular structure. This consolidates the soil and in turn results in a depression of the ground surface. Hydrocompaction is most commonly associated with projects that introduce large volumes of water to moisture deficient soils, such as canals, irrigation associated with agriculture, or landscaping of development projects.

The potential degree of hydrocompaction resulting from a transmission line is far less likely than potential soil compaction resulting from the loading and consolidation of the loose surface soil horizons by construction traffic. Such consolidation from vehicular traffic commonly produces a permanent rut or depression in the road surface. If water is channeled into the rut, and there is sufficient gradient to develop surface flow, the rut also may become a location for erosion.

Wind Erosion

Deflation or erosion of soils by wind is a common natural phenomenon in deserts and is governed by soil characteristics and the velocity of the wind. Fine-grained silt and clay particles are picked up by the wind and blown away as dust. Heavier sand particles usually do not become airborne but move in short leaps, referred to as saltation. These soils are most susceptible to wind erosion when recently disturbed by activities such as vehicular traffic. In some of the fine-grained soils, raindrops produce a thin film of clay to coat the surface. This crust, referred to as a carapace crust, provides a fragile shield against wind erosion until it is broken again by vehicular traffic or other activities.

Surface Water Erosion

The sensitivity of a particular site to erosion by surface runoff is a function of the soil type, and the degree of topographic relief, which governs the velocity of the surface water runoff.

Typical erosional features within the corridor consist of shallow gulleys and rills along localized areas of access road courses. Favorable factors that appear to have contributed to low erosion rates include the limited grading used along the existing transmission lines, the general conformance of access roads to topography, the utilization of existing roads where possible. Also, the majority of the existing line crosses terrain of low topographic relief.

4.2.5 Hydrology

The study corridor falls within the Coachella Valley Groundwater Basin. Within this basin, the study corridor falls within the San Gorgonio Pass Sub-basin. The sub-basin is bounded on the north by the San Bernardino Mountains and on the south by the San Jacinto Mountains. The San Gorgonio River flows over the sub-basin and is the main surface drainage feature for the sub-basin. Runoff from the San Bernardino Mountains contributes runoff to the river. The water bearing units in the region are alluvium and the San Timoteo Formation. The alluvium consists mostly of gravel and sand; however, they lie largely above the water table and therefore do not contribute much water to wells. The older, Pleistocene age alluvium contains sand and gravel and also large amounts of clay and silt. These deposits yield moderate amounts of water to wells (California Department of Water Resources 2004).

The storage capacity of the sub-basin was estimated by the California Department of Water Resources in 1987 to be 2,200,000 acre feet.

4.2.6 Air Quality

The proposed west of Devers study corridor is located in the northwestern end of San Jacinto Valley of southern California. The valley is defined by the San Bernardino Mountains to the north and the San Jacinto Mountains to the east. The meteorology found in this area can be described as a temperate climate, typically mild daytime temperatures, low humidity, and low amounts of precipitation. The seasons are marked by warm dry summers and cool wet winters.

Temperature, precipitation, and wind data for the region were developed from data collected in Redlands, California, and was provided by the Western Regional Climate Center. Maximum annual average temperature for the area is 78.2 degrees Fahrenheit with an absolute maximum of 115 degrees Fahrenheit. The minimum temperatures for the area on average are 49.4 degrees Fahrenheit with an absolute minimum temperature of 19 degrees Fahrenheit. Precipitation falls at

about 13.3 inches per year. Finally, the average annual wind speeds are 5.6 miles per hour. These data are summarized in Table 4-51.

TABLE 4-51
PROPOSED WEST OF DEVERS STUDY CORRIDOR CLIMATOLOGY SUMMARY

Temperature		Redlands, California
Annual Average	max (F)	78.2
	min (F)	49.4
January	max (F)	64.9
	min (F)	39.4
July	max (F)	94.5
	min (F)	60.6
Absolute	max (F)	115
	min (F)	19
Precipitation		
Annual Average		13.3
Summer Average		0.35
Winter Average		7.1
Wind (Riverside Municipal Air Park)		
Annual Average (mph)		5.6
Source: Western Regional Climate Center, web page (accessed July 22, 2003)		

The proposed west of Devers transmission upgrade is located in the SCAB and is governed by the SCAQMD. As was mentioned previously, in June 2003 the Riverside County portion of the SCAQMD was listed as non-attainment for ozone, carbon monoxide, and particulate matter. The non-attainment for ozone and carbon monoxide was redefined to the Los Angeles portion of the SCAB. However, the non-attainment status for particulate matter remained for the whole SCAB based on standards adopted by both federal (EPA 2003) and state management agencies (California Air Resources Board [CARB] 2003).

The proposed west of Devers transmission upgrade is located along an existing transmission line right-of-way; thus, there are virtually no air emissions directly generated due to on-site equipment. The proposed upgrade parallels existing transmission lines and access roads that have already been developed and are used for maintenance. The amount of land required for construction purposes includes 229.8 acres for equipment laydown areas and less than 1 mile of additional spur roads. The laydown areas may require some vegetative clearing or will be designated for overland access. During construction-related modifications to the site, particulate

matter in the form of fugitive dust will be generated during periods of high winds or large equipment transportation on unpaved roads. After construction, there may continue to be particulate matter emissions in the form of fugitive dust due to maintenance activities.

4.2.7 Traffic and Transportation

The proposed 230kV upgrade corridor extends west from Devers along an existing 230kV transmission line right-of-way through the communities of Banning, Beaumont, and Calimesa in Riverside County, and the communities of Loma Linda, Redlands, Colton, and Grand Terrace in San Bernardino County. The corridor exits the Devers Substation on the northern side of I-10, crossing CA 62, then crosses to the western side of I-10 near the border between Calimesa and Beaumont, near the Cherry Valley Boulevard exit. The corridor then crosses San Timoteo Canyon Road, and generally follows on the western side of this road until crossing I-215 and turning west to enter Vista Substation. Table 4-52 below provides traffic counts in the areas where the corridor crosses major travel arterials.

TABLE 4-52
AVERAGE DAILY TRAFFIC COUNT (ADT)

	South or West Bound			North or East Bound		
Location	**Peak Hour**	**Peak Month ADT**	**Annual ADT**	**Peak Hour**	**Peak Month ADT**	**Annual ADT**
CA 62 – I-10 exit to Pierson Blvd.*	1,550	16,600	15,900	1,400	15,100	14,500
I-10 at Fields Road exit	10,200	110,000	103,000	9,700	104,000	97,000
I-10 at Cherry Valley Boulevard exit*	6,300	91,000	85,000	6,000	86,000	80,000
San Timoteo Canyon Road east of Redlands Boulevard*	8,007 (6/26/01)	NA	NA	NA	NA	NA
Redlands Boulevard south of San Timoteo Canyon Road*	8,657 (3/13/02)	NA	NA	NA	NA	NA
I-10 at California Street exit*	14,000	185,000	183,000	13,600	180,000	178,000
I-215 at Washington Avenue exit*	13,200	163,000	160,000	14,100	174,000	171,000

Source: CDOT Division of Traffic Operations 2003; Riverside County DOT, Engineering Services Division 2004
*Indicates locations where proposed west of Devers 230kV upgrade corridor crosses state or interstate highways.

4.2.8 Biology

4.2.8.1 West of Devers Upgrade

This section summarizes the results of biological resource surveys conducted for the proposed west of Devers upgrade along an existing SCE transmission line corridor right-of-way between Vista Substation near Terrace View in Riverside County, and Devers near Palm Springs in San Bernardino County. The purpose of these studies was to determine the potential and actual occurrence of any special-status plant and wildlife species, or sensitive habitats, along the proposed right-of-way.

Methods

The approach to this portion of the project involved two phases. In the first phase, background information was gathered and compiled in preparation for going into the field. Biologists compiled a list of candidate sensitive species (plants and wildlife), and areas of special concern, that are known or expected to occur along the right-of-way. Standard database searches were performed (e.g., CNDDB, and others). All of the information compiled formed the basis for a project-specific database and resource mapping effort for the right-of-way.

Prior to going into the field, a map atlas was compiled that depicted the entire right-of-way using USGS topographic base maps. A set of maps was provided to each of the field biologists for reference and to assist with data collection and navigation in the field. The maps included the pre-survey (known) locations of any sensitive species or their habitat, areas likely to require specific surveys along the right-of-way, tower locations, and any access roads.

Following this pre-field orientation, the second phase involved having qualified field biologists conduct field studies along the entire right-of-way. Fieldwork began in early April 2003 and was

completed in September 2003. The majority of the field effort coincided with the time of year when sensitive species were most likely to be observed. For plants, several visits to the project area were required to address differing flowering seasons for each sensitive plant species.

Data collection was standardized for each site visited to the fullest extent possible. A field form designed specifically for the project was used to record the results of each survey. Digital photos of each site were taken for reference purposes.

The field biologists were equipped with handheld global positioning system (GPS) units. Specific locations of sensitive resources found in the field were digitized for later mapping and reporting purposes.

The field surveys were conducted usually by a team of two biologists traveling together. Additional, individual surveys were conducted on an as-needed basis by individual specialists. Wherever possible, the biologists drove to the existing tower locations using existing access roads. Elevation and location were recorded with a Magellan GPS unit. Where the access was closed (e.g., behind closed gates lacking SCE locks), the biologists either walked to each existing tower site, or (rarely) they observed them from a distance with binoculars.

At each existing tower site, the biologists compiled a list of representative plant species present and any sensitive plant or vertebrate species they observed. Habitat features such as hilltops, rock outcrops, and ridgelines were recorded also. The relative level of human disturbance in the area (i.e., trash, grading, vehicle tracks, etc.) was noted. A list of potential sensitive species was generated for each existing tower site or specialized habitat between existing tower sites. Any riparian or spring habitats were also noted and their distances from existing tower sites were estimated. The vegetation along the right-of-way between each existing tower site was also recorded and generally mapped, as were potential access problems (e.g., locked gates, washouts) for subsequent surveyors. The findings of the field surveys were compiled into a map atlas.

Vegetation

The project study area lies largely within the most inland and interior extension of South Coast Floristic Region of California (Hickman 1993). The interior valleys of southern coastal California in Los Angeles, western Riverside, and western San Bernardino and Orange counties are now heavily urbanized, but still retain large fragments of their original biotic elements.

The project study region, which lies at the piedmont of the convergence of the San Jacinto and San Bernardino mountains, is largely characterized by shrub vegetation known variously as chaparral or soft chaparral (coastal sage scrub). The characteristic climate on the western end of the project is Mediterranean arid (Raven and Axelrod 1978), the majority of the 10 inches of precipitation falls in the winter season from November to March. The climate of the eastern end is very arid, with as little as 5 inches of precipitation.

The project study area traverses one of the major biotic boundaries in North America: the transition from chaparral to desert. On the western end of the corridor, chaparral and sage scrub floristic elements characteristic of cismontane California, rich in endemic plants, predominate. On the eastern end of the corridor, the biota is fully characteristic of the Sonoran Desert.

Chaparral and related scrub communities in the Southern California region are variable in dominant plants, but share common structural characteristics: the vegetation is dense, often covering more than two-thirds or more of the ground, and is approximately the height of a person in canopy height. Annual plants and perennial plants are diverse and common, but are largely confined to the spaces between dense shrub canopies, or more commonly, annual plants and perennial plants dominate after fires, which are characteristic and important in chaparral.

Chaparral communities present include: scrub oak chaparral, Chamise chaparral, and Riversidean sage scrub/Chaparral mixed scrub. These habitats are found on the north-facing slopes and hilltops along the central and western portions of the right-of-way. Chaparral has been impacted by historical uses (e.g., agriculture, grazing) that resulted in the introduction of non-native grass

species. These include the brome grasses (*Bromus* sp.) and wild oats (*Avena* sp.). These introductions also changed the fire regimes and resulted in a more open type of habitat.

Riversidean sage scrub does not occur along the right-of-way as a well-defined vegetation type; instead, it occurs as a mixed vegetation type with chaparral and/or grassland vegetation elements. These areas usually contain stands of California buckwheat (*Eriogonum fasciculatum*) mixed with non-native grasses or chamise (*Adenostoma fasciculatum*), or scrub oak (*Quercus berberidifolia*) mixed with brittlebush or black (*Salvia mellifera*) or white sage (*Salvia apiana*) and/or California sagebrush (*Artemisia californica*).

Upland sites with stony or alluvial soils are often largely chaparral, but scattered within the study area corridor are numerous washes and perennial streams, each with characteristic riparian vegetation depending on hydrology. The riparian vegetation types present include: desert willow/scalebroom scrub, willow scrub, seepwillow scrub, and willow forest. The distribution is limited for the riparian scrubs and forests along the right-of-way. They only occur in active channels (i.e., the Whitewater River) (desert willow [*Chilopsis linearis*]/scalebroom scrub [*Lepidospartum squmatum*]), the San Timoteo Canyon Forest (willow [*Salix* sp.], with California sycamore [*Platanus racemosa*], alder [*Alnus rhombifolia*], and coast live oak [*Quercus agrifolia*]), or in spring areas on slopes or hillsides (willow and seepwillow [*Baccharis salicifolia*] scrubs). Common riparian dominants of dry washes are scale broom and willows (principally *Salix exigua*).

Oak woodland vegetation, now scattered as isolated remnants, is also characteristic of portions of the study area corridor. Coast live oak (*Quercus agrifolia*) is the characteristic dominant, with Palmer's oak (*Quercus palmeri*) frequent, and rare stands can contain Mesa oak (*Quercus engelmanii*) and or California walnut (*Juglans californica*); the latter two species are special status rare plants (CNPS 2001). Larger drainages of the southerly slopes of the San Bernardino Mountains, such as the San Gorgonio River and adjacent drainages to the west, support this habitat type.

Grassland communities are characteristic of the study area corridor on deep soils of lower slopes and valley bottoms, which are now largely urbanized.

The grassland communities present include: grassland, grassland/chaparral, grassland/scrub mosaic, and catclaw/grassland/valley cholla. The grasslands are dominated by non-native grass species including the brome grasses, particularly ripgut (*Bromus diandrua*) and red brome (*B. rubens*), wild oats, and mustard (*Brassica nigra*). These support fires nearly annually, which in turn have brought about a conversion in some areas to where only these and other weedy annual species occur (Zedler et al. 1983). In general, there has been an overall reduction in the native perennial species present in the grasslands. On the Morongo Indian land, the catclaw/grassland/valley cholla (*Opuntia parryi*) vegetation type may occur as a result of past grazing.

The desert scrub communities present include: creosote bush scrub, brittlebush scrub, and catclaw scrub. They are dominated by creosote bush and burrobush at the eastern end of the right-of-way beginning at Devers and extending onto the Morongo Indian land. The Morongo lands are grazed by cattle and, over an extended period, have produced a transitional vegetation type between catclaw dominated scrub to grassland (see below). Along this transition area, the upper elevations are dominated by brittlebush) scrub.

Devers Substation is situated on the broad alluvial fans of the eastern San Bernardino Mountains. The vegetation locally is sparse, with much open ground, and with shrub cover on the order of one-third of the landscape or less comprised by creosote bush in association with white bursage on gravelly soils. Washes that dissect valley bottoms of creosote bush scrub may support shrubby species such as cheesebush (*Hymenoclea salsola*).

The habitat quality of much of the vegetation has been degraded as a result of various human activities. Much of the right-of-way includes: ruderal/degraded scrub, ruderal/non-native grassland, and ruderal chaparral mosaic. Ruderal vegetation is dominated by weedy species that often establish as a result of either previous agricultural activities or weed abatement plowing.

These can produce fields of non-native grasslands or star-thistle (*Centaurea melitensis*). Ruderal/degraded scrub and ruderal chaparral mosaic often results from agricultural/weed abatement activities or frequent fires that encourage the spread of non-native grasses. Non-native grasses are more easily involved in fires than some other vegetation types. As a result, shrub communities often gradually disappear.

Special Status Plant Species

Table 4-53 summarizes the sensitive plant species that may occur in or near the right-of-way and possibly be affected by the project. Studies confirmed the presence of suitable habitat in or near the right-of-way for 18 sensitive plant species. Nevin's barberry (*Mahonia nevinii*) is a federal and state listed endangered species that was confirmed in the right-of-way.

TABLE 4-53
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE OR SAN BERNARDINO COUNTIES, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Abronia villosa var. *aurita*	Chaparral sand-verbena	CEQA	Moderate	Yes
Allium marvinii	Yucipa onion	CEQA	Moderate	Yes
Arenaria plaudicola	Marsh sandwort	FE, CE	None	No
Astragalus lentiginosuus var. *coachellae*	Coachella Valley milk-vetch	FE, CEQA	None	Yes
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	CEQA	Moderate	Yes
Astragalus tricarinatus	Tripple-ribbed milk-vetch	CEQA	Moderate	Yes
Atriplex coronata var. notatior	San Jacinto Valley crownscale	CE	None	No
Calochortus plummerae	Plummer's mariposa	CEQA	Low	Yes
Carex comosa	Bristly sedge	CEQA	None	No
Chorizanthe parryi var. *parryi*	Parry's spineflower	CEQA	High	Yes
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower	CEQA	Moderate	Yes
Chorizanthe xantii var. leucotheca	White-bracted spineflower	CEQA	High	Yes
Deinandra mohavensis	Mojave tarplant	CE	Moderate	Yes
Dodecahema leptoceras	Slender-horned spineflower	FE, CE	Moderate	Yes
Dudleya multicaulis	Many stem live-forever	CEQA	None	No

TABLE 4-53
SENSITIVE PLANT SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE OR SAN BERNARDINO COUNTIES, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Scientific Name	Common Name	Status	Probability of Presence	Pre-construction Survey Recommended
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woolly-star	FE, CE	Moderate	Yes
Erodium macrophyllum	Round leaf filaree	CEQA	Moderate	Yes
Euphorbia misera	Cliff spurge	CEQA	Moderate	Yes
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CEQA	Moderate	Yes
Linanthus maculatus	Little San Bernardino Mtns.	CEQA	Moderate	Yes
Mahonia nevinii	Nevin's barberry	FE, CE	High	Yes
Navarretia fossilis	Spreading pincussion-plant	CT	None	No
Nemacaulis denudata var. *gracilis*	Slender woolly heads	CEQA	Moderate	Yes
Monardella pringlei	Pringle's coyote-mint	CEQA	None	No
Orcuttia californica	California orcutt grass	FE, CE	None	No
Sidalcea neomexicana	Salt-spring checkerbloom	CEQA	None	No
Trichocoronis wrightii	Wright's button	CEQA	None	No

Status Codes:
FE – Federally Endangered
CE – California Endangered
CT – California Threatened
CEQA – California Environmental Quality Act

Probability of Presence:
High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable habitat, or far from known distribution

Wildlife

The vertebrate fauna of the west of Devers portions of the study corridor is composed of species of mammals, birds, amphibians, and reptiles. While chaparral, coastal sage scrub and valley grassland habitats are composed of characteristic suites of plant species, the vertebrate fauna is not particularly unique and most species present may be found in a variety of other habitat types. Exceptions to this generalization include the coastal California gnatcatcher (*Polioptila californica*) and Belding's orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*).

Mammals

The mammalian fauna of the west of Devers portion of the study corridor is dominated by species of small, nocturnal rodents that include the highly desert-adapted pocket mice and kangaroo rats that occupy Sonoran Desert and arid grassland portions of the western part of the corridor. Rodents also dominate the slightly more mesic California coastal sage scrub and chaparral habitats in the corridor. Small mammals likely to be present in sage scrub and chaparral include deer mouse (*Peromyscus maniculatus*), harvest mouse (*Reithrodontomys megalotis*), and desert cottontail (*Sylvilagus auduboni*). Mule deer, coyote, and bobcat (*Lynx rufus*) occur sparingly in the study corridor. Riparian areas such as San Timoteo Canyon likely host a variety of bat species including big brown bat (*Eptesicus fuscus*), California myotis (*Myotis californicus*), and Townsend's long-eared bat (*Plecotus townsendii*).

Birds

The avifauana of the west of Devers portion of the study corridor is dominated by small species of songbirds. In the western portions of the corridor, species like black-throated sparrow and LeConte's thrasher are present. In the slightly more mesic California coastal sage scrub, chaparral, and grassland species such as California towhee (*Pipilo crissalis*), Say's phoebe (*Sayornis saya*), sage sparrow (*Amphispiza belli*), and northern mockingbird (*Mimus polyglottos*) are likely to be encountered. Larger species that may be found at any location within the west of Devers study corridor include red-tailed hawk and turkey vulture. Similarly, the ubiquitous mourning dove (*Zenaida macroura*) is likely to occur anywhere in the corridor.

Reptiles

The reptile fauna of the west of Devers portion of the study corridor is fairly diverse and includes the desert forms such as Mohave desert tortoise and desert horned lizard (*Phrynosoma*

platyrhinos) in the western part of the corridor. In the slightly more mesic California coastal sage scrub, chaparral, and grassland species such as Gilbert's skink (*Eumeces gilberti*), alligator lizard (*Elgaria multiarinata*), western fence lizard (*Scelopoorus occidentalis*), gopher snake, common kingsnake (*Lampropeltis getulus*), and California whipsnake (*Masticophis aurigulus*).

Amphibians

The amphibian fauna of the west of Devers portion of the study corridor is likely quite depauperate. The red-spotted toad likely occupies rocky canyons and arroyos in the corridor and Couch's spadefoot may be present in the more westerly portions of the corridor.

Special Status Wildlife Species

Table 4-54 summarizes the sensitive wildlife species that may be affected by the proposed project and their likelihood of occurrence along the right-of-way. The field surveys focused on determining whether suitable habitat exists in the right-of-way rather than detecting species to determine presence/absence.

TABLE 4-54
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE OR SAN BERNARDINO COUNTIES, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Scientific Name	Common Name	Status	Counties of Presence	Probability of Presence	Pre-construction Survey Recommended
AMPHIBIANS					
Bufo californicus	Arroyo toad	FE, CSC	R	None	No
Spea hammondii	Western spadefoot toad	CSC	R, SB	Low	No
REPTILES					
Crotalus ruber ruber	Northern red-diamond rattlesnake	CSC	R, SB	High	No
Charina trivirgata	Rosy boa	FSC, S	R, SB	High	No
Cnemidophorus hyperythrus beldingi	Beldings orange-throated whiptail	CSC	R, SB	High	No
Phrynosoma coronatum blainvillei	San Diego horned lizard	CSC	R, SB	High	No
Gopherus agassizii	Desert tortoise	FT, CT	R	Low	Yes
BIRDS					
Accipiter cooperi	Cooper's hawk	CSC	R, SB	Moderate	No
Accipiter striatus	Sharp-shinned hawk	CSC	R, SB	Moderate	No
Aquilla chrysaetos	Golden eagle	CSC, S	R, SB	Moderate	No
Buteo regalis	Ferruginous hawk	CSC, S	R, SB	Moderate	No
Buteo swainsoni	Swainson's hawk	CT	R, SB	Low	No
Circus cyaneus	Northern harrier	CSC	R, SB	Moderate	No
Elanus leucurus	White-tailed kite	FP	R, SB	Low	No
Falco columbarius	Merlin	CSC	R, SB	Moderate	No
Falco mexicanus	Prairie falcon	CSC	R, SB	Moderate	No
Falco peregrinus anatum	Peregrine falcon	CE, FP	R, SB	Moderate	No
Athene cunicularia	Burrowing owl	CSC, S	R, SB	High	No
Empidonax traillii extimis	Southwestern willow flycatcher	FE, CE	R, SB	Low	Yes
Lanius ludovicianus	Loggerhead shrike	CSC	R, SB	High	No
Vireo bellii pusillus	Least Bell's vireo	FE, CE	R, SB	High	Yes
Eremophila alpestris actia	California horned lark	CSC	R, SB	High	No
Polioptila californica californica	Coastal California gnatcatcher	FT, CSC	R, SB	High	Yes
Toxostoma lecontei	Le Conte's thrasher	CSC, S	SB	Moderate	No
Dendroica petechia brewsteri	Yellow warbler	CSC	R, SB	High	No
Icteria virens	Yellow-breasted chat	CSC	R, SB	High	No
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	CSC	R, SB	High	No
Amphispiza belli belli	Bell's sage sparrow	CSC	R, SB	High	No

TABLE 4-54
SENSITIVE WILDLIFE SPECIES CURRENTLY KNOWN TO EXIST IN RIVERSIDE OR SAN BERNARDINO COUNTIES, CALIFORNIA AND PROBABILITY OF PRESENCE IN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

Scientific Name	Common Name	Status	Counties of Presence	Probability of Presence	Pre-construction Survey Recommended
MAMMALS					
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE, CSC	R, SB	Low	Yes
Dipodomys stephensii	Stephens' kangaroo rat	FE, CT	R, SB	Low	Yes
Perognathus longimembris brevinasus	Los Angeles pocket mouse	CSC	R, SB	High	No
Neotoma lepida intermedia	San Diego desert woodrat	CSC	R, SB	Moderate	No
Lepus californicus bennettii	San Diego black-tailed jackrabbit	CSC	R, SB	High	No

Status Codes:
FE – Federally Endangered
FT – Federally Threatened
FSC – Federal Species of Concern
CE – California Endangered
CT – California Threatened
CSC – California Species of Concern
S – BLM Sensitive
FP – Fully Protected
R – Riverside County
SB – San Bernardino County

Probability of Presence:
High – Route passes through suitable habitat with confirmed presence of species.
Moderate – Route passes through suitable habitat, but no confirmed presence, or outside known distribution.
Low – Route passes through marginal habitat, little potential presence of species, or outside known distribution.
None – No suitable or potential habitat, or far from known distribution.

4.2.9 Noise

The proposed 230kV transmission line upgrade corridor is located within the San Gorgonio Pass and the San Jacinto Valley. The corridor crosses mainly rural areas with large lot residential classifications; however, there are areas of medium density (2 – 15 residences per acre) through which the corridor either crosses or passes within 1 mile. Typical municipal ordinances stipulate that activities producing ambient noise should not exceed 55-50 dBA during nighttime hours (10 p.m. to 7 a.m.) and 60-55 dBA during daytime hours (7 a.m. to 10 p.m.) at receiving residential

property lines or sensitive areas. For example, the city of Loma Linda noise ordinance 9.20.040 stipulates that 55 dBA for daytime hours and <50 dBA for nighttime hours is acceptable.

Roadways that contribute to ambient noise include I-10, Interstate 15 (I-15), and intermittent traffic on San Timoteo Canyon Road. The existing transmission lines within the corridor may also produce noise from corona discharge.

4.2.10 Public Services and Utilities

Banning – The Banning Police Department consists of 33 sworn personnel and 14 civilian personnel. Fire service is provided by the Riverside County Fire Department Station # 89, located less than 2 miles north of the proposed west of Devers upgrade right-of-way. The community is served by the San Gorgonio Memorial Hospital in Banning, which has a 68-bed capacity, and by the Redlands Community Hospital, which has a 175-bed capacity. Two trauma centers located in Palm Springs and Loma Linda are also available (ECOPAC 2003).

Beaumont – Beaumont has a local police department located about 2 miles north of the proposed route. Fire service is provided by the Riverside County Fire Department Station # 20 and # 66. The project would likely be served by Station No. 20, located less than 1 mile north of the right-of-way. Hospital services are available in Banning, Redlands, and Palm Springs.

Calimesa - Police service is provided by the Riverside County Sheriff's Office Cabazon Station, located a few miles east of Banning. Under the city's contract with Riverside County, deputies are on duty in the city at all times. Fire service is provided by the Riverside County Fire Department Station # 21, located in Calimesa about 2 miles east of the right-of-way. Hospital services are available in Banning, Redlands, and Palm Springs.

Loma Linda – Police service is provided through a contract with the San Bernardino County Sheriff's Department. The Loma Linda Police Department is located in the nearby town of San

Bernardino, about 5 miles north of the Vista Substation. Fire service is provided by the local fire department, which consists of a full-time staff of 14 in addition to 30 part-time firefighters. Medical services are provided by the Loma Linda University Medical Center and Children's Hospital, which have 528 and 250 beds, respectively, and the Loma Linda Community Hospital with 120 beds. Loma Linda also has the Jerry L. Pettis Memorial Veterans Medical Center with a 434-bed capacity (SBC 2002).

Redlands - The Redlands Police Department employs 81 officers in four stations, the nearest of which is about 2 miles north of the right-of-way. The Redlands Fire Department operates and maintains three separate fully staffed fire stations. The fire department also provides emergency medical services. The Redlands Community Hospital has a 203-bed capacity (SBC 2002). Hospital services are also available in the near-by community of Loma Linda.

Colton – The Colton police department is located about 4 miles north of the Vista Substation. Colton has four fire stations. Service to the project would likely be provided by Fire Station # 4, located about 1 mile north of the right-of-way just east of I-215. Colton has three medical centers; hospital services are provided in the cities of Redlands and Loma Linda.

Grand Terrace – Police services are provided through a contract with the San Bernardino County Sheriff's Department out of the San Bernardino police station that also provides service to Loma Linda. Fire services are also provided by San Bernardino County through Fire Station # 23, located about 2 miles south of the right-of-way. Hospital services are provided 10 minutes away in Loma Linda.

4.2.11 Visual Resource Inventory

This section describes the visual resource inventory for the proposed west of Devers 230kV transmission line upgrade. The inventory has been conducted in a manner that is consistent with accepted practices, in response to CEQA Criteria for Aesthetics and the BLM, VRM 8400 Series

Manual (BLM 1986). The visual resource studies were conducted by reviewing aerial photographs, maps, and planning documents; contacting agencies; and field reconnaissance within the proposed study corridor. The visual resource inventory includes the consideration of visual quality, scenic vistas, and agency management objectives as described below.

4.2.11.1 Inventory Elements

Visual Quality

For purposes of this study, visual quality is a term used to describe the setting and the viewers that may be affected by the proposed project.

Landscape Setting

The study area is located in the Pacific Border Province in the Angeles Range Section (Fennemen 1951). The landscape within the study corridor is primarily rural to suburban with gently rolling terrain largely surrounded by mountain ranges in the eastern portion of the corridor, becoming more urban near the Vista and San Bernardino substations. There are several notable land features that contribute to the landscape setting, including the San Bernardino, San Jacinto, and San Gabriel mountain ranges and San Gorgonio Pass. The study corridor falls between the San Bernardino and San Gabriel mountains to the north and the San Jacinto and Santa Ana mountains to the south. The extensive east-west trending lowlands at the base of the mountain ranges are referred to as the "Valley of Southern California" and consist of generally smooth valleys or basins. Throughout the valleys, isolated hills or groups of hills rise above the valley floor. Natural vegetation within the study area includes desert scrub (creosote), coastal scrub (sumac and buckwheat), mixed chaparral (scrub oak), and suburban agriculture.

Throughout much of the study corridor, this natural setting has been modified to a large extent by previous and ongoing suburban development. In this regard, mixed use development (residential, commercial, industrial) often dominates the setting in locations where the proposed west of Devers 230kV transmission line upgrade crosses developed areas in Riverside and San Bernardino counties, and through the suburban areas of Banning, Beaumont, Calimesa, Redlands, Loma Linda, Colton, and Grand Terrace before terminating at Vista Substation.

The inventory of visual quality within non-developed, natural settings was based on the premise that each landscape character type (e.g., mountain foothills, valley chapparal) exhibits its own type of scenic quality and encompasses a variety of sensitive viewers. Within suburban settings visual quality is primarily based on the viewers and the visual image of the built environment. The west of Devers 230kV transmission line upgrade corridor includes landscapes that are both natural and developed (built). Existing conditions (e.g., the presence of existing transmission lines) that may affect the scenic quality or visual image of an area were also considered in the evaluation of landscape scenery.

Natural Setting - Scenic Quality

In a natural setting, landscape character types are defined by areas of land that have similar characteristics of landform, water related features, vegetative communities, and patterns of these landscape elements. In the natural setting, scenic quality was determined by evaluating landscape character type based upon the uniqueness and diversity of landform, water, vegetation, cultural features, and influence of adjacent scenery. Landscapes with greater diversity of features are typically considered to have higher scenic value. For purposes of this study, landscape character types were assigned one of the following scenic quality classifications:

Class A – land of outstanding or distinctive diversity or interest

Class B – land of common or average diversity or interest

Class C – land of minimal diversity or interest

Developed Settings – Visual Image Types

The purpose of characterizing the types of existing and planned visual images in proximity to the proposed west of Devers 230kV transmission upgrade corridor was to determine the potential visual quality impacts. In developed rural, suburban, and urban settings, landscape scenery is based on the visual features of the built environment and is defined by visual image types. Visual image types consist of development patterns that are defined by existing and planned land use, planning concepts (circulation and building types), and visual character (landscape design and architecture). Six major image types were identified in the developed setting, including residential, open space/park, commercial, industrial, institutional, and agricultural landscape types.

Existing Visual Conditions

The scenic quality of natural settings and the visual image of developed settings may be modified locally by the presence of facilities including transmission and distribution lines, overhead lighting, signs, roadways, canals, railroads, and other features that affect visual quality. The existing condition within the proposed 230kV transmission upgrade corridor was evaluated through mapping and field review in order to determine those locations where modifications would influence scenery and views. In this regard, the presence of multiple existing high voltage transmission lines adjacent to the proposed west of Devers 230kV transmission upgrade, has created an existing utility corridor that has substantially modified the local landscape setting along the entire length of the project and, in particular, in areas that have been previously developed.

Views

The inventory of views included four components: (1) the identification of key viewpoints, (2) visual sensitivity, (3) distance zones, and (4) viewing conditions.

Key Viewpoints and Sensitive Viewers

Numerous key viewpoints associated with sensitive viewers were identified including individual residences, residential developments, recreation areas, and travelways. Of particular importance were those locations where viewers have open, permanent views.

Visual sensitivity reflects the degree of concern for change in the scenic quality of the natural landscape, or to the visual image of the suburban setting. Visual sensitivity levels (high, moderate, or low) reflect the type of viewpoint/viewer (residential, recreational, or travel) and viewer concern for change, volume of use, public and agency concerns, influence of adjacent land use, and viewing duration.

Distance Zones

The distance from the viewer to the proposed west of Devers 230kV transmission upgrade also was considered. For this type of project, in the foreground (0 to 0.25 mile) individual objects are seen in greater detail, whereas the middleground (0.25 to 0.5 to 1 mile) is an area where objects are typically viewed in relationship to patterns rather than individual features. In background areas (1-3 miles), landscapes are viewed as horizon lines and tones, where atmospheric conditions often dominate.

Viewing Conditions

Viewing conditions address viewer orientation (parallel, perpendicular, elevated, or depressed), the potential for screening from sensitive view locations, and the potential for skylining of facilities. Three levels of screening were identified during the inventory, including open viewing conditions that exhibit minimal to no screening; partially screened views, including areas where viewing opportunities are intermittent; and screened views, including areas where terrain, vegetation, buildings, or other built elements (walls and fences) may obscure views. Skylining may range from fully or partially skylined viewing conditions to backdropped by terrain, vegetation, or structures.

Scenic Vistas

Scenic vistas are designated viewpoints associated with scenic views that typically occur along highways or other travel routes.

4.2.11.2 Visual Resource Inventory Results

This section describes the results of the visual resource inventory within the proposed west of Devers study corridor including visual quality, and scenic vistas.

Visual Quality

Landscape Character Types - Natural Setting

While portions of the west of Devers 230kV transmission upgrade study corridor have been developed, areas of vacant land still demonstrate natural conditions that can be divided into three distinct landscape types: desert valley grasslands, grasslands, and foothills. For examples of these natural landscape character types refer to Figure 4-3.

Scenic Quality - Scenic quality was inventoried for the study area as depicted on Map 4-6e (end of Chapter 4). Scenic Quality Rating Forms were developed for the landscape types previously described, consistent with BLM methods, and used to determine levels of scenic quality within the corridor as described below.

The proposed project does not pass through any lands that have been designated as Class A scenery.

Class B scenery is associated with undeveloped landscapes with some visual variety in line, color, form, and texture. The foothills associated with the San Bernardino Mountains west of the Devers Substation and the hills associated with San Timoteo Canyon were designated as Class B scenery. These landscapes exhibit variety in color based on the season and landform, adding interest to the setting.

Class C landscapes consist of undeveloped land with little variety in landform and vegetation. Approximately one-third of the study corridor crosses Class C scenery, which primarily consists of the flat valley land surrounded by subtle rolling hills. The rest of the study corridor passes through developed lands.

Desert Grasslands Character Type

Grasslands Character Type

Foothills Character Type

Figure 4-3
Proposed West of Devers Study Corridor
Landscape Character and Image Types

Foothills Character Type

Commercial Image Type

Institutional Image Type

Figure 4-3 (cont.1)
Proposed West of Devers Study Corridor
Landscape Character and Image Types

Industrial Image Type

Open Space / Park Image Type

Figure 4-3 (cont.2)
Proposed West of Devers Study Corridor
Landscape Character and Image Types

Residenital Image Type

Agricultural Image Type

Figure 4-3 (cont.3)
Proposed West of Devers Project Corridor
Landscape Character and Image Types

Visual Image Types – Developed Settings

Within the suburban setting, six visual image types (see Figure 4-4) were identified during field reconnaissance along the proposed project including agricultural, residential, industrial, commercial, institutional, and open space/park. While developed areas, primarily residential, are currently found in scattered concentrations, future land use plans suggest that a majority of the study corridor (Links 101-104) will continue to be developed as residential areas with open space.

Agricultural Image Types – These include small pockets of land that are crossed by the proposed west of Devers upgrade within San Timoteo Canyon. While limited in extent, these areas have been modified for crop production. Other cultural modifications include facilities in support of agricultural production. Variations in landform are extremely limited, and vegetation primarily consisting of citrus grove, is homogenous in color.

Residential Image Types – These consist of low- to high-density single-family detached units in addition to apartment style condos and/or town homes, most often in a regular ordered pattern. The development pattern for medium- to high-density residential image types displays a strong sense of continuity in housing and street patterns, which are repeated throughout the development. These patterns are often arranged on an internal geometric grid, with a loop road system, providing a perimeter of housing which serves as a separation or seam to surrounding uses. Low-density residential image types exhibit large individual lots and curvilinear and random circulation patterns, often with no centralized focus. Housing character in these areas is non-unified, with orientation of the building generating inward and outward views to the surrounding landscape. Pockets of low-density residential types occur within San Timoteo Canyon and eastward toward the Morongo Indian Reservation as well as in Grand Terrace and Colton. Medium-density housing in the form of master-planned communities is scattered along the study corridor but is in higher concentrations in the cities of Banning and Beaumont (between Links 101 and 102).

Industrial Image Types – These include developments which have active industrial uses and are found immediately west of Devers Substation and in other limited areas. Facilities, buildings and land modifications in this image type are centralized, often large, and may dominate the local setting in terms of complexity, scale, and layout concept. Landscape treatment (often limited) may include vegetation screening, used on the perimeter of the industrial development to block views. These areas include wind farms, resource extraction, and other utility related facilities adjacent to, or in the vicinity of the proposed project.

Commercial Image Types – These are typically oriented to the street with the layout concept designed to provide high visibility and access. Structures are often "box like," unified, and display a repetition of architectural facades and sign types. Open parking lots are the predominant source of buffering from the surrounding area. Hotels, motels, strip malls and stores are all examples of the commercial image type. Commercial image types were identified within the Morongo Indian Reservation (casino/hotel and outlet shopping center) and in localized areas.

Institutional Image Types – These include developments such as schools, libraries, and churches, which often provide a strong community landmark. The setting is dominated by a central building, which serves as a focus for the site. The character may consist of open green space, often including recreation facilities (schools). Visibility is often high both to and from the surrounding roads.

Open Space/Park Image Types – These include parks and open space and cemeteries. This image type is characterized by contiguous open space, typically including combinations of grass, shrubs/trees, and hardscape. The edges are most often defined by surrounding land use, usually residential or institutional, and streets, which may enclose these areas while at the same time providing access. Views are usually focused into the interior of the image type while other development confines off-site views. Open space/park image types that are adjacent to, or crossed by the proposed project, include golf courses, parks, trail systems, and the cemetery. In the cities of Banning, Calimesa, Redlands, and Loma Linda it was required that the existing

utility corridor, where the proposed project is to occur, function as an open space, passive recreation/pedestrian circulation corridor.

Existing Conditions

Existing visual conditions that may affect the scenic quality or image type of an area were considered in the evaluation of landscape settings. All land crossed by the proposed west of Devers 230kV transmission upgrade have been highly modified by the presence of the existing transmission line corridor which includes up to five different types of existing structures. In many locations these facilities dominate the existing setting.

Views

Numerous key viewpoints were identified including dispersed residences within master planned communities, recreational areas, and travel routes. Of particular importance were those locations where regional landscape features such as the San Bernardino and San Jacinto mountains were dominant. Localized views of importance include those from neighborhood areas, parks, cemeteries, and roads immediately adjacent to or crossed by the existing utility corridor. The following discussion regarding the inventory of views addresses viewer sensitivity, distance zones, and viewing conditions specific to sensitive viewpoints including residential, recreation, and travelway viewers within the proposed west of Devers 230kV transmission upgrade study corridor.

Residential Area Viewers – Residential viewers were identified within the study corridor and were assigned a high sensitivity based primarily on viewing duration and concern for change in the landscape. Dispersed rural residential viewers and low- to medium-density residential development and associated viewers include some areas within the Morongo Indian Reservation and San Timoteo Canyon. Viewers in these and other locations have foreground to middleground

views of the proposed and existing transmission lines that vary from open, to partially or fully screened views, depending on localized conditions. Residential viewers along Links 103 and 104 (Loma Linda, Colton, and Grand Terrace) have similar viewing conditions. Residences that occur on the northern and southern side of the proposed transmission upgrade corridor within the Morongo Indian Reservation have immediate foreground views of the proposed transmission line.

Medium- to high-density housing and associated viewers occur in several locations including the cities of Banning and Beaumont. These viewers have open to partially or fully screened views of the existing and proposed west of Devers 230kV transmission lines, dependent upon their location within each development and localized screening conditions. Viewers on the edge of developments tend to have the most direct unobstructed views, while those on the interior have views that are partially to fully screened. Specifically, those homes occurring immediately adjacent on the north side of the existing transmission line right-of-way in Beaumont will have direct immediate foreground views of the proposed transmission upgrade.

Recreational Viewers - There are a number of parks located in proximity to, or that have foreground/middleground views of the existing transmission line corridor, including the PGA of Southern California Golf Course and the Oak Valley Green Neighborhood Park. The Pacific Crest National Scenic Trail, which crosses the existing right-of-way and the proposed west of Devers 230kV upgrade corridor, is considered to have high visual sensitivity because of its scenic designation. In addition, Riverside and San Bernardino counties and the cities of Banning, Calimesa, Redlands, and Loma Linda all preserve existing transmission line easements as open space/trail corridors in their general plans.

Travelway Viewers – High sensitivity travelways include several eligible, and officially designated, State Scenic Highways. Those located within the study corridor include CA 62 from I-10 to San Bernardino County, CA 111 to I-10 near Whitewater, and I-10 from CA 38 near Redlands to CA 62 near Whitewater. San Timoteo Canyon Road, which runs parallel to portions of the existing transmission line corridor, is also considered highly sensitive, in part, due to its

historic value to the community. San Timoteo Canyon is located within a "resource preservation" area in the city of Redlands General Plan. Views from these roads range from open immediate foreground where I-10 and CA 62 cross the proposed west of Devers 230kV transmission upgrade corridor, to middleground/background screened views from CA 111 and San Timoteo Canyon Road, where views may range from partially to fully skylined, or backdropped.

Scenic Vistas

There are no designated scenic vistas within the proposed west of Devers 230kV upgrade study corridor.

4.2.12 Cultural Resources

See Section 4.1.12 for a brief overview of cultural resources in the project area.

Archaeology

Class I records search data identified eight previously recorded prehistoric archaeological sites and one isolated occurrence potentially within the study corridor. Two of these sites (RIV-179 and RIV-197) and the one isolated occurrence appeared to be potentially within the 300-foot-wide project APE. Based on the Class III archaeological survey of the 300-foot-wide project APE, RIV-179 could not be relocated, RIV-197 was found to be outside the APE, and two new sites were recorded (P33-13429, and P33-13430 (Eckhardt and Walker 2004b).

Neither P33-13429 nor P33-13430 appear eligible for the NRHP (Eckhardt and Walker 2004b).

Ethnography

Apart from the recorded archaeological sites and the portion of the study corridor that crosses the Morongo Indian Reservation, there are no known areas of ethnographic sensitivity within the project APE. In addition, Native American groups have an interest in the disposition of prehistoric archaeological sites as evidence of the presence of their ancestries.

BLM staff has indicated that they will consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project (personal communication, Wanda Raschkow 2004).

History

A Class I records search identified 38 previously recorded historic-era buildings and archaeological sites, and five isolated occurrences potentially within the 1-mile-wide study corridor. Three of the previously recorded sites (RIV-4768H/SBR-7168H, RIV-2262H, and P33-007888) and none of the isolated occurrences appeard to be potentially within the 300-foot-wide project APE. The Class III archaeological survey resulted in the relocation of all of those resources, and the recordation of nine other historic sites (RIV-7462H/P33-13427, P33-13428, RIV-2262H, RIV-4768H/SBR-7168H/P36-007168, SBR-11624H/P36-011624, P33-13431, P33-13434, P33-007888, and P36-020240 and one historic isolated occurrence (P33-13432) within the 300-foot-wide project APE (Eckhardt and Walker 2004b).

Of the nine historic sites identified within the APE, three (RIV-7168H/4768H, RIV-2262H, and P33-007888) are assessed potentially eligible for listing on the NRHP. Isolated artifacts do not meet criteria for listing on the NRHP (Eckhardt and Walker 2004b).

Paleontology

Between the Devers and Vista substations (Links 100, 101, 102, 103, and 104) the proposed 230kV upgrade right-of-way traverses approximately 25.9 miles of high or undetermined areas of paleontological sensitivity. The remainder of the corridor has a low paleontological sensitivity. The undetermined or high sensitivity areas include Pleistocene older alluvium in Links 102 and 103, Canebrake Conglomerate or Palm Springs Formation in Link 102, and San Timoteo Formation in Links 102 and 103. Link 104 traversing the area between Link 103 and San Bernardino Substation crosses only lithic units of low paleontological sensitivity (Scott 2003).

4.2.13 Public Health and Safety

4.2.13.1 School Facilities

The following section describes the school facilities that are located within ½ mile of the proposed west of Devers upgrade and SCE's existing transmission line right-of-way. Table 4-55 provides a summary of existing schools and their respective locations relative to the existing right-of-way within the proposed west of Devers transmission line upgrade corridor.

Existing schools located within approximately ¼ mile from the existing transmission line right-of-way are listed in Table 4-55. The new Beaumont High School, now under construction, also would be within ¼ mile from the right-of-way. The Colton Joint Unified School District plans to construct a new middle school in Bloomington, and will construct a new high school at an undetermined location in 2006 (CJUSD 2005).

TABLE 4-55
SCHOOLS WITHIN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR

School District	City/Jurisdiction	School	Location	Distance from Existing Right-of-way
Schools Within ¼ Mile				
Link 100				
Banning Unified (private under contract)	White Water, California	Whitewater High School	55860 Verbenia Avenue	0.1 mile (south)
Link 102				
Beaumont Unified	Beaumont, California	Beaumont Senior High School	1591 Cherry Avenue Cherry Avenue/Cougar Way	120 feet (north)
Beaumont Unified	Beaumont, California	Mountain View Middle School	200 Cougar Way Cougar Way/Palm Avenue	.25 mile (north)
Beaumont Unified	Cherry Valley, California	Beaumont High School (under construction)	11445 Beaumont Avenue Beaumont Avenue/Cougar Way	.25 mile (north)
Link 103				
Colton Joint Unified	Colton, California	Reche Canyon Elementary	3101 Canyon Vista Drive Canyon Vista Drive/Chase Canyon Lane	0.1 mile (south)
Private	Colton, California	Christian Center Academy	1401 S. Mount Vernon Avenue Mt. Vernon Avenue/I-215	adjacent (south)
Colton Joint Unified	Grand Terrace, California	Terrace View Elementary	22731 Grand Terrace Road Grand Terrace Road/Vista Grande Way	800 feet (south)
Link 104				
Redlands Unified	Loma Linda, California	Bryn Mawr Elementary School	11680 Whittier Avenue Whittier Avenue/Cresthaven Court	.25 mile (east)
Schools Within ½ Mile				
Link 101				
Banning Unified	Banning, California	Hoffer Elementary	1115 E Hoffer Street Hoffer Street/Phillips Avenue	.5 mile (southwest)
Link 102				
Private	Banning, California	Calvary Christian School	1325 Mountain Avenue	.5 mile (south)
Beaumont Unified	Beaumont, California	Chavez Elementary	1730 Cherry Avenue Cherry Avenue/Mary Lane	.5 mile (north)
Link 103				
Charter	Colton, California	San Andreas Academy	851 S. Cooley Drive	.5 mile (north)
Colton Joint Unified	Grand Terrace, California	Terrace Hills Middle	22579 De Berry Street De Berry Street/Mt. Vernon Avenue	.5 mile (south)
Private	Grand Terrace, California	Azure Hills Adventist Elementary	22577 City Center Court	.5 mile (southeast)
Colton Joint Unified	Grand Terrace, California	Grand Terrace Elementary	12066 Vivienda Avenue Vivienda Avenue/Barton Road	.5 mile (south)

TABLE 4-55 SCHOOLS WITHIN THE PROPOSED WEST OF DEVERS STUDY CORRIDOR				
School District	**City/Jurisdiction**	**School**	**Location**	**Distance from Existing Right-of-way**
Link 104				
Redlands Unified	San Bernardino, California	Victoria Elementary	9963 Richardson Street	.5 mile (west)
Sources: AES 2004; BUSD 2004; California Department of Education 2004; CJUSD 2004; RUSD 2004 Note: School property locations were identified within approximately ½-mile on either side of the existing transmission line right-of-way				

4.2.13.2 Airport and Airstrip Operations

There are two public airports and three heliports within 2 miles of the proposed west of Devers upgrade right-of-way. The San Bernardino International Airport is located about 1.25 miles north of the San Bernardino Substation. The Banning Municipal Airport is located just less than 1 mile south of the right-of-way. The Loma Linda University Medical Center Heliport and San Bernardino Heliport are located 1 mile and 1.6 miles, respectively, north/northeast of the right-of-way, between the Vista and San Bernardino substations. There is also a heliport at Devers Substation.

4.3 SUBALTERNATE TRANSMISSION LINE ROUTES

4.3.1 Introduction

Two 500kV transmission line subalternate routes are evaluated in this document—the Harquahala-West and Palo Verde Subalternate Routes. The Harquahala-West subalternate route would be approximately 14 miles shorter than the proposed Devers-Harquahala route. The route segment begins at the Harquahala Switchyard approximately 1 mile north of Courthouse Road and follows section lines west for approximately 12 miles through private and state land to the El Paso Natural Gas pipeline corridor. The route then follows the pipeline corridor northwest,

through predominately BLM land for approximately 9 miles, to its intersection with the existing DPV1 and proposed Devers-Harquahala transmission line corridor.

The Palo Verde Subalternate Route was evaluated in the event that the termination point of the project would be the PVNGS Switchyard, as an alternative to the Harquahala Switchyard. The route is approximately 14.9 miles long and would parallel the DPV1 transmission line southeast past Saddle Mountain, and then east and northeast to PVNGS.

The description of the environmental setting for each of the subalternate routes follow. The Harquahala-West Subalternate Route is identified as Link HW and the Palo Verde Subalternate Route is identified as Link PVS on Maps 4-1a, 4-2a, 4-3a, 4-4a, 4-5a, and 4-6a, located at the end of Chapter 4.

4.3.2 Land Use

4.3.2.1 Methodology

The inventory was compiled through interpretation of existing maps and aerial photographs within and adjacent to the subalternate routes. The mapped information was then field verified by ground reconnaissance. The study corridor for both subalternate routes is 2 miles wide.

Land use inventory results for the subalternate routes are described in the following sections and displayed on in the following maps (end of Chapter 4):

- Map 4-1 a: Land Ownership
- Map 4-2 a: Land Jurisdiction
- Map 4-3 a: Land Use – Existing
- Map 4-4 a: Land Use – Future

4.3.2.2 Harquahala-West Subalternate Route

Land Ownership/Jurisdiction

Land ownership and jurisdiction status were identified and mapped for the Harquahala-West subalternate route based on available secondary data sources. Descriptions of the major categories follow, and the information is listed in Table 4-56 and Table 4-57 and shown on Maps 4-1a and 4-2a (end of Chapter 4).

TABLE 4-56
LAND OWNERSHIP CROSSED BY THE HARQUAHALA-WEST SUBALTERNATE ROUTE

Ownership	Total Miles Crossed
Bureau of Land Management	8.9
Arizona State Trust Land	3.1
Private Land	9.1
Total	**21.1**
Note: Totals may not check due to rounding.	

TABLE 4-57
LAND JURISDICTION CROSSED BY THE HARQUAHALA-WEST SUBALTERNATE ROUTE

Jurisdiction	Total Miles Crossed
Unincorporated Maricopa County	13.2
Unincorporated La Paz County	7.8
Total	**21.0**
Note: Totals may not check due to rounding.	

The public land managed by the BLM along the Harquahala-West Subalternate Route is within the Yuma Field Office planning area. The subalternate route is within the BLM utility corridor designated in the Lower Gila South RMP. The Eagletail Mountains WA falls within the study corridor of this subalternate route. The boundary of the wilderness comes within approximately ¼ mile from the proposed route. Approximately 8.9 miles of BLM land is crossed by the route.

Approximately 3.1 miles of Arizona State Trust Lands are crossed by the subalternate route. These lands occur in small areas between the BLM and private land. Approximately 9.1 miles of private land are found along the subalternate route as it goes west to the El Paso Natural Gas Pipeline corridor from the Harquahala Switchyard.

Existing Land Use

The following land use categories are found within the study corridor of the Harquahala-West Subalternate Route. The land uses are described as they occur in the study corridor.

Residential land uses along the Harquahala-West Subalternate Route include dispersed rural residences, which are accessed from Courthouse Road. Four residences occur within 1 mile of the subalternate route, and one residence occurs within ¼ mile of the route (between Mileposts 8 and 9 of link HW). Agricultural areas within the study corridor are located close to the Harquahala Generating Station, generally in the Harquahala Plain. Link HW crosses approximately 3 miles of agricultural land along irrigation canal laterals. Agricultural land within the study corridor is Prime Farmland as described by the Natural Resource Conservation Service. Prime Farmland characteristics are described in Section 4.1.2.1.

The majority of land within the subalternate route study corridor is vacant and/or undeveloped land. This vacant land includes private, state, and BLM land. Recreation areas within the study area include Courthouse Rock, a large rock feature located approximately 1.5 miles southwest of the subalternate route within the Eagletail WA.

The subalternate route parallels an El Paso Natural Gas pipeline corridor, which traverses from south of the PVNGS northwest through Wenden Pump Station 4126. The Wenden Station is located south of Milepost 30 on Link 1b and the pipelines that pass through it include 1600, 1103, 1100, and the All American Pipeline (Line 2000). Pipelines have been installed on both sides of the access road. A fiber optic cable is also located along the pipeline corridor.

Future Land Use

The general comprehensive and land management planning documents identify planned land uses in the subalternate corridor within the same jurisdictions as the proposed Devers-Harquahala route in this area. Eagle Ranch is a subdivided area along Courthouse Road. The subalternate route crosses approximately 4.5 miles of Eagle Ranch. The future land uses are identified on Map 4-4a.

The BLM has planned for utility corridors within their jurisdiction. The Harquahala-West Subalternate Route is located in a designated utility corridor where it is parallel to the El Paso Natural Gas pipeline corridor. The Maricopa County Comprehensive Plan designates the subalternate corridor as a Rural Residential area. Rural Residential is defined as one dwelling unit or less per acre. La Paz County does not have an adopted general plan.

No established hiking and riding trails were identified within the subalternate corridor, although dispersed recreation occurs on land managed by the BLM. The BLM is currently evaluating a proposal to develop a trail within the vicinity of Courthouse Rock.

4.3.2.3 Palo Verde Subalternate Route

If it is determined that the termination point of the project is the PVNGS Switchyard instead of the Harquahala Switchyard, the 500kV transmission line route would follow the DPV1 transmission line southeast past Saddle Mountain (See Map 3-2a) within the 130-foot-wide right-of-way granted to SCE by the BLM for DPV2 in 1989. The right-of-way is adjacent to the existing DPV1 transmission line, on the eastern and northern side, within the BLM-designated utility corridor. Acquisition of new right-of-way across private and state land also would be required. Construction of this alternative would require a cutover with the DPV1 line. A diagram of the proposed and subalternate route construction configurations is shown on Map 3-3 (end of

Chapter 3). The length of the Palo Verde 500kV subalternate transmission line route, between the junction of Harquahala and PVNGS, would add approximately 10 miles.

Land Ownership/Jurisdiction

Land ownership and jurisdiction status were identified and mapped for the Palo Verde Subalternate Route. Descriptions of the major categories follow, and the information is listed in Table 4-58 and shown on Maps 4-1a, 4-2a, and 4-2b.

TABLE 4-58
LAND OWNERSHIP CROSSED BY THE PALO VERDE SUBALTERNATE ROUTE

Ownership	Total Miles Crossed
Bureau of Land Management	8.8
Arizona State Trust Land	2.3
Private Land	3.8
Total	**14.9**

Land managed by the BLM along this subalternate route is managed by the Phoenix Field Office and includes Saddle Mountain and the Palo Verde Hills. The route would utilize the 130-foot-wide right-of-way granted to SCE in 1989 for the DPV2 transmission line. Approximately 2.3 miles of Arizona State Trust Lands are crossed by the subalternate route. Approximately 3.8 miles of private lands are found along the subalternate route in the vicinity of the PVNGS.

Existing Land Use

The following land uses are found within the Palo Verde subalternate study corridor and are identified on Map 4-3a. Dispersed rural residences occur in the northern portion of the study corridor along the Salome Highway and in the southern portion of the study corridor, along Wintersburg Road. Residences along the Salome Highway are between 1 and 2 miles away from

the centerline of the subalternate route. The Palo Verde Subalternate Route does not cross any agricultural land. The majority of land within the subalternate route study corridor is vacant and/or undeveloped land. The route parallels the existing DPV1 500kV transmission line for its entire length.

Future Land Use

General comprehensive and land management planning documents identify planned land uses in the subalternate corridor within the same jurisdictions as the proposed Devers-Harquahala transmission line route in this area. The future land uses are identified on Map 4-4a. The Palo Verde Subalternate Route is located in the BLM designated Palo Verde-Devers utility corridor that includes the DPV1 transmission line. The Maricopa County Tonopah/Arlington Specific Area Plan includes planned land use designations of rural residential, planned open space (in the vicinity of Saddle Mountain), and industrial (within the PVNGS property).

4.3.3 Socioeconomics, Population, and Housing

4.3.3.1 Harquahala-West and Palo Verde Subalternate Routes

The Harquahala-West Subalternate Route is located in Maricopa and La Paz counties, Arizona. The Palo Verde Subalternate Route is entirely within Maricopa County. Socioeconomic, population, and housing data are reported in Section 4.1.3.1.

4.3.4 Geology and Soils

4.3.4.1 Harquahala-West and Palo Verde Subalternate Routes

Physiographic Setting

The Harquahala-West and Palo Verde Subalternate Routes are in the Sonoran Desert section of the Basin and Range physiographic province (refer to Plate 4 in the 1977 Environmental Report). The province is described in Section 4.1.4.1.

4.3.5 Hydrology

4.3.5.1 Harquahala-West and Palo Verde Subalternate Routes

The Harquahala-West and Palo Verde Subalternate Routes are located in the Harquahala Plain. This plain is bounded by discontinuous mountain ranges including the Little Harquahala, Big Horn Mountains, Gila Bend Mountains, and Palo Verde Hills. As noted in Table 4-25, the Harquahala Plain drains into Centennial Wash.

As noted in Section 4.1.5.1, groundwater is typically found in the sand and gravel layers that lie beneath the alluvial valleys.

4.3.6 Air Quality

4.3.6.1 Harquahala-West and Palo Verde Subalternate Routes

The air quality data for the Harquahala-West and Palo Verde Subalternate Routes are described in Section 4.1.6.1.

4.3.7 Traffic and Transportation

4.3.7.1 Harquahala-West and Palo Verde Subalternate Routes

The Harquahala-West Subalternate Route does not cross any major transportation routes. The Palo Verde Subalternate Route crosses Wintersburg Road.

4.3.8 Biology

4.3.8.1 Harquahala-West Subalternate Route

Vegetation

Beginning at the Harquahala Switchyard, the Harquahala-West Subalternate Route traverses agricultural, ruderal, and native desert lands. Agricultural and ruderal land makes up the first 3 miles of the alternative as it crosses the Harquahala Plain. Once beyond the human-affected lands, the route crosses native desert land that is dominated by creosote bush (*Larrea tridentata*) with local co-dominance by white bursage (*Ambrosia dumosa*), the classic plant species that typify the Lower Colorado River Valley Subdivision of the Sonoran Desert (Turner 1982). Small drainageways and runnels on the Harquahala Plain support widely scattered individuals of mesquite (*Prosopis velutina*). In areas where water from runnels and sheet flows collect, small

patches of mesquite woodland are present. Creosote bush communities dominate the corridor westward to the CAP lateral canal and the El Paso Natural Gas pipeline near the easternmost foothills of the Eagletail Mountains. At this location, the corridor turns to the northwest and follows the El Paso Natural Gas pipeline and associated access road.

The El Paso Natural Gas pipeline runs along the northeastern edge of the Eagletail Mountain foothills. The route segment along the natural gas pipeline traverses a plant community that is ecotonal between the shrub-dominated Lower Colorado Valley Subdivision of the Sonoran Desert and the more diverse, arborescent/succulent Arizona Upland Subdivision. Soils in this area are much more coarse and gravelly than those on the Harquahala Plain and this is manifest in a different plant community in the foothills. Creosote bush continues to be a dominant species, but is joined by the arborescent ironwood, blue paloverde, and foothill paloverde. Cacti and ocotillo also become a much more common component of the foothill flora. Cactus species present include saguaro, chain-fruit cholla, prickly pear, silver cholla, teddy bear cholla (*O. bigelovii*), hedgehog cactus (*Echinocereus engelmannii*), and pincushion cactus (*Mammillaria tetrancistra*; *M. grahamii*) among others.

Close examination of the actual distribution of ironwood, blue paloverde, and saguaro reveals that most of these plants are actually growing alongside small washes and runnels with interfluvial sites dominated by creosote bush and white bursage with brittlebush on some of the steeper, rockier sites. Larger washes also contain catclaw acacia and cheesebush.

Special Status Plant Species and Sensitive Plant Communities

The USFWS (2004) lists two species of Endangered plants in Maricopa County (see Table 4-32) — Arizona agave (*Agave arizonica*) and Arizona cliff-rose (*Purshia subintegra*). Neither of these plants is known from any locality anywhere near the Harquahala-West Subalternate Route, nor is there suitable habitat for either species within the corridor.

A number of species that are listed under the ANPL are present within the Harquahala-West corridor. Based on several previous native plant surveys along the existing DPV1 line, it appears highly unlikely that any of the Highly Safeguarded Protected Native Plants are present within the Harquahala-West corridor. It is possible that crested or fan-top forms of the saguaro cactus could be present, although no individuals of this form were observed during site reconnaissance conducted in March 2004. There is a number of Salvage Restricted Protected Native Plants within the corridor including all agaves, cacti, and ocotillo. Table 4-32 contains three representative species of cacti, two of which are known to be present within the Harquahala-West corridor. Salvage Assessed and Harvest Restricted species include blue and foothill paloverde, mesquite, and ironwood.

Although the BLM sensitive Death Valley Mormon tea (Table 4-32) was not observed, it may be present in the this area, but it is more likely to be found further west toward the Colorado River. There were no unique or highly sensitive plant communities observed within the Harquahala-West corridor. The creosote bush-dominated communities that typify the vegetation of the area are the most common, widespread communities in the lowlands of southern Arizona. The more sensitive habitats include xeroriparian scrublands along major washes and patches of mesquite woodland occurring at lowland areas on the Harquahala Plain.

Wildlife

Vertebrate wildlife that is present within the Harquahala-West corridor is composed of mammals, birds, amphibians, and reptiles that are characteristic of arid Sonoran Desert lowland and low foothill plant communities and soil types.

Mammals

The mammalian fauna of the Harquahala-West corridor is composed largely of small, nocturnal species of bats and rodents, including highly desert-adapted Heteromyid pocket mice and kangaroo rats. Owing to an absence of suitable roosting and nursery sites (e.g., caves, mine shafts and adits, buildings, and bridges), it is likely that bat presence is largely restricted to foraging individuals. Diurnal species include black-tailed jack rabbit, Harris antelope ground squirrel, and rock squirrel. Desert mule deer occur sparingly in larger desert washes and the ubiquitous coyote is likely to be encountered almost anywhere within the corridor.

Birds

Turner (1994) notes that the Lower Colorado River Valley Subdivision is the poorest of the Sonoran Desert subdivisions with respect to its avifauna. He points out that LeConte's thrasher (*Toxostoma lecontei*) is the only bird species that is diagnostic of the subdivision. The fact that florisitic elements that are not strictly Lower Colorado River Valley are present in this area contributes significantly to a more diverse avifauna than would be present otherwise. It is likely that one could expect to find 75 or so species of birds in the Harquahala-West corridor over the course of a year's time including vultures, hawks, quail, doves, roadrunner, owls, goatsuckers, swifts, hummingbirds, woodpeckers, and a fairly diverse array of songbirds (flycatchers, larks, swallows, wrens, gnatcatchers, mockingbird, thrashers, shrike, vireos, wood warblers, orioles, tanagers, grosbeaks, finches, and sparrows).

Amphibians

The only amphibians likely to be present with the Harquahala-West corridor are the highly adapted species of toads and spadefoot toads that appear in response to summer monsoon rainfall. These species spend most of the year sequestered in rodent burrows or are dug well into the soil awaiting the summer rains when they emerge to breed in temporary rainfall pools and

stock tanks. Species likely to be present include Couch's spadefoot, Great Plains toad, Sonoran Desert toad, and red-spotted toad.

Reptiles

Depending on substrate, a fairly diverse group of lizards and snakes may be found in habitats traversed by the Harquahala-West subalternate route. Fine, sandy soils are likely to host such species as banded sand snake, sidewinder, and desert iguana. Rocky slopes, outcrops, and washes support a different herpetofauna that includes such species as long-tailed brush lizard, chuckwalla desert spiny lizard, desert horned lizard, western whiptail, desert glossy snake, and many more (Turner 1982).

Special Status Wildlife

Table 4-33 provides a listing of federally listed, state-listed, and BLM sensitive species that are known to occur in Maricopa and La Paz counties, Arizona. Of this group of organisms, none of the federally listed species were observed or are likely to be present within the Harquahala-West corridor. There is some possibility of the Southwestern willow flycatcher being present along wooded washes during spring or fall migration, but due to lack of habitat, there is no possibility of the species nesting within the corridor. Loggerhead shrike and California leaf-nosed bat, both federal species of concern and BLM sensitive species, are almost certain to occur at least occasionally within the corridor. Desert bighorn reside in the Eagletail Mountains and may occasionally wander downslope in the Harquahala-West corridor.

4.3.8.2 Palo Verde Subalternate Route

Vegetation

The Palo Verde Subalternate Route exits the Harquahala Switchyard and travels easterly for approximately 2 miles across agricultural land. Between the point the corridor leaves agricultural land and the point it crosses the Salome Highway and turns to the southeast, the route crosses land dominated by creosote bush with white bursage. There are local patches of mesquite along washes and behind berms created by road construction. Creosotebush continues being the dominant plant species, but Arizona Upland Subdivision elements that appear include saguaro, ironwood, foothill paloverde, and several species of cacti. The ecotonal plant community composed of elements of both Sonoran Desert subdivisions is the characteristic vegetation type as the route travels southward between Saddle Mountain and the Palo Verde Hills.

Approximately 5 miles after turning to the southeast, the route leaves the fairly broken terrain between the Palo Verde Hills and Saddle Mountain and crosses a broad, alluvial plain that is dominated by creosote bush. Arizona Upland elements persist on this plain, but the upland plants including ironwood, mesquite, etc., tend to be restricted to major and minor drainages. Past the southern tip of the Palo Verde Hills, the route turns to the east and crosses approximately 2.2 miles of ruderal land that is located about 650 feet east of Winters Wash. The route crosses Winters Wash, which is dominated by mid-sized mesquite trees with a dense grass and forb understory.

Special Status Plants and Sensitive Plant Communities

The USFWS (2004) lists two species of plants in Maricopa County (see Table 4-32) — Arizona agave and Arizona cliffrose. Neither of these plants has been found in any locality anywhere near the subalternate route, nor is there suitable habitat for either species within the corridor.

A number of species that are listed under the ANPL are present within the corridor. Based on several previous native plant surveys along the existing DPV1 line, it appears highly unlikely that any of the Highly Safeguarded Protected Native Plants are present along the Palo Verde Subalternate Route. It is possible that crested or fan-top forms of the saguaro cactus could be present, although no individuals of this form were observed during site reconnaissance of the route during mid-September 1999, nor was this form reported by field crews conducting cactus ferruginous pygmy-owl surveys or monitoring construction of the Harquahala-Hassayampa 500kV transmission line. Salvage Restricted Protected Native Plants within the subalternate route include all agaves, cacti, and ocotillo. Table 4-32 contains three representative species of cacti, two of which are known to be present within the corridor. There are a number of other species of cacti present that are not listed in Table 4-32, such as Salvage Assessed and Harvest Restricted species include blue and foothill paloverde, mesquite, and ironwood.

There are no unique or highly sensitive plant communities within the corridor. The most sensitive habitats are associated with major and minor drainageways and include communities on washes between the Palo Verde Hills and Saddle Mountain. These washes are dominated by ironwood with blue paloverde, mesquite, and catclaw acacia. Saguaro cacti also tend to be associated with small washes and runnels in this area. Habitats along Winters Wash are very strongly dominated by dense growth of mesquite, representing the most "unique" vegetation type within the corridor.

Wildlife

Vertebrate wildlife present within the Palo Verde Subalternate Route corridor includes mammals, birds, amphibians and reptiles that are characteristic of arid Sonoran Desert lowland and low foothill plant communities and soil types.

Mammals

The mammalian fauna of the Palo Verde Subalternate Route are composed largely of small, nocturnal species of bats and rodents, including highly desert-adapted Heteromyid pocket mice and kangaroo rats. Owing to an absence of suitable roosting and nursery sites in the corrodor (e.g., caves, mine shafts and adits, buildings, and bridges), it is likely that bat presence is largely restricted to foraging individuals. Diurnal species include black-tailed jackrabbit, Harris antelope ground squirrel, and rock squirrel. Desert mule deer occur sparingly in larger desert washes and the ubiquitous coyote is likely to be encountered almost anywhere within the corridor.

Birds

Turner (1994) notes that the Lower Colorado River Valley Subdivision is the poorest of the Sonoran Desert subdivisions with respect to its avifauna. He points out that LeConte's thrasher is the only bird species that is diagnostic of the subdivision. The fact that florisitic elements that are not strictly Lower Colorado River Valley are present in the Palo Verde Subalternate Route corridor contributes significantly to a more diverse avifauna than would be present otherwise. It is likely that one could expect to find 75 or so species of birds over the course of a year's time including vultures, hawks, quail, doves, roadrunner, owls, goatsuckers, swifts, hummingbirds, woodpeckers, and a fairly diverse array of songbirds (flycatchers, larks, swallows, wrens, gnatcatchers, mockingbird, thrashers, shrike, vireos, wood warblers, orioles, tanagers, grosbeaks, finches, and sparrows).

Amphibians

The only amphibians likely to be present with the Palo Verde Subalternate Route corridor are the highly adapted species of toads and spadefoot toads that appear in response to summer monsoon rainfall. These species spend most of the year sequestered in rodent burrows or are dug well into

the soil awaiting the summer rains when they emerge to breed in temporary rainfall pools and stock tanks. Species likely to be present within the corridor include Couch's spadefoot Great Plains toad, Sonoron Desert toad, and red-spotted toad.

Reptiles

Depending on substrate, a fairly diverse group of lizards and snakes may be found in habitats traversed by this subalternate route. Fine, sandy soils are likely to host such species as banded sand snake, sidewinder, and desert iguana. Rocky slopes, outcrops, and washes support a different herpetofauna that includes such species as long-tailed brush lizard, chuckwalla, desert spiny lizard, desert horned lizard, western whiptail, desert glossy snake, and many more (Turner 1982).

Special Status Wildlife

Federally listed, state-listed, and BLM sensitive species that are known to occur in Maricopa and La Paz counties, Arizona are listed in Table 4-33. Of this group of organisms, none of the federally listed species were observed, or are likely to be present within the Palo Verde subalternate corridor. There is some possibility of the Southwestern willow flycatcher being present along wooded washes during spring or fall migration; but due to lack of habitat, there is no possibility of the species nesting in the corridor. A 7-mile segment of this corridor south of the Salome Highway traverses Category II Sonoran Desert tortoise habitat. Loggerhead shrike and California leaf-nosed bat, both federal species of concern and BLM sensitive species, are almost certain to occur at least occasionally within the subalternate corridor. The big game species, desert bighorn, likely occupy the rugged terrain of Saddle Mountain and may move back and forth across the corridor in their travels between Saddle Mountain and the Palo Verde Hills.

4.3.9 Noise

4.3.9.1 Harquahala-West and Palo Verde Subalternate Routes

The acoustic setting for the Harquahala-West and Palo Verde Subalternate Routes is similar to the proposed Devers-Harquahala transmission line route as described in Section 4.1.9.

4.3.10 Public Services and Utilities

4.3.10.1 Harquahala-West and Palo Verde Subalternative Routes

The unincorporated community of Tonopah is the nearest community to both of the subalternate routes. Public Services and Utilities information for these subalternate routes is similar to that described in Section 4.1.10.1.

4.3.11 Visual Resources

4.3.11.1 Harquahala-West Subalternate Route

Potential visual issues identified along the Harquahala-West subalternate route are associated with sensitive viewers, including recreational and residential. The existing conditions have been modified by a gas pipeline and associated road. A number of residences occur within 1 mile of the subalternate route with open views of the proposed project. Additional sensitive viewers that occur within the subalternate route study corridor are associated with the trail in the Eagletail Wilderness. However, the views of the subalternate transmission line would be partially screened and back-dropped and would occur approximately 1 mile away from the trail. The scenic quality adjacent to and crossed by this alternative is Class C.

4.3.11.2 Palo Verde Subalternate Route

Sensitive viewers associated with the Palo Verde Subalternate Route include travelers, residents, and dispersed recreation users. The landscape within the study corridor has been locally modified by existing 500kV transmission lines for the entirety of the subalternate route and designated as Scenic Quality Class C. The residential viewers identified are located at least 1 mile away from the route. Travelers on the Salome Highway would have open views of the existing DPV1 transmission line and the Palo Verde subalternate transmission line on this alternative route. Dispersed recreation users will have varying views of the existing DPV1 and subalternate transmission lines, depending on their location within the Eagletail WA.

4.3.12 Cultural Resources

4.3.12.1 Harquahala-West Subalternate Route

Archaeology

Class I research conducted in 2004 identified 19 prior studies and 15 recorded archaeological sites within the Harquahala-West Subalternate Route study corridor. Of these 15 recorded sites, 4 were determined to be potentially within the 300-foot-wide project study corridor based on Class I research information (Luhnow 2004).

A Class II archaeological survey was conducted in 2004 for the Harquahala-West Subalternate route. The purpose of the Class II survey was to ascertain the relative cultural resource sensitivity of the Harquahala-West Subalternate Route study corridor (Luhnow 2004).

None of the four sites determined through the Class I research to be potentially within the 300-foot-wide corridor could be relocated in the field (Luhnow 2004). The Class II survey did result

in the discovery of two isolated prehistoric archaeological occurrences—a lithic tool and a lithic flake. Isolated artifacts do not meet criteria for listing on the NRHP.

Ethnography

Previous ethonographic research conducted for the DPV1 transmission line project resulted in the identification of two areas of ethnographic concern in the vicinity of the project area (Bean and Vane 1978). These places may meet criteria for designation as TCPs. They are the Eagletail Mountains and Harquahala Plain (ibid). In addition, Native Americans have interest in prehistoric archaeological sites that represent evidence of the presence of their ancestors.

Native American groups such as the Yavapai, Tohono O'odham, Hia-Ced O'odham, and Cocopah may have affiliation with these areas. BLM staff has indicated that they will consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document prepared for the DPV2 project (personal communication, Wanda Raschkow 2004).

History

Class I research identified 19 prior studies and no recorded historic-era resources within the study corridor (Luhnow 2004).

A Class II archaeological survey was conducted for the Harquahala-West Subalternate route. This survey consisted of an intensive survey of two sample transects 300-foot-wide by 1-mile long along two areas with environmental characteristics with potential for the presence of archaeological resources (across a large wash and playa setting, and along a valley/hill interface). The purpose of the Class II survey was to ascertain the relative cultural resource sensitivity of the Harquahala-West Subalternate Route (Luhnow 2004).

The Class III survey resulted in the discovery of one isolated historic-era archaeological occurrence. This is a rock cairn that may be associated with a mining claim (Luhnow 2004). Isolated artifacts do not meet criteria for listing on the NRHP.

Paleontology

Virtually the entire length of the Harquahala-West Subalternate Route crosses undifferentiated Pleistocene older alluvium and Holocene alluvium in the Harquahala Plain. The Pleistocene older alluvium has a high paleontological sensitivity ranking (Scott 2003).

4.3.12.2 Palo Verde Subalternate Route

Archaeology

Class I research identified 26 prior studies, 48 previously recorded prehistoric archaeological sites, and one NRHP listed district within 1 mile of the Palo Verde Subalternate Route. Of these resources, 14 were identified in the Class I research as occurring within or immediately adjacent to the project APE (defined as a 300- to 600-foot-wide corridor encompassing future tower and access road locations).

The Class III survey was unable to relocate 10 of the 14 resources identified as potentially occurring within the project APE (Luhnow and Dickinson 2004). These sites are recorded as AZ S:12:5 (ASM), AZ S:12:6 ASM), AZ S:12:7 (ASM), AZ T:9:10 (ASM), AZ T:9:11 (ASM), AZ T:9:14 (ASM), AZ T:9:15 (ASM), AZ T:9:16 (ASM), AZ T:9:17 (ASM), and AZ T:9:22 (ASM). The four sites that were relocated are AZ T:9:12 (ASM), AZ T:9:13 (ASM), AZ T:9:21 (ASM), and AZ T:9:64 (ASM). In addition, four previously unrecorded sites were discovered during the Class III survey. These are AZ S:12:35 (ASM), AZ S:12:36 (ASM), AZ T:9:86 (ASM) and AZ T:9:87 (ASM).

Three archaeological sites are assessed NRHP eligible or potentially eligible. The Class III survey observations indicate that the site lacks integrity and does not demonstrate any historic or prehistoric associations (Luhnow and Dickinson 2004). The newly recorded sites consist of one small scatter of chipped stone and two small localized ceramic scatters. All are recommended not NRHP eligible (ibid).

In addition to the archaeological sites, the Class III survey located 21 isolated archaeological occurrences (Luhnow and Dickinson 2004). Isolated artifacts do not meet criteria for listing on the NRHP.

Ethnography

Previous ethnographic research conducted for the DPV1 transmission line project resulted in the identification of five TCPs (Bean and Vane 1978). These are: the Jagow Well/Palo Verde Hills Archaeological District, Palo Verde Hills, plains between the Palo Verde Hills and Gila Bend Mountains, Harquahala Plain, and the Tonopah area. In addition, Native Americans have interest in prehistoric archaeological sites that represent evidence of the presence of their ancestors.

Native American groups such as the Yavapai, Tohono O'odham, Hia-Ced O'odham, and Cocopah may have affiliation with these areas, which were largely associated with resource procurement.

The Jagow Well/Palo Verde Hills Archaeological District is called "Mountain that sounds like a drum" by the Yavapai people. This area, which exhibits rock art, shrines, and an intaglio figure, is considered to be a place of spiritual power (Rogge et al. 2000a).

BLM staff has indicated that they will consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for

input to the federal NEPA document for the DPV2 project (personal communication, Wanda Raschkow 2004).

History

The Class I research identified 13 recorded historic-era sites within the study corridor. Of these resources, three were identified in the Class I research as occurring within or immediately adjacent to the project APE (defined as 300- to 600-foot-wide corridor encompassing future tower and access road locations). The Class III survey was unable to relocate one of the three resources identified as potentially occurring within the project APE (Luhnow and Dickinson 2004). AZ S:12:32 (ASM) is recommended not eligible to the NRHP. One previously unrecorded site was discovered during the Class III survey, AZ S:12:36 (ASM). The newly recorded site consists of late historic mining features with an associated scatter of historic artifacts. It is recommended not NRHP eligible (ibid).

In addition, nine isolated historic occurrences were recorded during the Class III survey. These include five historic artifacts, three historic GLO survey markers, and one chassis with associated body parts of an abandoned five-window Ford pickup truck. Isolated artifacts do not meet criteria for listing on the NRHP (Luhnow and Dickinson 2004).

Paleontology

Approximately 8 miles of the 15-mile Subalternate Route study corridor traverse areas of high paleontological sensitivity. The remainder is low sensitivity. The high sensitivity areas are all Pleistocene older alluvium (Scott 2003).

4.3.13 Public Health and Safety

4.3.13.1 School Facilities

There are no existing or proposed schools located within the study corridor of either subalternate route.

4.3.13.2 Airport and Airstrip Operations

The PVNGS heliport is located approximately ½ mile northeast of the existing DPV1 transmission line near the PVNGS switchyard, the terminus of the Palo Verde Subalternate Route.

4.4 MIDPOINT SUBSTATION ALTERNATIVES

4.4.1 Introduction

The Midpoint Substation alternatives include three sites (Map 3-2a,b) located along the proposed Devers-Harquahala 500kV transmission line route, west of Blythe, California. All of the alternatives occur on vacant, undeveloped land; therefore, the alternatives are combined into one description for several of the following resources. Because the alternatives occur immediately adjacent to the proposed Devers-Harquahala transmission line route, several of the descriptions refer to previous resource sections that address the proposed route.

4.4.2 Land Use

4.4.2.1 Land Ownership/Jurisdiction

The Midpoint Substation preferred site and alternative sites occur in Riverside County, California, west of Blythe. The SCE preferred site and the Wiley Well alternative site are located on BLM land. The Mesa Verde alternative site is located on private land.

4.4.2.2 Existing Land Use

The Midpoint Substation preferred and alternative sites are immediately adjacent to the proposed Devers-Harquahala transmission line, west of Blythe. Land use within this corridor is documented in the proposed route description and shown on Maps 4-3c and 4-4c. All of the alternatives occur on vacant/undeveloped land. The closest residence to the preferred site is approximately 1 mile to the east. Residences are located more than 2 miles from either of the two alternative sites.

4.4.2.3 Planned Land Use

The Midpoint Substation preferred site and alternative sites are located within Riverside County, California. According to the Riverside County General Plan, the land use designation for the Wiley Well and Mesa Verde alternative sites is Rural Residential. The land use designation for the Preferred Site is agriculture. A review of development plans at Riverside County in June 2004 showed no specific development plans in the area of the preferred and alternative sites.

4.4.3 Socioeconomics, Population, and Housing

The Midpoint Substation preferred and alternative sites are located within Riverside County, west of Blythe. Section 4.1.3.2 includes socioeconomic, population, and housing data for Riverside County and Blythe, applicable to the preferred and alternative substation sites.

4.4.4 Geology and Soils

The Midpoint Substation preferred and alternative sites lie in the Western Mojave Desert and Eastern Mojave Desert physiographic provinces. (These provinces are described in Section 4.1.4.2.) The Midpoint Substation preferred and alternative sites are located on the Palo Verde Mesa, which is underlain by non-indurated sedimentary rock. The soils for the Midpoint Substation preferred and alternative sites are the same as those described for the proposed route in Section 4.1.4.1.

4.4.5 Hydrology

The Midpoint Substation preferred and alternative sites are located on the Palo Verde Mesa, which is drained by McCoy Wash and a number of unnamed drainages. Groundwater data for the Palo Verde Mesa are provided in Table 4-26.

4.4.6 Air Quality

The Midpoint Substation preferred and alternative sites are located in Riverside County, California within the Mohave Desert Air Quality District. Air quality standards for Riverside County and the Mohave County Air Quality District are described in Section 4.1.6.

4.4.7 Traffic and Transportation

Descriptions of road and traffic conditions in the vicinity of the Midpoint Substation preferred and alternative sites are provided in Section 4.1.7.2.

4.4.8 Biology

Vegetation

The Midpoint Substation preferred and alternative sites are located within the Lower Colorado River Valley subdivision of Sonoran Desertscrub (Turner and Brown 1994). Vegetation is dominated by creosote bush and white bursage. Big galleta is a common herbaceous perennial. Dyebush is locally common in places. Common annuals include species of *Lotus, Cryptantha,* and *Plantago* as well as desert sand verbena (*Abronia villosa*). Drainageways in the area are lined with blue paloverde and ironwood as well as big galleta.

Special Status Plant Species

There are four species that could potentially be found in the area of the preferred and alternative substation sites: Abram's spurge (*Chamaesyce abramsiana*), Arizona spurge (*Chamaesyce arizonica*), Harwood's milkvetch (*Astragalus insularis harwoodii*), and glandular ditaxis (*Ditaxis clariana*). A complete list of sensitive plant species found in Riverside County is in Table 4-35.

Individuals of Harwood's milkvetch were found on and adjacent to the preferred substation site in surveys conducted in April 2004. The milkvetch were also found adjacent to the Mesa Verde Alternative Site, but none were found at the Wiley Well Alternative Site. This species has no federal or state status, but the California Native Plant Society considers it a List 2 plant.

Wildlife

The suite of vertebrate wildlife that is present within the area of the preferred and alternative sites is composed of mammals, birds, amphibians, and reptiles that are characteristic of the arid Colorado River Valley vegetation community and soil types.

Mammals

The mammalian fauna in the area of the preferred and alternative sites is composed largely of small nocturnal species of bats and rodents, including highly desert-adapted Heteromyid pocket mice and kangaroo rats. Owing to an absence of suitable roosting and nursery sites (e.g., caves, mine shafts and adits, buildings, and bridges), it is likely that bat presence is largely restricted to foraging individuals. A common diurnal species is the black-tailed jackrabbit. Desert mule deer occur sparingly in larger washes, and the ubiquitous coyote is likely to be encountered almost anywhere within the project area.

Birds

Turner and Brown (1994) note that the Lower Colorado River Valley Subdivision is the poorest of the Sonoran Desert subdivisions with respect to its avifauna. They point out that the LeConte's thrasher is the only bird species that is diagnostic of the subdivision. However, many other species are common in this area including: vultures, hawks, doves, owls, woodpeckers, flycatchers, gnatcatchers, mockingbird, finches, and sparrows.

Amphibians

The only amphibians likely to be present in the area of the Midpoint Substation preferred and alternative sites are the highly adapted species of toads and spadefoots that appear in response to unreliable summer rainfall. These species spend most of the year sequestered in rodent burrows or dug well into the soil awaiting the summer rains when they emerge to breed in temporary rainfall pools and stock tanks. Species likely to be present include Couch's spadefoot, Great Plains toad, Sonoran Desert toad, and red-spotted toad.

Reptiles

The fine sandy soils found in the area of the preferred and alternative sites provide habitat for species such as banded sand snake, sidewinder, and desert iguana. Western whiptails and zebra-tailed lizards (*Callisaurus draconoides*) are also common in the area of the preferred and alternative sites.

Special Status Wildlife

A list of special status wildlife species occurring in Riverside County can be found in Table 4-36. Habitat for the federally threatened desert tortoise on Palo Verde Mesa is minimal, and few if any individuals are likely to be found here. The Colorado Desert fringe-toed lizard (*Uma notata*) is likely to occur on the loose sandy substrates in the area of the Midpoint Substation preferred and alternative sites. This lizard is considered a species of concern by the USFWS and sensitive by BLM. There is also habitat for the flat-tailed horned lizard within the areas of the sites. This species utilizes fine windblown sand; however, the range for this species does not include the study corridor. It is possible that burrowing owls could be found in the vicinity of the sites.

4.4.9 Noise

Noise is generally defined as unwanted sound. Sound travels through the air as waves of minute air pressure fluctuations caused by some type of vibration. In general, sound waves travel away from the noise source as an expanding spherical surface. Thus, the energy contained in a sound wave is spread over an increasing area as it travels away from the source resulting in a reduction in noise as the distance from the noise source increases.

The preferred and alternative substation sites are located in open desert land. The nearest residence is located approximately 1 mile from the preferred alternative site. The area has a desert climate and is subject to inclement weather only 9 percent of the time. Minimal ambient noise is expected at the proposed and alternative substation sites.

4.4.10 Public Services and Utilities

The nearest public services and utilities to the Midpoint Substation preferred and alternative sites are located in Blythe, California. Section 4.1.10.2 describes these services in the Blythe area.

4.4.11 Visual Resources

4.4.11.1 Preferred Site

One residence is located within 1 mile of the preferred Midpoint Substation site. The residence is situated below a bluff and would have a viewing position that provides partially screened views of the substation site. Furthermore, the existing viewing conditions in this area have been modified by the occurrence of 500kV and 161kV transmission lines.

4.4.11.2 Mesa Verde Alternative

There are no residential or other sensitive viewers within 1 mile of the Mesa Verde alternative site. Travelers on I-10 will have open to partially screened views of this site.

4.4.11.3 Wiley Well Alternative

The Wiley Well alternative substation site is located approximately ½ mile from I-10, resulting in unobstructed foreground views to this substation site in a landscape with little modification. The site is located on Class C scenic quality. To the south of this alternative substation site is a prison complex and access road.

4.4.12 Cultural Resources

4.4.12.1 Preferred Site

Archaeology

A records search identified four previously recorded archaeological sites and two isolated occurrences within a ½-mile radius of the preferred Midpoint Substation site. These resources include two trail segments (RIV-775T, RIV-772T), two multi-component sites (RIV-1823 and RIV-6534), and isolated occurrences of lithic flakes and ceramic sherds (P33-005963 and P33-005964). In addition to these previously recorded resources, an archaeological survey of the substation site resulted in the recordation of two new resource discoveries within the site boundaries (P33-13659 and P33-13660). Of the previously recorded resources, one (RIV-775T) was found to be located within the substation site boundary.

All of the three archaeological sites confirmed to be located within the preferred Midpoint Substation site (RIV-775T, P33-13659, and P33-13660) appear potentially eligible to the NRHP.

Ethnography

Previous ethnographic research conducted for the DPV1 project resulted in the identification of areas of cultural concern to contemporary Chemehuevi and Mojave Native Americans in the vicinity of the preferred Midpoint Substation site. These are archaeological sites and aboriginal trails in the Colorado River area. None of the areas with direct Native American association are known to be within the preferred Midpoint Substation site. Native Americans have indicated a general interest in prehistoric archaeological resources that represent evidence of their ancestors.

No known TCPs are present in the preferred Midpoint Substation site boundaries. BLM staff has indicated that they would consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project.

History

A records search identified two previously recorded historic-era resources within ½ mile of the preferred Midpoint Substation site. An archaeological survey of the preferred Midpoint Substation site resulted in no further historic resource discoveries, and confirmed that two previously recorded historic resources are located outside of the preferred Midpoint Substation boundaries. There are no known historic-era resources located within the preferred Midpoint Substation site.

Paleontology

The preferred Midpoint Substation site is located on Pleistocene older alluvium, which is considered to have a high paleontological sensitivity ranking (Scott 2003). Rock units composed of Holocene alluvium are located on either side of the substation area. Pleistocene alluvium has a low paleontological sensitivity ranking (ibid.).

4.4.12.2 Mesa Verde Alternative

Archaeology

A records search identified one previously recorded archaeological site (RIV-1819, a cobble quarry locus with ceramic scatter) within ½ mile of the Mesa Verde alternative substation site. Archaeological survey of this alternative substation site resulted in the discovery of one previously unrecorded archaeological resource within the alternative substation boundaries (P33-13672), and confirmed that RIV-1819 is located outside of the alternative substation site boundaries. P33-13672 is a lithic scatter of petrified wood flakes and is potentially eligible to the NRHP.

Ethnography

Previous ethnographic research conducted for the DPV1 project resulted in the identification of areas of cultural concern to contemporary Chemehuevi and Mojave Native Americans in the vicinity of the preferred substation site. These are archaeological sites and aboriginal trails in the Chuckwalla Valley and Colorado River areas. None of the areas with direct Native American association are known to be within the Mesa Verde alternative substation site. Native Americans have indicated a general interest in prehistoric archaeological resources that represent evidence of their ancestors.

No known archaeological resources or TCPs are present in the Mesa Verde alternative substation site boundaries. BLM staff has indicated that they would consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project.

History

A records search identified no previously recorded historic-era resources within ½ mile of the Mesa Verde alternative substation site. An archaeological survey of the alternative substation site resulted in no additional historic-era resource discoveries. There are no known historic-era resources within the Mesa Verde alternative substation boundaries.

Paleontology

The Mesa Verde alternative substation site is located on Holocene alluvium and Holocene dune sand geological units. Neither of these geological units is conducive to the formation or preservation of fossils, and this alternative substation site is therefore given a low paleontological sensitivity ranking (Scott 2003).

4.4.12.3 Wiley Well Alternative

Archaeology

A records search identified three previously recorded archaeological sites and one isolated occurrence within a ½-mile radius of the Wiley Well alternative substation site. These resources are RIV-1818, a ceramic sherd scatter, RIV-3810, a large multi-component site, and P33-013599, a sparse lithic scatter. The isolated occurrence is P22-12930, an isolated lithic flake. An

archaeological survey of the proposed Wiley Well alternative site resulted in no resource discoveries. There are no known archaeological resources on the alternative substation site.

Ethnography

Previous ethnographic research conducted for the DPV1 project resulted in the identification of areas of cultural concern to contemporary Chemehuevi and Mojave Native Americans in the vicinity of the Wiley Well alternative substation site. These are archaeological sites and aboriginal trails in the Chuckwalla Valley and Colorado River areas. None of the areas with direct Native American association are known to be within the Wiley Well alternative substation site. Native Americans have indicated a general interest in prehistoric archaeological resources that represent evidence of their ancestors.

No known archaeological resources or TCPs are present in the Wiley Well alternative substation site boundaries. BLM staff has indicated that they would consult with appropriate Native American groups in the context of the BLM's government-to-government responsibility with Native American tribes for input to the federal NEPA document for the DPV2 project.

History

A records search identified no previously recorded historic-era resource within ½ mile of the Wiley Well alternative substation site. Archaeological survey identified one newly recorded resource, P33-013598, a refuse scatter associated with the World War II Desert Training Center. P33-013598 is located off the substation site. Archaeological survey of this alternative substation site resulted in no resource discoveries within the substation site boundaries.

Paleontology

The Wiley Well alternative substation site is located on Holocene alluvium and Holocene dune sand geological units. Neither of these geological units is conducive to the formation or preservation of fossils, and this alternative substation site is therefore given a low paleontological sensitivity ranking (Scott 2003).

4.4.13 Public Health and Safety

4.4.13.1 School Facilities

There are no existing schools located within ¼ mile of the preferred and alternative Midpoint Substation sites.

4.4.13.2 Airport and Airstrip Operations

There are no public airports or private airstrips within 2 miles of the Midway Substation preferred site or alternative sites.

Map 4-1a
OWNERSHIP
Devers - Palo Verde No. 2 Transmission Line Project
Panel 1 of 3

Sources

United States Geological Survey (USGS), Phoenix, AZ (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Arizona land ownership, EPG, Inc. 2000. Arizona land jurisdiction, Town of Quartzsite, 2003. KOFA, U.S. Fish and Wildlife Service. U.S. Bureau of Land Management, California State Office, June 1998. U.S. Department of the Interior, Bureau of Land Management, BLM Arizona Access Guide (La Posa), October 1999. Devers to Palo Verde No.2 PEA (1988). SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 1 2 3 4 5 Miles

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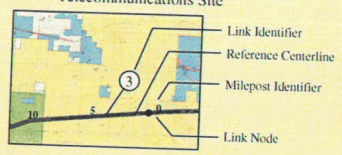
m:/projects/sce/devers/arizona/mxds/owner.mxd

Ownership

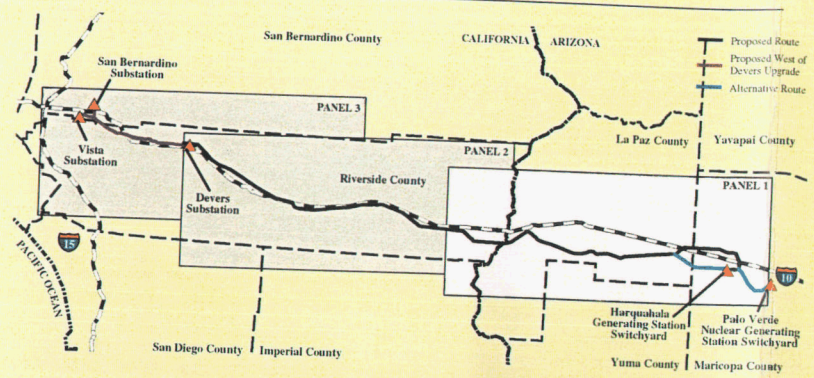
- Bureau of Land Management
- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- Native American Tribe
- Yuma Proving Ground
- State
- Private

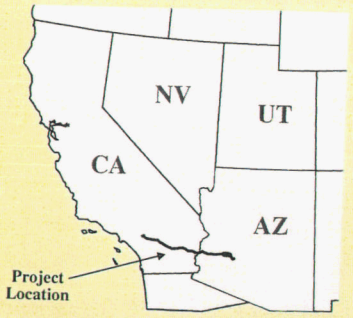
General Reference Features

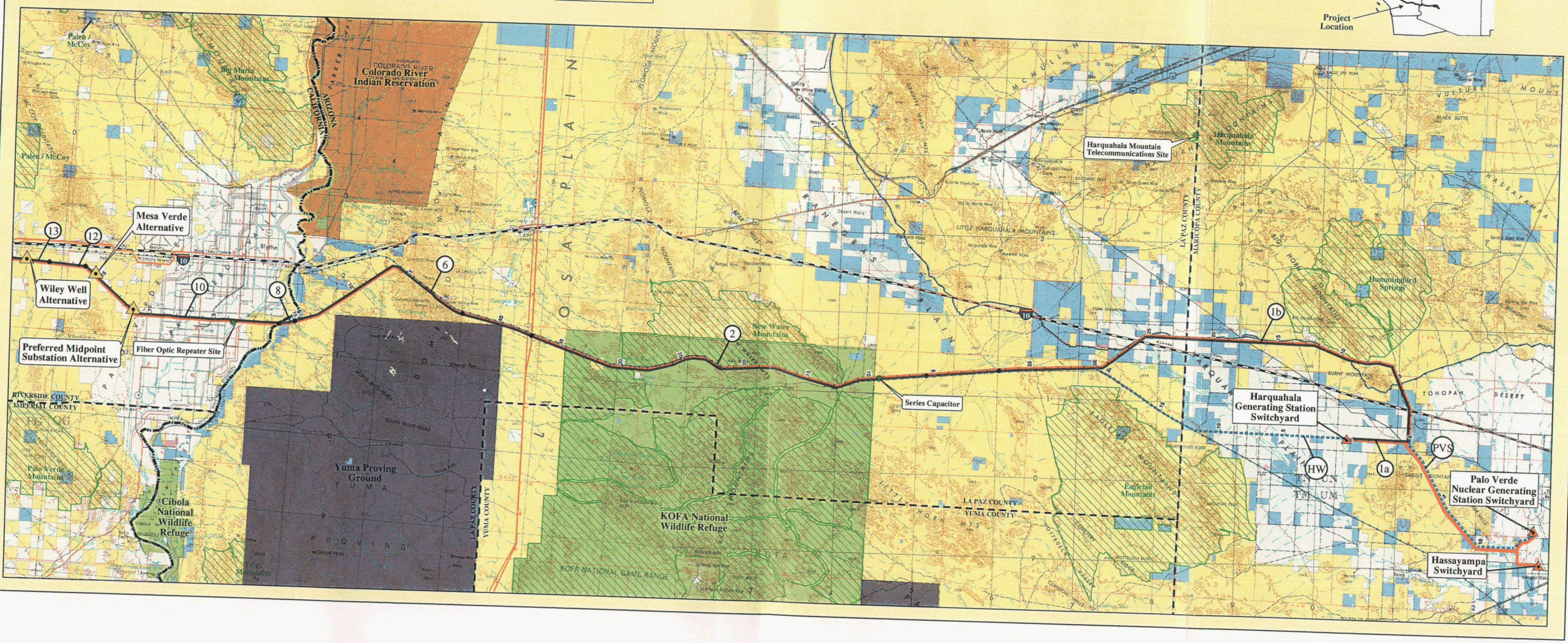
- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- Central Arizona Project Canal (USBR)
- State Boundary
- County Boundary
- Substation/Switchyard
- Midpoint Substation Alternative
- Wilderness
- Series Capacitor/ Fiber Optic Repeater Site/ Telecommunications Site



Panel Index Map







Map 4-1b
OWNERSHIP

Devers - Palo Verde No. 2 Transmission Line Project

Panel 2 of 3

Sources

United States Geological Survey (USGS), Santa Ana, CA (1979), Needles, CA/AZ, (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Arizona land ownership, EPG, Inc. 2000. Arizona land jurisdiction, Town of Quartzsite, 2003. California land jurisdiction, Riverside County, July 3, 2003. KOFA, U.S. Fish and Wildlife Service. U.S. Bureau of Land Management, California State Office, June 1998. U.S. Department of the Interior, Bureau of Land Management, October 1999. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 5 10 Miles

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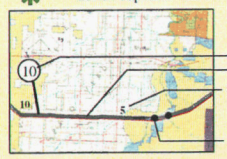
Ownership

- Bureau of Land Management
- Bureau of Reclamation
- California Fish and Game
- U.S. Fish & Wildlife Service
- U.S. Forest Service
- Nature Conservancy
- National Park Service
- Native American Tribe
- Military
- State
- Private
- Salton Sea

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Joshua Tree National Park Boundary
- Substation/Switchyard
- Midpoint Substation Alternative
- Wilderness
- Series Capacitor & Fiber Optic Repeater Site



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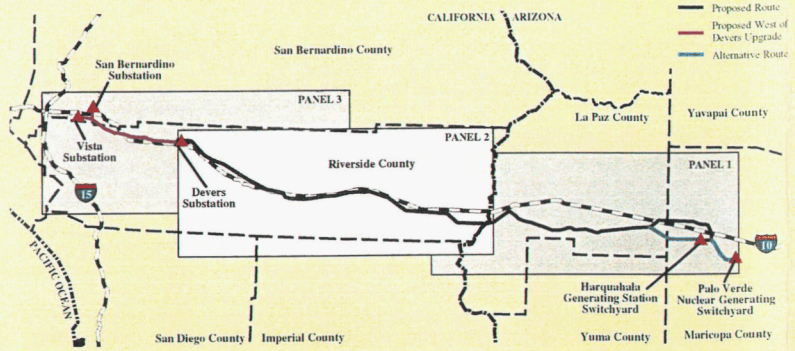

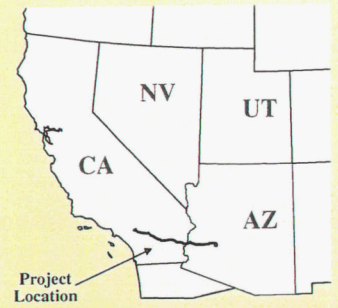

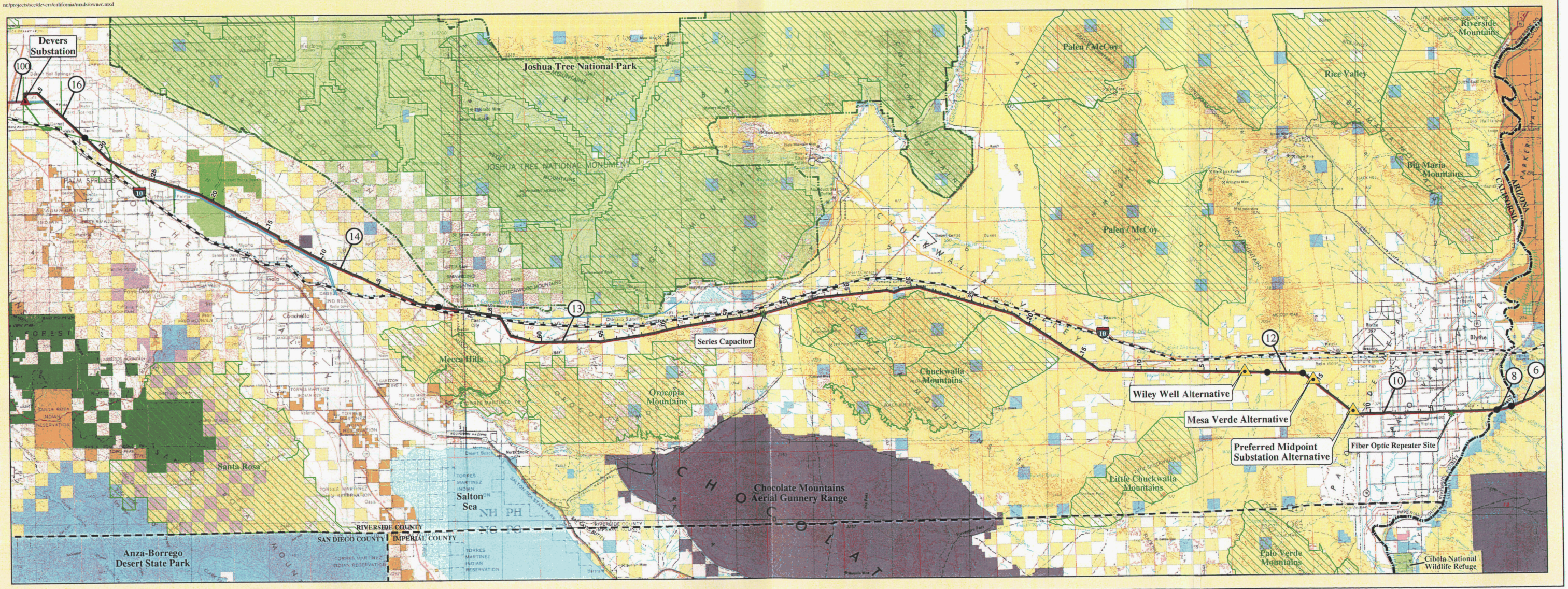

Sources

United States Geological Survey (USGS), Santa Ana, CA (1979); Needles, CA/AZ, (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Arizona land ownership, EPG, Inc. 2000. California land jurisdiction, Riverside County, July 3, 2003. KOFA, U.S. Fish and Wildlife Service. U.S. Bureau of Land Management, California State Office, June 1998. U.S. Department of the Interior, Bureau of Land Management, October 1999. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 5 10 Miles

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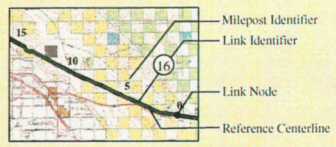
Land Ownership

- Bureau of Land Management
- Bureau of Reclamation
- California Fish and Game
- U.S. Fish & Wildlife Service
- U.S. Forest Service
- Nature Conservancy
- National Park Service
- Native American Tribe
- Military
- State
- Private

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Joshua Tree National Park Boundary
- Substation/Switchyard
- Wilderness
- Series Capacitor



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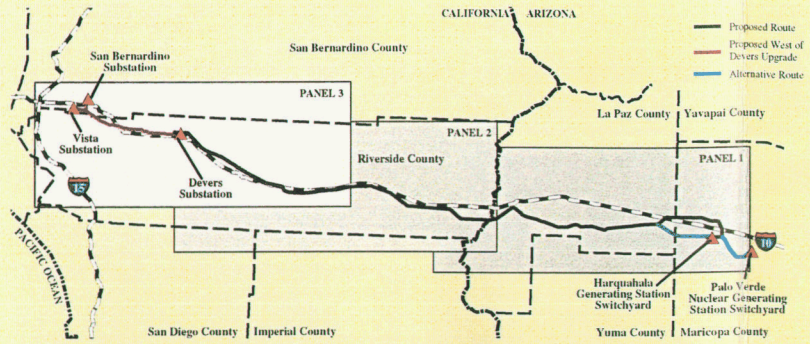
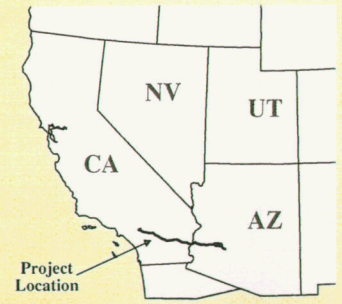
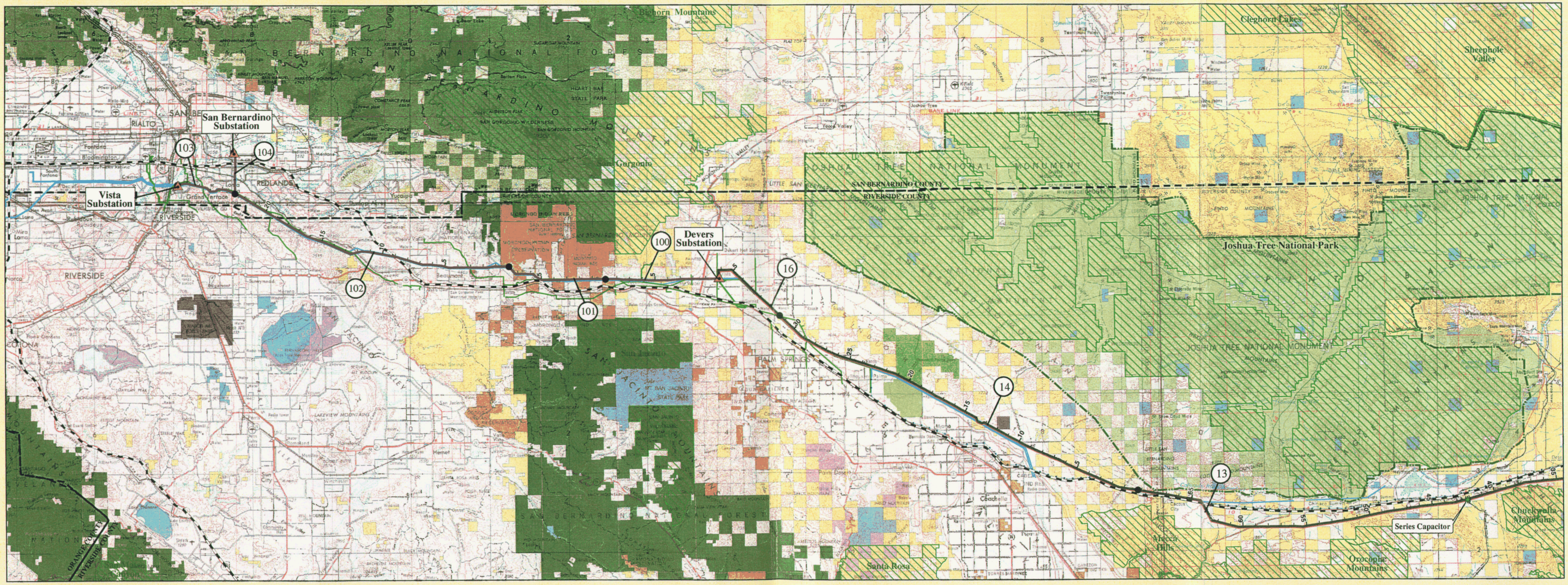


Map 4-1c
OWNERSHIP

Devers - Palo Verde No. 2 Transmission Line Project
Panel 3 of 3





Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models Arizona Land use data, EPG, Inc. 2000.

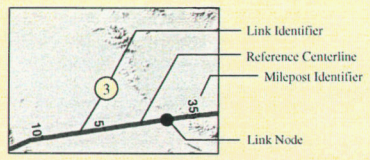
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Jurisdiction

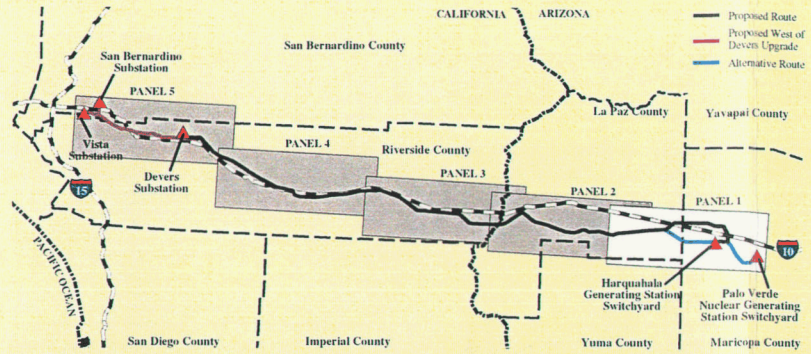
- Unincorporated Area
- Wilderness
- KOFA National Wildlife Refuge

General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- Series Capacitor



Panel Index Map

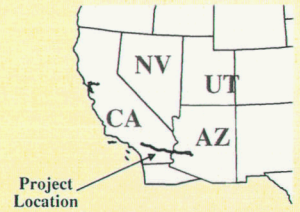


Map 4-2a

JURISDICTION

Devers - Palo Verde No. 2 Transmission Line Project

Panel 1 of 5



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R 15 W R 14 W R 13 W R 12 W R 11 W R 10 W R 9 W R 8 W R 7 W R 6 W R 6 W

T 4 N T 3 N T 2 N T 1 N T 1 S

RANEGRAS PLAIN

HOVATTER RD.

VICKSBURG RD. AVE 51 EAST

BUCKEYE - SALOME RD.

AV. 75 EAST

MARICOPA COUNTY

BIG HORN MOUNTAINS

1B

2

Series Capacitor

HW

Harquahala Generating Station Switchyard

COURTHOUSE RD.

HARQUAHALA RD.

HARQUAHALA PLAIN

1A

SADDLE MOUNTAIN

PALO VERDE HILLS

BUCKEYE - SALOME HWY.

TONOPAH RD./411TH AVE.

INDIAN SCHOOL RD.

WINTERSBURG RD.

Palo Verde Nuclear Generating Station Switchyard

PVS

Hassayampa Switchyard

ELLIOT RD.

EAGLETAIL MOUNTAINS

LA PAZ COUNTY

YUMA COUNTY

LITTLE HORN MOUNTAINS

Sources

United States Geological Survey (USGS). hillshade derived from USGS 30-meterDigital Elevation Models.

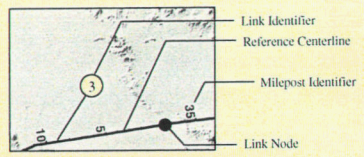
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Jurisdiction

- Unincorporated Area
- Wilderness
- KOFA National Wildlife Refuge

General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- Series Capacitor



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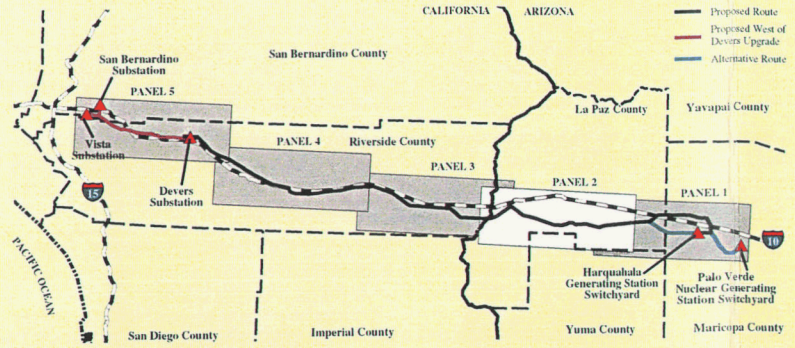
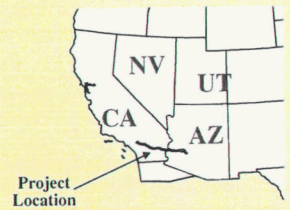


Map 4-2b

JURISDICTION

Devers - Palo Verde No. 2 Transmission Line Project

Panel 2 of 5



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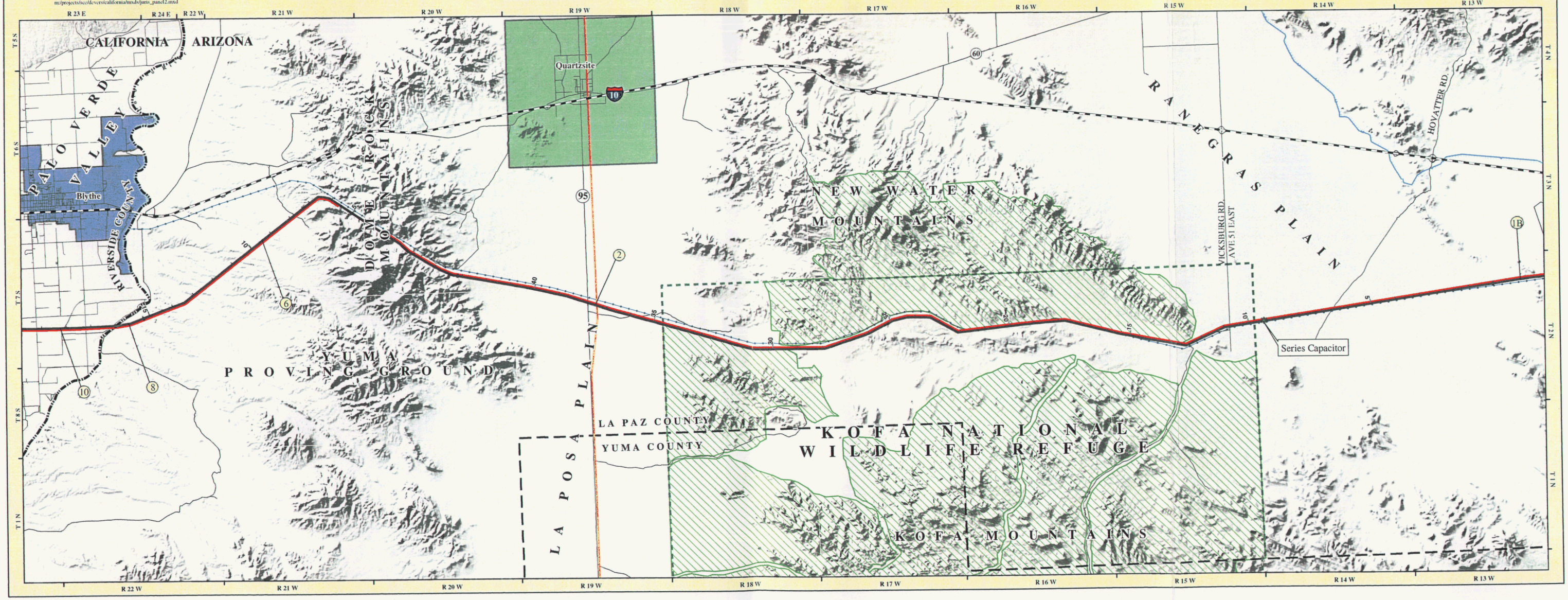


Map 4-2c

JURISDICTION

Devers - Palo Verde No. 2 Transmission Line Project

Panel 3 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models.

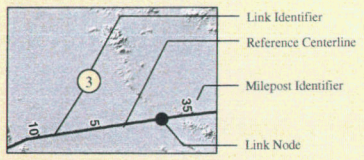
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Jurisdiction

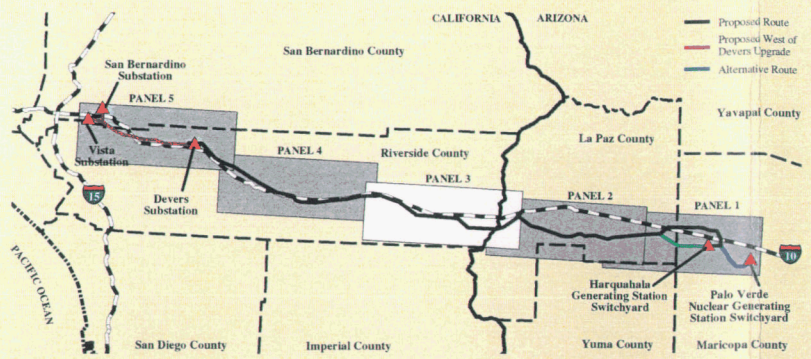
- Unincorporated Area
- Wilderness

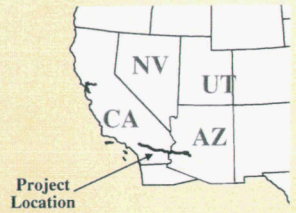
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Roads
- Township and Range
- Midpoint Substation Alternatives
- Fiber Optic Repeater Site



Panel Index Map





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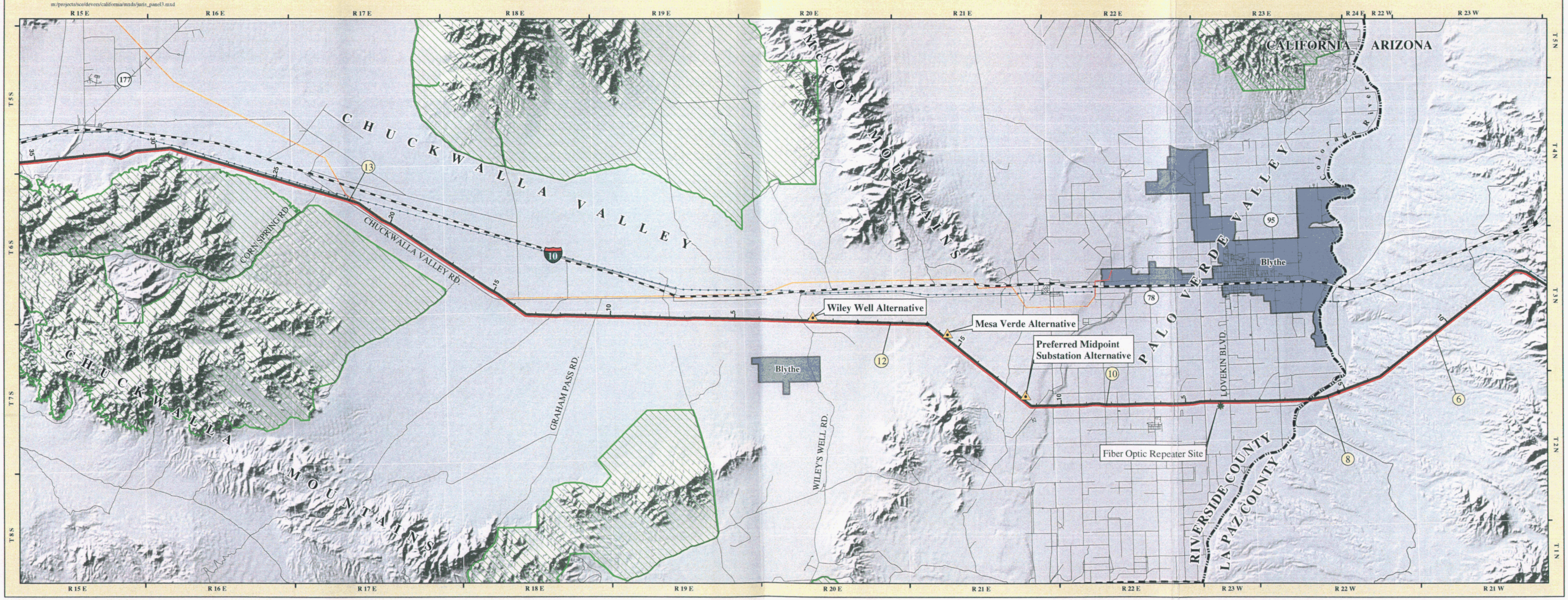
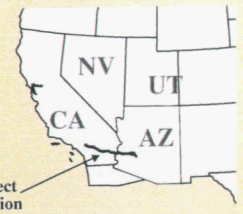


Map 4-2d

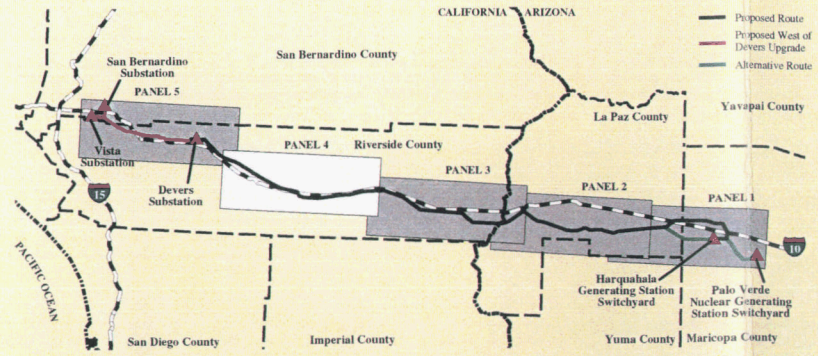
JURISDICTION

Devers - Palo Verde No. 2 Transmission Line Project

Panel 4 of 5



Panel Index Map



Sources

United States Geological Survey, hillshade derived from USGS 30-meterDigital Elevation Models.

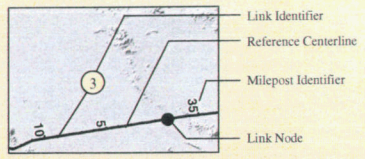
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Jurisdiction

- Unincorporated Area
- Wilderness
- Coachella Valley Preserve
- Joshua Tree National Park Boundary

General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- Interstate/Highway
- Roads
- Township and Range
- Series Capacitor



0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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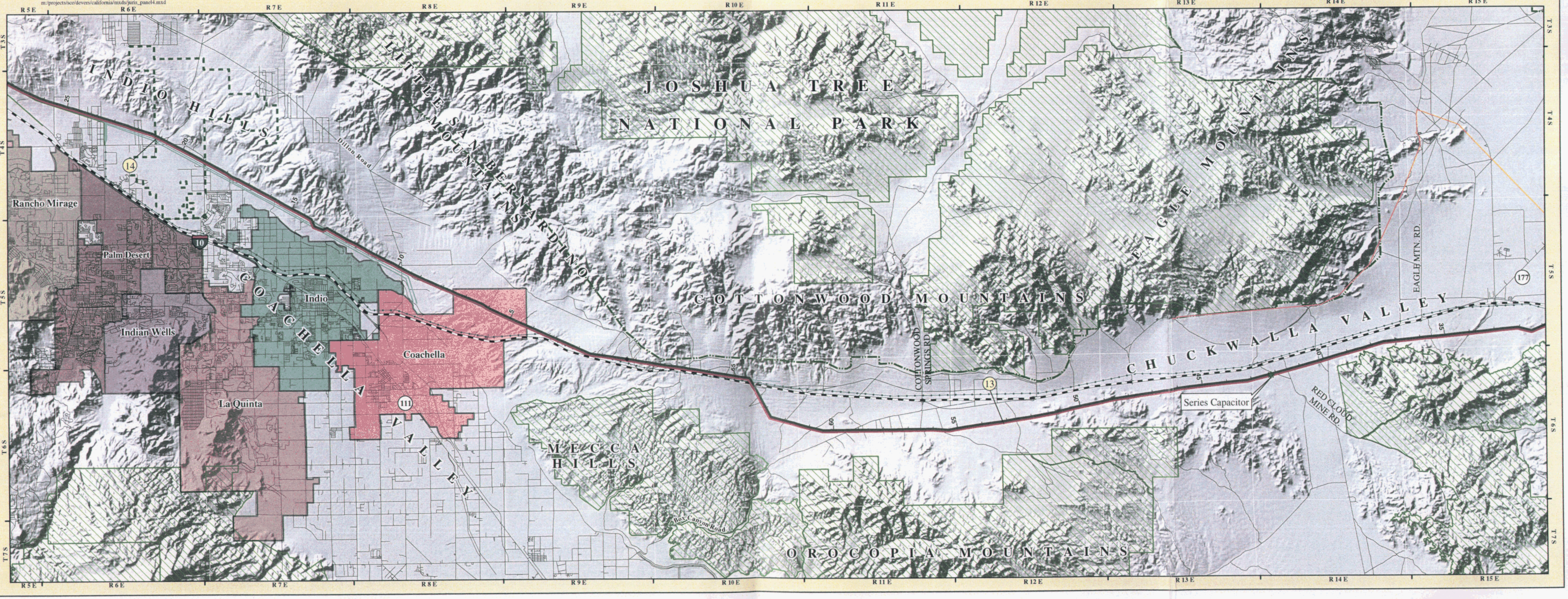
m:/projects/sce/devers/california/mxds/juris_panel4.mxd



Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Jurisdiction data, San Bernardino County and Riverside County.

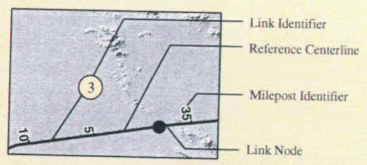
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Jurisdiction

- Unincorporated Area
- Wilderness
- Coachella Valley Preserve
- Joshua Tree National Park Boundary

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range



0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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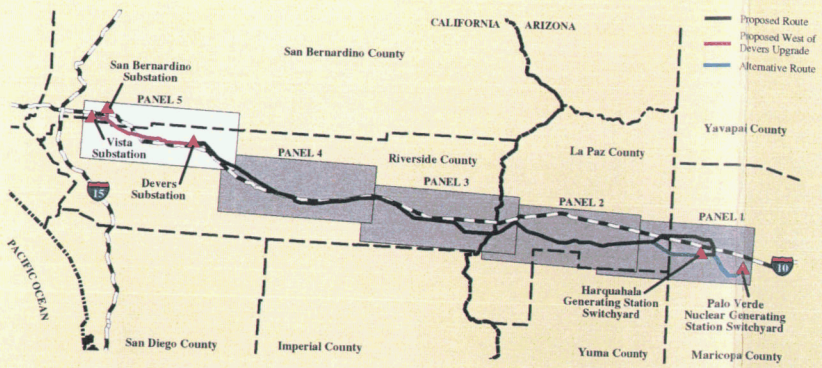
m:/projects/sce/devers/california/mxds/juris_panel5.mxd

Panel Index Map

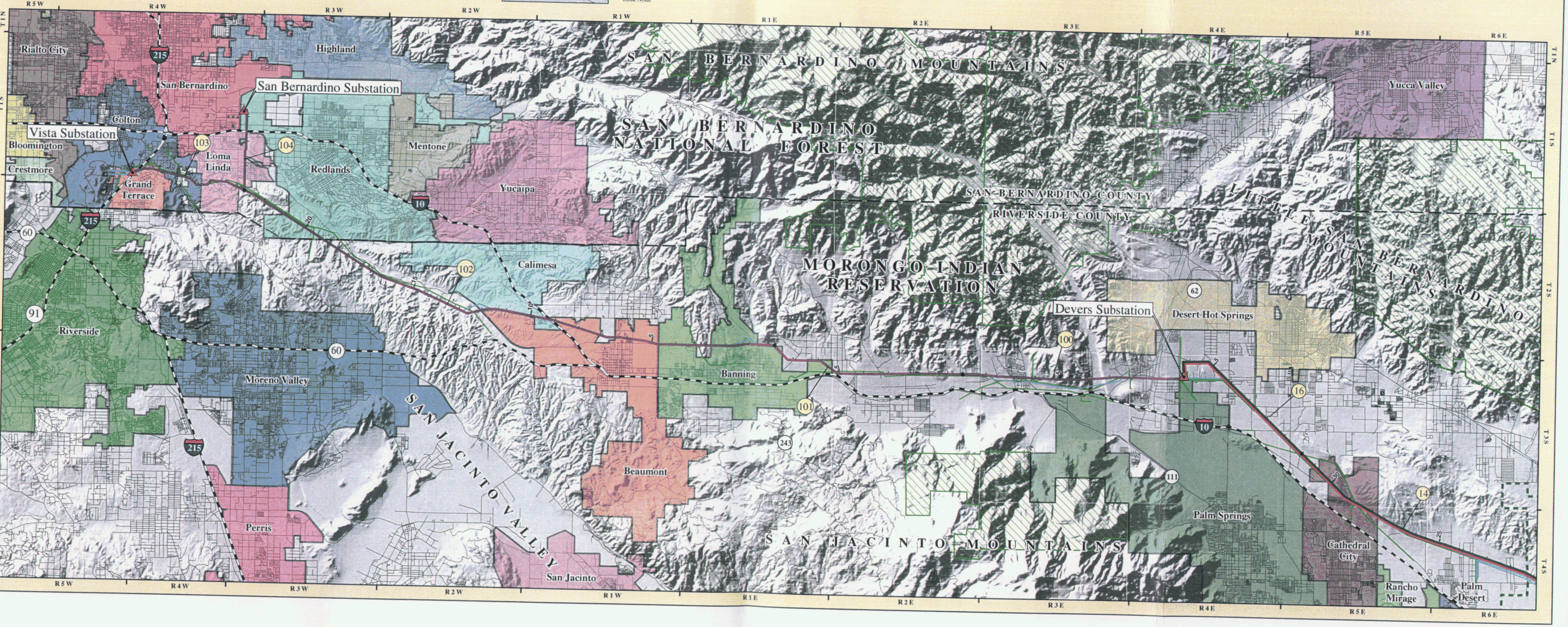


Map 4-2e

JURISDICTION

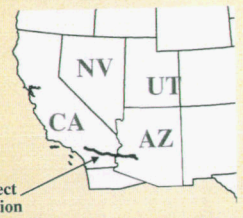
Devers - Palo Verde No. 2 Transmission Line Project

Panel 5 of 5



Map 4-3a
EXISTING LAND USE

Devers - Palo Verde No. 2
Transmission Line Project
Panel 1 of 5



Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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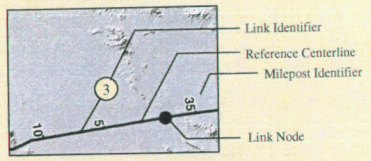
m:/projects/sce/devers/california/mxds/exlu_panel01.mxd

Existing Land Use

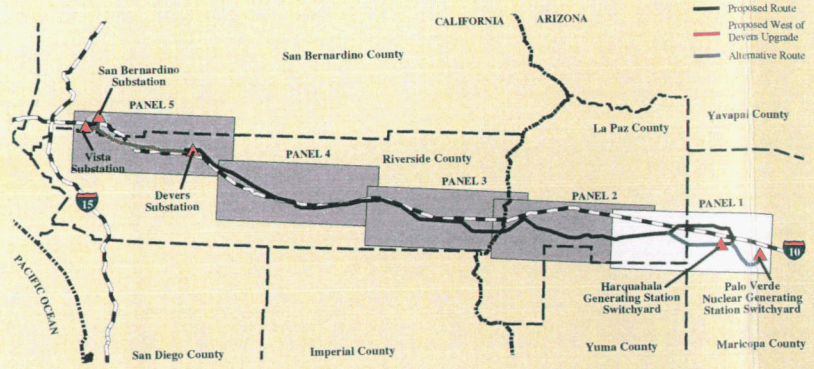
- Residential - Low Density
- Single Family Dwelling Unit
- Industrial
- Agriculture
- Agriculture - Outstructure
- Vacant/Undeveloped
- Abandoned Building
- Utility
- Communication Facility
- Airport
- Heliport

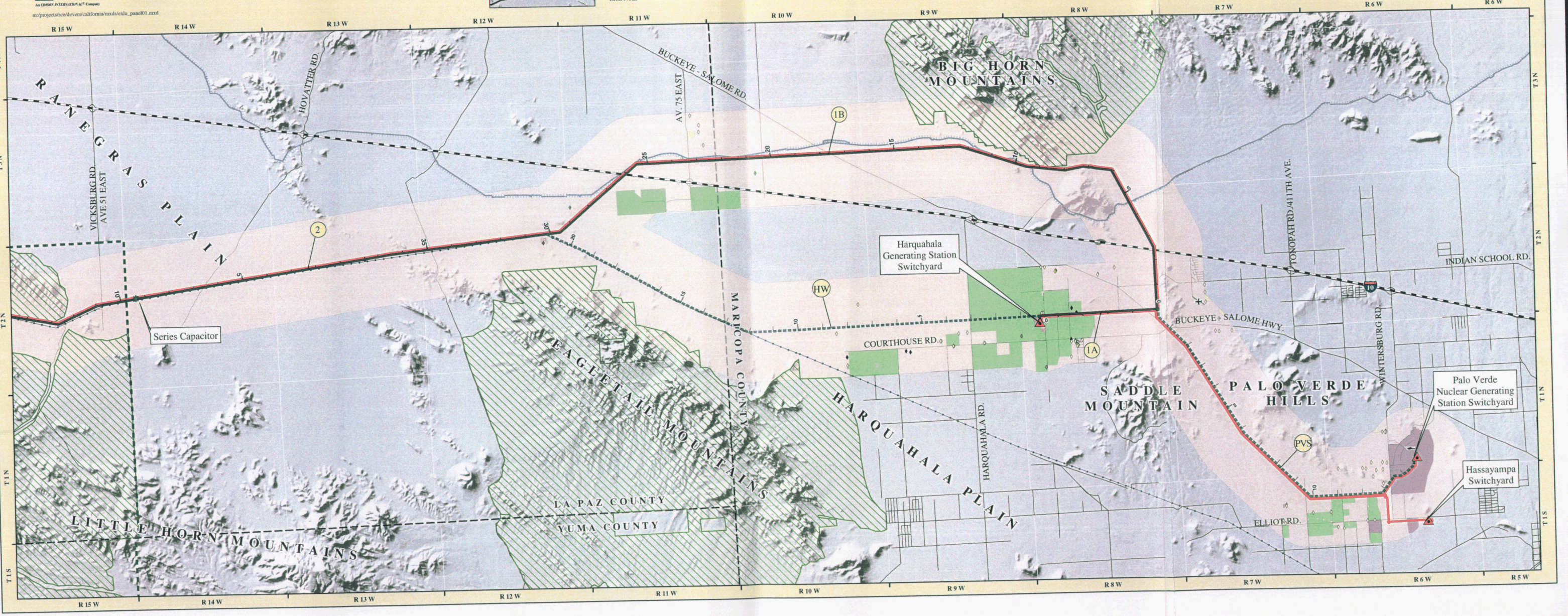
General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative Route
- Existing 500kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Wilderness
- Series Capacitor



Panel Index Map





Map 4-3b
EXISTING LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 2 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. March 9, 2004

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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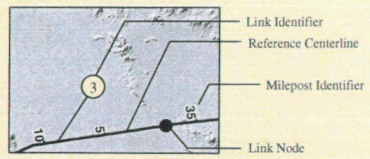
m:/projects/sce/devers/california/mxds/exlu_panel02.mxd

Existing Land Use

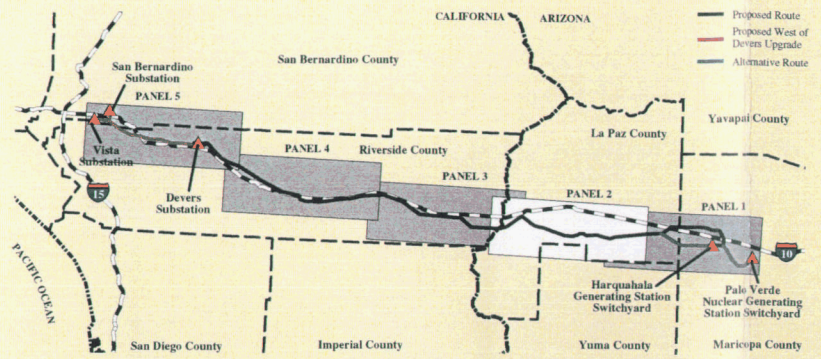
- Residential - Low Density
- Single Family Dwelling Unit
- Agriculture
- Agriculture - Outstructure
- Vacant/Undeveloped
- Utility
- Communication Facility
- Riverbed/Wash
- BLM La Posa Designated Camping Area
- BLM La Posa Long-Term Visitor Area

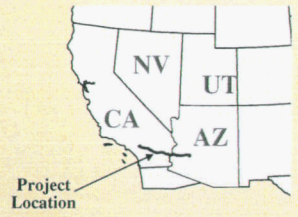
General Reference Features

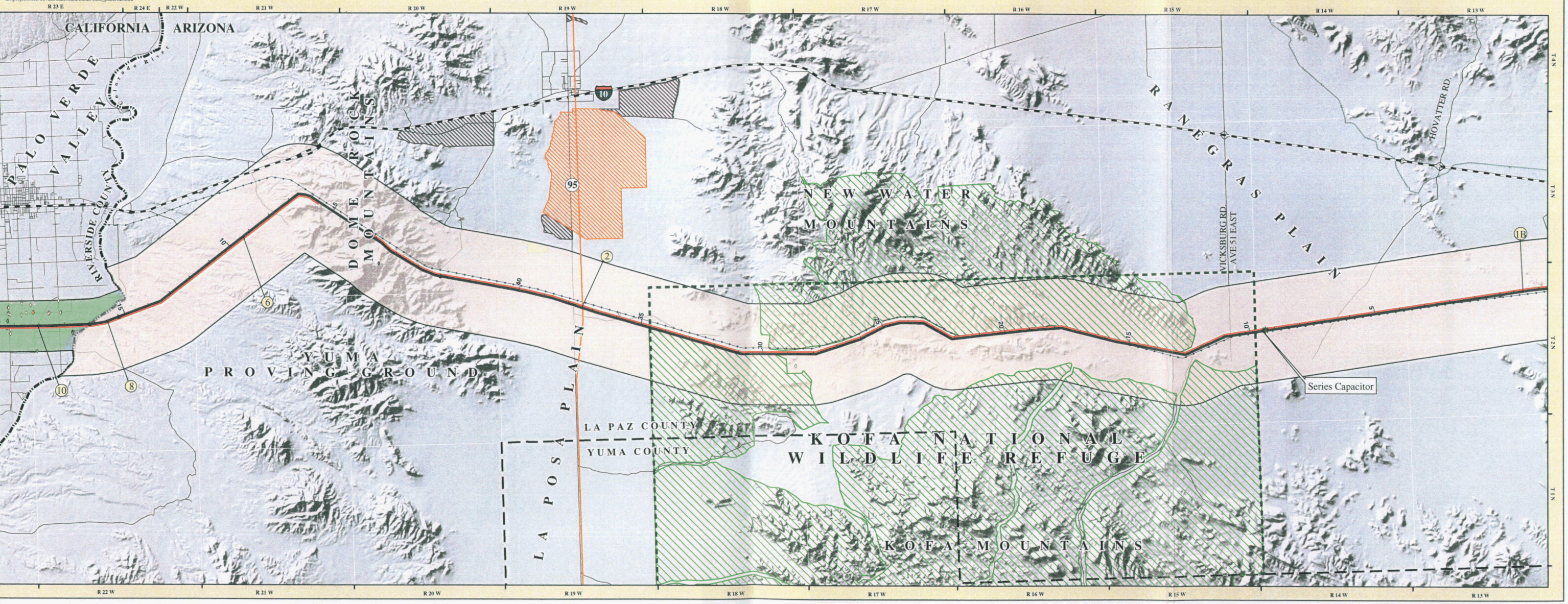
- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Wilderness
- Series Capacitor



Panel Index Map



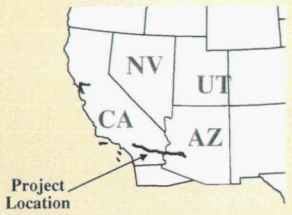




Map 4-3c
EXISTING LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 3 of 5



Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2000.

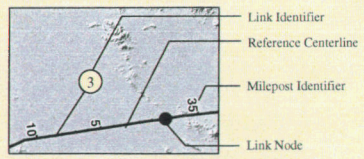
Prepared By: Environmental Planning Group, Inc. March 9, 2005

Existing Land Use

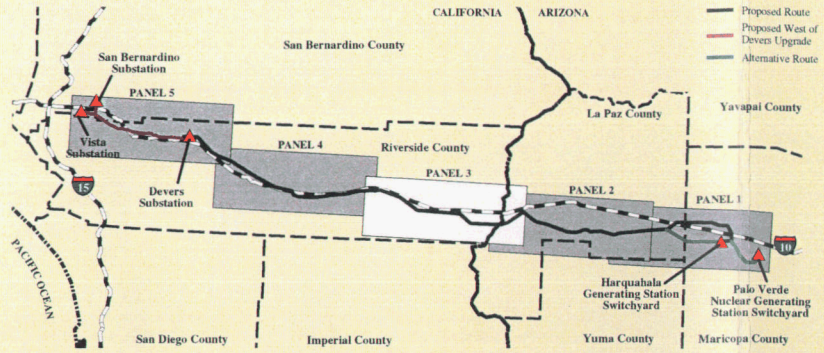
- Residential - Low Density
- Single Family Dwelling Unit
- Mixed Use
- Education
- Agriculture
- Agriculture - Outstructure
- Vacant/Undeveloped
- Abandoned Building
- Riverbed/Wash

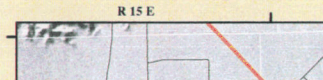
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Roads
- Township and Range
- Midpoint Substation Alternatives
- Fiber Optic Repeater Site



Panel Index Map





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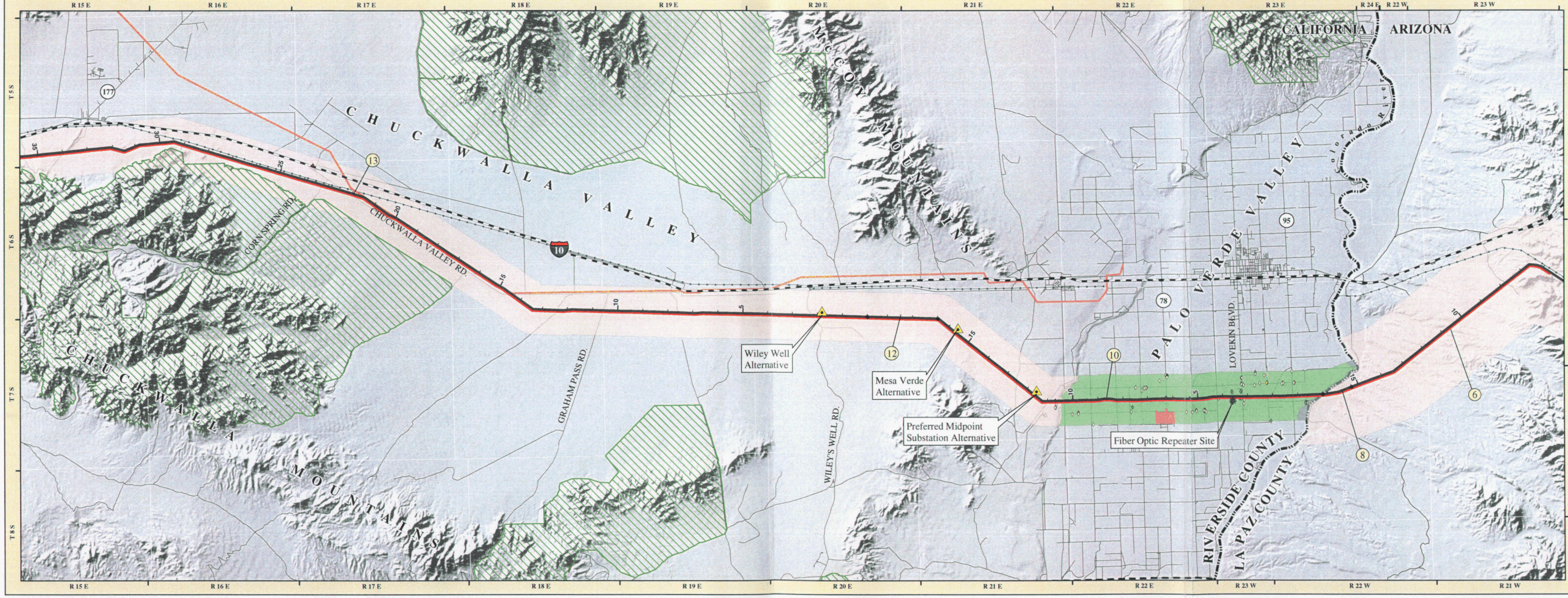
m:/projects/sce/devers/california/mxds/exlu_panel03.mxd



Map 4-3d
EXISTING LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 4 of 5

Sources

United States Geological Survey, hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

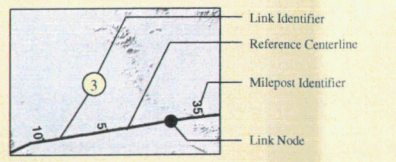
Prepared By: Environmental Planning Group, Inc. March 9, 2004

Existing Land Use

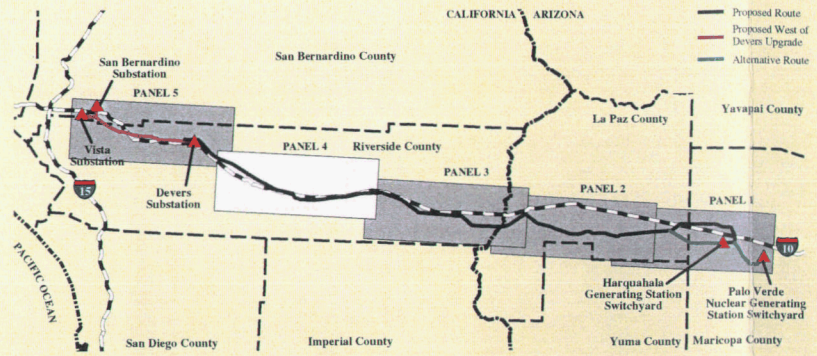
- Residential - Medium Density
- Residential - Low Density
- Single Family Dwelling Unit
- Mixed Use
- Industrial
- Light Industrial
- Extraction/Mining
- Public/Quasi Public
- Airfield
- Agriculture
- Vacant/Undeveloped
- Utility
- Water Tower/Tank
- Communication Facility
- Recreation
- Lake/Riverbed/Wash
- Airport

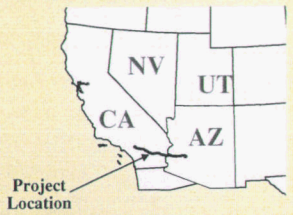
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- Interstate/Highway
- Roads
- Township and Range
- Wilderness
- National Park Boundary
- Series Capacitor



Panel Index Map





m:/projects/sce/devers/california/mxds/exlu_panel04.mxd

Map 4-3e

EXISTING LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 5 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. March 9, 2004

0 1 2 3 4 5 Miles

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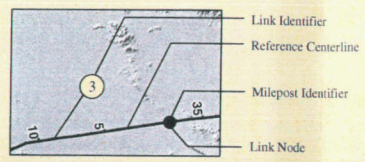
m:/projects/sce/devers/california/mxds/exhi_panel05.mxd

Existing Land Use

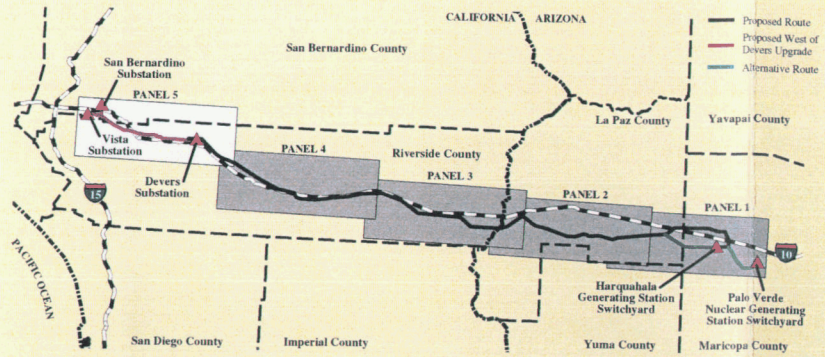
- Residential - High Density
- High Density Residential
- Residential - Medium Density
- Residential - Low Density
- Single Family Dwelling Unit
- Commercial
- Resort/Hotel/Casino
- Mixed Use
- Industrial
- Light Industrial
- Landfill
- Public/Quasi Public
- Cemetary
- Hospital
- School/Educational Facility
- Airfield
- Agriculture
- Agriculture - Outstructure
- Vacant/Undeveloped
- Abandoned Building
- Utility
- Water Tower/Tank
- Wind Farm/Turbine
- Communication Facility
- Recreation
- Open Space
- Water/Riverbed/Wash

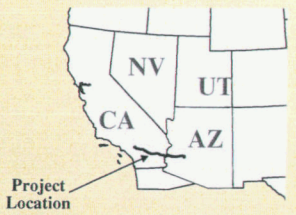
General Reference Features

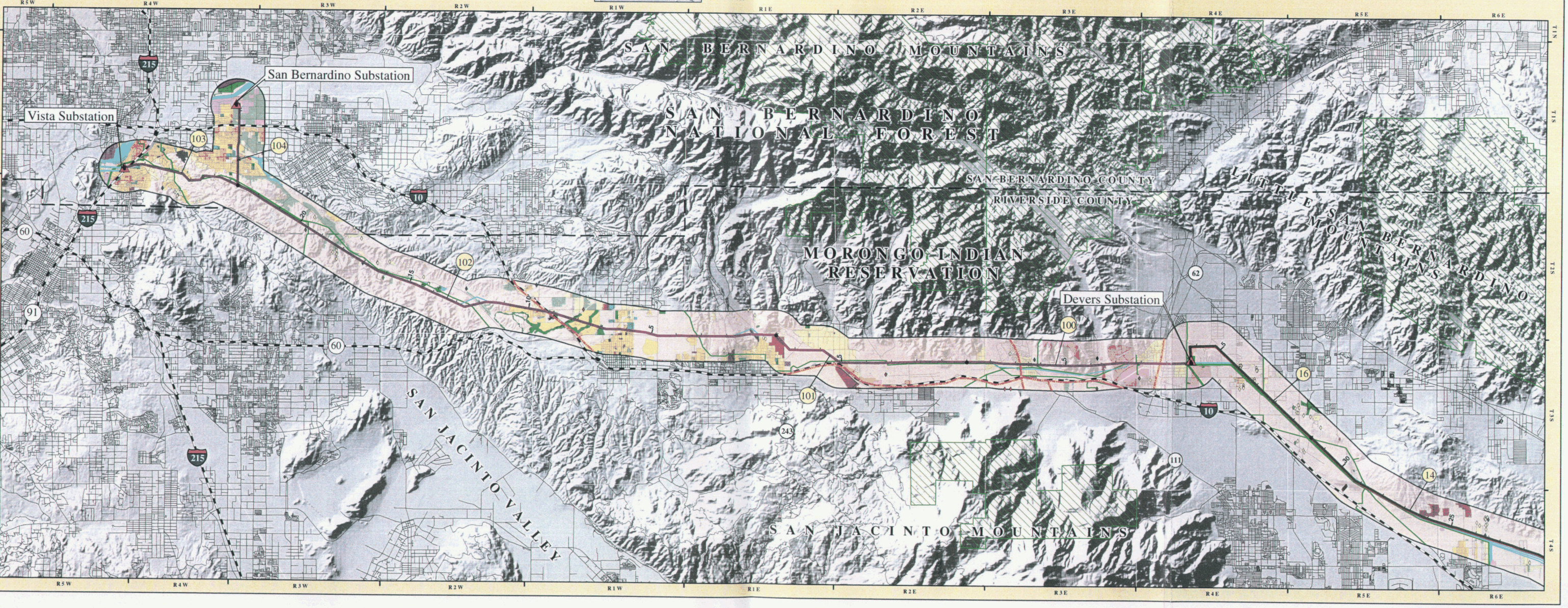
- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range
- Scenic Road



Panel Index Map







Map 4-4a
FUTURE LAND USE

Devers - Palo Verde No. 2 Transmission Line Project
Panel 1 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

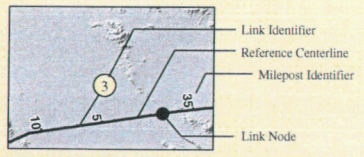
Prepared By: Environmental Planning Group, Inc. March 9, 2004

Future Land Use

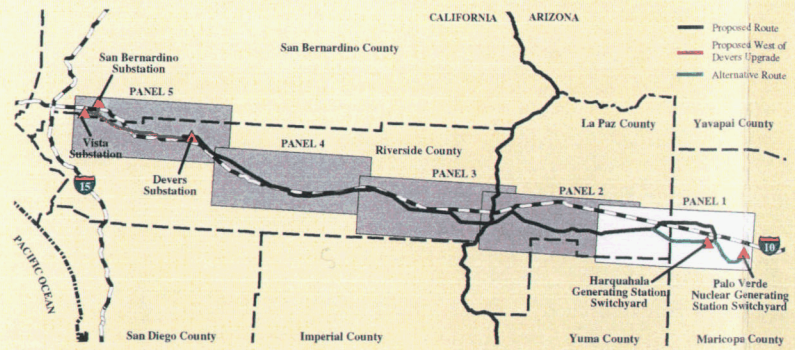
- Residential - Low Density
- Residential - Rural
- Single Family Dwelling Unit
- Industrial
- Agriculture
- Agriculture - Outstructure
- Unplanned
- Utility
- Communication Facility

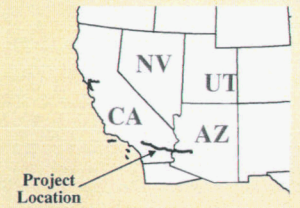
General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative Route
- Existing 500kV Transmission Line
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map





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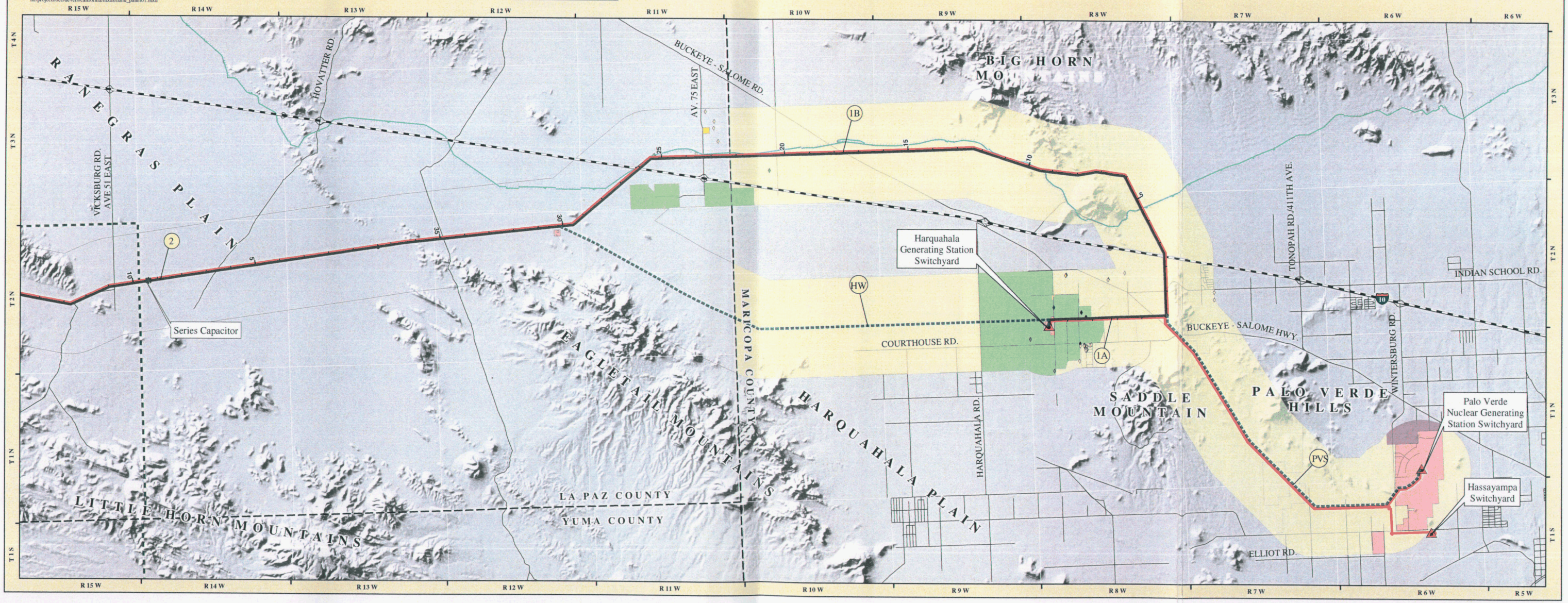


Map 4-4b
FUTURE LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 2 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

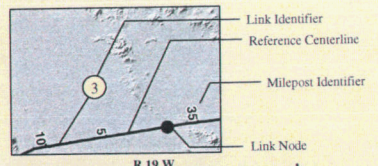
Prepared By: Environmental Planning Group, Inc. March 9, 2004

Future Land Use

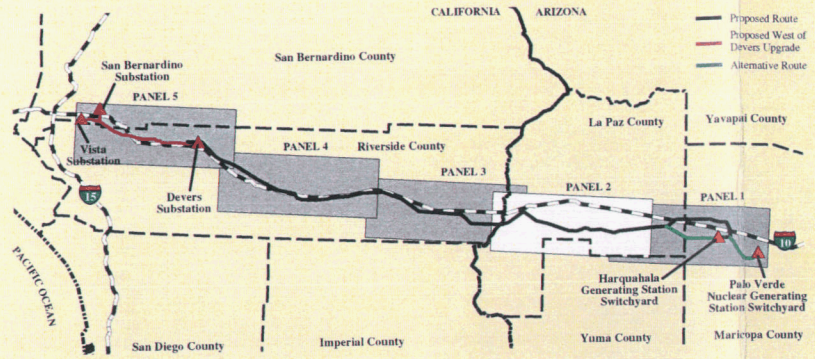
- Residential - Low Density
- Single Family Dwelling Unit
- Agriculture
- Agriculture - Outstructure
- Unplanned
- Utility
- Communication Facility
- Riverbed/Wash
- Parks/Preservation

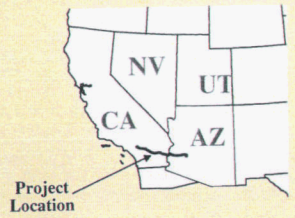
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- State Boundary
- County Boundary
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map





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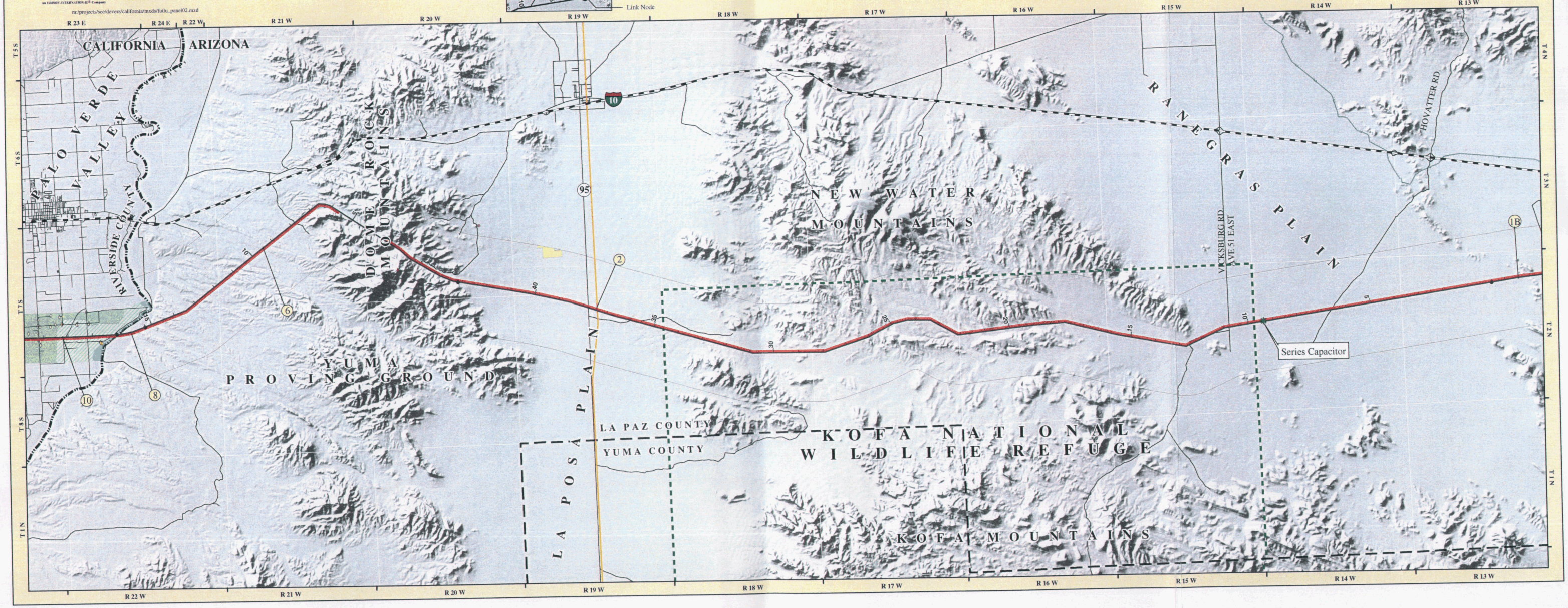


Map 4-4c
FUTURE LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 3 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Landuse data, EPG, Inc. 2003.

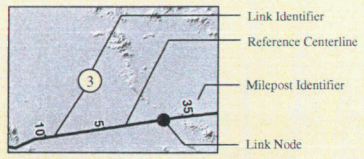
Prepared By: Environmental Planning Group, Inc. March 9, 2004

Future Land Use

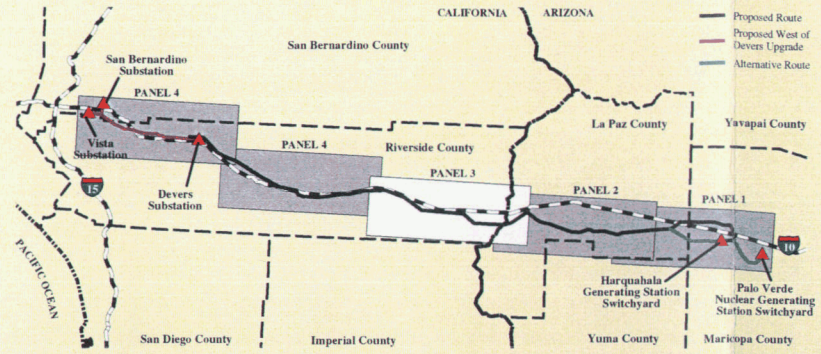
- Residential - Low Density
- Residential - Rural
- Single Family Dwelling Unit
- Mixed Use
- Education
- Agriculture
- Agriculture - Outstructure
- Unplanned
- Abandoned Building
- Riverbed/Wash
- Communication Facility
- Parks/Preservation

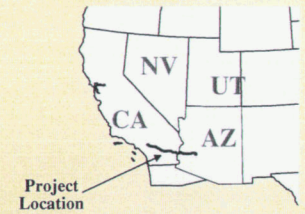
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- State Boundary
- Interstate/Highway
- Roads
- Township and Range
- Midpoint Substation Alternatives
- Fiber Optic Repeater Site



Panel Index Map





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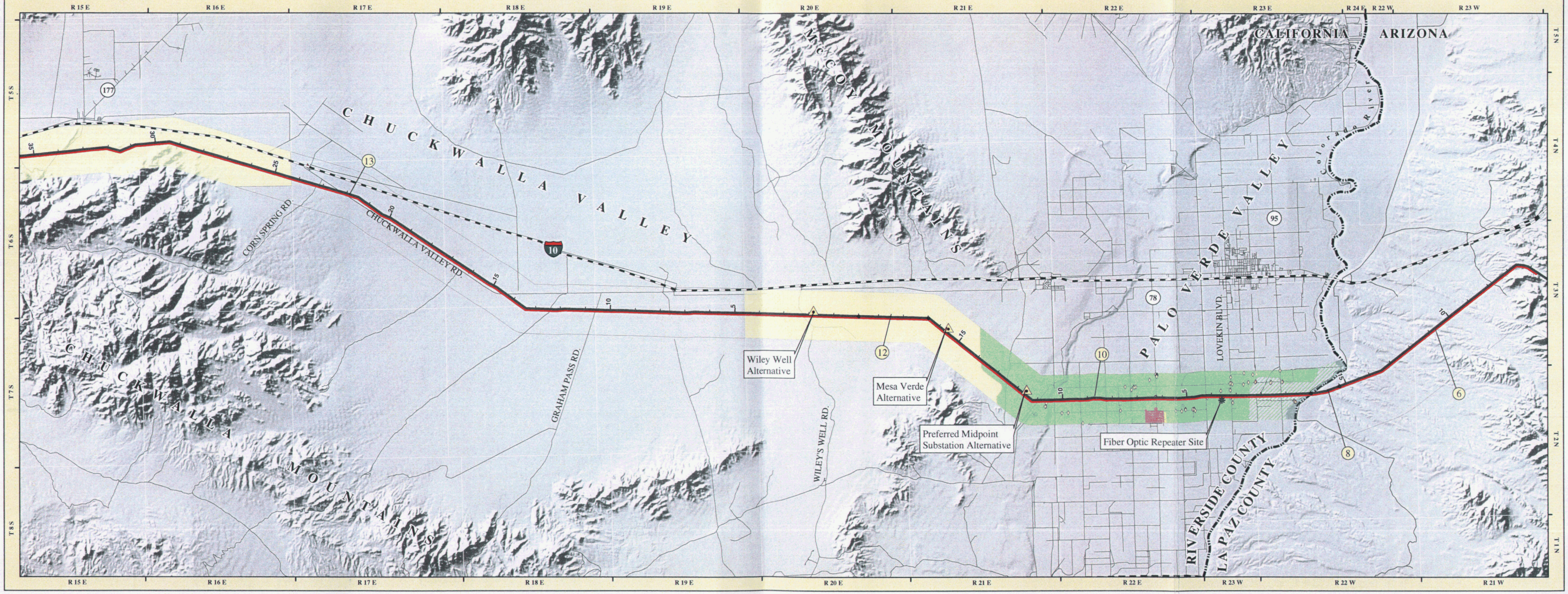

0 1 2 3 4 5 Miles

Map 4-4d
FUTURE LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 4 of 5

Sources

United States Geological Survey, hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. March 9, 2004

0 1 2 3 4 5 Miles

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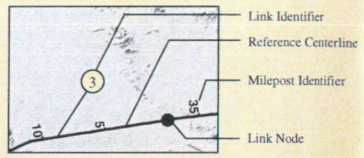
m:/projects/sce/devers/california/mxds/futu_panel04.mxd

Future Land Use

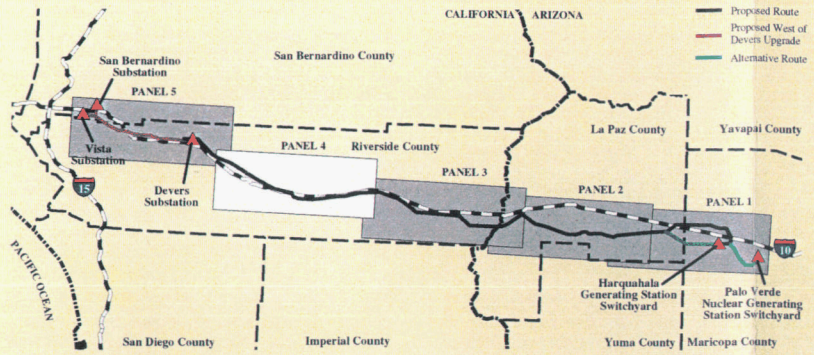
- Residential - Medium Density
- Residential - Low Density
- Residential - Rural
- Single Family Dwelling Unit
- Commercial
- Mixed Use
- Industrial
- Light Industrial
- Extraction/Mining
- Public/Quasi Public
- Airfield
- Agriculture
- Unplanned
- Abandoned Building
- Utility
- Water Tower/Tank
- Communication Facility
- Recreation
- Parks/Preservation
- Open Space
- Non-Developable Open Space
- Lake/Riverbed/Wash

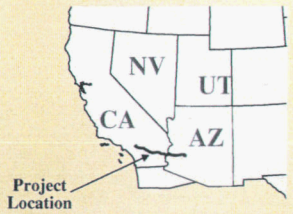
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- Interstate/Highway
- Roads
- Township and Range
- Series Capacitor



Panel Index Map





R5E R6E R7E R8E R9E R10E R11E R12E R13E R14E R15E

T3S T4S T5S T6S T7S

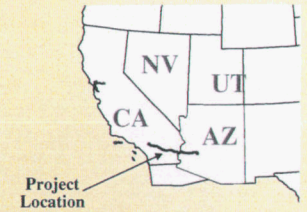
INDIO HILLS
PAR00393
TP30784
BRS000955
Dillon Road
SAN BERNARDINO MOUNTAINS
JOSHUA TREE NATIONAL PARK
COTTONWOOD MOUNTAINS
EAGLE MOUNTAINS
EAGLE MTN. RD.
CHUCKWALLA VALLEY
COTTONWOOD SPRINGS RD.
COACHELLA VALLEY
PAR00393
MECCA HILLS
Box Canyon Road
RED CLOUD MINE RD.
Series Capacitor
OROCOPIA MOUNTAINS

Map 4-4e

FUTURE LAND USE

Devers - Palo Verde No. 2 Transmission Line Project

Panel 5 of 5



Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. March 9, 2004

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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epg

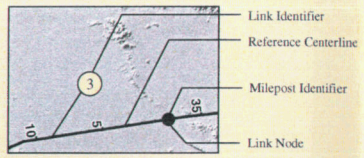
m:/projects/sce/devers/california/mxds/ezlu_panel05.mxd

Future Land Use

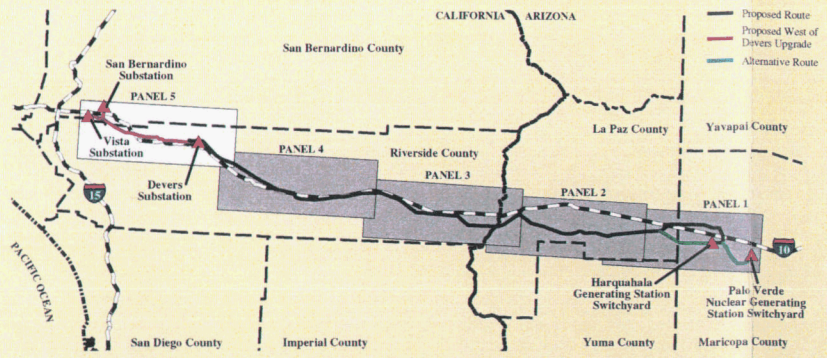
- Residential - High Density
- High Density Residential
- Residential - Medium Density
- Residential - Low Density
- Residential - Rural
- Single Family Dwelling Unit
- Commercial
- Resort/Hotel/Casino
- Mixed Use
- Industrial
- Light Industrial
- Landfill
- Public/Quasi Public
- Cemetary
- Hospital
- School/Educational Facility
- Airfield
- Agriculture
- Agriculture - Outstructure
- Unplanned
- Abandoned Building
- Utility
- Water Tower/Tank
- Wind Farm/Turbine
- Communication Facility
- Recreation
- Parks/Preservation
- Open Space
- Non-Developable Open Space
- Water/Riverbed/Wash

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range



Panel Index Map



R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E

T1N T1S T2S T3S T4S

SAN BERNARDINO MOUNTAINS

SAN BERNARDINO NATIONAL FOREST

SAN BERNARDINO COUNTY

RIVERSIDE COUNTY

LITTLE SAN BERNARDINO MOUNTAINS

MORONGO INDIAN RESERVATION

SAN JACINTO VALLEY

SAN JACINTO MOUNTAINS

San Bernardino Substation

Vista Substation

Devers Substation

PA R00399

TR30784

Map 4-5a
SENSITIVE HABITATS

Devers - Palo Verde No. 2 Transmission Line Project

Panel 1 of 5

Sources

Phoenix BLM. Hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

Sensitive Habitats

Sonoran Desert Tortoise

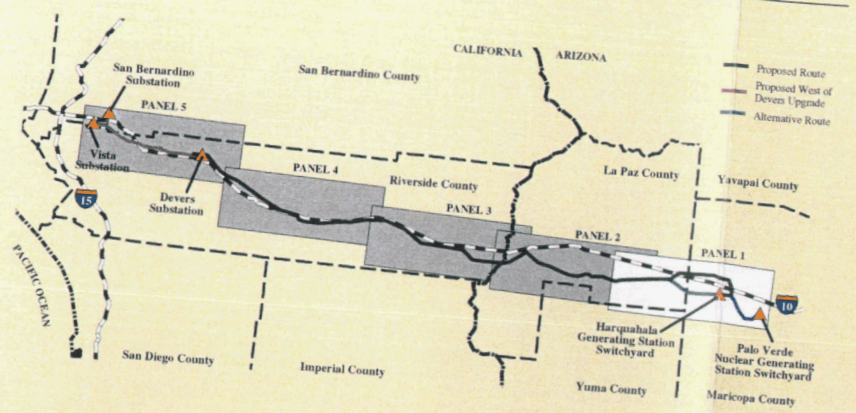
- BLM Designated Category 2 Habitat
- BLM Designated Category 3 Habitat

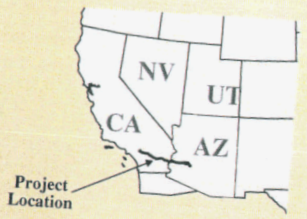
General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor

Link Identifier
Reference Centerline
Milepost Identifier
Link Node

Panel Index Map



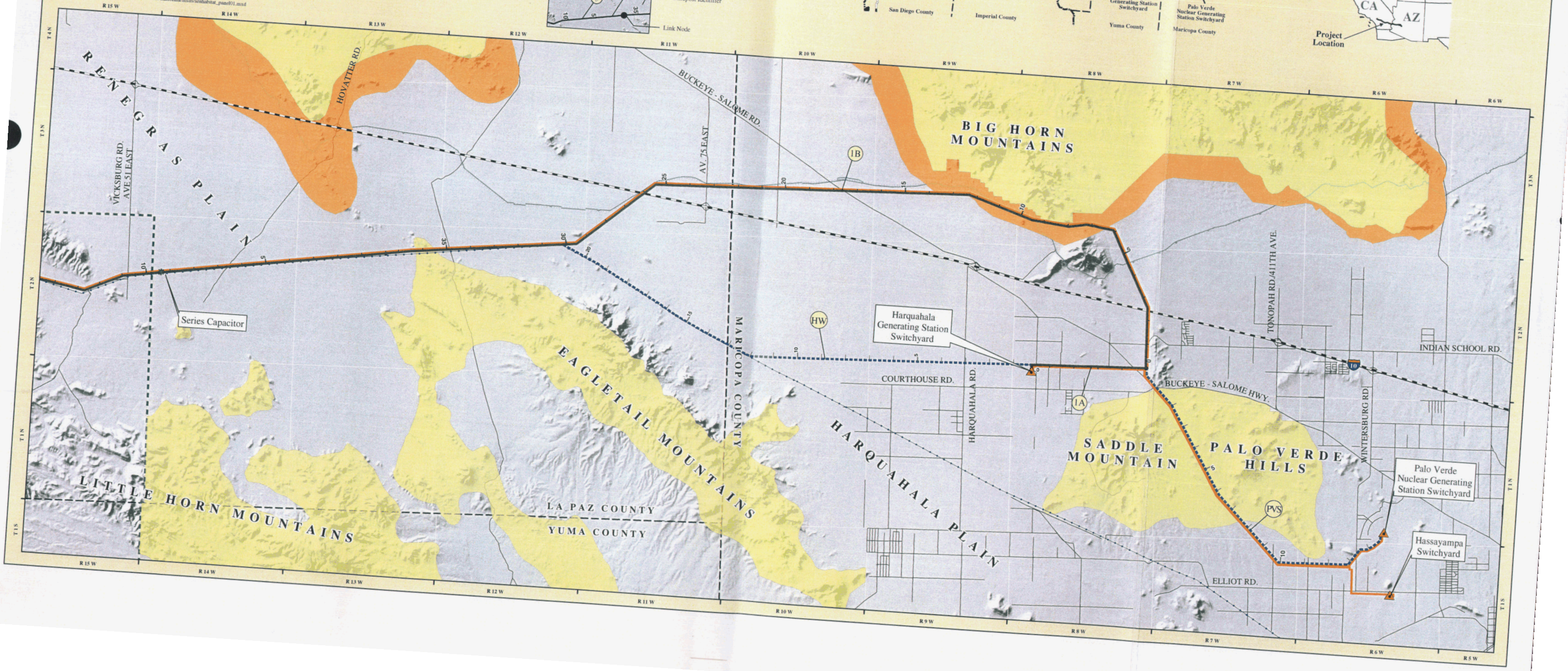


0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON An EDISON INTERNATIONAL Company

epg

m:/projects/sce/devers/california/mxds/senhabitat_panel01.mxd



Map 4-5b
SENSITIVE HABITATS

Devers - Palo Verde No. 2 Transmission Line Project

Panel 2 of 5

Sources

Phoenix BLM, Hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 9, 2005

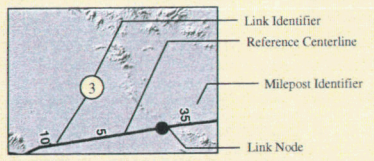
Sensitive Habitats

Sonoran Desert Tortoise

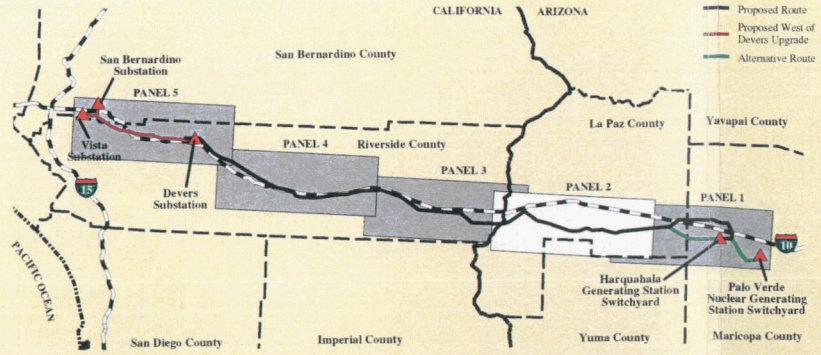
- BLM Designated Category 2 Habitat
- BLM Designated Category 3 Habitat

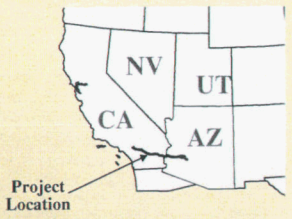
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- Central Arizona Project Canal
- State Boundary
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map





0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

epg

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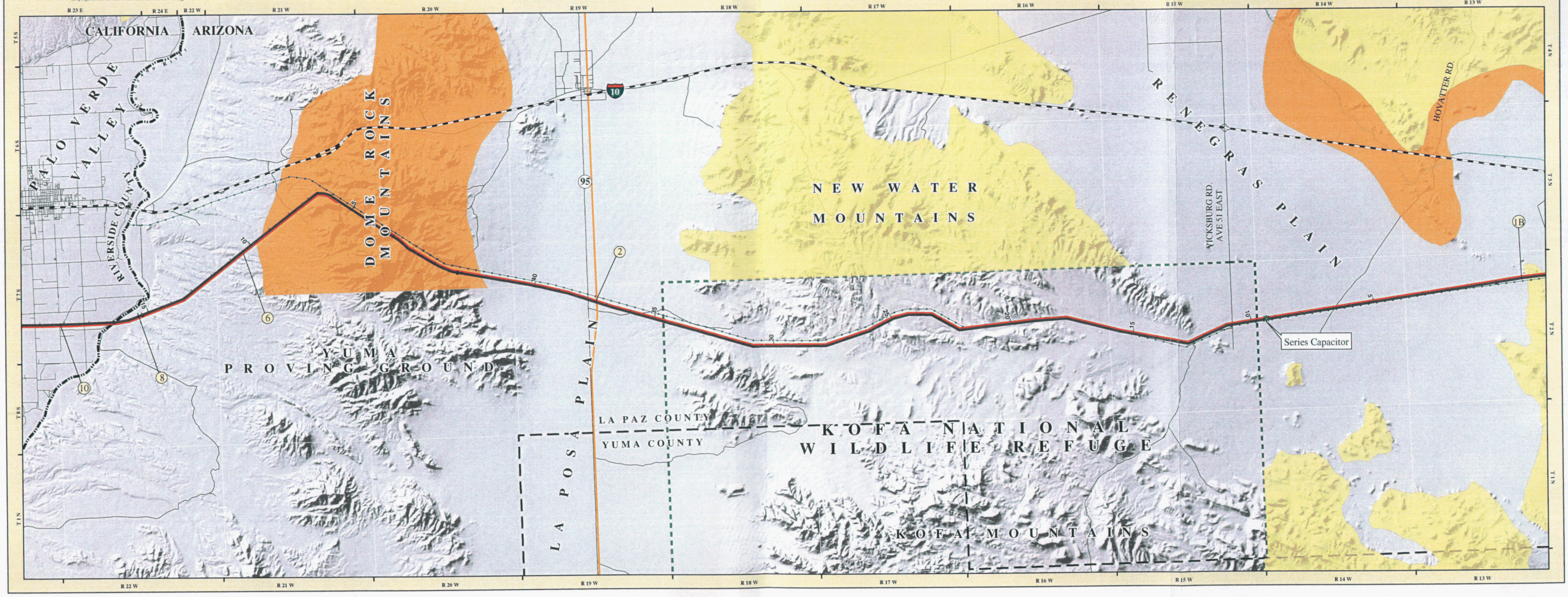


Map 4-5c
SENSITIVE HABITATS

Devers - Palo Verde No. 2 Transmission Line Project

Panel 3 of 5

Sources

BLM Phoenix, BLM California Desert District, USFWS Carlsbad. Hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 9, 2005

Sensitive Habitats

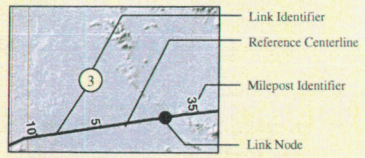
Sonoran Desert Tortoise
- BLM Designated Category 2 Habitat
- BLM Designated Category 3 Habitat

Mojave Desert Tortoise
- BLM Chuckwalla DWMA ACEC
- Critical Habitat

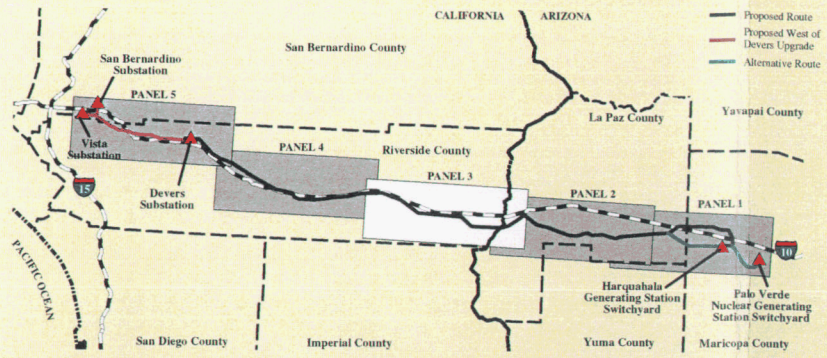
BLM ACEC
- Chuckwalla Valley Dune Thicket

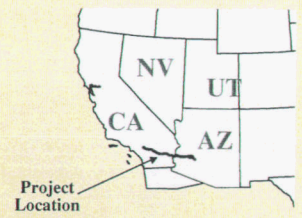
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Roads
- Township and Range
- Midpoint Substation Alternatives
- Fiber Optic Repeater Site



Panel Index Map





N

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON An EDISON INTERNATIONAL Company

epg

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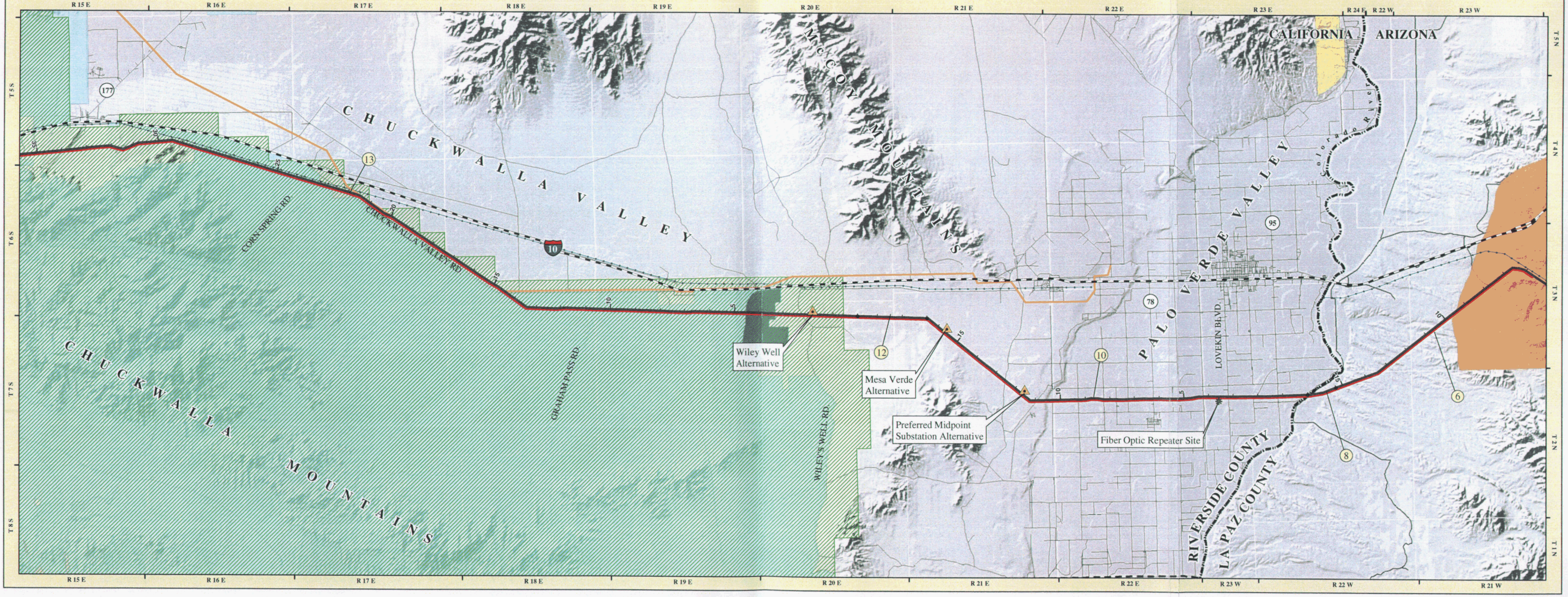


Map 4-5d
SENSITIVE HABITATS

Devers - Palo Verde No. 2 Transmission Line Project

Panel 4 of 5

Sources

BLM California Desert District, USFWS Carlsbad. Hillshade derived from USGS 30-meterDigital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

epg

m:/projects/sce/devers/california/mxds/senhabitat_panel04.mxd

Sensitive Habitats

Mojave Desert Tortoise

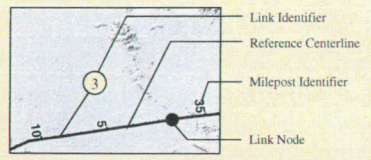
- BLM Chuckwalla DWMA ACEC
- Critical Habitat
- BLM Chuckwalla DWMA ACEC/Critical Habitat

Coachella Valley Fringe-toed Lizard

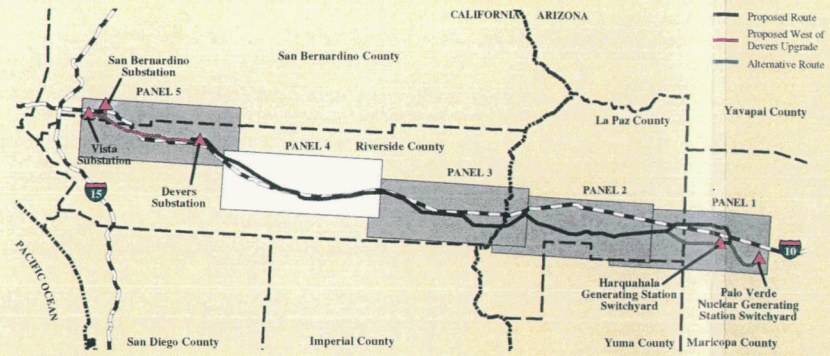
- BLM ACEC
- Critical Habitat

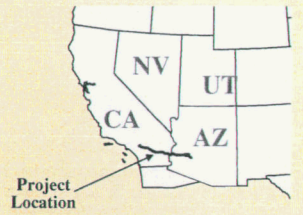
General Reference Features

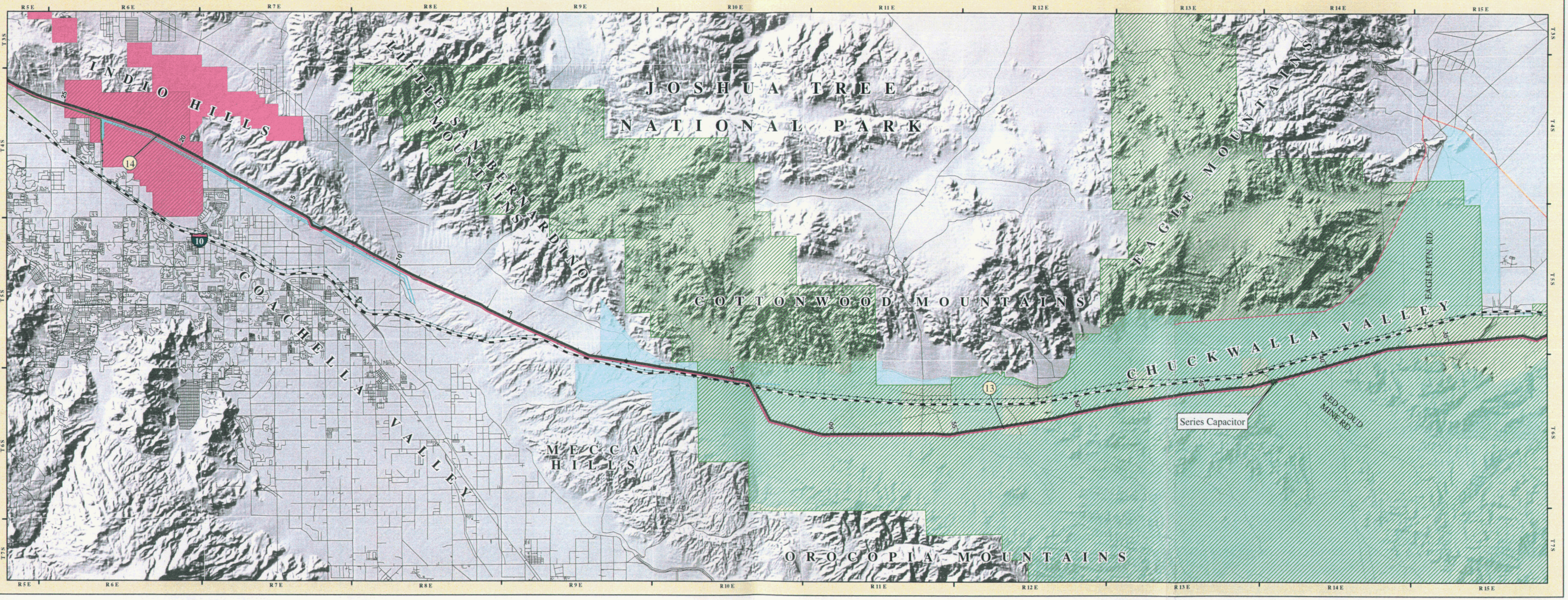
- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- Interstate/Highway
- Roads
- Township and Range
- Series Capacitor



Panel Index Map







Sources

BLM California Desert District, USFWS Carlsbad. Hillshade derived from USGS 30-meterDigital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 9, 2005

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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epg

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Sensitive Habitats

Coachella Valley Fringe-toed Lizard

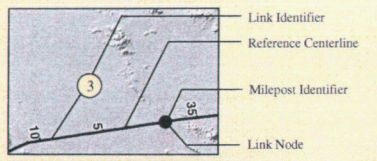
- BLM ACEC
- Citical Habitat

BLM ACECs

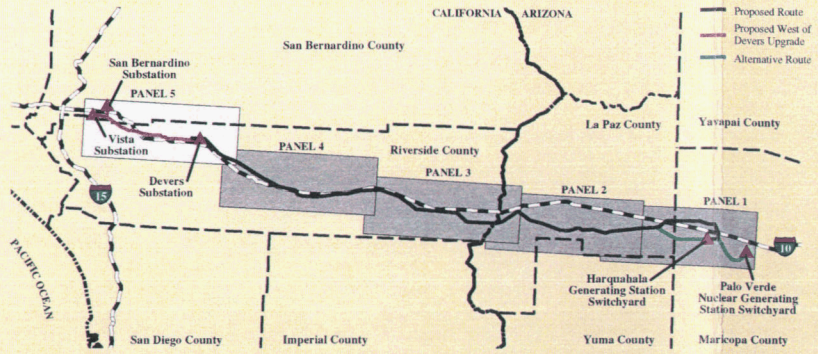
- Big Morongo Canyon
- Potrero
- Whitewater Canyon

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed West of Devers Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range



Panel Index Map

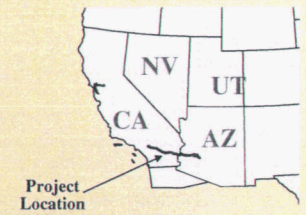


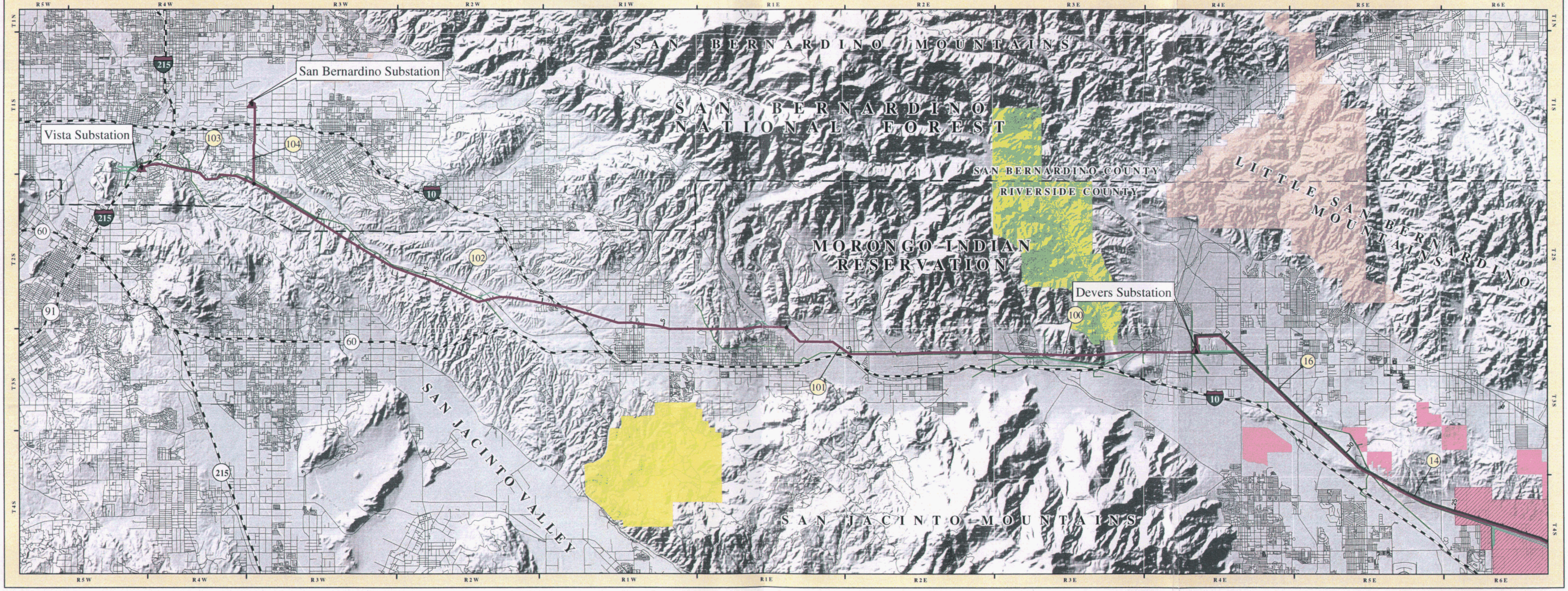
Map 4-5e

SENSITIVE HABITATS

Devers - Palo Verde No. 2 Transmission Line Project

Panel 5 of 5





Map 4-6a
SCENIC QUALITY RATING UNITS/ VISUAL IMAGE TYPES

Devers - Palo Verde No. 2 Transmission Line Project

Panel 1 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

0 1 2 3 4 5 Miles

SOUTHERN CALIFORNIA EDISON
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epg

m:/projects/sce/devers/california/mxds/scenicvis_panel01.mxd

Scenic Quality Rating

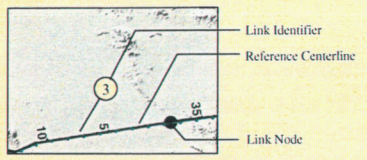
- Class A
- Class B
- Class C

Visual Image Type

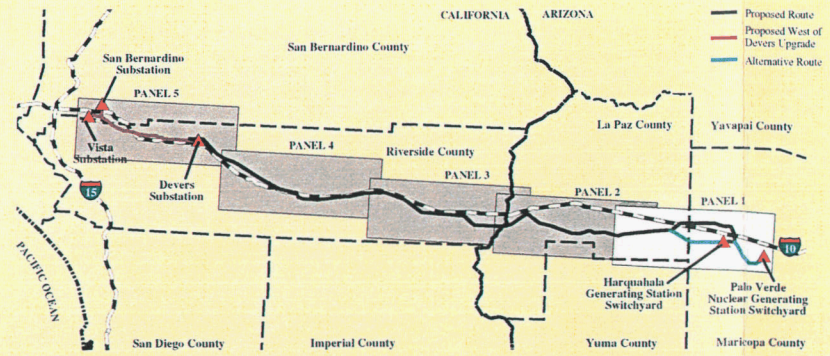
- Agriculture
- Commercial
- Industrial
- Institutional
- Open Space/Parks
- Residential

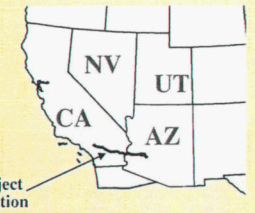
General Reference Features

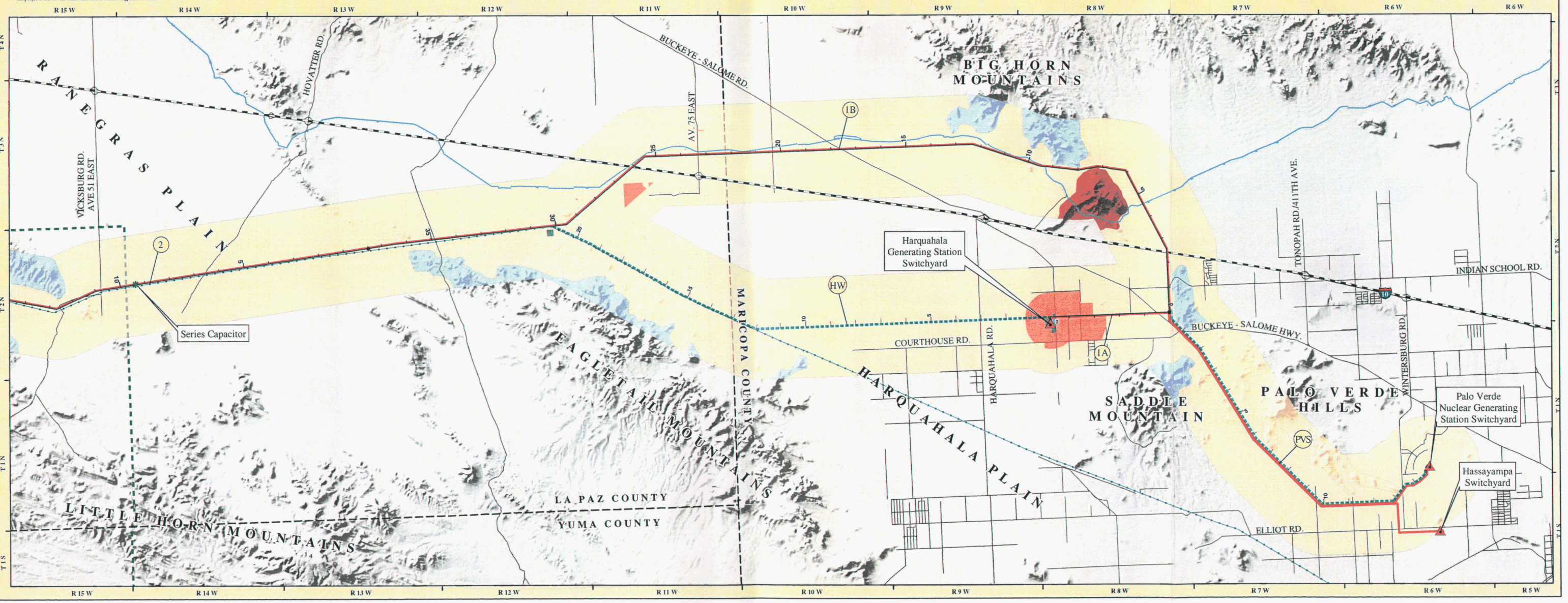
- Proposed 500kV Transmission Line Route
- Alternative Route
- Existing 500kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map







Map 4-6b
SCENIC QUALITY RATING UNITS/ VISUAL IMAGE TYPES

Devers - Palo Verde No. 2
Transmission Line Project

Panel 2 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

Scenic Quality Rating

- Class A
- Class B
- Class C

Visual Image Type

- Agriculture
- Commercial
- Industrial
- Institutional
- Open Space/Parks
- Residential

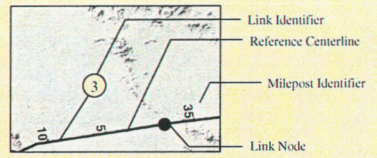
0 1.25 2.5 5 Miles

SOUTHERN CALIFORNIA EDISON An EDISON INTERNATIONAL Company

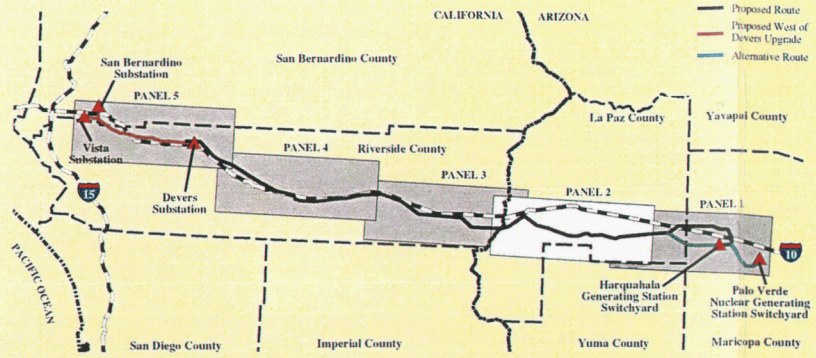
mi/projects/sce/devers/california/mxds/scenicvis_panel02.mxd

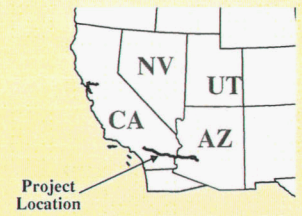
General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Central Arizona Project Canal
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map





Map 4-6c
SCENIC QUALITY RATING UNITS/ VISUAL IMAGE TYPES

Devers - Palo Verde No. 2
Transmission Line Project
Panel 3 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

Scenic Quality Rating

- Class A
- Class B
- Class C

Visual Image Type

- Agriculture
- Commercial
- Industrial
- Institutional
- Open Space/Parks
- Residential

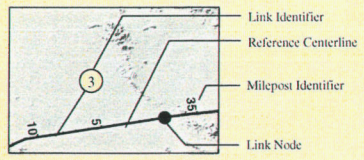
0 1.25 2.5 5 Miles

SOUTHERN CALIFORNIA EDISON

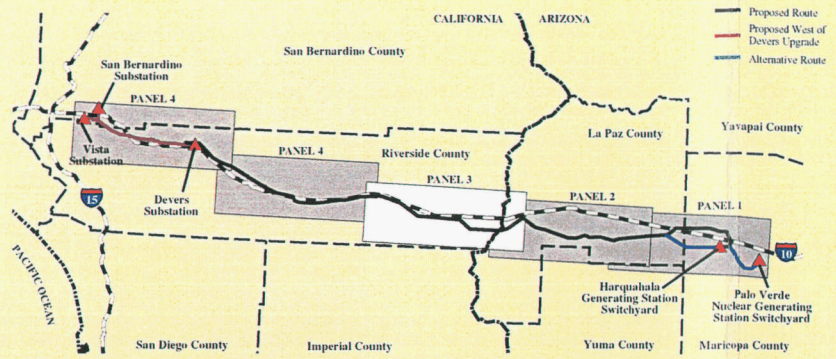
m:\projects\sce\devers\california\mxds\scenicvis_panel03.mxd

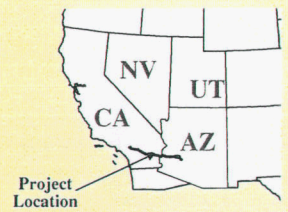
General Reference Features

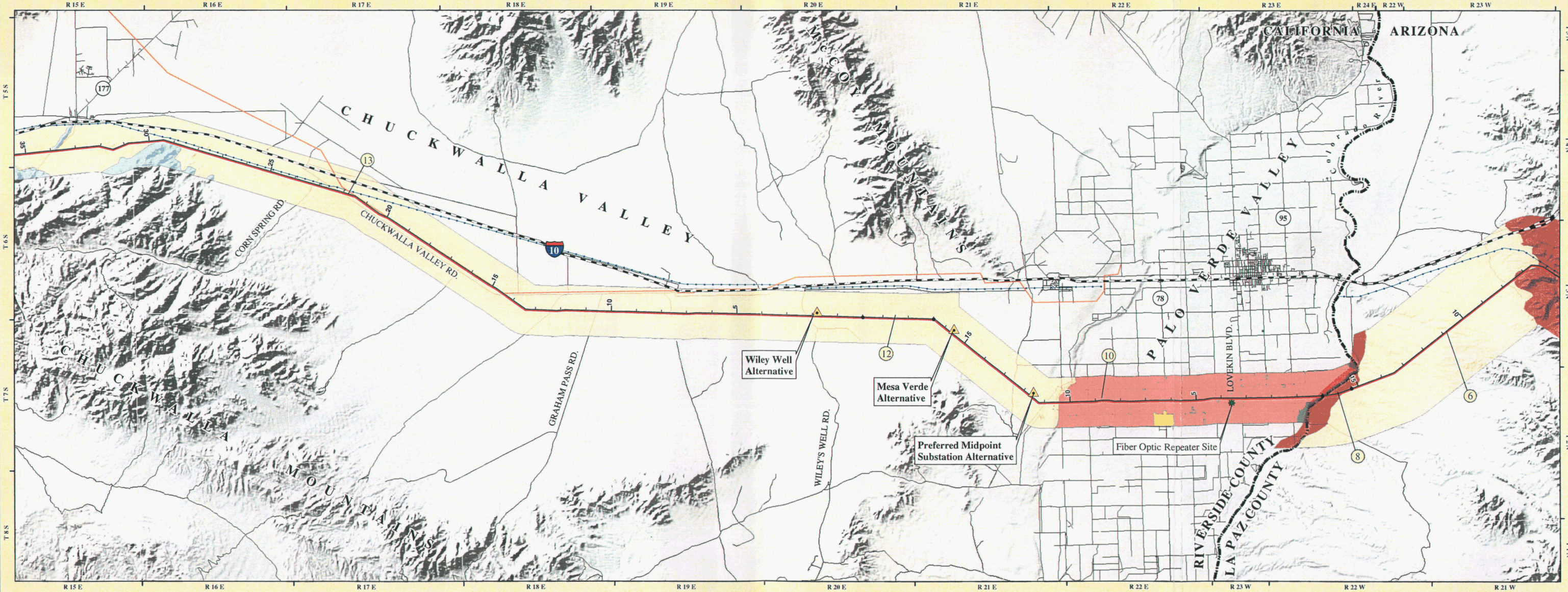
- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- State Boundary
- County Boundary
- Interstate/Highway
- Roads
- Township and Range
- Midpoint Substation Alternatives
- Fiber Optic Repeater Site



Panel Index Map







Sources

United States Geological Survey, hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

Scenic Quality Rating

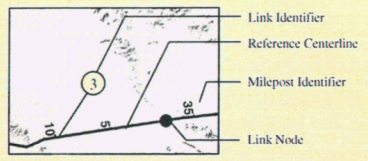
- Class A
- Class B
- Class C

Visual Image Type

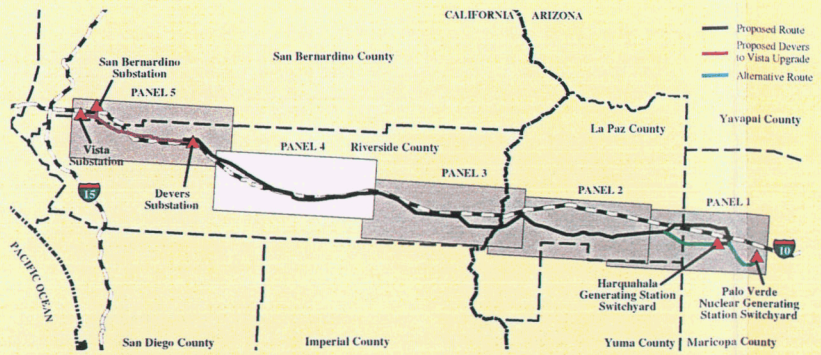
- Agriculture
- Commercial
- Industrial
- Institutional
- Open Space/Parks
- Residential

General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Existing 115kV Transmission Line
- Natural Gas Pipeline
- Interstate/Highway
- Roads
- Township and Range
- Series Capacitor



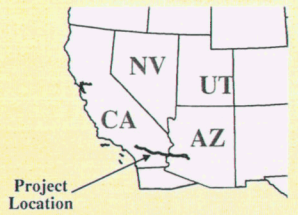
Panel Index Map



Map 4-6d
SCENIC QUALITY RATING UNITS/ VISUAL IMAGE TYPES

Devers - Palo Verde No. 2
Transmission Line Project

Panel 4 of 5



0 1.25 2.5 5 Miles

SOUTHERN CALIFORNIA EDISON

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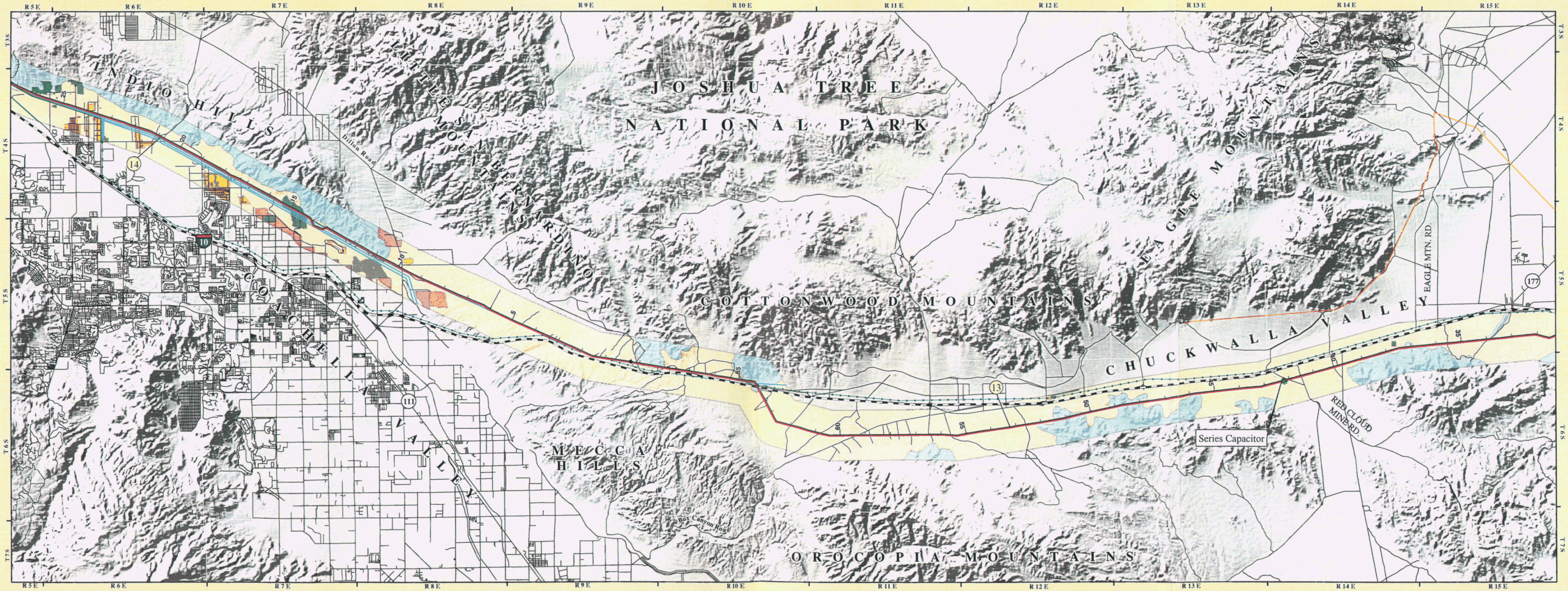


Map 4-6e

SCENIC QUALITY RATING UNITS/ VISUAL IMAGE TYPES

Devers - Palo Verde No. 2 Transmission Line Project

Panel 5 of 5

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models.

Prepared By: Environmental Planning Group, Inc. March 11, 2005

mt/projects/sce/devers/california/mxds/scenicvis_panel05.mxd

Scenic Quality Rating

- Class A
- Class B
- Class C

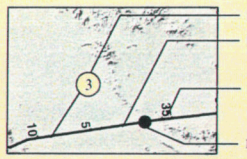
Visual Image Type

- Agriculture
- Commercial
- Industrial
- Institutional
- Open Space/Parks
- Residential

0 1.25 2.5 5 Miles

General Reference Features

- Proposed 500kV Transmission Line Route
- Proposed Devers to Vista Upgrade
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115kV Transmission Line
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Roads
- Township and Range



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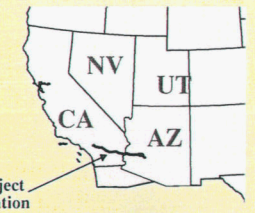

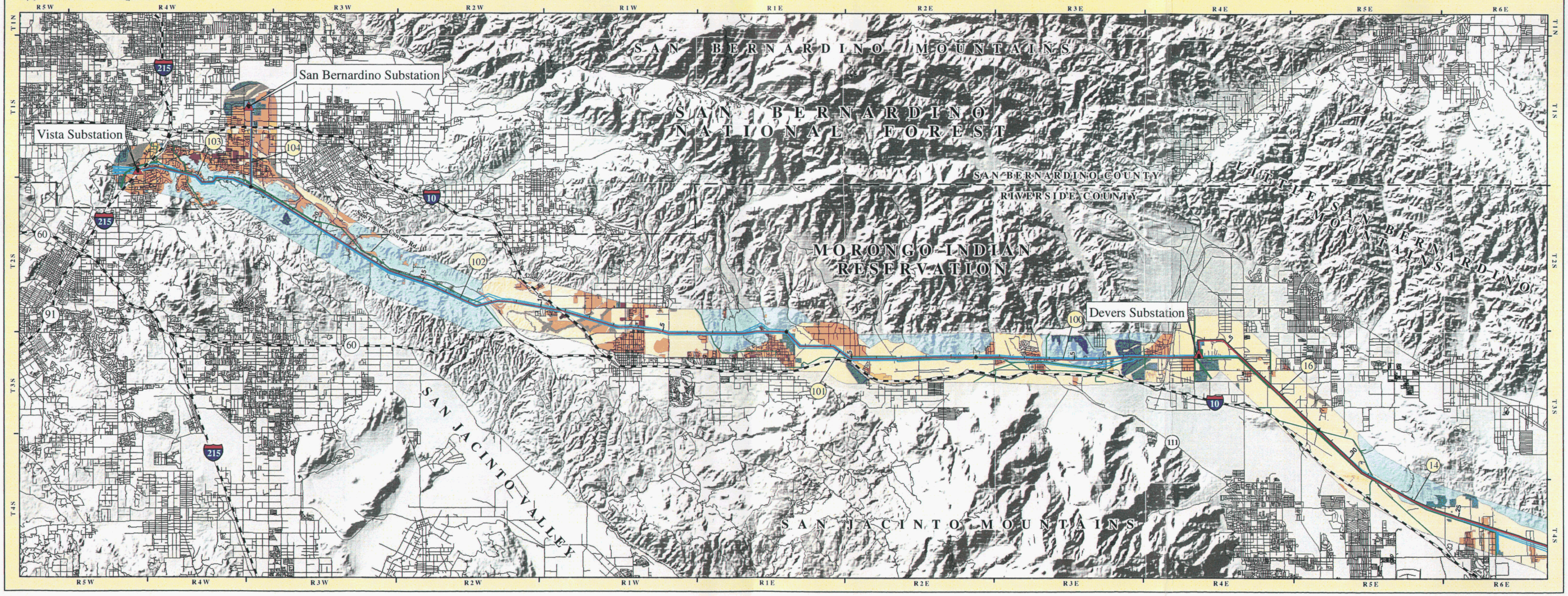

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Certificate of Public Convenience and Necessity Concerning the Devers-Palo Verde No. 2 Transmission Line Project	)))))))	Application No. 05-04-015 (Filed April 5, 2005)

PROPONENT'S ENVIRONMENTAL ASSESSMENT

DEVERS-PALO VERDE NO. 2 TRANSMISSION LINE PROJECT

VOLUME I – PART 2 OF 2

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Dated: April 5, 2005

CHAPTER 5.0
ENVIRONMENTAL IMPACT ASSESSMENT SUMMARY

5.1 DEVERS-HARQUAHALA 500kV TRANSMISSION LINE

5.1.1 Introduction

This section includes the summary of impacts that could occur for each affected resource with respect to the proposed Devers-Harquahala 500kV transmission line. Potentially significant impacts are described in Chapter 6.

5.1.2 Land Use

The proposed Devers-Harquahala transmission line generally parallels the existing DPV1 line, utilizing existing access roads where possible and requiring approximately 19.3 miles of new spur roads.

According to CEQA significance criteria, potential land use impacts can occur based on the following:

- project physically divides an established community
- project conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect
- project conflicts with any applicable habitat conservation plan or natural community conservation plan

- prime farmland, unique farmland, or farmland of statewide importance is converted into a non-agricultural use

- conflicts occur with the existing zoning for agricultural use or Williamson Act contract

- due to location or nature of other involved changes to the existing environment a conversion of farmland to a non-agricultural use results

5.1.2.1 Arizona

The Arizona portion of the proposed Devers-Harquahala 500kV transmission line would be constructed within an existing utility corridor and, therefore, would not physically divide any established community.

The proposed transmission line would not conflict with existing general plans for the study area. The proposed transmission line crosses federal lands within a designated utility corridor, and within an existing right-of-way granted across federal lands; therefore, land use impacts to federal land would be minimal.

No conflicts with habitat conservation plans or natural community conservation plans would occur. Link 2 crosses the KOFA NWR. The USFWS issued a CRC (USFWS 1989 – Appendix C) for the proposed DPV2 500kV transmission line through the KOFA NWR. The CRC states that the proposed transmission line is "compatible with the purpose for which the land was acquired...." Additionally, the CRC indicates that "although the existing and proposed Devers-Palo Verde transmission lines are routed adjacent to proposed wilderness areas on the KOFA Refuge, they remain within the Crystal Hill-Coyote Peak Exclusion, an area specifically eliminated from consideration for wilderness designation because of its utility ROW

development. As stated in the EIS prepared for the 1974 wilderness proposal, wilderness designation would provide for continuation of existing rights-of-way, easements, and permits, and would not preclude additional routes on those lands excluded from wilderness designation if authorized under permit from this agency" (USFWS 1989). The impacts associated with crossing the KOFA NWR would therefore be less than significant.

Potential impacts to areas where private land and recreational areas may be affected by the construction and operational phases of the proposed transmission line are described below.

Construction

The proposed transmission line would cross 2 miles of agricultural land along Link 1a, where approximately 11 tubular steel pole towers would be installed in a parallel alignment with the Harquahala-Hassayampa 500kV transmission line. During the construction phase, temporary laydown areas, tensioning, and pulling sites would result in the removal of some active prime and unique agricultural land from production, and interfere with tilling and irrigation patterns.

A temporary impact during construction may occur where Link 8 crosses the Colorado River and could disrupt the recreational opportunities on the river in the vicinity of the proposed line.

Operation

Potential long-term operational impacts would occur along Link 1a, where tubular steel pole foundations would take approximately 950 square feet of active agricultural land out of production, and may interfere with tilling and irrigation patterns. The proposed transmission line would parallel the existing DPV1 500kV line; thus, impacts to agricultural crop dusters would be less than significant.

5.1.2.2 California

The California portion of the proposed Devers-Harquahala 500kV transmission line would be constructed within an existing utility corridor and, therefore, would not physically divide any established community.

The proposed route would not conflict with adopted environmental plans, policies, or goals of the affected communities. Although the preferred route passes through three cities and two municipal spheres of influence, the proposed transmission line would not conflict with existing general plans. The proposed route would not conflict with specific developments within Riverside County.

No conflicts with habitat conservation plans or natural community conservation plans would occur. The California portion of the proposed Devers-Harquahala 500kV transmission line crosses federal lands within the designated BLM utility corridor and within the existing right-of-way granted by BLM for construction of the DPV2 project. Therefore, impacts to federal land would be minimal.

Potentially significant impacts could occur along Links 13 and 14 where the proposed transmission line would cross three BLM ACECs (Chuckwalla Valley Dune Thicket, Alligator Rock, and Coachella Valley Fringe-toed Lizard), a California State Park (Indio Hills Palms), and the Coachella Valley NWR and Preserve.

Construction

Removal of an unoccupied single-family dwelling unit located within the proposed Devers-Harquahala right-of-way may be required at Link 10, Milepost 5.3. Two single-family dwelling units and a mobile home are located on an 11-acre parcel located west of CA 78 between 24th Avenue and 22nd Avenue north of and adjacent to the DPV2 right-of-way at Milepost 6.2. The

proposed Devers-Harquahala 500kV transmission line would be constructed north of and adjacent to the irrigation ditch, and would be located within approximately 100 feet of the structures. Mitigation would include purchase of the parcel, or selective tower placement, to avoid conflict with the residences.

The proposed transmission line would impact prime irrigated farmland in the Palo Verde Valley along Link 10. Approximately 39 transmission structures would be installed along 10.5 miles of farmland, parallel to the existing DPV1 line. Potential impacts during the construction phase would result from the removal of cropland from production, interference with tilling/irrigation patterns, and potential conflict with agricultural aviators due to temporary laydown areas, tensioning, and pulling sites.

Milepost 15 of Link 14 of the proposed transmission line would cross the Granite Construction Company sand and gravel mine. Impacts may occur if mining operations are impeded during construction.

Link 16 crosses a corral at Milepost 3.4. Potential construction impacts could occur to the corral located under the existing DPV1 transmission line if construction were to temporarily restrict the use of the corral.

Operation

Long-term operational impacts would occur in the Palo Verde Valley along Link 10 where structure foundations would permanently remove less than 0.1 acre of active agricultural land from production, and may interfere with tilling and irrigation patterns. Because the proposed transmission line would parallel the existing DPV1 line, impacts to agricultural aviators would be minimal.

Operational impact also could occur in the vicinity of the Granite Construction Company sand and gravel mine located at Milepost 15 of Link 14. No long-term operational impacts would occur, however, because the mine would be spanned by placing towers on either side of the mine pit.

5.1.3 Socioeconomics, Population, and Housing

According to CEQA significance criteria, potential impacts to population and housing could occur based on the following:

- project induces substantial population growth in an area, either directly (i.e., by proposed new homes and businesses) or indirectly (i.e., through extension of roads or other infrastructure)

- project displaces substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere

- project displaces substantial numbers of people, necessitating the construction of replacement housing elsewhere

5.1.3.1 Arizona

The construction of the proposed transmission line would not have a significant impact on the population or housing of the communities through which it passes in Arizona. An estimated 205 construction personnel are expected to be employed for the Devers-Harquahala 500kV line construction in Arizona and California combined.

No permanent housing would be required, as a long-term operations work force would not be needed after construction is complete. Should housing be required during construction, the town of Quartzsite, located near the proposed route in La Paz County, is accustomed to seasonal fluctuations in population from tourism; the relatively small influx of construction workers would not adversely impact the community's ability to provide housing or other accommodations. In addition, the towns of Tonopah and Buckeye in Maricopa County have adequately supported the influx of construction labor for numerous energy projects in recent years. As such, the proposed transmission line would not induce significant growth, resulting in a less than significant impact, or displace any existing housing, resulting in no impact. Any worker expenditures in these communities would represent a small, short-term benefit to some businesses in the vicinity of the proposed route.

An estimate of potential property tax payments to local jurisdictions was calculated based on proposed project costs and weighted ad valorem tax rates on a county basis. Many property-taxing jurisdictions would receive tax revenues from the proposed Devers-Harquahala transmission line. For purposes of this analysis, only total tax payments in each county are addressed, without allocation to the jurisdictions within counties to which such taxes would accrue, such as cities and special districts.

The results indicate that property taxes paid in La Paz County would represent a significant proportion of the county's total assessed valuation. The estimated annual property tax revenue would be approximately $3.4 million (in 2010), which would be more than 19 percent of La Paz County's total assessed value in fiscal year 2003-2004, and a total of approximately $14 million (net present value) or $48 million (nominal value) over the project life.

The estimated highest annual property tax payment in Maricopa County would be less than $2 million, which would be less than 1 percent of the county's total assessed valuation.

It is important to recognize that these estimates are preliminary and subject to revision as project planning proceeds. Actual property tax payments would be established by the state valuation

agencies in detail when the proposed transmission line is constructed and do not constitute a commitment by SCE.

5.1.3.2 California

The construction of the proposed Devers-Harquahala transmission line would not have a significant impact on the population or housing of the communities through which it passes in California. The greater Palo Verde and Coachella valleys are accustomed to seasonal fluctuations in population from tourism. The relatively small influx of construction workers would not adversely impact the community's ability to provide housing or other accommodations.

Potential property tax payments to local jurisdictions were estimated based on proposed project costs and weighted ad valorem tax rates on a county basis. Many property-taxing jurisdictions would receive tax revenues from the proposed DPV2 project. For purposes of this analysis, only total tax payments in each county are addressed, without allocation to the jurisdictions within counties to which such taxes would accrue, such as cities and special districts. These estimates also combine the west of Devers 230kV transmission upgrades with the California portion of the Devers-Harquahala 500kV transmission line and related facilities. Tax payments have been estimated for all counties affected by the proposed transmission line within California (i.e., Riverside, San Bernardino, Orange, and San Diego).

The results indicate that property taxes paid in California would not represent a significant proportion of the counties' total assessed valuation. The estimated annual property tax revenue for Riverside County would be approximately $3.9 million (in 2010), which would be less than one percent of the county's combined total assessed value in fiscal year 2003-2004, and total $15.3 million (net present value) or $51 million (nominal value) over the project life.

In San Bernardino County, estimated tax revenues would be approximately $7.2 million over the project life. Negligible tax revenues would accrue to Orange and San Diego counties.

It is important to recognize that these estimates are preliminary and subject to revision as project planning proceeds. Actual property tax payments would be established by the state valuation agencies in detail when the Devers-Harquahala transmission line is constructed and do not constitute a commitment by SCE.

5.1.4 Geology and Soils

According to CEQA significance criteria, potential geologic impacts could occur if the proposed Devers-Harquahala transmission line facilities were exposed to or cause one or more of the following:

- rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault
- seismic ground shaking, seismic-related ground failure, liquefaction
- inundation by seiche, tsunami, mudflow
- landslides and flooding
- wildland fires
- substantial soil erosion or the loss of topsoil
- loss of unique geologic features
- on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse

- expansive soil that could create substantial risks to life or property

- have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater

- the project was to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state

- the project was to result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan or other land use plan

5.1.4.1 Arizona

Geology

No potentially significant impacts for geology were identified within the Arizona portion of the Devers-Harquahala study corridor during construction of the DPV1 project. The proposed transmission line would follow the alignment of the existing DPV1 transmission line and would utilize existing access roads. Except for spur roads in work areas within the existing right-of-way, construction of the proposed transmission line would not require any new access road grading that would result in modifications to ground surface features.

In areas of low relief along the existing DPV1 line right-of-way, a minimal amount of grading was done for the construction of spur roads and tower pads, thus minimizing disturbance to the existing terrain or ground surface within the right-of-way. Similar procedures would be utilized in construction of the spur road extensions and pads for the proposed Devers-Harquahala transmission line. Soil compaction along new spur roads in soft fluvent soils may result in

localized shallow depressions of the ground surface. These depressions would be limited to the spur roads and tower pads and would be insignificant.

Geologic or physical features that may be considered unique are desert pavements and sand dunes. The only extensive sand dune is located southeast of Ford Dry Lake in California. The access road along the existing alignment does not traverse this feature.

Desert pavement is common in the study area. As noted previously, impacts to desert pavement by spur roads and tower pads were minimized on the existing DPV1 line alignment by limiting or eliminating grading in areas of low relief terrain. Similar procedures would be utilized in constructing the spur roads and pads for the proposed Devers-Harquahala transmission line.

Operation of the proposed transmission line would have minimal impacts on geology.

To mitigate potential impacts to geology, mitigation measures specified in the 1989 BLM Right-of-Way Grant (Appendix B) would be applied, including 2-1, 2-6, and 2-9.

Soils

No significant impacts were identified to soils within the Arizona portion of the proposed Devers-Harquahala study corridor during construction of the existing DPV1 project. Soil erosion along the existing DPV1 transmission line and its access road, due to surface water runoff, has been minimal. The erosion that has occurred is localized and is largely the result of surface water eroding low fill slopes and local portions of the access road with steep gradients. Since the proposed transmission line would utilize existing access roads, and the major portion of the proposed route crosses relatively low relief terrain, the erosion impacts due to the new spur roads and tower pads would be insignificant.

5.1.4.2 California

Geology

No potentially significant impacts were identified for geology within the California portion of the Devers-Harquahala study corridor during construction of the DPV1 project. Similar to the Arizona portion of the corridor, the proposed transmission line would follow the alignment of the existing DPV1 transmission line and would utilize existing access roads. Except for spur roads in work areas within the existing right-of-way, construction of the proposed transmission line would not require any new access road grading that would result in modifications to ground surface features.

In areas of low relief along the existing DPV1 line right-of-way, minimal or no grading was done for spur roads and tower pads for its construction, thus disturbance to the existing terrain or ground surface was minimized. Similar procedures would be utilized in construction of the spur roads and pads for the proposed Devers-Harquahala transmission line. Soil compaction along new spur roads in soft fluvent soils may result in localized shallow depressions of the ground surface. These depressions would be limited to the spur roads and tower pads and would be insignificant.

The western portion of the proposed route is located in a seismically active region and crosses the active Banning and Mission Creek faults and the potentially active Mecca Hills Fault. The towers along the alignment in this area could likely be subject to severe seismic shaking within the lifetime of the proposed project. Stringing and wind loads are generally higher than seismic load on towers, so this potential impact is not considered significant to the operation of the proposed transmission line. Ground surface rupture also may occur at the line crossings of active faults. Towers would be located to avoid siting over an active fault trace. Landslides, mudslides, or other related ground failures are not considered to be a significant impact along the preferred alignment.

During the design life of the proposed project, moderate to high levels of ground shaking are possible given the seismic setting of the project area. Design-level studies would identify the hazard levels and present engineering recommendations to support appropriate seismic designs. Overhead transmission lines and substation equipment can be engineered and constructed to withstand strong motions and moderate ground deformation. For example, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substation." Strong ground shaking is considered during substation design, but is not as relevant to transmission line tower design because wind design criteria, which are considered, are more conservative than ground shaking considerations.

Geologic or physical features that may be considered unique are desert pavements and sand dunes. Impacts to these features would be insignificant as the access road along the existing alignment would be utilized. This access road does not traverse the only extensive sand dune found in the study area. The sand dune is located southeast of Ford Dry Lake in California, which is north of I-10.

Soils

No significant impacts were identified to soils within the California portion of the proposed Devers-Harquahala study corridor during construction of the DPV1 project. Soil erosion along the existing DPV1 transmission line and its access road due to surface water runoff has been minimal. The erosion that has occurred is localized and is largely the result of surface water eroding low fill slopes and local portions of the access road with steep gradients. Since the proposed Devers-Harquahala transmission line would utilize existing access roads, and the major portion of the proposed route crosses relatively low relief terrain, the erosion impacts due to the new spur roads and tower pads would be insignificant.

5.1.5 Hydrology

According to CEQA significance criteria, potential impacts to water quality could occur if the proposed transmission line were to cause one or more of the following:

- violation of any water quality standards or waste discharge requirements

- substantial depletion of groundwater supplies or interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level

- substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site

- substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or a substantial increase in the rate or the amount of surface runoff in a manner which would result in flooding on- or off-site

- creation or contribution to runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff

- placement of housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map

- placement of a structure within a 100-year floodplain structure that would impede or redirect flood flows

5.1.5.1 Arizona and California

The construction and operation of the proposed Devers-Harquahala transmission line is not expected to violate water quality standards or waste discharge requirements. No groundwater would be used for construction or operations; therefore, no impacts are expected to aquifer volume. There is a low potential for increased surface water runoff and sedimentation. Such an effect would be less than significant since existing access roads would be utilized, except for construction of spur roads and work areas. Washes would be spanned, where possible; therefore, no significant impacts are expected to streams or washes.

5.1.6 Air Quality

According to CEQA significance criteria, potential air quality impacts could occur if the project would:

- conflict with or obstruct implementation of applicable Air Quality Attainment Plan or Congestion Management Plan
- violate any stationary source air quality standard or contribute to an existing or projected air quality violation
- result in a net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative threshold for ozone precursors)
- create or contribute to a non-stationary source "hot spot" (primarily carbon monoxide)
- expose sensitive receptors to substantial pollutant concentrations
- create objectionable odors impacting a substantial number of people

5.1.6.1 Arizona and California

CEQA requires Air Quality Management Districts in California to determine thresholds of significance for emissions. These emissions thresholds have been compiled based on the standards developed by SCAQMD and the MDAQMD. No local emissions thresholds exist for the portion of the proposed Devers-Harquahala transmission line that is located in Arizona. Table 5-1 lists the daily emission thresholds of significance in California for the construction components of the proposed Devers-Harquahala transmission line. Projects that produce pollutants that exceed the amounts listed may have a potentially significant impact on air quality.

Emissions results for the west of Devers 230kV transmission line upgrade are described in Section 5.2.6. Fugitive dust and vehicle emissions for the proposed west of Devers 230kV upgrade are included in Tables 5-2 through 5-4, in order to illustrate cumulative impacts for the California portion of the proposed Devers-Harquahala transmission line during construction.

TABLE 5-1
AIR POLLUTION CONTROL DISTRICT
SIGNIFICANCE IMPACT EMISSION THRESHOLDS (CONSTRUCTION)

Air Pollution Control District		Pollutant				
		CO	ROC	NO_x	SO_x	PM_{10}
SCAQMD	tons per year	99	10	10	27	27
	tons per quarter	25	2.5	2.5	7	7
	pounds per day	413	42	42	113	113
MDAQMD	tons per year	75	25	25	25	15
	tons per quarter	19	6	6	6	4
	pounds per day	313	104	104	104	63

Source: MDAQMD 2002; SCAQMD 2002
CO – carbon monoxide
ROC – reactive organic compounds
NO_x – nitrogen oxide
SO_x – oxides of sulfur
PM_{10} – particulate matter

TABLE 5-2 ESTIMATED CUMULATIVE FUGITIVE DUST PM_{10} EMISSIONS BEFORE MITIGATION	
	PM_{10} (lbs/day)
Arizona (Devers-Harquahala)	273
California (Devers-Harquahala)	340
California (west of Devers upgrade)	114
California Emissions Total	**454**

TABLE 5-3 ESTIMATED CUMULATIVE FUGITIVE DUST PM_{10} EMISSIONS AFTER MITIGATION		
	PM_{10} (lbs/day)	**PM_{10} (tons/year)**
Arizona (Devers-Harquahala)	62	7.2
California (Devers-Harquahala) (MDAQMD)	78	2.1
California (Devers-Harquahala) (SCAQMD)	78	9.2
California (west of Devers) (SCAQMD)	31	0.4
California SCAQMD Total	109	9.6
Assumptions based on five-day work weeks.		

TABLE 5-4 ESTIMATED CUMULATIVE DAILY EXHAUST EMISSIONS FOR CONSTRUCTION VEHICLES					
	Emissions (lbs/day)				
	CO	**ROC**	**NO_x**	**SO_x**	**PM_{10}**
Arizona	236.3	61.7	445.4	76.7	32.4
California (Devers-Harquahala) (MDAQMD and SCAQMD)	236.3	61.7	445.4	76.7	32.4
California (west of Devers upgrade) (SCAQMD)	195.2	45.6	366.1	30.0	23.3
California SCAQMD Total	431.5	107.3	811.5	106.7	55.7
	Emissions (tons/year)				
	CO	**ROC**	**NO_x**	**SO_x**	**PM_{10}**
Arizona	27.3	7.1	51.4	8.9	3.7
California (Devers-Harquahala) (MDAQMD)	6.4	1.7	12.0	2.1	0.9
California (Devers-Harquahala) (SCAQMD)	27.8	7.2	52.3	9.0	3.8
California (west of Devers upgrade) (SCAQMD)	25.4	5.9	47.6	3.9	3.0
California SCAQMD Total	53.2	13.1	99.9	12.9	6.8
Source: Exhaust emissions factors found in Table A9-8-B of CEQA Air Quality Handbook. SCAQMD, revised 1993. Assumptions based on diesel fuel emissions, for eight-hour work day.					

Construction

Based on the construction plan described in Section 3.5, a variety of truck auxiliary vehicles would be used over a 24-month period for construction. Construction would occur in phases starting at both endpoints. The phases include material processing, roads, foundations, tower assembly/erection, and conductor operations. As work on any one phase is completed, the construction crew moves on to the next segment and is followed by the crew responsible for the next phase of construction. The construction of the proposed Devers-Harquahala 500kV transmission line would produce emissions in the form of fugitive dust and exhaust from heavy equipment and support vehicles.

During construction of the proposed project, exhaust emission is produced by vehicles and other internal combustion equipment. These emissions are in the form of CO, ROC, NO_x, SO_x, and PM_{10}.

PM_{10} is also generated as fugitive dust emissions from ground clearing and grading, and dust generated from vehicle traffic at the construction site.

Based on the estimated total number of acres disturbed and the amount of fuel consumption per day, the total amount of unmitigated worst case PM_{10} fugitive dust emissions were calculated to be 454 pounds per day (lbs/day) for the SCAQMD (including Devers-Harquahala and west of Devers) and 340 lbs/day for the MDAQMD (Devers-Harquahala), as presented in Table 5-2 (SCAQMD 1993). Approximately 127 miles of the proposed Devers-Harquahala 500kV line are located in California. Within California, approximately 24 miles of the proposed line are within the MDAQMD and 103 miles are within the SCAQMD. Calculations assume that there would be grading operations performed on all of the development area in California and would include 114 lbs/day of PM_{10} for the west of Devers 230kV upgrade portion of the DPV2 project. The calculated value exceeds the construction emission threshold of 113 lbs/day developed by the SCAQMD and 63 lbs/day developed by the MDAQMD. However, implementation of the Best Available Control Measures (BACM) would be utilized in order to control dust emissions,

reducing the cumulative impact of the project to less than significant levels (see Table 5-3). These BACM mitigation measures are described in Section 6.1.6. Yearly emissions totals were calculated assuming a 24-month construction period for the Devers-Harquahala 500kV and the west of Devers portions of the proposed DPV2 project. The MDAQMD and SCAQMD totals were calculated (after mitigation) based on the percent of the line found in each district. These totals also are shown in Table 5-3.

The cumulative exhaust emissions produced from the vehicles and equipment used for construction also were calculated. A summary of the impacts produced from the vehicles and equipment used is presented in Table 5-4. The work schedule and total fuel consumed were used in the calculations and the emission rates were estimated based on the CEQA Air Quality Handbook. The estimated daily exhaust emissions would exceed the SCAQMD thresholds for CO, ROC, and NO_x and the MDAQMD threshold for NO_x. Yearly exhaust emissions would exceed the SCAQMD thresholds for ROC and NO_x and the MDAQMD for NO_x. Mitigation measures to reduce these impacts would include purchasing air emissions credits from the districts to offset the construction emissions.

The estimates of daily emissions are dependent on the activity of the equipment used. The estimates shown here were developed for the entire construction portion of the project. It was assumed that on any given day, the same number and types of vehicles are used for each portion of the Devers-Harquahala 500kV line construction; therefore, exhaust emissions would be the same. Yearly emissions were calculated assuming a 24-month construction period for the Devers-Harquahala 500kV and the west of Devers portions of the DPV2 project. The MDAQMD and SCAQMD totals were calculated based on the proportion of the line found in each district. As part of the construction contract, SCE would require bidders to submit a construction transportation plan describing how workers would travel to the job site.

Operation

Operation of the Devers-Harquahala 500kV transmission line would not produce significant emissions. There would be extremely small amounts of ozone produced due to corona discharge at the hardware/insulator assemblies. Some fugitive dust and vehicle emissions would be produced by maintenance activities. Overall, impacts to air quality due to the operation and maintenance of the transmission line would be less than significant.

5.1.7 Traffic and Transportation

According to CEQA significance criteria, potential impacts to traffic and transportation could occur based on the following:

- project would cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, volume to capacity ratio on roads, or congestion at intersections)

- project would exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways

- project would result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk

- project substantially increases hazards due to a design feature (e.g. sharp curves, dangerous intersections, or incompatible uses [e.g., farm equipment])

- project results in inadequate emergency access, inadequate parking capacity, or conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)

5.1.7.1 Arizona and California

Construction workers and supply vehicles would generate a less than significant amount of additional traffic in the area in which they are working. Because the work force would be divided into small crews working on different portions of the line, the additional traffic generated in any one area would be small and would occur for a short period of time. I-10 and numerous major arterials designed to accommodate large volumes of traffic are located near the proposed route. Access roads previously constructed for the existing DPV1 transmission line would be used for construction. Since construction would not require new access roads, new access for off-road vehicles would not be promoted. Road closures, if necessary, would be limited to short durations and periods of low volume traffic or in accordance with state departments of transportation policies. No long-term additional traffic from project operation would occur. The construction and operation of the proposed Devers-Harquahala 500kV line would not result in significant traffic impacts.

5.1.8 Biology

Under CEQA Significance Criteria (Appendix G of the revised CEQA Guidelines), a project would be considered to have a potentially significant biological impact if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS

- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS

- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

In general, the primary criteria for determining significance of an impact on biological resources are sensitivity ratings and regulatory protection assigned by federal and state resource agencies (e.g., USFWS, CDFG). Any activity within the proposed project area that results in the "take" of a federally or state-listed threatened or endangered species would be considered significant. To "take" is defined in the federal Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an endangered or threatened species or to attempt to engage in any of these activities." Harm not only includes killing a species, but activities that modify or significantly degrade habitat that could result in death or injury to individual members of a species by significantly disrupting their essential behavioral patterns. The number of individuals impacted is not relevant to determining significance; if one individual is or could be impacted, then the impact would be considered significant. Because the impact is significant, mitigation would be required to reduce the impact to less than significant.

Four types of impacts to biological resources could result from the construction and operation of the proposed Devers-Harquhala transmission line, as follows:

- Direct impacts occur when biological resources are altered, disturbed, destroyed, or removed during the course of project implementation. Examples of direct impacts are loss of habitat as a result of grading, filling or "take" of a sensitive species.

- Indirect impacts occur when project-related activities impact biological resources in a manner other than direct. Potential indirect impacts include increased noise levels and non-native weed establishment.

- Permanent impacts result in the irreversible loss of biological resources. Examples include the removal of sensitive vegetation or vegetation that supports a sensitive species, or chronic disturbance of sensitive species during a critical time period (e.g., breeding season).

- Temporary impacts are reversible with the implementation of mitigation measures. Examples include the revegetation of an area cleared during construction, or short-term noise events associated with operations.

The following sections include summaries of potential impacts to sensitive plant and wildlife species that may result from construction and operation of the proposed Devers-Harquahala transmission line.

Related facilities include new telecommunications system facilities, series capacitor banks, shunt reactors, and additional equipment that would be installed at existing substations as described in Section 3.4, Chapter 3. New telecommunications facilities would be installed on existing properties at the Black Peak, Smith Peak, and Harquahala Mountain communication sites and within existing properties at Devers, Mirage, and Harquahala Generating Station substations.

The new Blythe Optical Repeater facility would be constructed within the proposed Devers-Harquahala 500kV right-of-way in California. The new series capacitor bank sites in Arizona and California would be located adjacent to the existing DPV1 capacitor banks. The description provided in Sections 4.1.8.1 and 4.1.8.2 of existing vegetation and wildlife resources within the Devers-Harquahala study corridor includes these sites.

Each of the communication and substation sites described above have previously been disturbed, and therefore construction of new facilities at these sites would not cause any substantial new ground disturbance. Therefore, impacts to vegetation and wildlife at these sites would be less than significant.

An assessment of habitat conditions was also undertaken at the Valley Substation. The facilities would be installed within the existing substation property. The substation property has been previously disturbed, and no endangered or threatened wildlife or plant species, or otherwise sensitive species are present or would be expected to occur at the site. Therefore, impacts to vegetation and wildlife at Valley Substation would be less than significant.

5.1.8.1 Arizona

Vegetation

Table 5-5 contains information on the estimated impacts to the various vegetation communities traversed by the proposed Devers-Harquahala study corridor in Arizona.

TABLE 5-5
POTENTIAL DIRECT TEMPORARY IMPACTS TO VEGETATION ASSOCIATIONS WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR BY TRANSMISSION LINE LINK – ARIZONA (ACRES)

Vegetation Association	Link 1a and 1b	Link 2	Link 6	Link 8	Total Acres
Creosote-bush scrub	0	53.7	0	0	53.7
Creosote bush – bursage scrub	176.2	88.6	33.0	1.8	299.6
Mixed paloverde-creosote bush scrub	1.8	1.8	35.0	0	39.4
Paloverde-ironwood/smoketree wash	0	56.2	2.8	0	59.0
Mesquite scrub dominated wash	7.8	0	0	0	7.8
Mixed paloverde and cactus	0	0	0	0	0
Mesquite and salt cedar riparian	0	0	0	1.4	1.4
Sand dune community	0	0	0	0	0
Agricultural	13.8	0	0	0	13.8
Total Disturbance	**199.6**	**200.3**	**71.6**	**3.2**	**474.7**

Source: Dames & Moore (1989)

Sensitive Plant Species

There are no federally listed threatened or endangered plants that have been documented in the Arizona portion of the Devers-Harquahala study corridor or are likely to be found there. Other sensitive plants known or likely to be found include Death Valley Mormon tea and straw-top cholla, both species that are tracked by the AGFD through the Heritage Data Management System.

There would be less than significant impacts to sensitive plants in the Arizona portion of the Devers-Harquhala study corridor. Straw-top cholla is common and widespread in western Arizona and eastern California. No individuals of Death Valley Mormon tea were found during field surveys of tower sites and access roads in 2002 and 2003.

Wildlife

During construction of the proposed Devers-Harquahala transmission line, impacts to general wildlife are expected. Individuals of fossorial species may be inadvertently killed when burrows are collapsed by heavy machinery. Depending on the season of construction, bird nests in cacti, shrubs, or trees could be destroyed. Similarly, highly cryptic nests of ground-nesting species may be accidentally destroyed. Wildlife may also be accidentally run over by vehicles, an impact type that could persist as long as the access road for the project is available to back-country motorists.

Sensitive Wildlife

There are no known federally listed wildlife species that are likely to occur in the Arizona portion of the proposed Devers-Harquahala study corridor with regularity. Yuma clapper rails pass through the corridor during migration where it crosses the Colorado River, but there is no nesting or loafing habitat for Yuma clapper rails at the crossing location of the proposed Devers-Harquahala transmission line. For this reason, the impact to any federally listed species would be less than significant.

Other sensitive wildlife species that may occur in the Arizona portion of the study area include desert tortoise (Sonoran population), Arizona chuckwalla, Mojave fringe-toed lizard, banded Gila monster, and desert rosy boa. The desert tortoise and the chuckwalla are likely to occur in upland areas, the Mojave fringe-toed lizard in sandy areas, and the Gila monster may be found in upland or lowland habitats. Sensitive bird species likely to be in this vicinity include western least bittern, great egret, snowy egret, white-faced ibis, and western burrowing owl. The herons and ibis are likely to be restricted to the Colorado River vicinity or irrigated agricultural areas, but the burrowing owl could be found in other habitats. Sensitive mammals in the transmission line corridor include California leaf-nosed bat, western yellow bat, pale big-eared bat, and desert bighorn sheep. All of these species, except the desert bighorn, are species that are monitored by

the AGFD's Heritage Data Management System. The desert bighorn is a high profile big game species that is intensely monitored by the AGFD.

Impacts to sensitive wildlife species in Arizona are expected to be less than significant. Most species, if impacted at all, would be temporarily disturbed by construction activity and noise, and most would be able to simply move away from the disturbance. It is possible that some individuals of desert tortoise, Gila monster, or rosy boa could be directly affected during construction of spur roads. Similarly, individuals of these species could be crushed by construction equipment and along access roads, especially in more upland, mountainous terrain. Sensitive bird species, mostly associated with the Colorado River crossing, are likely to simply move away from construction-related disturbance. There would be some minimal residual collision hazard for birds flying up and down the river and potentially running into conductors or static lines. It is highly unlikely that construction and operation of the proposed line would have any effect on any of the sensitive bat species that may occur in the proposed transmission line corridor. Desert bighorn sheep would be affected by construction activities in the KOFA NWR, New Water and Plomosa mountains, and in the Livingston Hills. The results of studies conducted on this population of bighorn between 1978 and 1984, however, suggest that the effects would neither be negative nor severe. In that study, the most significant effect of construction of the DPV1 line was that radio-collared animals spent more time in the construction zone during construction than they did before (four years of data) or after (two years of data) construction.

Indirect Impacts

Indirect impacts associated with the construction of the proposed transmission line could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, material stockpile yards, and concrete batch plant sites.

5.1.8.2 California

Vegetation

Table 5-6 is a summary of potential impacts to general vegetation types within the California reach of the proposed Devers-Harquahala study corridor.

TABLE 5-6
POTENTIAL DIRECT TEMPORARY IMPACTS TO VEGETATION ASSOCIATIONS WITHIN THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR BY TRANSMISSION LINE LINK – CALIFORNIA (ACRES)

Vegetation Association	Link 8	Link 10	Link 12	Link 13	Link 14	Link 16	Total Acres
Creosote bush scrub	0	0	0	15.4	145.9	22.0	183.3
Creosote bush – bursage scrub	0	27.1	13.3	234.8	0	0	275.2
Paloverde-ironwood/ smoketree wash	0	0	0	68.8	0	0	68.8
Sand dune community	0	0	0	0	0	5.5	5.5
Agricultural	3.7	48.2	0	0	0	0	51.9
Total Disturbance	**3.7**	**75.3**	**13.3**	**319.0**	**145.9**	**27.5**	**584.7**

Source: Dames & Moore (1989)

Sensitive Plant Species

Field studies for rare plants in California revealed the presence of the following species that are federally listed or proposed for listing as threatened or endangered.

Scientific Name	Common Name	Status
Astragalus lentiginosus var. *coachellae*	Coachella Valley milkvetch	Endangered
Escobaria alversonii.	Cushion foxtail cactus	Species of Concern

Impacts to Coachella Valley milkvetch would be less than significant. There is evidence to suggest that the kinds of soil disturbances caused by electrical transmission line construction in milkvetch habitat may actually enhance populations. This is based on studies conducted by SCE following construction of DPV1. SCE biologists found Coachella Valley milkvetch populations

to be more robust in areas that had been disturbed by construction than in nearby, undisturbed areas. Impacts to cushion foxtail cactus would be significant unless mitigated.

Other plant species that may be adversely affected are listed in Table 4-34 and include triple-ribbed milkvetch and Little San Bernardino Mountains linanthus. The remaining sensitive plants of Riverside County that are listed in Table 4-34 have very little probability of occurring in the proposed Devers-Harquahala study corridor and none were detected during field surveys of tower sites and access roads in 2002 and 2003. Impacts to non-federal sensitive plant species are expected to be less than significant owing to an apparent absence of populations of these species within the Devers – Harquahala study corridor. Neither the triple-ribbed milkvetch, nor the Little San Bernardino Mountains linanthus, have been found within the study corridor during surveys conducted in 1987, 1994, 2002, and 2003.

Wildlife

Construction of the California portion of the proposed Devers-Harquahala transmission line could impact wildlife as a result of burrows being collapsed by heavy equipment, animals being inadvertently run over by construction vehicles, and generally being disturbed by the presence of people and machines. Depending on the season of construction, bird nests could be destroyed as a result of clearing of shrubs, trees, or cacti from spur roads and/or tower sites.

Sensitive Wildlife

Federally listed wildlife species, or potential habitat thereof, found during field surveys in California include the following:

Scientific Name	Common Name	Status
Phrynosoma mcallii	Flat-tailed horned lizard	Proposed Threatened
Gopherus agassizii	Desert tortoise	Threatened (California threatened)
Uma inornata	Coachella Valley fringe-toed lizard	Threatened (California endangered)
Spermophilus tereticaudus chlorus	Palm Springs round-tailed ground squirrel	Candidate (California species of concern)

Potential habitat for flat-tailed horned lizard, Coachella Valley fringe-toed lizard, and Palm Springs round-tailed ground squirrel was found during field surveys in 2002 and 2003. Desert tortoise and sign thereof were found at several locations in 2002 and 2003 in the proposed Devers-Harquahala study corridor.

Potential impacts to desert tortoise, Coachella Valley fringe-toed lizard, and Palm Springs round-tailed ground squirrel are considered to be potentially significant, but would be mitigated to less than significant. It is anticipated that the USFWS would provide mitigation recommendations as part of the Section 7 Consultation process for the DPV2 project.

A number of other sensitive (e.g., federally listed or proposed) wildlife species may occur in the California portions of the study area along the Colorado River. These include several species of fishes and birds, including southern bald eagle, Yuma clapper rail, western snowy plover, mountain plover, western yellow-billed cuckoo, and southwestern willow flycatcher. Of these species, the cuckoo, rail, and flycatcher could nest in the vicinity of the proposed crossing, if suitable riparian habitat is available.

Construction of the proposed transmission line would avoid any disturbance of riparian or aquatic habitats on the Colorado River. Consequently, impacts to these species by construction or operation of the proposed transmission line would be less than significant.

A number of species listed in the California Natural Diversity Database (CDFG 2003) also are likely to occur within California portions of the study corridor. Possible sensitive reptiles include chuckwalla, Mojave fringe-toed lizard, and desert rosy boa. Sensitive bird species in the

California portion of the study corridor include western least bittern, snowy egret, white-faced ibis, ferruginous hawk, Swainson's hawk, California black rail, elf owl, western burrowing owl, Gila woodpecker, loggerhead shrike, and LeConte's thrasher. Sensitive mammal species in this vicinity also may include California leaf-nosed bat, pale big-eared bat, pallid bat, and western yellow bat.

Impacts to these species include disturbance during construction, loss of habitat, loss of prey species and/or habitat thereof, incidental crushing of less mobile forms on access roads and in work areas, and crushing or smothering of individuals sequestered in burrows on work sites. Impacts to the more mobile forms (birds and bats) would be less than significant, owing to their ability to move away from disturbance. Habitat loss for these species will be less than significant and of short term in a regional sense.

Impacts to the sensitive reptile species are considered to be potentially significant and would be mitigated in order to reduce the impact to less than significant.

Indirect Impacts

Indirect impacts associated with construction within the proposed Devers-Harquahala corridor could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, materials stockpile yards, and concrete batch plants. It is at these sites that soil surface disturbance is likely to be greatest, thus encouraging establishment of invasive, weedy species.

5.1.9 Noise

According to CEQA significance criteria, potential noise impacts can occur based on the following:

- exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels
- substantial permanent increases in ambient noise levels in the project vicinity above levels existing without the project
- substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, where the project would expose people residing or working in the project area to excessive noise levels
- for a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels

5.1.9.1 Arizona and California

Construction

The noise associated with the construction activities would be due to equipment operation. The noise levels produced within the corridor would depend on the number of operating machines and the distance to the nearest sensitive receiving source property line. Typical noise levels associated with construction equipment falls in the range of 80 to 100 dBA (at a range of 50 feet from the active construction site). For the proposed transmission line, most of the corridor is in vacant desert land; however, there are isolated areas with residences within 350 feet of construction. Noise associated with construction would be masked by other sources of noise (i.e., I-10 and other high volume streets) and would be inaudible at large distances.

The proposed Devers-Harquahala construction would comply with local noise ordinances. Typical municipal ordinances stipulate that activities producing ambient noise should not exceed 55-50 dBA during nighttime hours (10 p.m. to 7 a.m.) and 60-55 dBA during daytime hours (7 a.m. to 10 p.m.) at residential property lines or sensitive areas. However, exemptions include temporary construction during daytime hours except on Sundays and federal holidays. There may be a need to work outside of the aforementioned local ordinances in order to take advantage of low electrical draw periods during the nighttime hours. SCE would comply with variance procedures established by local authorities if a variance is required.

Operation

The major sources of ambient noise in the area are due to I-10, aircraft flyovers, local traffic, activities at business locations, various recreational activities, and the existing DPV1 transmission line. The proposed Devers-Harquahala 500kV transmission line would slightly increase the noise level within the corridor. However, the increase would not be audible at the nearest sensitive receptors relative to the existing ambient noise levels and the distance from the

source. There are no residences or other sensitive receptors located within audible range of the proposed series capacitor stations. Noise impacts would be less than significant.

5.1.10 Public Services and Utilities

According to CEQA significance criteria, potential impacts to public services could occur based on the following:

- project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services including fire protection, police protection, schools, parks, and other public facilities

5.1.10.1 Arizona

Since most community services are provided to local residences and employee relocation would be temporary, no significant impacts on public services including medical, police, fire, and emergency are anticipated. Services to construction workers would not exceed the level that local facilities are equipped to provide for visitors or temporary workers in the area. In addition to the medical facilities available in the small communities near the proposed route, numerous medical facilities equipped to handle all levels of emergency medical situations are located in the greater Phoenix metropolitan area.

5.1.10.2 California

Since most community services are provided to local residences and employee relocation would be temporary, no significant impacts on public services including medical, police, fire, and emergency are anticipated. Services to construction workers would not exceed the level local facilities are equipped to provide for visitors or temporary workers in the area. In addition to the medical facilities available in the small communities near the proposed route, numerous medical facilities equipped to handle all levels of emergency medical situations are located on the western end of the proposed route near Devers. These include medical facilities in the cities of Palm Springs, Rancho Mirage, and Indio. Cathedral City also has two general hospitals.

5.1.11 Visual Resources

The impact analysis was based on the BLM's VRM System 8400 series (BLM 1984) as well as previous transmission line visual impact assessments in response to CEQA environmental criteria for aesthetics. This section focuses on potential impacts resulting from the construction and operation of the proposed Devers-Harquahala 500kV transmission line. CEQA provides specific significance criteria relating to visual impacts. According to the criteria, significant visual impacts could occur if the project would:

- substantially degrade the existing visual quality of the site and its surroundings
- have a substantial adverse effect on a scenic vista
- substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- create a new source of substantial light or glare adversely impacting day or nighttime views in the area

Visual impacts associated with the proposed Devers-Harquahala transmission line include short-term impacts resulting from the presence of vehicles and equipment during construction, and long-term impacts resulting from the presence of the proposed transmission line facilities over their lifetime.

The measure of potential adverse impacts on visual resources is based on visual contrast. Visual contrast is a measure of the degree of perceived change that would occur in the landscape due to the construction and operation of the proposed Devers-Harquahala transmission line. Visual contrast typically results from (1) landform modifications that are necessary to upgrade and construct new access roads and tower pad sites, (2) removal of vegetation to construct roads and maintain right-of-way and ground clearance zones associated with the conductors and towers, and (3) introduction of new structures in the landscape.

The visual contrast assessment was performed by comparing landscape elements (form, line, color, and texture) of the existing landscape with the elements associated with the proposed transmission line facilities including new structures (towers, hardware, equipment, and conductors) and new or improved access. In this regard, landform, vegetation, and structural elements in the landscape were evaluated in conjunction with the proposed (newly introduced) transmission line, and assigned degrees of change/contrast ranging from strong to moderate, weak, or none. Contrast evaluations were performed from selective key viewpoints representing typical views of the project, including the documentation of existing and simulated conditions as illustrated in Figures 5-1 through 5-3.

5.1.11.1 Arizona and California

Following is a summary of visual impacts based on the criteria as identified by CEQA.

Substantially Degrade the Existing Visual Quality of the Site and Its Surroundings

Impacts to scenic quality would occur in areas of Class A scenery and where construction and operation of the proposed Devers-Harquahala transmission line would result in strong contrast with the natural landscape setting. The proposed Devers-Harquahala transmission line crosses the Dome Rock Mountains and the Colorado River, which have a designation of Class A scenic quality. However, because the proposed transmission line would be located adjacent to existing transmission lines, with existing access and other land modifications, the resulting contrast and impacts are anticipated to be minimal.

Visual impacts would result from the visibility of the proposed Devers-Harquahala transmission line from sensitive viewpoints and from the contrast of the proposed facilities within the existing setting. Viewer impacts consist of potential effects to views from residences, park and recreation areas, and travel routes and highways. However, since the transmission line route would be constructed within designated BLM utility corridors, parallel to existing 500kV transmission lines with similar structures, and the use of existing access roads, the contrast is expected to be weak. The impact would therefore be less than significant. This would apply to both existing viewers and viewers associated with planned future use.

Residential Viewers

Typically, foreground to background views from a high-sensitivity viewpoint of the proposed transmission line, combined with a weak project contrast, would result in impacts that are not considered significant. This is the case with dispersed residences located adjacent to the proposed project in both Arizona and California, where the proposed line would directly parallel existing transmission lines including the existing DPV1 500kV transmission lines, and additional 230kV lines near Devers. Areas of residential viewers that would be impacted by the proposed Devers-Harquahala transmission line in Arizona include dispersed residences associated with the agricultural lands in the Harquahala Valley and north of the Eagletail Mountains, and from

isolated residences adjacent to the KOFA NWR. In California, residential viewers potentially affected by the project include dispersed locations south of Blythe and near Indio and Palm Desert. In the vicinity of the Devers Substation (Link 16), where residences have immediate foreground views of the proposed transmission line, the impacts are minimized because of the highly modified existing conditions, the presence of existing transmission lines in the foreground view, and wind turbines scattered throughout the middleground and background (see simulations, Figures 5-1 and 5-2). Therefore, impacts to residential viewers are anticipated to be less than significant.

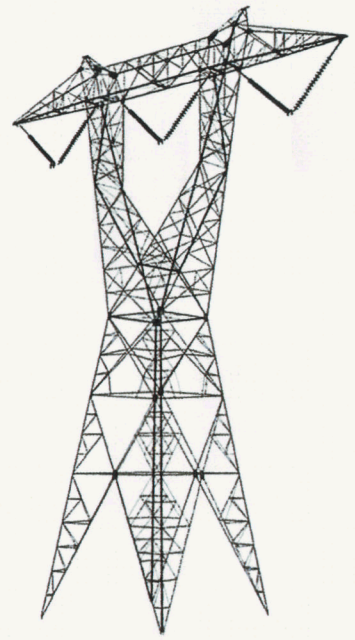
Travelway Viewers

Potential impacts of short duration to travelway viewers would result from the proposed transmission line crossing or paralleling I-10 (see simulation, Figure 5-3). Similar impacts to views would occur from other travel routes including crossings of the Salome-Tonopah Road and SR 95. Additional impacts would occur to viewers from travel routes parallel to the proposed transmission line or with middleground views of the proposed transmission line such as portions of I-10, CA 111, and SR 74. However, because the proposed Devers-Harquahala transmission line would be constructed adjacent to existing 500kV transmission lines, impacts are anticipated to be less than significant.

Existing Condition - Transmission line corridor in the foreground and San Bernardino Mountains and wind farm in the background.
Photograph taken 12/11/03 at 11:10 a.m. using a 50mm focal length.

Viewpoint located north of Palm Springs at residence south of Dillon Road looking west-northwest towards proposed project, approximately 1/4 mile from the tower in the center of view.

Simulation - Transmission line corridor with proposed Devers-Palo Verde No. 2 500kV lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



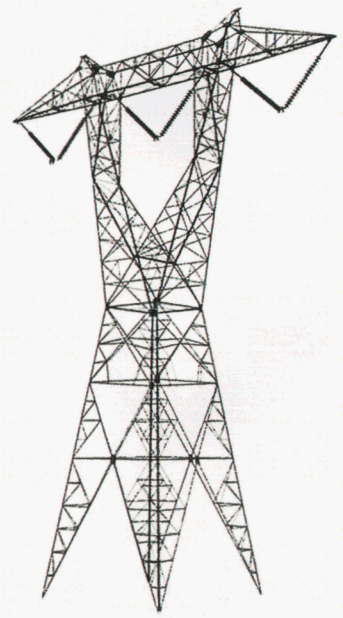
Typical 500kV single-circuit lattice steel tower. Proposed towers are simulated to match existing tower heights and spans.

Figure 5-1

Existing Condition - Transmission line corridor in the foreground and Little San Bernardino Mountains and Desert Hot Springs in the background. Photograph taken 12/11/03 at 11:27 a.m. using a 50mm focal length.

Viewpoint located north of Palm Springs at residence south of Dillon Road looking north-northeast towards proposed project, approximately 1/4 mile from the tower in center of view.

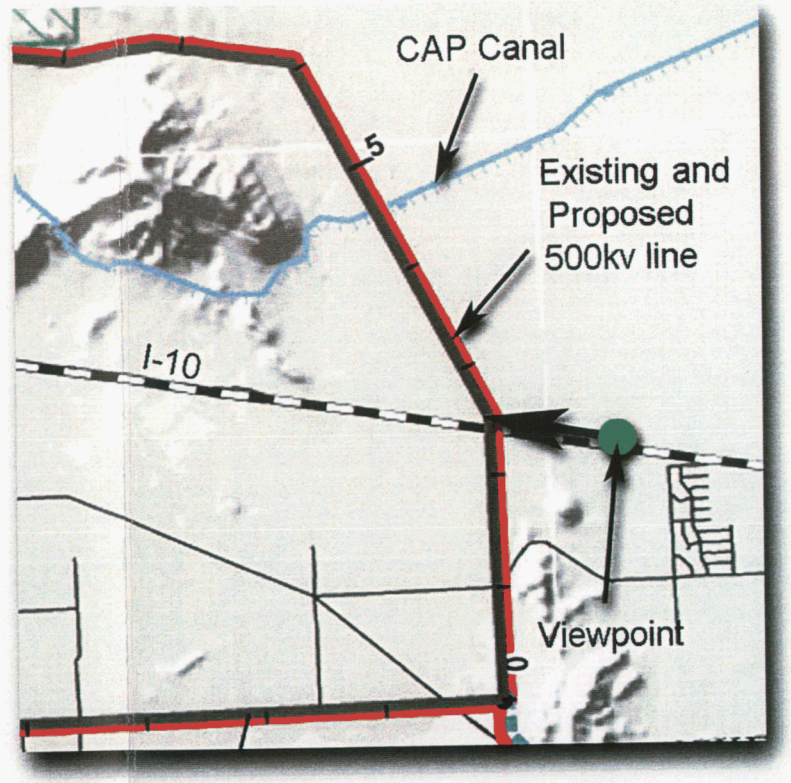
Simulation - Transmission line corridor with proposed Devers-Palo Verde No. 2 500kV lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



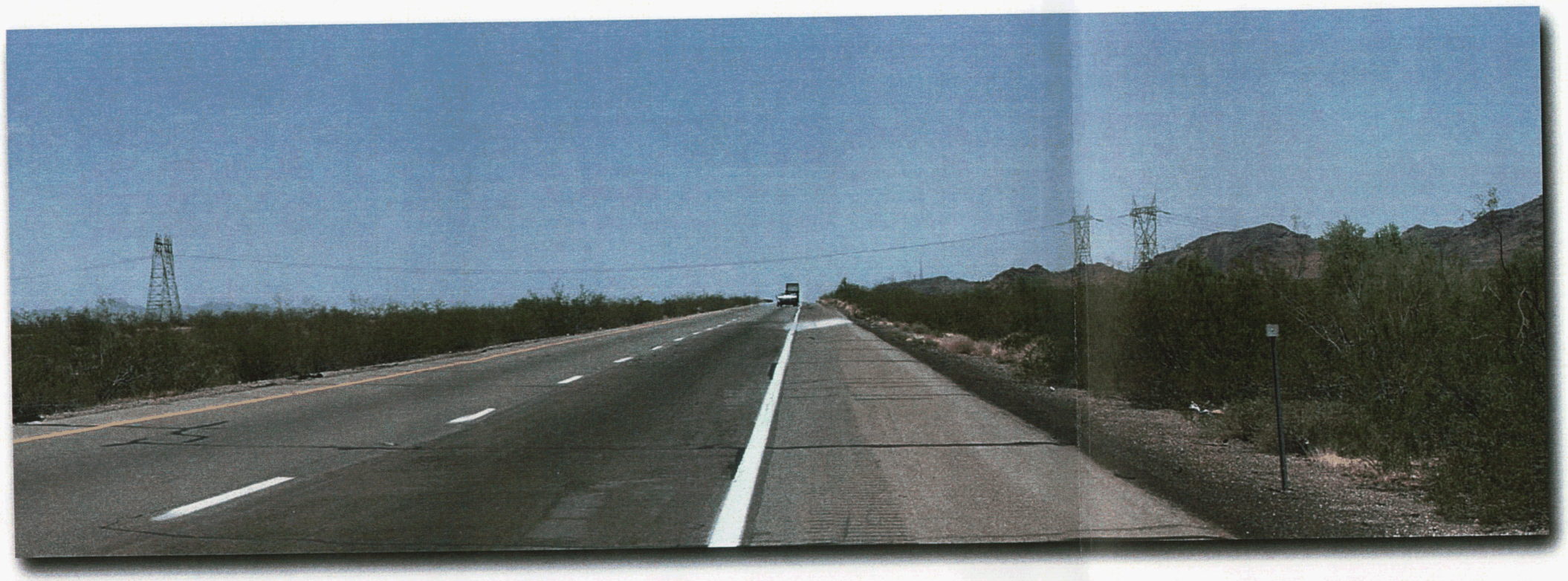
Typical 500kV single-circuit lattice steel tower used in simulations. Proposed towers are simulated to match existing tower heights and spans.

Figure 5-2

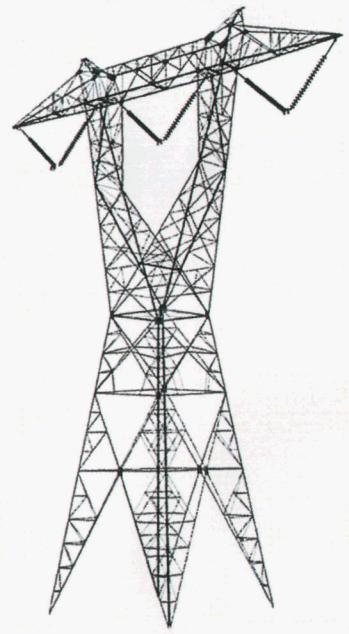
Existing Conditions - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona.
Photograph taken 7/26/04 at 12:26 p.m. using a 50mm focal length.



Viewpoint located along Interstate 10 west of Phoenix, Arizona looking west across the proposed project, approximately 0.6 mile from route crossing.



Simulation - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona with proposed Devers-Palo Verde No. 2 500kV lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



Typical 500kV single-circuit lattice steel tower used in simulations.
Proposed towers are simulated to match existing tower heights and spans.

Figure 5-3

Recreation/Open Space Viewers

Impacts would occur to recreational users of the Colorado River, and park and recreation areas near the river. Impacts to recreational users of KOFA NWR would result from the proposed transmission line crossing through the valley and foothill area south of the Plomosa Mountains. Additional impacts to recreation areas include views from the La Posa Visitor Area and views from the Big Horn and Eagletail mountains. However, because the proposed project is located adjacent to the existing DPV1 500kV transmission line, contrast levels are low and impacts are anticipated to be less than significant.

Substantial Adverse Effect on Scenic Vistas

There would be no adverse effect on scenic vistas because there are no state-designated scenic vistas within the proposed Devers-Harquahala transmission line study corridor.

Substantially Damage Scenic Resources Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings Within a State Scenic Highway.

The proposed Devers-Harquahala transmission line would not cross or affect any state scenic roads or highways. Therefore, there are no anticipated impacts to state scenic highways.

Create a New Source of Substantial Light or Glare Adversely Impacting Views

Construction of the proposed Devers-Harquahala transmission line would normally occur during daylight hours. No additional sources of light or glare would be created, as non-specular conductors would be utilized, and the finish on structures would be dulled.

5.1.12 Cultural Resources

Potential impacts to cultural resources could occur if the project would:

- cause a substantial adverse change in the significance of a historical resource
- cause a substantial adverse change in the significance of an archaeological resource
- directly or indirectly destroy a unique paleontological resource or site or unique geological resource
- disturb any human remains, including those interred outside of formal cemeteries

5.1.12.1 Arizona

Archaeology

Two archaeological sites have been identified within the proposed project APE: AZ S:8:1 (ASM) and AZ S:8:14 (ASM). Of these, only AZ S:8:1 (ASM) has been determined eligible for the NRHP. Artifacts from AZ S:8:1 were collected and analyzed as part of the original DPV1 project (Carrico and Quillan 1982) and the site artifacts identified during the Class III survey for the present project (Dobschuetz et al. 2004) were similar to those previously collected and analyzed. As a result, it was concluded that the data potential for the portion of AZ S:8:1 (ASM) located within the project APE appear exhausted. Therefore, no impacts to significant archaeological resources are anticipated by construction of the proposed Devers-Harquahala transmission line.

Ethnography

Because the proposed transmission line would be constructed adjacent to the existing DPV1 500kV transmission line, indirect effects to TCPs or potential TCPs are considered negligible. No TCPs or potential TCPs have been identified within the project APE (defined as within 100 feet of project tower pads and access roads). Apart from archaeological sites within the APE, about which Native Americans have expressed a general concern, no significant ethnographic values have been identified that could be affected by the proposed transmission line. BLM staff has indicated that they would consult with appropriate Native American groups regarding project effects on traditional cultural values within the context of the BLM's government-to-government responsibility with Native American tribes (personal communication, Wanda Raschkow 2004).

History

One archaeological site, AZ R:7:113 (ASM), was identified during the Class III survey within the project APE (Dobschuetz et al. 2004). This site is described as a historic-era artifact scatter and was not deemed NRHP eligible. No effects to NRHP eligible historic-era resources are expected as a result of construction and operation of the proposed transmission line.

Paleontology

Approximately 88.7 miles of high or undetermined areas of paleontological sensitivity are crossed by the proposed Devers-Harquahala study corridor between the Harquahala Substation and the Arizona/California border (Links 1a, 1b, 2, 6, and 8). Potentially significant paleontological specimens may be impacted by excavation of tower footings and grading of access spur roads in these areas (Scott 2003).

5.1.12.2 California

Archaeology

Eighteen NRHP eligible or potentially eligible archaeological resources have been identified within the proposed project APE. These resources are designated RIV-53T(c), RIV-53T(d), RIV-250T, RIV-343T(b), RIV-343(c), RIV-650T, RIV-673T, RIV-1119, RIV-1383, RIV-1813, RIV-1814, RIV-1815, RIV-1816, RIV-1819, RIV-1821, RIV-1822, P33-13574, and P33-13576. Potential impacts to these resources could result from earth-disturbing construction activities including tower pad and access road grading, footing digging, tower erection, and conductor pulling and splicing.

Ethnography

Because the proposed Devers-Harquahala transmission line would be constructed adjacent to the existing DPV1 500kV transmission line, indirect effects to TCPs or potential TCPs are considered negligible. Only one TCP or potential TCP has been identified within the project APE (defined as within 100 feet of project tower pads and access roads). This is Edom Hill forming the northwestern end of the Indio Hills. The hill is considered sacred to the Agua Caliente Indian Tribe. The study corridor crosses approximately 3 miles of the lower slopes of Edom Hill including 0.1 mile of Agua Caliente Indian Reservation land. Incremental effects to the Native American belief system from construction of the proposed project are thought to be minimal due to the presence of the DPV1 transmission line and a gas pipeline in the same area. Other potential ethnographic issues in the project APE are effects to archaeological sites, about which Native Americans have expressed a general concern.

BLM staff has indicated that they would consult with appropriate Native American groups regarding project effects on traditional cultural values within the context of the BLM's

government-to-government responsibility with Native American tribes (personal communication, Wanda Raschkow 2004).

History

Thirteen NRHP eligible or potentially eligible historic-era resources have been identified within the project APE. These resources are designated RIV-1117H(a), RIV-1117H(b), RIV-1809H, RIV-1810H, RIV-7489H, RIV-7490, P33-13588, P33-13596, P33-13598, P33-13600, P33-13601, P33-13602, P33-13603. Potential project impacts to these resources could result from earth-disturbing construction activities including tower pad and access road grading, footing digging, tower erection, and conductor pulling and splicing.

Paleontology

Between the California border and Devers (Links 10, 12, 13, 14, and 16) the study corridor traverses approximately 31 miles of high or undetermined areas of paleontological sensitivity. The undetermined or high sensitivity areas include Pleistocene older alluvium in Links 10, 13, and 14; Eocene Maniobra Formation rocks in Link 13; and Ocotillo Conglomerate and Pliocene non-marine sediments in Link 14. Potentially significant paleontological specimens may be impacted by excavation of tower footings and grading of access spur roads in these areas (Scott 2003).

5.1.13 Public Health and Safety

According to the CEQA significance criteria, potential hazards or hazardous materials impacts that may be caused by the project include the following:

- creation of a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous waste

- creation of a significant hazard to the public or the environment though reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment

- reasonable anticipation to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school

- if the project is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment

- if the project is located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area

- if the project is within the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the project area

- if the project would impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan

- exposure to people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands

Potential impacts to public health and safety could occur during construction or operation of the proposed project, as follows.

5.1.13.1 Hazardous Materials

A hazardous substance is any substance that the EPA has designated as hazardous, dangerous, or toxic under the Clean Air Act, 42 U.S.C. 7401 et seq., the Clean Water Act, 33 U.S.C. 1251 et seq., the Toxic Substances Control Act, 15 U.S.C. 2601 et seq., the Comprehensive Environmental Response, Compliance, and Liability Act, as well as any hazardous waste under the Resource Conservation and Recovery Act of 1976. The Occupational Safety and Health Administration (OSHA) and the EPA at the federal level, and the California Occupational Safety and Health Administration (Cal/OSHA) and the California Environmental Protection Agency (Cal/EPA) at the state level, regulate hazardous materials. Cities and counties also regulate hazardous materials.

Project construction activities would involve the operation of heavy equipment and support vehicles on site. The presence of hazardous materials or hazardous wastes within the project area could pose a threat to the environment only if substances were improperly stored or handled, if construction equipment were to leak or spill petroleum or hydraulic fluids, or if hazardous materials are encountered during excavation of foundations resulting in inadvertent releases to the environment. Operation of the proposed DPV2 project would not cause the routine transport, use, or disposal of hazardous materials. Measures to avoid and/or minimize impacts from hazards or hazardous materials have been included as part of the project design or would be incorporated per regulation and SCE standard construction, operation, and maintenance procedures. A hazardous substance management, handling, storage, disposal and emergency response plan would be prepared, implemented, and kept on site (or in vehicles) during construction and maintenance of the project. To minimize, avoid and/or clean up any hazardous material, should an unforeseen spill occur, SCE and its contractors would be responsible for following SCE's Storm Water Pollution Prevention Plan (SWPPP).

The majority of the proposed transmission line project construction would be located within SCE fee-owned rights-of-way or easements granted to SCE. Within areas subject to new right-of-way acquisition, SCE would conduct an Environmental Site Assessment (ESA). The ESA (also

known as a Phase I review) includes a review of published information, aerial photographs, and environmental databases; interviews with persons knowledgeable about the area; and site inspections to identify sites located within or near the designated area of construction that have a potential to release hazardous materials to the subsurface in actionable concentrations. Further investigation in the form of a Preliminary Site Investigation would be performed within areas of concern if and where warranted by the findings of the ESA.

5.1.13.2 School Facilities

Project construction and operations would not occur on any school sites. There would be a very low risk of emitting hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. No schools were identified within ½ mile from the project right-of-way, and no temporary construction areas would be located within ¼ mile of any existing school site.

5.1.13.3 Airport and Airstrip Operations

The proposed transmission line would not impact operation of any airport or private airstrip. The proposed route is located adjacent to an existing 500kV transmission line and would therefore not create a new safety hazard for people residing or working in the project area.

5.1.13.4 Emergency Response or Evacuation Plans

The risk of wildland fires in the project area is possible given the dry climate and vegetation in the existing rights-of-way. The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan, nor would it cause people or structures to be exposed to wildland fires. SCE would minimize fire risk of loss,

injury, or death as a result of fire during construction by maintaining brush clearance in accordance with applicable local, state, and federal laws.

5.2 WEST OF DEVERS 230kV TRANSMISSION UPGRADE

5.2.1 Introduction

The proposed DPV2 project would require upgrades to SCE's existing 230kV transmission system west of Devers. The existing 230kV system west of Devers includes two 230kV circuits connecting Devers and Vista substations and two circuits connecting Devers with the San Bernardino Substation located at the San Bernardino Generating Station (see Figure 3-7a). San Bernardino Junction is the term used to identify the intersection of the 230kV transmission line corridors that meet 3.4 miles south of the San Bernardino Substation. This section includes the summary of impacts that would occur for each affected resource with respect to the 230kV upgrade for the DPV2 project. Potentially significant impacts are described in Chapter 6.

5.2.2 Land Use

The proposed transmission corridor upgrade involves four transmission lines, the Devers-San Bernardino No. 1 and No. 2 230kV, and the Devers-Vista No. 1 and No. 2 230kV transmission lines. The upgrade would utilize existing access roads. The transmission lines are located within an existing transmission corridor; therefore, the majority of impacts to land use are expected to be minimal.

The corridor has been established and therefore would not cause a divide within an existing or planned community. No conflicts would occur with existing general plans for communities within the study area. Additionally, no conflicts with habitat conservation plans or natural

community conservation plans would occur. However, land uses may be affected by the construction and operational phases of the proposed project, described as follows.

5.2.2.1 Construction

Since no additional right-of-way would be required for the 230kV upgrade project, there would be no direct impacts to existing residences.

Link 102 would cross a cemetery at Milepost 1 in Banning. Impacts to the cemetery would be less than significant because the cemetery would be spanned by the conductors and ground disturbance would be avoided during construction.

Mileposts 3.5 and 8 of Link 101 cross existing material extraction mines. Temporary impacts may occur during construction if mining operations are impeded but would be of short duration and therefore would be less than significant.

Using the acreage assumptions described in Section 3.5.5.2, approximately 0.8 acre of agricultural land would be temporarily disturbed during construction of the project along Links 102 and 104. Potential impacts during the construction phase to irrigated cropland within the right-of-way would result from the temporary removal of cropland from production and interference with tilling/irrigation patterns and potential conflict with agricultural aviators due to temporary laydown areas, tensioning, and pulling sites. Additional impacts could occur due to restricted agricultural vehicular access.

Various parks and recreational facilities located within the right-of-way may be affected by construction activities. Noble Creek Regional Park (Link 102, Milepost 7), Oak Valley Golf Course (Link 102, Mileposts 7.5 and 8), and the Pacific Crest Trail (Link 100, Milepost 7) would incur temporary impacts during construction. The impacts are associated with a temporary disruption of recreation activities in these areas.

5.2.2.2 Operation

Long-term operational impacts would occur along Links 102 and 104 where transmission line structure foundations would permanently remove active agricultural land out of production and interfere with tilling and irrigation patterns. Additional impacts would occur if towers are placed within an orchard. However, if the orchards are spanned and the clearances maintained, minimal impacts would occur.

Operational impact also would occur in the vicinity of the extraction mines located under Link 101. However, no long-term operational impacts would occur if the material extraction mines can be spanned.

5.2.3 Socioeconomics, Population, and Housing

The construction of the proposed project would not have a significant impact on the population or housing of the communities through which it passes west of Devers. The construction industry has an adequate local workforce in Riverside and San Bernardino counties, and much of the labor force may commute locally, alleviating the need for temporary housing. The total workforce would be less than 0.1 percent of the Riverside or San Bernardino county employment base.

The construction workforce for the west of Devers 230kV transmission upgrade project is expected to be contractors who may reside in southern California. Construction worker immigration to the area is expected to be a minor component of the total labor force. Should temporary housing be needed, the area is highly developed and has adequate housing facilities.

Any worker expenditures in these communities would represent a small, short-term benefit to some businesses in the vicinity of the proposed corridor.

According to the analysis conducted for this study, property tax revenues paid in California for the 230kV upgrade project would be less than one percent of the total assessed valuation in 2003 (refer to previous Section 5.1.3.2).

5.2.4 Geology and Soils

5.2.4.1 Geology

No potentially significant impacts were identified for geology within the west of Devers 230kV upgrade study corridor. The proposed route would follow an existing transmission corridor and would utilize existing access roads. Except for potential upgrades to existing tower sites and select new tower locations, construction of the proposed transmission line would not require grading that would result in modifications to ground surface features.

To mitigate potential impacts to geology that might result from construction of the proposed upgrade, mitigation measures specified in Section 6.2.4 of this PEA would be applied.

5.2.4.2 Soils

No significant impacts were identified to soils within the west of Devers 230kV transmission upgrade study corridor. Since the proposed project would utilize existing access roads, and the major portion of the proposed route crosses relatively low relief terrain, the erosion impacts due to select new tower pads would be less than significant.

To mitigate potential impacts to soils that might result from construction of the proposed upgrade, mitigation measures specified in Section 6.2.4 of this PEA would be applied.

5.2.5 Hydrology

No potentially significant impacts were identified for hydrology. The proposed west of Devers transmission upgrade would be built within an existing corridor with tower placements designed to avoid washes, where possible. The transmission upgrades would not deplete groundwater supplies or alter the drainage pattern of an area.

To mitigate potential impacts to hydrology that might result from construction of the proposed upgrade, mitigation measures specified in Section 6.2.5 of this PEA would be applied.

5.2.6 Air Quality

5.2.6.1 Construction

Based on the construction plan for the proposed west of Devers upgrade (Section 3.5.2.2), a variety of truck auxiliary vehicles would be used over a 24-month period of construction. Construction would occur in phases, and would include structure removal, material processing, roads, foundations, tower assembly/erection, and conductor operations. As work on any one phase is completed, the construction crew moves on to the next segment and is followed by the crew responsible for the next phase of construction. The construction of the west of Devers 230kV transmission upgrade would produce emissions in the form of fugitive dust and exhaust from heavy equipment and support vehicles. Equipment used for the construction of the west of Devers portion of the proposed DPV2 project was assumed to be the same as that of the Devers-Harquahala 500kV portion.

Based on the total number of acres developed and the amount of fuel consumption per day, the total amount of PM_{10} fugitive dust emissions were calculated to be 114 lbs/day as an unmitigated worse case for the west of Devers 230kV portion of the project (see Table 5-2, Section 5.1.6.1). The estimate assumes that there would be grading operations performed on all areas disturbed by

construction activities. The estimated PM_{10} cumulative dust emissions for California are 454 lbs/day. The calculated value would exceed the SCAQMD construction emission threshold of 113 lbs/day. Implementation of the BACM would be utilized in order to further reduce dust emissions, reducing the cumulative impact of the project to 109 lbs/day (see Table 5-3).

The cumulative exhaust emissions produced from the vehicles and equipment used for the project were also calculated. A summary of the estimated levels of vehicle and equipment emissions are provided in Table 5-4. The work schedule and total amount of fuel consumed were used to calculate emissions levels and the emission rates were taken from the CEQA Air Quality Handbook (SCAQMD 1993). Cumulative daily exhaust emissions for California are shown on Table 5-4.

5.2.6.2 Operation

Operation of the 230kV upgrade would not produce significant emissions. There would be minute amounts of ozone produced due to corona discharge at the hardware/insulator assemblies. Minimal fugitive dust and vehicle emissions would be produced by maintenance activities. Overall, impacts to air quality due to the operation and maintenance of the transmission line would be less than significant.

5.2.7 Traffic and Transportation

Construction workers and supply vehicles would generate an insignificant amount of additional traffic in the area in which they are working. Because the workforce would be divided into crews working on different portions of the line, the additional traffic generated in any one area would be small and would occur for short periods of time. In addition, I-10 and numerous major arterials designed to accommodate large volumes of traffic are located near the proposed route, and new access roads would not be required for construction of the proposed project. Since

construction would not require new access roads, new access for off-road vehicles through undeveloped areas would not be promoted. Road closures, if necessary, would be limited to short durations and periods of low volume traffic or in accordance with state departments of transportation policies. No additional long-term traffic from project operation would occur.

5.2.8 Biology

Vegetation

Possible impacts associated with construction of the proposed west of Devers 230kV transmission upgrade are summarized below. The segment includes approximately 40 miles of existing right-of-way from Devers to San Bernardino Junction within which new tower construction and tower removals are planned. This area would include approximately 73 acres of habitat for plants and wildlife that may be disturbed. Areas disturbed during construction may be less than estimated based on the specific locations of new structures determined in final design, and potential utilization of existing access roads for construction. No new access roads would be required for reconductoring activities between San Bernardino Junction and Vista Substation, or between San Bernardino Junction and San Bernardino Substation, resulting in a minimal level of potential disturbance.

Table 5-7 summarizes the potentially affected area by vegetation associations where the proposed west of Devers upgrade from Devers to San Bernardino Junction may cause a loss of habitat. Approximately 35 acres (48 percent) are characterized as ruderal and degraded areas, or non-native grasslands, unlikely to support sensitive species or native vegetation. The remaining 38 acres are mainly chaparral or scrub habitats, with the exception of 1.3 acres (1.8 percent) of riparian habitat types and 1.9 acres (2.6 percent) of Riversidean sage scrub chaparral. The latter habitat types may support several sensitive plant and wildlife species, including coastal California gnatcatchers, a federally threatened species.

TABLE 5-7
POTENTIAL DIRECT TEMPORARY IMPACTS TO VEGETATION ASSOCIATIONS WITHIN THE PROPOSED WEST OF DEVERS TRANSMISSION UPGRADE STUDY CORRIDOR

Dominant Vegetation Type	Miles crossed from Devers to San Bernardino Junction	Area potentially affected (acres)[1]
Catclaw scrub	3.8	6.9
Catclaw/grassland/valley cholla	0.5	1.0
Chaparral	2.0	3.7
Creosote bush scrub	2.6	4.7
Desert willow/scalebroom	0.6	1.0
Grassland	2.4	4.4
Grassland scrub mosaic	2.0	3.6
Grassland/chaparral	3.7	6.7
Mixed scrub oak/chaparral	1.5	2.6
Non native grassland	5.0	9.2
Riparian	0.4	0.7
Riparian willow	0.3	0.6
Riversidean sage scrub chaparral	1.1	1.9
Ruderal/chaparral mosaic	1.0	1.8
Ruderal/degraded scrub	10.2	18.7
Ruderal/non native grassland	2.8	5.2
Total[2]	**39.8**	**72.7**

Source: BioResource Consultants 2003
Note:
[1] Potentially affected area was calculated assuming approximately 1.8 acres/mile of total disturbance (includes spur roads, structure removal, structure installation, and other construction areas.)
[2] Totals may not check due to rounding.

Southern sycamore alder riparian is a CNDDB sensitive habitat that occurs in the general region, but none was encountered in the study corridor. This is true also for southern riparian scrub habitat.

Wildlife

Some impacts to most classes of wildlife can be expected as a result of construction activities within the proposed west of Devers corridor. Small, fossorial forms may be crushed in their burrows by heavy equipment and others may be inadvertently run over by construction vehicles. The presence of men and equipment would result in a disturbance impact to many animals.

Depending on the season of construction, it is also possible that nesting birds could be disturbed or their nests destroyed.

Sensitive Plants and Wildlife

Based on CNDDB occurrences and other historical information that was reviewed for this project, there are at least 16 sensitive plant and wildlife species with CNDDB occurrence records in the study corridor, or in the general region of the project. Of those 16 species, no more than 53.3 acres of suitable habitat for four sensitive wildlife species are likely to be impacted (Table 5-6). Of these, impacts at most locations can be reduced to less than significant levels by avoiding and minimizing impacts during construction. This is true for habitat that potentially supports sensitive plants along the right-of-way.

The areas of potentially affected wildlife species are summarized in Table 5-8. If some loss of habitat for sensitive wildlife cannot be avoided, depending on the specific tower and construction site layouts, then suitable mitigation for sensitive species habitat losses would need to be determined to reduce impact levels to less than significant. It is possible that there would be some loss of potential habitat for desert tortoises, though there are very few recent records for this species within the study corridor, which is at the edge of the species' current known distribution. For this reason, impacts to desert tortoise are considered to be less than significant. As much as 19.1 acres of potential coastal California gnatcatcher habitat may be affected; however, much of this would likely be avoided or the impacts would be minimized so as to not cause a significant loss of suitable habitat. If habitat losses occur, mitigation would be warranted. Less than 1 acre of suitable habitat for least Bell's vireo may be affected; however, there are no recent records for this species in the project area where habitat loss is expected to occur. For this reason, impacts to least Bell's vireo are expected to be less than significant. Approximately 27 acres of potential habitat for Stephens' kangaroo rats may be impacted. Much of this area will either have no impact to potential habitat for this species, or impacts can be avoided entirely and

are, therefore, considered less than significant. Final areas identified for construction and tower placements would determine the actual habitat loss for this species.

TABLE 5-8
SENSITIVE SPECIES HABITAT POTENTIALLY AFFECTED BY NEW TOWER CONSTRUCTION

Species Habitat	Miles crossed from Devers to San Bernardino Junction	Area potentially affected (acres)
Desert tortoise	3.3	6.0
Coastal California gnat catcher	10.5	19.1
Least Bells vireo	0.5	0.8
Stephens' kangaroo rat	15.0	27.4
Total	**29.2**	**53.3**

Note:
[1]Potentially affected area was calculated assuming approximately 1.8 acres/mile of total disturbance (includes spur roads, structure removal, structure construction, and other construction areas.)
[2]Totals may not check due to rounding.

Indirect Impacts

Indirect impacts associated with construction within the proposed west of Devers upgrade corridor could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, materials stockpile yards, and concrete batch plants. It is at these sites that soil surface disturbance is likely to be greatest, thus encouraging establishment of invasive, weedy species.

5.2.9 Noise

5.2.9.1 Construction

The noise associated with the construction activities would be primarily generated by the equipment involved. The noise levels produced within the corridor would depend on the number of operating machines and the distance to the nearest sensitive receiving source property line.

Typical noise levels associated with construction equipment fall in the range of 80 to 1 00 dBA (at a range of 50 feet from the active construction site). Most of the west of Devers upgrade corridor is within vacant land; however, there are some residences within 350 feet of construction. Noise associated with construction may be masked by other sources of noise (i.e., I-10, aircraft flyovers, local traffic, and activities at nearby businesses).

The proposed west of Devers 230kV transmission upgrade would comply with local noise ordinances. Typical municipal ordinances stipulate that activities producing ambient noise should not exceed 55-50 dBA during nighttime hours (10 p.m. to 7 a.m.) and 60-55 dBA during daytime hours (7 a.m. to 10 p.m.) at receiving residential property lines or sensitive areas. However, exemptions include temporary construction during daytime hours except on Sundays and federal holidays. There may be a need to work outside of the aforementioned local ordinances in order to take advantage of low electricity use during nighttime hours. SCE would comply with variance procedures established by local authorities if a variance is necessary.

5.2.9.2 Operation

The major sources of ambient noise in the area are due to traffic on I-10 and I-15, local traffic, aircraft flyovers, activities at business locations, various recreational activities, and the existing transmission lines. The proposed transmission line upgrade would not increase noise levels within the corridor. No noise impacts are anticipated to occur.

5.2.10 Public Services and Utilities

Since most community services are provided to local residences and employee relocation and project construction would be temporary, no impacts on public services including medical, police, fire, and emergency are anticipated. Services to construction workers would not exceed the level for which local facilities are equipped to provide for visitors or temporary workers in

the area. In addition to medical facilities available in the smaller communities near the proposed west of Devers upgrade corridor, numerous medical facilities equipped to handle all levels of emergency medical situations also are available in the larger metropolitan area of San Bernardino, near Vista Substation. These include the cities of Redlands and Loma Linda; Loma Linda has the premier University Medical Center that draws patients from around the country.

5.2.11 Visual Resources

The impact analysis was based on the BLM's VRM System 8400 series (BLM 1984) as well as previous transmission line visual impact assessments in response to CEQA environmental criteria for aesthetics. This section focuses on impacts resulting from the construction and operation of the proposed west of Devers 230kV transmission upgrade. Visual impacts include short-term impacts resulting from the presence of vehicles and equipment during construction, and long-term impacts resulting from the presence of transmission lines facilities over their lifetime.

The measure of potential adverse impact on visual resources is based on visual contrast. Visual contrast is a measure of the degree of perceived change that would occur in the landscape due to the construction and operation of the proposed west of Devers 230kV transmission upgrade. Visual contrast typically results from (1) landform modifications that are necessary to upgrade and construct new access roads and tower pad sites, (2) removal of vegetation to construct roads and maintain right-of-way and ground clearance zones associated with the conductors and towers, and (3) introduction of new structures in the landscape.

The visual contrast assessment was performed by comparing landscape elements (form, line, color, and texture) of the existing landscape with the elements associated with the proposed transmission line facilities including new structures (towers, hardware, equipment, and conductors) and new or improved access. In this regard, landform, vegetation, and structural elements in the landscape were evaluated in conjunction with the proposed (newly introduced)

transmission line, and assigned degrees of change/contrast ranging from strong to moderate, weak, or none. Contrast evaluations were performed from key viewing areas representing typical views to the project, including the documentation of existing and simulated conditions are illustrated in Figures 5-4 through 5-7.

According to the CEQA criteria for aesthetics, significant visual impacts could occur if the project would:

- substantially degrade the existing visual quality of the site and its surroundings
- have a substantial adverse effect on a scenic vista
- substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- create a new source of substantial light or glare adversely impacting day or nighttime views in the area

Following is a summary of visual impacts based on the CEQA criteria.

Substantially Degrade the Existing Visual Quality of the Site and Its Surroundings

There is no Class A scenery adjacent to, or crossed by, the proposed 230kV upgrade corridor, and all Class B landscapes are crossed within an existing modified utility corridor. Therefore, impacts to existing scenic quality are anticipated to be less than significant.

The proposed west of Devers 230kV transmission upgrade would cross or be adjacent to the following image types: agriculture, open space/park, industrial, commercial, institutional, and residential. The existing condition of these image types has already been highly modified by the

presence of two single-circuit 230kV lines and one double-circuit 230kV transmission line. Construction of the proposed 230kV transmission line would be limited to the existing utility corridor in these areas and would not affect the current or future development pattern and visual character of these and other areas, due to the presence of the existing utility corridor.

In general, an adverse impact is a result of high to moderate visibility (foreground to middleground views) and strong or moderate project/setting contrast from residential, recreation or travel route views. The proposed west of Devers 230kV transmission upgrade would occur in an existing transmission line corridor, and consists of upgrading an existing line and matching existing tower types (Links 100-102) or simply reconductoring with selective tower replacement (Links 103 and 104). Therefore, the visual contrast created by the proposed west of Devers upgrade would be minimal to indiscernible. In addition, the number of structures that occur within the corridor would be reduced from three to two structures for portions of the proposed route, or from four to three in others, resulting in an overall reduction of towers visible to sensitive viewers. Overall, impacts to sensitive viewers are anticipated to be less than significant.

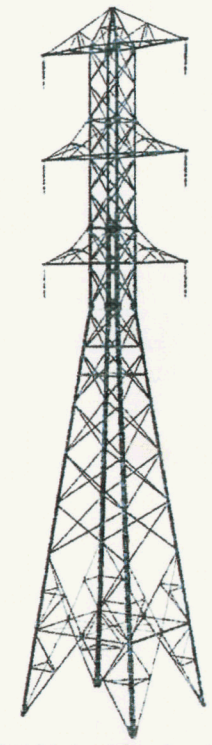
Residential Viewers

The majority of the views of the west of Devers upgrade corridor from residential viewers are screened by topography, vegetation, and/or buildings, and may occur from the foreground into the background. As a result of distance, screening, and existing corridor conditions, the visual impact to these viewers would be less than significant, as illustrated on Figures 5-4 and 5-7. In some locations, the proposed transmission upgrade would result in an improvement on visual quality based on a reduction in the number of towers.

Existing Condition - Transmission line corridor adjacent to residential image type.
Photograph taken 1/22/04 at 11:37am using a 50mm focal length.

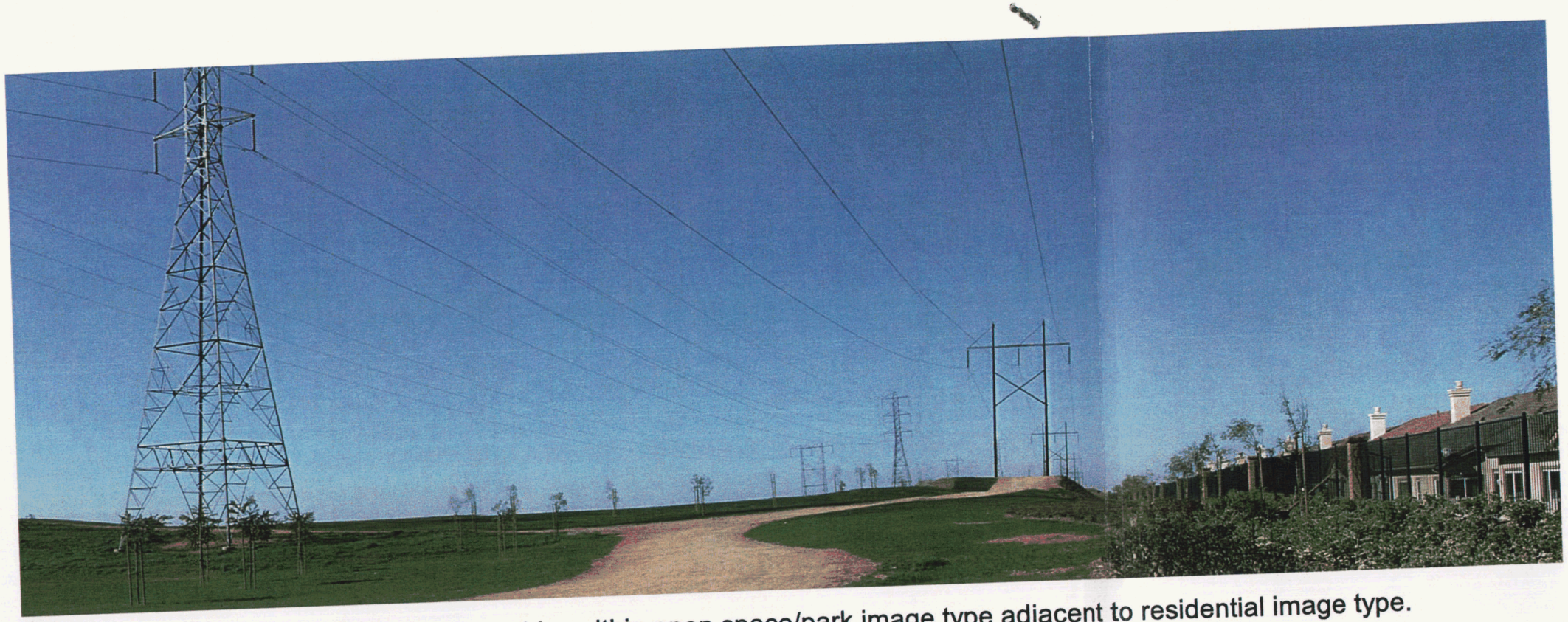
Viewpoint located in the city of Beaumont east of Beaumont Avenue and north of transmission line, looking west-southwest towards proposed project. Viewpoint approximately 1/8 mile from the tower in the center of view.

Simulation - Transmission line corridor with two 230kV single-circuit lattice towers removed and proposed 230kV double-circuit lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



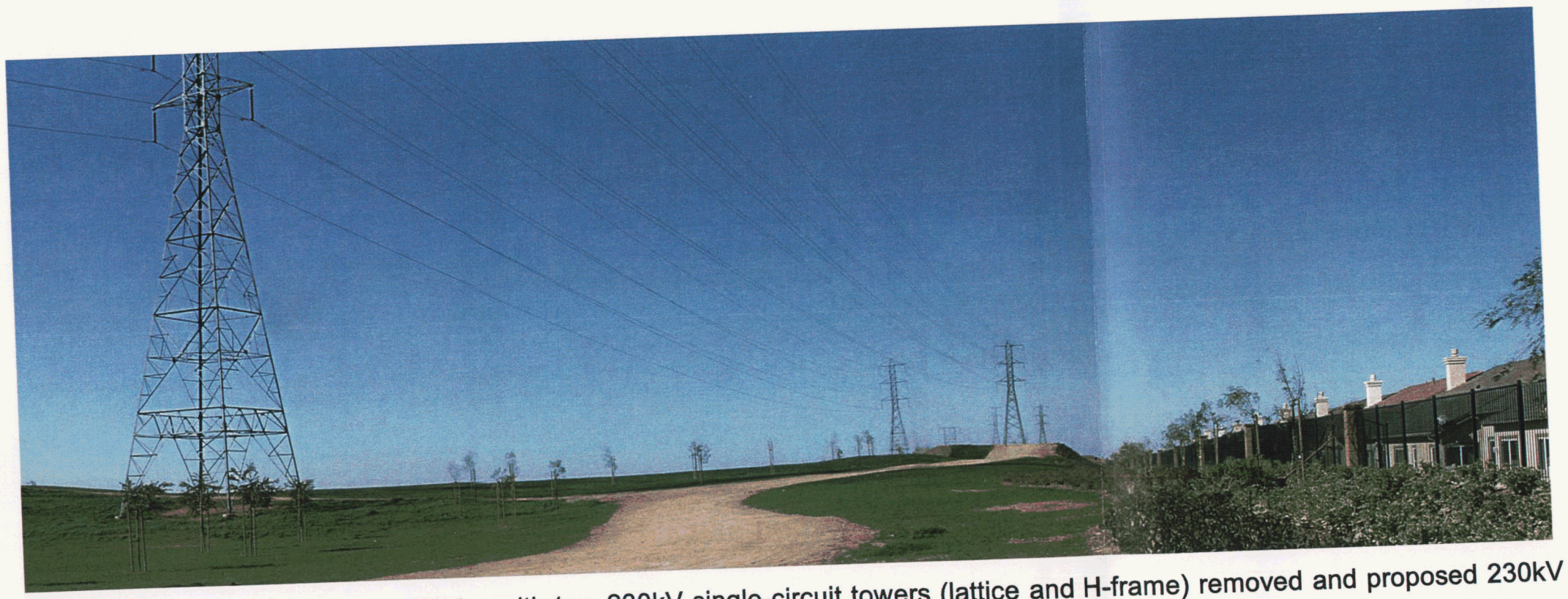
Typical 230kV double-circuit lattice steel tower used in simulations. Proposed towers are simulated to match existing tower heights. Tower locations are conceptual.

Figure 5-4

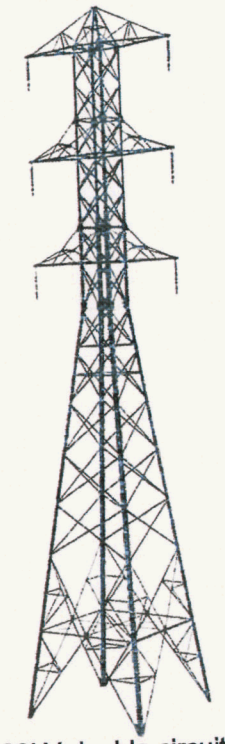


Existing Condition - Transmission line corridor within open space/park image type adjacent to residential image type.
Photograph taken 1/22/04 at 12:23 pm using a 50mm focal length.

Viewpoint located in the city of Beaumont east of Oak View Drive, looking west-southwest towards proposed project. Viewpoint approximately 1/16 m ile from the tower in the center of view.



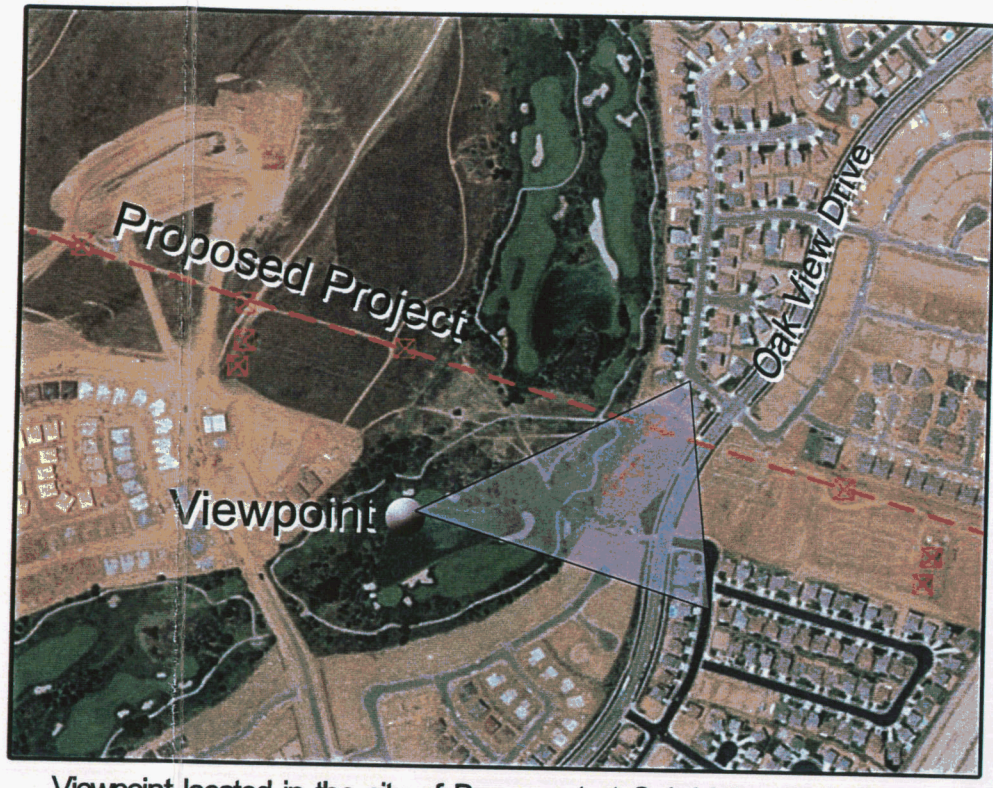
Simulation - Transmission line corridor with two 230kV single-circuit towers (lattice and H-frame) removed and proposed 230kV double-circuit lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



Typical 230kV double-circuit lattice steel tower used in simulations. Proposed towers are simulated to match existing tower heights. Tower locations are conceptual.

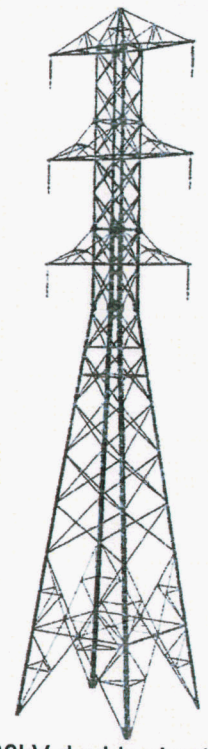
Figure 5-5

Existing Condition - Transmission line corridor within open space/park image type adjacent to residential image type.
Photograph taken 1/22/04 at 1:01 pm using a 50mm focal length.



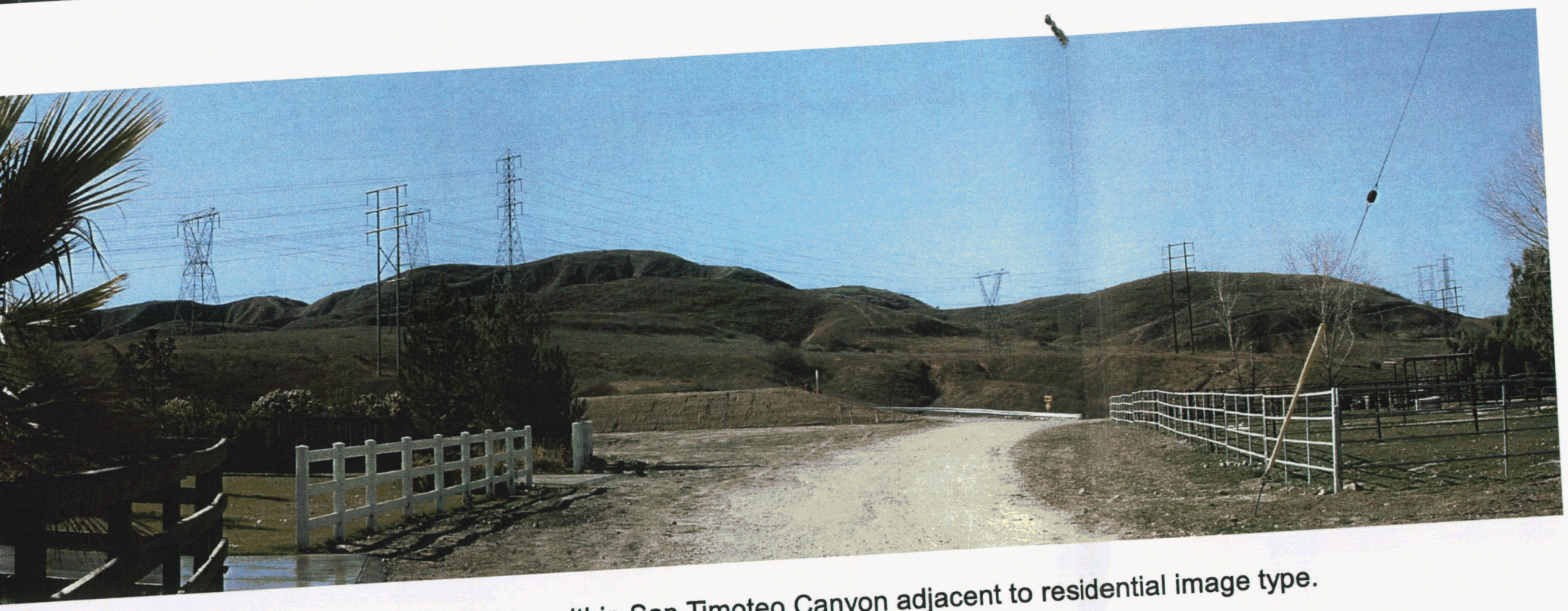
Viewpoint located in the city of Beaumont at Oak Valley Golf Course south of transmission line, looking east-northeast towards proposed project. Viewpoint approximately 1/8 mile from the tower in the center of view.

Simulation - Transmission line corridor with two 230kV single-circuit towers (lattice and H-frame) removed and proposed 230kV double-circuit lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.

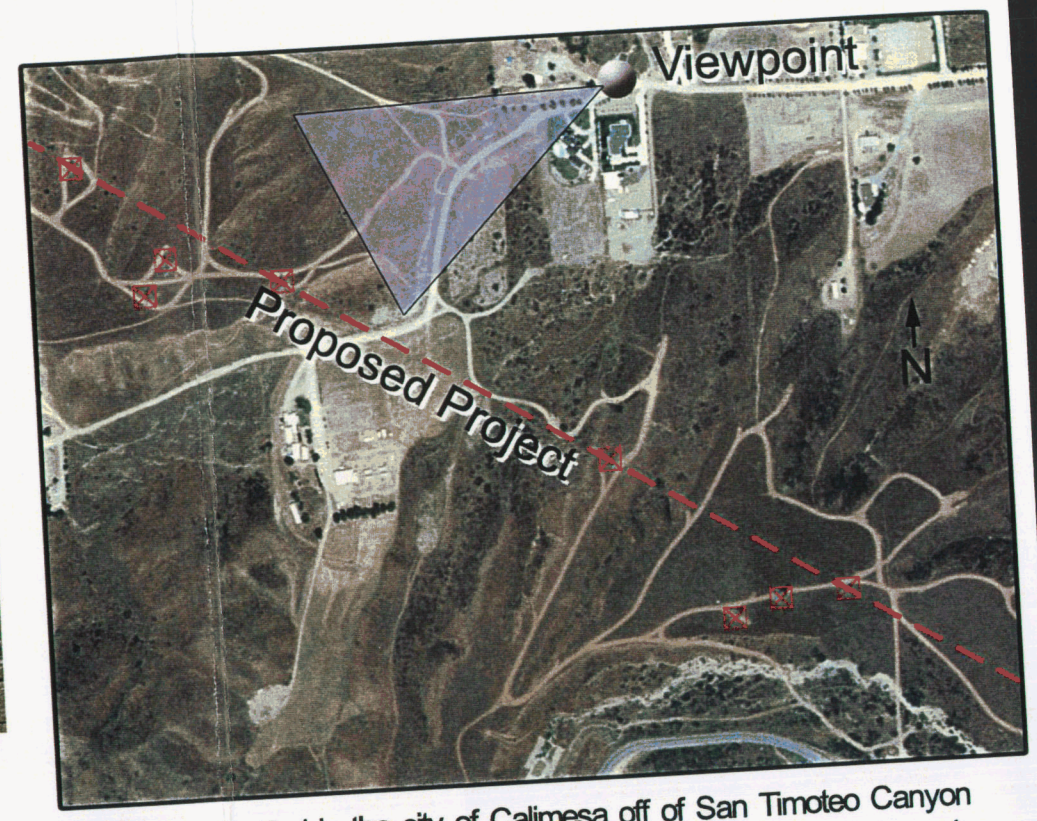


Typical 230kV double-circuit lattice steel tower used in simulations. Proposed towers are simulated to match existing tower heights. Tower locations are conceptual.

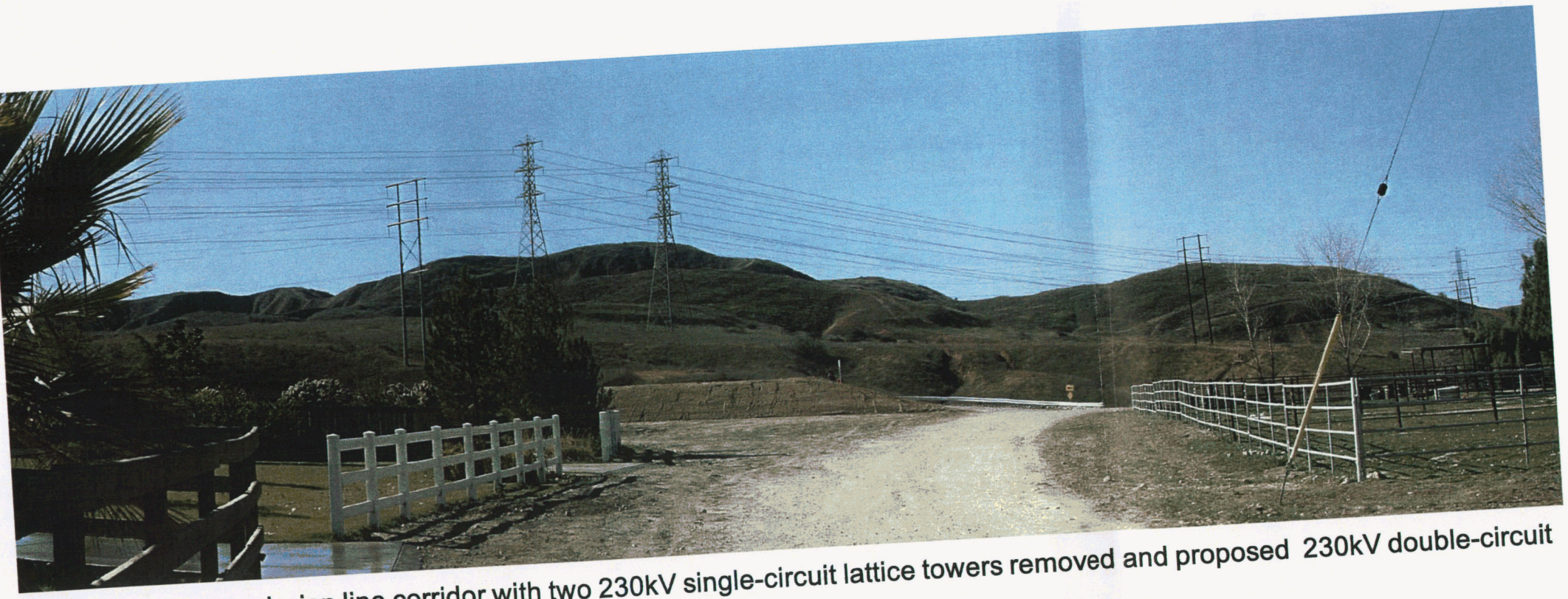
Figure 5-6



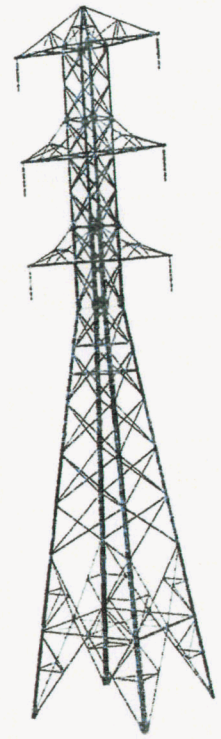
xisting Condition - Transmission line corridor within San Timoteo Canyon adjacent to residential image type.
hotograph taken 1/22/04 at 2:13 pm using a 50mm focal length.



Viewpoint located in the city of Calimesa off of San Timoteo Canyon Road north of transmission line, looking west-southwest towards proposed project. Viewpoint approximately 1/4 mile from the tower in the center of view.



Simulation - Transmission line corridor with two 230kV single-circuit lattice towers removed and proposed 230kV double-circuit lattice steel structure transmission line.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



Typical 230kV double-circuit lattice steel tower used in simulations. Proposed towers are simulated to match existing tower heights. Tower locations are conceptual.

Figure 5-7

Where residential units occur immediately adjacent to the proposed 230kV transmission upgrade, adverse impacts may occur where the newly located towers could be situated in the unobstructed immediate foreground distance zone of individual residences (Link 102). Visual simulations depicting existing and proposed conditions from key residential areas are also shown on Figures 5-4 and 5-5.

Travelway Viewers

Less than significant impacts are expected along moderate or low sensitivity travel routes. The majority of the views of the proposed 230kV transmission upgrade corridor from these local travel routes are partially screened or screened by topography, vegetation and/or buildings.

Impacts to views from travelways are largely dependent upon distance, the setting, and orientation to the proposed transmission line corridor (i.e., either parallel or perpendicular to the roadway). A scenic highway, which offers scenic views to distant or local natural features such as the San Bernardino or San Jacinto mountains, constitutes high sensitivity travelways. The transmission line corridor crosses State Scenic Highway CA 62 west of the Devers Substation (Link 100), which provides access to Joshua Tree National Park. From I-10 northbound on CA 62, the contrast created by the line is negligible in this area because the proposed transmission upgrade would occur in an existing transmission line corridor and would consist of replacing an existing transmission line. The proposed route also crosses CA 62 at an approximately 90-degree angle, which results in a relatively short viewing duration. Impacts created by the proposed west of Devers 230kV transmission upgrade would be minimal or indiscernible to southbound travelers on CA 62 because of the existing utility corridor, in addition to the presence of wind generator towers scattered across the landscape, and the proposed perpendicular crossing.

West of Beaumont, the proposed transmission upgrade crosses I-10 (designated scenic) just west of Milepost 26. Impacts at the crossing would be less than significant, based on the existing

modified corridor setting, and the replacement of the existing transmission line with a double-circuit tower that matches the existing tower types.

Recreation/Open Space Viewers

Impacts to recreation viewers from golf courses and existing trails (including utility line trails in the cities of Beaumont, Banning, Calimesa, Redlands, and Loma Linda) are anticipated to be less than significant due to the full to partial localized screening associated with the presence of the highly modified corridor setting. In addition selective cities have incorporated the existing utility corridor in their open space trails network. Open space views associated with cemeteries and parkland adjacent to the proposed transmission upgrade also would have less than significant impacts. Visual simulations depicting the existing conditions and proposed west of Devers 230kV upgrade from typical recreation use areas are shown on Figures 5-4 and 5-5.

Substantial Adverse Effect on Scenic Vistas

There are no state designated scenic vistas within the proposed west of Devers 230kV transmission upgrade study corridor. Therefore, impacts to scenic vistas would not occur.

Substantially Damage Scenic Resources Including, But Not Limited to, Trees, Rock Outcroppings, and Historic Buildings Within a State Scenic Highway.

Because the proposed west of Devers transmission upgrade would be constructed to span the highway, and towers would be installed on either side of the roadway, the impact on trees, rock outcroppings, and historic buildings or other sensitive features within the scenic highway would be less than significant.

Create a New Source of Substantial Light or Glare Adversely Impacting Views

Construction of the west of Devers 230kV transmission upgrade would normally occur during daylight hours. No additional sources of light would be created and glare would not adversely impact views, as non-specular conductors would be utilized and the finish on towers would be dulled.

5.2.12 Cultural Resources

Archaeology

A Class III archaeological survey of the 300-foot-wide project APE within the proposed west of Devers 230kV study corridor identified two archaeological resources within the APE (Eckhardt and Walker 2004b). These resources are P33-13429 and P33-13430. Neither P33-13429 nor P33-13430 appear eligible for the NRHP. No impacts to NRHP eligible archaeological resources are anticipated as a result of construction and operation of the proposed west of Devers transmission upgrade.

Ethnography

Apart from the recorded archaeological sites and the portion of the west of Devers corridor that crosses the Morongo Indian Reservation, there are no known areas of ethnographic sensitivity within the project APE. In addition, Native American groups have an interest in the disposition of prehistoric archaeological sites as evidence of the presence of their ancestors.

Construction and operation of the proposed transmission upgrade is not expected to have effects on Native American TCPs or other resources of cultural value. BLM staff has indicated that they would consult with appropriate Native American groups regarding this process in the context of

the BLM's government-to-government responsibility with Native American tribes (personal communication, Wanda Raschkow 2004).

History

The Class III archaeological survey of the 300-foot-wide project APE resulted in the identification of nine historic-era sites in the APE: RIV-7462H/P33-13427, P33-13428, RIV-2262H, RIV-4768H/SBR-7168H/P36-007168, SBR-11624H/P36-011624, P33-13431, P33-13434, P33-007888, P36-020240. Three of these resources—RIV-4768H/SBR-7168H/P36-007168, RIV-2262H, and P33-007888—are assessed potentially eligible for listing on the NRHP (Eckhardt and Walker 2004b). These resources are subject to potential effects from project construction and operation.

Paleontology

Between Devers and Vista substations (Links 100, 101, 102, 103, and 104) the proposed west of Devers corridor traverses approximately 25.9 miles of high or undetermined areas of paleontological sensitivity. The undetermined or high sensitivity areas include Pleistocene older alluvium in Links 102 and 103, Canebrake Conglomerate or Palm Springs Formation in Link 102, and San Timoteo Formation in Links 102 and 103. Potentially significant paleontological specimens may be impacted by excavation of tower footings and grading of access spur roads in these areas (Scott 2003).

5.2.13 Public Health and Safety

5.2.13.1 Hazardous Materials

The potential for impacts to public health and safety from hazardous materials that could occur during construction or operation of the proposed transmission upgrade west of Devers, and the means by which SCE would attempt to minimize those potential impacts, would be the same as described in Section 5.1.13.1.

5.2.13.2 School Facilities

Project construction and operations would not occur on any school sites. There would be a very low risk of emitting hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. There are eight existing schools located within approximately ¼ mile of the existing west of Devers right-of-way, as identified in Section 4.2.13.1 (Table 4-55). Impacts to school facilities that would result from construction and operation of the proposed west of Devers transmission upgrade would be less than significant.

5.2.13.3 Airport and Airstrip Operations

The proposed west of Devers 230kV transmission line upgrade would not impact west of Devers operation of any airport or private airstrip. Construction and operation of the proposed upgrade would be located within an existing right-of-way, and would therefore not create a new safety hazard for people residing or working in the project area.

5.2.13.4 Emergency Response or Evacuation Plans

Construction or operation of the proposed west of Devers transmission upgrade would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan.

5.3 SUBALTERNATE TRANSMISSION LINE ROUTES

5.3.1 Land Use

5.3.1.1 Harquahala-West Subalternate Route

The majority of the approximately 21.1-mile-long Harquahala-West Subalternate Route crosses vacant/undeveloped land as it parallels section lines to the existing El Paso Natural Gas pipeline corridor, where it turns northwest and parallels the pipeline corridor to the existing DPV1 corridor next to the Wenden Pump Station 4126. As the subalternate route crosses approximately 4.5 miles of land subdivided as Eagle Ranch, potential impacts could occur if the plots were sold for residential use. Immediately west of the Harquahala Switchyard, the subalternate route crosses approximately 3 miles of agricultural land. Approximately 14 new single-circuit, tubular steel poles would be constructed through the agricultural land, which would result in a loss of approximately 0.03 acre of agricultural land. Farming operations could resume after construction. Tubular steel poles also would be used for approximately ½ mile west of the agricultural land.

The subalternate route would utilize the existing access road within the pipeline corridor. Approximately 9 miles of new access road would be constructed for the subalternate route, disturbing approximately 17.8 acres of undeveloped land. The total permanent disturbance along the Harquahala-West Subalternate Route would be approximately 18.9 acres. Table 5-9 shows the estimated amount of potential ground disturbance for the Harquahala-West Subalternate

Route compared to the proposed Devers-Harquahala route from Harquahala to a common endpoint, as indicated on Map 3-2a. The subalternate route would not physically divide any established community and would not conflict with existing general plans for the study corridor. The El Paso Natural Gas pipeline corridor is identified in the Lower Gila South RMP as a designated BLM utility corridor.

TABLE 5-9
PERMANENT GROUND DISTURBANCE FOR THE PROPOSED DEVERS-HARQUAHALA ROUTE AND HARQUAHALA-WEST SUBALTERNATE ROUTE

	Structure Footprint (acres)	Access and Spur Roads (acres)	Total Disturbance (acres)
Proposed Devers-Harquahala Route	1.1	5.0	6.1
Harquahala-West Subalternate Route	0.6	17.8	18.9

Notes:
1. Harquahala Switchyard and the junction with DPV1 near Wenden Pump Station are used as common endpoints for the proposed and subalternate routes.
2. Disturbance areas estimate based on tower span distances: Lattice towers—3.4 towers per mile, tubular steel poles—4 per mile.
3. Lattice towers permanent disturbance—0.01 acre, tubular steel poles permanent disturbance—100 square feet.
4. Access road permanent disturbance estimate based on 14-foot-wide roadway.

During construction, temporary construction and laydown areas along the first 3 miles of the subalternate route could potentially impact agricultural lands. Assuming 0.4 acre of disturbance per mile for pulling/tensioning and splicing sites, and approximately 0.9 acre at each new structure location, approximately 12 acres of agricultural land could be temporarily disturbed during construction. Including temporary disturbance to undeveloped and agricultural land, a total area of approximately 18.9 acres could be disturbed during construction.

5.3.1.2 Palo Verde Subalternate Route

The majority of the Palo Verde Subalternate Route would be located adjacent to the existing DPV1 transmission line right-of-way within the designated BLM utility corridor. The remainder of the subalternate route, which crosses undeveloped state and private land, is located in an

existing 500kV utility corridor. A total of approximately 50 lattice steel towers would be constructed for the 15-mile subalternate route, or 27 more towers than the proposed Devers-Harquahala 500kV route. Existing access along the DPV1 transmission line corridor would be utilized for construction and maintenance. Overland travel would be used to access tower locations via extensions of spur roads from the existing DPV1 access road. During construction, temporary construction and laydown areas and structure assembly sites would potentially disturb approximately 8.9 acres. The Palo Verde Subalternate Route would result in approximately 2 acres of permanent ground disturbance.

5.3.2 Socioeconomics, Population, and Housing

5.3.2.1 Harquahala-West and Palo Verde Subalternate Routes

The construction of either of the subalternate routes would not impact the population or housing of the area through which they pass. As noted in Section 5.1.3.1, some of the labor force would likely be drawn from the greater Phoenix area, in which case the workers would commute and would not require housing. Labor force statistics described in Section 5.1.3.1 would be applicable to these subalternates.

5.3.3 Geology and Soils

5.3.3.1 Harquahala-West Subalternate Route

No significant impacts to geology and soils are expected from the construction or operation of the Harquahala-West Subalternate Route. Approximately 15 acres of disturbance would occur to soils during the construction of approximately 9 miles of access roads. Impacts to soils would be mitigated using erosion control measures described in Section 6.1.4.

5.3.3.2 Palo Verde Subalternate Route

Impacts to geology and soils are expected to be less than significant from the construction or operation of the Palo Verde Subalternate Route. A minimal level of new access would be required along the subalternate route, as existing access would be used for construction and operation. Impacts to soils would be mitigated using erosion control measures described in Section 6.1.4.

5.3.4 Hydrology

5.3.4.1 Harquahala-West and Palo Verde Subalternate Routes

The construction and operation of either of the subalternate routes would not be expected to violate water quality standards or waste discharge requirements. No groundwater would be used for construction or operation of either subalternate route; therefore, no impacts are expected to aquifer volume. Washes would be spanned where possible; therefore, impacts to washes are expected to be less than significant.

5.3.5 Air Quality

5.3.5.1 Harquahala-West and Palo Verde Subalternate Routes

Impacts to air quality from the construction and operation of the proposed project using either of the subalternate routes would be similar to the impacts described for the Arizona portion of the proposed Devers-Harquahala route in Section 5.1.6.1.

5.3.6 Traffic and Transportation

5.3.6.1 Harquahala-West and Palo Verde Subalternate Routes

Impacts to traffic and transportation from the construction and operation of the subalternate routes would be less than significant. Impacts to the project from either of the subalternates would be similar to the impacts described for the Arizona portion of the proposed route in Section 5.1.7.1.

5.3.7 Biology

5.3.7.1 Harquahala-West Subalternate Route

Vegetation

Construction and operation of the Harquahala-West Subalternate Route would result in the removal of, or damage to, a number of species of native plants. Construction of spur roads would cause the removal of shrubs, cacti, and, possibly, some trees. Vegetation also is likely to be crushed in at tower site construction areas, in pulling areas, and in equipment storage and laydown areas.

Sensitive Plant Species

There are no federally listed threatened or endangered plant species that have been documented within the study corridor for this subalternate route. A number of plant species that are listed under the ANPL are present within the corridor, however it is highly unlikely that any plant species listed as Highly Safeguarded Protected Native Plants are present. Crested or fan-top forms of saguaro cactus could be present; however, no individuals of this form were observed

during site reconnaissance. There are a number of Salvage Restricted Protected Native Plants present including all agaves, cacti, and ocotillo. Salvage Assessed and Harvest Restricted species present include ironwood, blue and foothill paloverde, and mesquite. Plants protected under the ANPL, other than those that are highly safeguarded, can be offered for salvage, or salvage assessed.

Wildlife

Permanent impacts such as injury, mortality, and permanent displacement of wildlife during construction of tower footings, spur roads, crane pads, and staging areas could occur. Temporary impacts such as disturbance and temporary displacement of wildlife also could occur during construction.

Sensitive Wildlife

No federally listed species are likely to be present within the Harquahala-West Subalternate Route study corridor. There is some possibility of the southwestern willow flycatcher being present along wooded washes during spring or fall migration, but there is no possibility of the species nesting within the corridor due to lack of acceptable habitat. The loggerhead shrike, a federal species of concern and BLM sensitive species, may be present within the corridor occasionally. The California leaf-nosed bat, also a federal species of concern and BLM sensitive species, could be present within the corridor during nocturnal foraging. However, because this species does not generally forage far from its roost in caves or mines, such roosts would have to be immediately adjacent to the project corridor for this species to be present. The pale big-eared bat, a federal species of concern, could be present as a nocturnal forager along the portion of the corridor that skirts the Eagletail Mountains if suitable mine or cave roost habitat is present. Desert bighorn sheep, a big game species in Arizona, resides in the Eagletail Mountains and may occasionally wander downslope within the vicinity of the corridor.

The burrowing owl, a federal species of concern and a BLM sensitive species, is recorded in Maricopa County and could be present anywhere within the corridor where suitable habitat is present, including the agricultural and ruderal areas at the east end of the study corridor.

Other sensitive species that are likely to occur within the Harquahala-West study corridor include Sonoran population desert tortoises, Arizona chuckwalla, banded Gila monster, and desert rosy boa. The desert tortoise and chuckwalla are most likely to be found in rocky upland areas along the eastern slope of the Eagletail Mountains, and the Gila monster may be present anywhere within the native desert lands along the corridor, particularly in the vicinity of washes.

Indirect Impacts

Indirect impacts associated with the construction of the Harquahala-West Subalternate Route transmission line could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, materials stockpile yards, and concrete batch plant sites.

Overall impacts to sensitive plant and animal species on the Harquahala-West Subalternate Route are expected to be less than significant.

5.3.7.2 Palo Verde Subalternate Route

Vegetation

Construction of the Palo Verde Subalternate Route would result in the removal of, or damage to, a number of species of native plants. Construction of spur roads would cause the removal of shrubs, cacti, and, possibly, some trees. Vegetation is also likely to be crushed in at tower site construction areas, in pulling areas, and in equipment storage and laydown areas.

Sensitive Plant Species

There are no federally listed threatened or endangered species of plants that have been documented in the Arizona portion of Devers-Harquahala study corridor, including the study corridor for the Palo Verde Subalternate Route. Sensitive plants known or likely to be found include straw-top cholla (*Opuntia echinocarpa*) and the suite of species listed under the ANPL.

Wildlife

Permanent impacts including injury, mortality, and permanent displacement of wildlife during construction of tower footings, spur roads, crane pads, and staging areas could occur. Temporary impacts such as disturbance and temporary displacement also are likely to occur during construction.

Sensitive Wildlife

Sensitive reptile species that may be present within the study corridor of the Palo Verde Subalternate Route include Sonoran desert tortoise (*Gopherus agassizi*), Arizona chuckwalla (*Sauromalus ater*), and desert rosy boa (*Charina trivirgata gracia*). All three of these reptiles may be encountered in rocky, upland areas as opposed to lowland, alluvial sites. Among birds, there is a remote possibility that burrowing owls (*Athene cunicularia hypugaea*) could occur within the corridor. It also is possible that the federally listed southwestern willow flycatcher (*Empidonax traillii extimus*) could be present in dense mesquite growth along Winters Wash during periods of spring or fall migration. Sensitive mammals that may be present within the corridor from time to time include California leaf-nosed bat (*Macrotus californicus*) and desert bighorn sheep (*Ovis canadensis mexicana*).

Indirect Impacts

Indirect impacts associated with construction within this proposed corridor could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, materials stockpile yards, and concrete batch plants. It is at these sites that soil surface disturbance is likely to be greatest, thus encouraging establishment of invasive, weedy species.

Impacts to sensitive plant and animal species on the Palo Verde Subalternate Route are expected to be less than significant.

5.3.8 Noise

5.3.8.1 Harquahala-West and Palo Verde Subalternate Routes

Construction or operation of the transmission line along either of the subalternate routes would result in less than significant noise impacts. Both of the subalternate routes are located in rural areas with no immediately adjacent residences. Construction and operation of either of the subalternate routes would comply with local noise standards, as described in Section 5.1.9.1.

5.3.9 Public Services and Utilities

5.3.9.1 Harquahala-West and Palo Verde Subalternate Routes

Impacts to public services and utilities from the construction or operation of either of the subalternate routes would be less than significant. Impacts expected are similar to those for the proposed route, as described in Section 5.1.10.1.

5.3.10 Visual

5.3.10.1 Harquahala-West Subalternate Route

Several residences occur within 1 mile of the Harquahala-West Subalternate Route with open views of the subalternate transmission line (Link HW, Mileposts 8 and 9). Because this route would not parallel an existing vertical linear facility, the impacts to those residential viewers would be potentially significant. Additional impacts could occur to sensitive viewers using the trail in the Eagletail Wilderness. However, the views of the subalternate route are partially screened and backdropped, and would occur approximately 1 mile away from the trail, resulting in less than significant impacts. A simulation was prepared to depict the project as it would appear from the trail viewpoint (Figure 5-8). Impacts to scenic quality are anticipated to be minimal because the subalternate route would occur in a Class C landscape.

5.3.10.2 Palo Verde Subalternate Route

Impacts to residential viewers (one residence) adjacent to this subalternate route would be less than significant because the transmission line along this subalternate route would parallel two existing 500kV transmission lines at the viewpoint. Additional impacts would occur to travelers on the Salome Highway, but would be minimal because the new line would parallel existing 500kV transmission lines. Impacts to scenic quality (primarily Class C landscape) are anticipated to be minimal because the existing conditions along the route include existing transmission lines and the associated access road.

5.3.11 Cultural Resources

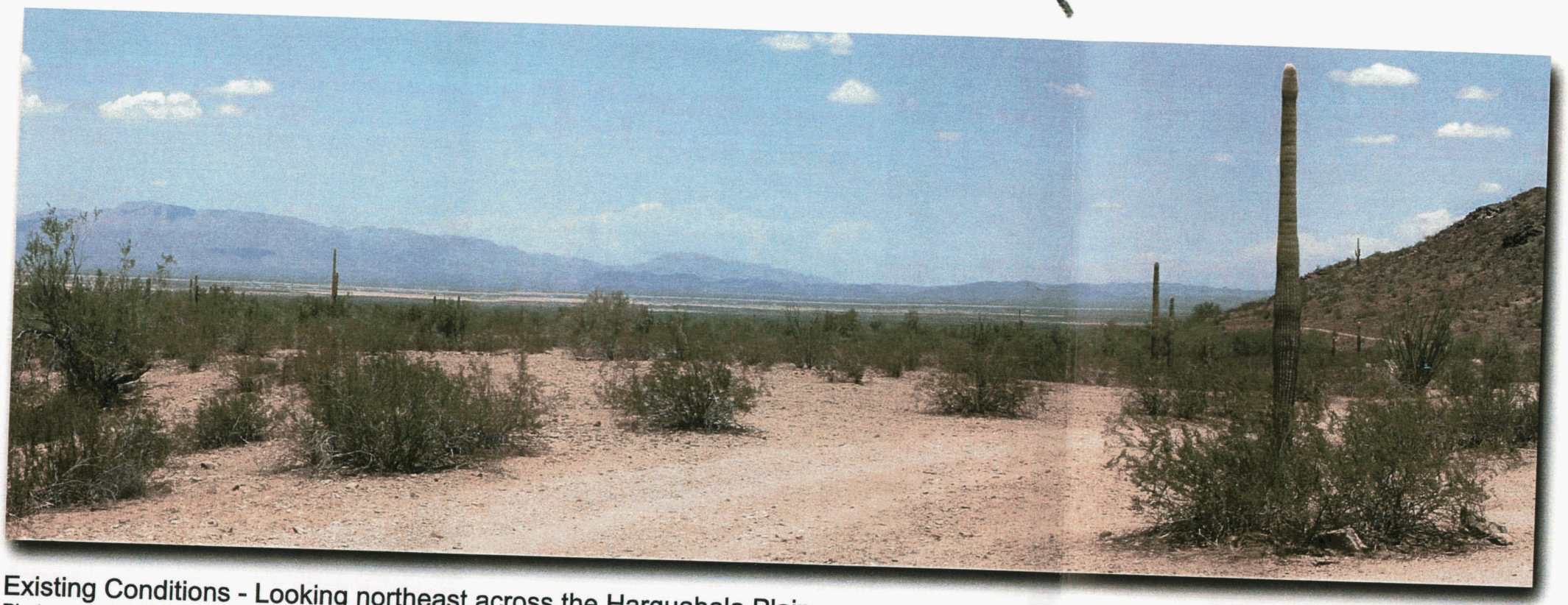
5.3.11.1 Harquahala-West Subalternate Route

Archaeology

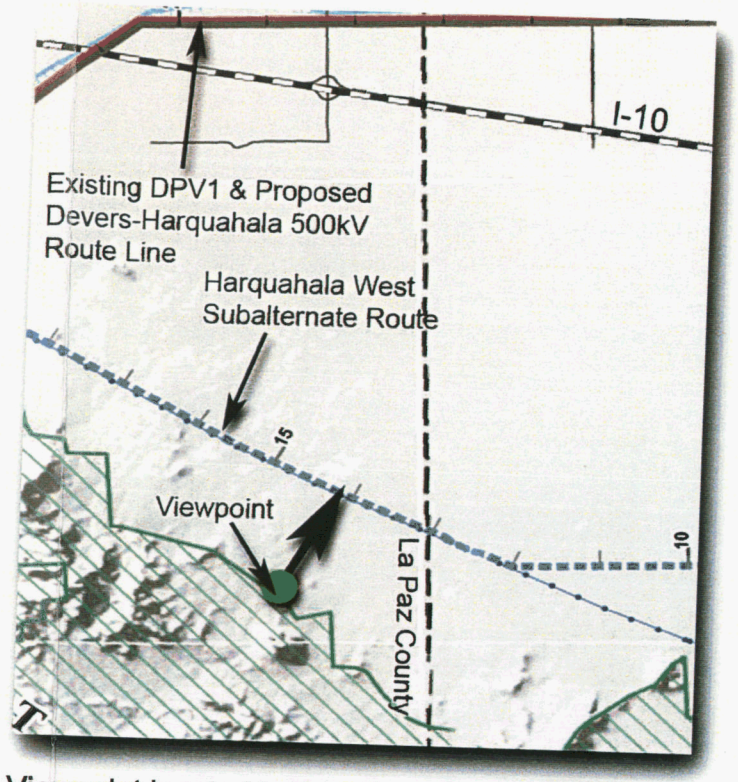
In addition to the records search, a Class II sample archaeological survey was conducted within the study corridor for this subalternate route. No NRHP eligible or potentially eligible archaeological resources were identified in the 300-foot-wide corridor (Luhnow 2004). The discovery of only two isolated archaeological occurrences in the areas of the 2-mile-long survey transects suggests that the archaeological sensitivity of this area is only moderate, and potential impacts to NRHP eligible resources would be less than significant.

Ethnography

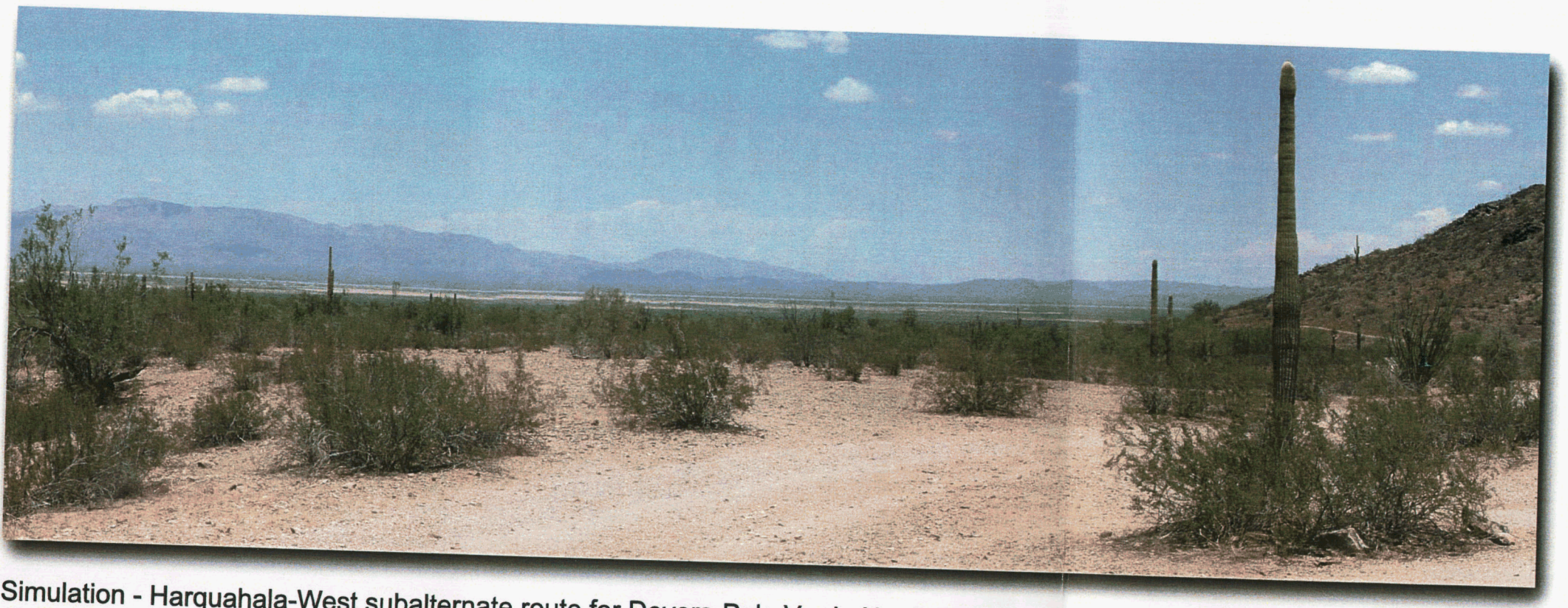
No TCPs or potential TCPs have been identified within the project APE (defined as the 300-foot-wide study corridor for the Class II study). Apart from archaeological sites that may occur within the APE, about which Native Americans have expressed a general concern, no significant ethnographic values have been identified that could be affected by the project. BLM staff has indicated that they would consult with appropriate Native American groups regarding project effects on traditional cultural values within the context of the BLM's government-to-government responsibility with Native American tribes (personal communication, Wanda Raschkow 2004).



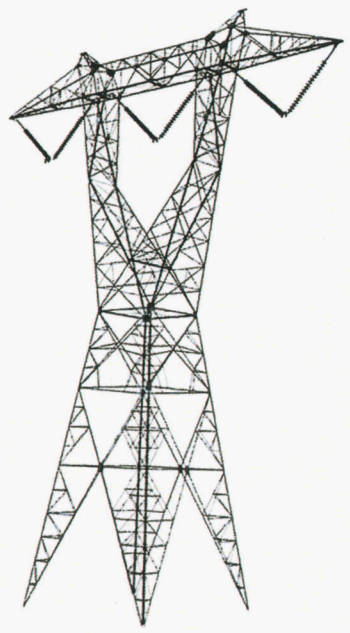
Existing Conditions - Looking northeast across the Harquahala Plain.
Photograph taken 7/26/04 at 1:06 p.m. using a 50mm focal length.



Viewpoint located just north of Courthouse Rock looking northeast approximately 1.5 miles from the Harquahala-West subalternate route.



Simulation - Harquahala-West subalternate route for Devers-Palo Verde No. 2, 500kV lattice steel structure transmission line looking northeast across the Harquahala Plain.
This image is most accurately viewed at a distance of approximately 11 inches from the page to match the actual field of view.



Typical 500kV single-circuit lattice steel tower used in simulations.

Figure 5-8

History

The Class 1 records search and the Class II sample survey of the Harquahala-West Subalternate Route resulted in the identification of no historic-era sites and one isolated historic-era occurrence (a rock cairn that may be associated with a mining claim) within the 300-foot-wide project corridor (Luhnow 2004). At this time there are no known historic-era resources in the project area that are listed on or potentially eligible for listing on the NRHP (ibid). Therefore, there are no known NRHP eligible historic-era resources in the APE threatened by potential construction and operation effects of the Harquahala-West Subalternate Route.

Paleontology

Virtually the entire length of the Harquahala-West Subalternate Route crosses undifferentiated Pleistocene older alluvium and Holocene alluvium in the Harquahala Plain. The Pleistocene older alluvium has a high paleontological sensitivity ranking (Scott 2003).

5.3.11.2 Palo Verde Subalternate Route

Archaeology

Seven archaeological sites have been identified within the project APE; AZ S:12:35 (ASM), AZ T:9:12 (ASM), AZ T:9:13 (ASM), AZ T:9:21 (ASM), AZ T:9:64 (ASM), AZ T:9:86 (ASM), and AZ T:9:87 (ASM). Of these sites, AZ T:9:12 (ASM), AZ T:9:13 (ASM), AZ T:9:21 (ASM), and AZ T:9:64 (ASM) are assessed NRHP eligible or potentially eligible.

Ethnography

Because the Palo Verde Subalternate Route would be constructed adjacent to existing transmission lines, indirect effects to TCPs or potential TCPs are considered negligible. No TCPs or potential TCPs have been identified within the project APE (defined as within 100 feet of project tower pads and access roads). Apart from archaeological sites within the APE, about which Native Americans have expressed a general concern, no significant ethnographic values have been identified that could be affected by the project. BLM staff has indicated that they would consult with appropriate Native American groups regarding project effects on traditional cultural values within the context of the BLM's government-to-government responsibility with Native American tribes (personal communication, Wanda Raschkow 2004).

History

Three historic-era sites were identified in the Class III survey as occurring within or immediately adjacent to the project APE (defined as a 300- to 600-foot-wide corridor encompassing the proposed tower and access road locations). These resources are recorded as AZ T:9:65 (ASM), AZ S:12:32 (ASM), and AZ S:12:36 (ASM). All three are recommended not eligible for the NRHP. Potential effects could occur to AZ T:9:65 (ASM) as a result of construction and operation of the Palo Verde Subalternate Route.

Paleontology

Approximately 8 miles of the Palo Verde Subalternate Route traverse areas of high paleontological sensitivity. Potentially significant paleontological specimens may be impacted by excavation of tower footings and grading of access spur roads in these areas (Scott 2003).

5.3.12 Public Health and Safety

5.3.12.1 Harquahala-West and Palo Verde Subalternate Routes

Hazardous Materials

The potential for impacts to public health and safety from hazardous materials that could occur during construction or operation of either subalternate route, and the means by which SCE would attempt to minimize those potential impacts would be the same as described in Section 5.1.13.1.

School Facilities

Project construction and operation would not occur on any school sites. There would be a very low risk of emitting hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. No schools were identified within ½ mile of either of the subalternate routes, and no temporary construction areas would be located within ¼ mile of any existing school sites.

Airport and Airstrip Operations

Disturbance resulting from construction or operation of the transmission line located on either of the subalternate routes would not impact operation of any airport or private airstrip. Neither of the subalternate routes would create a new safety hazard for people residing or working in the project area.

Emergency Response or Evacuation Plans

The potential for impacts to emergency response or evacuation plans that could occur during construction or operation of either of the subalternate routes would be less than significant.

5.4 MIDPOINT SUBSTATION ALTERNATIVES

5.4.1 Land Use

Impacts to land use are expected from the construction and operation of the Midpoint Substation, at the preferred site or either of the alternative sites, would be less than significant. As shown on Map 4-3c, all three sites are located on vacant/undisturbed land, and construction of the Midpoint Substation would not conflict with general plans.

5.4.2 Socioeconomics, Population, and Housing

Impacts to socioeconomics, population, or housing as a result of construction and operation of the Midpoint Substation preferred or alternative sites would be less than significant. Tax revenue contributions to Riverside County would represent a negligible portion of the county's assessed valuation.

5.4.3 Geology and Soils

Impacts to geology and soils are expected from the construction or operation of the Midpoint Substation at any of the preferred or alternative sites would be less than significant. Approximately 44 acres of permanent ground disturbance would occur on the footprint of the substation, and additional temporary ground disturbance would occur in construction areas. Less

than 1 acre of permanent disturbance from construction of an access road would occur at the Wiley Well site. Permanent disturbance resulting from the access road at the preferred site would be about 10 acres, and about 15 acres at the Mesa Verde site. Impacts to soils would be mitigated using erosion control measures described in Section 6.1.4.

5.4.4 Hydrology

The construction and operation of the Midpoint Substation at the preferred or alternative sites would not be expected to violate water quality standards or waste discharge requirements. No groundwater would be used; therefore, impacts to washes are expected to be less than significant.

5.4.5 Air Quality

Less than significant impacts to air quality are expected from the construction or operation of the Midpoint Substation at the preferred or alternative sites. Impacts to air quality would be mitigated using measures described in Section 6.1.6.

5.4.6 Traffic and Transportation

Impacts to traffic and transportation from the construction and operation of the Midpoint Substation at the preferred site or alternatives would be less than significant. Impacts resulting from the Midpoint Substation would be similar to those of the proposed route as described in Section 5.1.7.

5.4.7 Biology

Impacts to biological resources would be expected to be less than significant for the preferred Midpoint Substation site or either of the alternatives.

5.4.7.1 Sensitive Plant Species

There are no federally listed threatened or endangered species of plants that have been documented in the vicinity of the preferred site or alternative sites. Harwood's milkvetch, a CNPS List 2 species, was documented in the area during surveys in April 2004. No other sensitive species were found.

5.4.7.2 Wildlife

Permanent impacts including injury, mortality, and permanent displacement of wildlife during construction could occur. Temporary impacts such as disturbance and temporary displacement are also likely to occur during construction.

Sensitive Wildlife

The only sensitive species that is likely to occur on the preferred site at either of the alternative sites is the Colorado Desert fringe-toed lizard. This species would utilize aeolian sands within the project area. The sands are too fine to comprise good habitat for the desert tortoise.

5.4.7.3 Indirect Impacts

Indirect impacts associated with construction of the Midpoint Substation could include an increase in non-native weed establishment and recruitment, especially in areas of soil disturbance.

5.4.8 Noise

Equipment operation is the primary noise source associated with construction activities. Noise levels are dependent on several factors including the number of machines operating within an area at a given time and the distance between the source(s) and receiving properties. Typically, noise generated from construction activities ranges between 80 and 90 dBA 500 feet from an active construction area. The nearest residential properties are located approximately 1 mile east of the preferred site, and greater than 1 mile from either of the alternative sites, and therefore would not likely be impacted by noise from operation of the substation.

5.4.9 Public Services and Utilities

Impacts to public services and utilities from the construction and operation of the Midpoint Substation at the preferred site or either of the alternatives would be less than significant. Impacts expected are similar to those for the proposed Devers-Harquahala line, as described in Section 5.1.10.2.

5.4.10 Visual Resources

5.4.10.1 Preferred Site

Visual impacts associated with the Midpoint Substation are not anticipated to occur except to the single residential viewer located about 1 mile east of the preferred site. However, because the resident's view of the site would be from a lower elevation, the impact is anticipated to be less than significant. Impacts to scenic quality are anticipated to be minimal because the preferred site is located on Class C landscape. The Midpoint Substation preferred site would comply with the VRM designation of Class 4.

5.4.10.2 Mesa Verde Alternative

Impacts to viewers from I-10 would be less than significant. This alternative site is approximately 1 mile from I-10 and would be partially screened by existing desert vegetation. Impacts to scenic quality are anticipated to be less than significant because the site would be located on Class C landscape.

5.4.10.3 Wiley Well Alternative

Potentially significant impacts could occur to travelers along I-10 with this site alternative. The site is located about ½ mile from I-10, resulting in unobstructed foreground views to the site in a landscape with little modification. Impacts to scenic quality are anticipated to be less than significant because the site is located on Class C landscape. The Wiley Well alternative site would comply with the VRM designation of Class 4.

5.4.11 Cultural Resources

5.4.11.1 Preferred Site

Archaeology

Archaeological survey identified three archaeological sites within the preferred substation site boundaries—RIV-775T, P33-13659, and P33-13660—and all of these resources appear potentially eligible to the NRHP. Earth-disturbing project construction and operation activities, such as site preparation grading and digging, could result in impacts to these resources but would be mitigated to less than significant levels.

Ethnography

Apart from the recorded archaeological sites there are no known areas of ethnographic sensitivity within the preferred substation site. Native American groups have expressed interest in the disposition of prehistoric archaeological sites as evidence of the presence of their ancestors.

Construction or operation of a substation on the preferred site is not expected to have effects on Native American TCPs or other resources of cultural value. BLM staff has indicated that they would consult with appropriate Native American groups regarding this process in the context of the BLM's government-to-government responsibility with Native American tribes.

History

An archaeological survey of the preferred Midpoint Substation site resulted in the identification of no historic-era resources. Therefore, no historic-era resources would be subject to direct effects from construction or operation of the substation at the preferred site.

Paleontology

The preferred site is located on Pleistocene older alluvium, which is considered to have a high paleontological sensitivity ranking (Scott 2003). Rock units composed of Holocene alluvium are located on either side of the site. Pleistocene alluvium has a low paleontological sensitivity ranking (ibid). Potentially significant paleontological specimens may be impacted by grading and excavation activities associated with site preparation and construction of the substation. A paleontological field survey would be conducted on the site prior to the start of any construction activities to determine the presence or extent of lithic units of high paleontological sensitivity in the project area.

5.4.11.2 Mesa Verde Alternative

Archaeology

Archaeological survey of the Mesa Verde alternative substation site resulted in the discovery of one previously unrecorded archaeological resource within the alternative site boundaries (P33-13672). P33-13672 is a lithic scatter of petrified wood flakes and is potentially eligible to the NRHP. Earth-disturbing project construction and operation activities, such as site preparation grading and digging, could result in impacts to this resource but would be mitigated to less than significant levels.

Ethnography

Apart from the recorded archaeological site, there are no known areas of ethnographic sensitivity within the Mesa Verde alternative site. Native American groups have expressed interest in the disposition of prehistoric archaeological sites as evidence of the presence of their ancestors.

Construction or operation of a substation on the Mesa Verde alternative site is not expected to have effects on Native American TCPs or other resources of cultural value. BLM staff has indicated that they would consult with appropriate Native American groups regarding this process in the context of the BLM's government-to-government responsibility with Native American tribes.

History

An archaeological survey of the Mesa Verde alternative site resulted in no historic-era resource discoveries. There are no known historic-era resources within the alternative site boundaries are expected to be subject to impacts from construction and operation of the proposed substation.

Paleontology

The Mesa Verde alternative site is located on Holocene alluvium and Holocene dune sand geological units. Neither of these geological units is conducive to the formation or preservation of fossils, and this alternative substation site is therefore given a low paleontological sensitivity ranking (Scott 2003). Potentially significant paleontological specimens may be impacted by grading and excavation activities associated with site preparation and construction of the new substation. No potentially significant paleontological specimens are expected on this site.

5.4.11.3 Wiley Well Alternative

Archaeology

An archaeological survey of the Wiley Well alternative site resulted in the identification of no known archaeological resources. Therefore, no archaeological resources are expected to be subject to impacts from construction or operation of the proposed substation.

Ethnography

Construction or operation of a substation on the Wiley Well alternative site is not expected to have effects on Native American TCPs or other resources of cultural value. BLM staff has indicated that they would consult with appropriate Native American groups regarding this process in the context of the BLM's government-to-government responsibility with Native American tribes.

History

An archaeological survey of the alternative site resulted in no resource discoveries within the site boundaries. No historic-era resources are therefore expected to be subject to impacts from construction or operation of the substation on the Wiley Well alternative site.

Paleontology

The Wiley Well alternative site is located on Holocene alluvium and Holocene dune sand geological units. Neither of these geological units is conducive to the formation or preservation of fossils, and this proposed substation site is therefore given a low paleontological sensitivity

ranking (Scott 2003). Potentially significant paleontological specimens may be impacted by grading and excavation activities associated with site preparation and construction of the new substation. No potentially significant paleontological specimens are expected on this site.

5.4.12 Public Health and Safety

5.4.12.1 Hazardous Materials

The potential for impacts to public health and safety from hazardous materials that could occur during construction or operation of the substation at the preferred site or at any of the alternative sites, and the means by which SCE would attempt to minimize those potential impacts would be the same as described in Section 5.1.13.1.

5.4.12.2 School Facilities

Project construction or operation would not occur on any school sites. There would be a very low risk of emitting hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. No schools were identified within ½ mile from the preferred or alternative sites, and no temporary construction areas would be located within ¼ mile of any existing school sites.

5.4.12.3 Airport and Airstrip Operations

Construction or operation of the Midpoint Substation at the preferred site, or either of the alternative sites, would not impact operation of any airport or private airstrip. The sites are located in an existing right-of-way adjacent to the existing DPV1 transmission line, and would

therefore not create a new safety hazard for people residing or working in the project area. In addition, no airports or airstrips are located within 2 miles of the preferred or alternative sites.

5.4.12.4 Emergency Response or Evacuation Plans

Construction or operation of the preferred site or either of the alternative substation sites would not impair implementation of or physically interfere with an adopted emergency response or evacuation plan.

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PART 1 OF 2
BAR CODE # 0000063063

To review Part 2 please see:

BAR CODE #0000063064