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RIVERSIDE TRANSMISSION RELIABILITY PROJECT

Paleontology Technical Report

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

In 2004, pursuant to Southern California Edison's (SCE) Federal Energy Regulatory Commission (FERC)-approved Transmission Owner (TO) Tariff, Riverside Public Utilities (RPU) submitted a request for SCE to provide additional transmission capacity to meet projected load growth and to provide for system reliability. SCE determined that in order to meet RPU's request, SCE should expand its regional electrical system to provide RPU a second source of transmission capacity to import bulk electric power. This would be accomplished by creation of a new SCE 230 kilovolts (kV) transmission interconnection, the construction of a new SCE substation, the construction of a new RPU substation, and the expansion of the RPU 69 kV subtransmission system. The proposed Project, called the Riverside Transmission Reliability Project (RTRP), would provide RPU with long-term system capacity for load growth, and needed system reliability and flexibility.

The additional transmission capacity to RPU would be available through the proposed SCE Wildlife Substation at 230 kV and then transformed to 69 kV for integration into the RPU electrical system serving the City of Riverside (City). The transformation or "stepping down" of power from 230 kV to 69 kV would take place at the proposed RPU Wilderness Substation. Wilderness and Wildlife Substations would be located adjacent to each other on property that is presently owned by and within the City.

In order to integrate the additional transmission capacity into RPU's electric system, RPU's 69 kV system would be expanded and divided into eastern and western systems. The existing source of energy from Vista Substation would continue to supply the eastern system, while the western system would be supplied through the proposed Wilderness Substation. Creating two separate 69 kV subsystems is necessary for prudent electric utility operation and would also help provide the required level of emergency back-up service, particularly in the event of an interruption to either 230/69 kV substation source.

Several new double-circuit 69 kV subtransmission lines would need to be constructed between 69 kV substations within the City. To accommodate these new subtransmission lines, upgrades would be required at four existing RPU 69 kV substations. The upgrades would take place within the existing boundaries of each substation.

New fiber optic communications would also be required for system control of Wilderness and Wildlife Substations and associated 69 kV and 230 kV transmission lines. The 69 kV communication facilities would be incorporated into the existing RPU fiber optic network. The 230 kV communications would meet SCE's reliability standards.

1.2 PALEONTOLOGICAL RESOURCES OVERVIEW

This technical report was developed as a supporting document to the Draft Environmental Impact Report (DEIR) required under the California Environmental Quality Act (CEQA) for the Proposed Project. It includes analysis of environmental impacts associated with both the Proposed Project (sometimes referred to as the I-15 Route or Build Option B) and the 230 kV Van Buren Offset Route alternative (sometimes referred to as Build Option A). The report was completed prior to refinement of the Proposed Project and may contain outdated component identification information (e.g., segment, line, link identifiers) that may differ in description in the DEIR.

This technical report provides an assessment of issues related to paleontological resources along the two Project areas of the APE. The purpose of this report is to assist RPU and SCE staff in planning and design efforts for the proposed Project as related to paleontological resource issues. Specifically, this report is intended to summarize existing paleontological resource data in the APE and vicinity; assess potential

impacts to paleontological resources from implementation of Project construction; and identify mitigation measures to avoid or reduce Project-related impacts wherever feasible. Additional discussion of report methodology is provided below. This report was prepared by Thomas A. Deméré of the Department of PaleoServices, San Diego Natural History Museum (SDNHM), San Diego, California.

As defined here, paleontological resources (i.e., fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of humans. Fossil remains such as bones, teeth, shells, leaves, and wood are found in the geologic deposits (rock formations) within which they were originally buried. For the purposes of this report, paleontological resources can be thought of as including not only the actual fossil remains but also the collecting localities and the geologic formations containing those localities.

1.3 PROJECT LOCATION

The Project area is located in the western and northern sections of the City of Riverside and extends north into unincorporated areas of western Riverside County. The Project area is bordered to the north by State Route 60 (SR-60) and the existing Mira Loma to Vista SCE Transmission Lines to the west by Interstate 15, and to the south and east by State Route 91 (SR-91). The Santa Ana River roughly divides the Project area into northern and southern halves.

The natural topography of the Project area is valley lowland intersected by a sinuous river corridor, isolated bluffs, and rolling hills, and surrounded by mountain ranges. Elevations within the Project area range from 680 to above 1900 feet above mean sea level (MSL); however, Project components would be located in relatively level portions within this area. The Project area is almost entirely developed; the only remaining large areas of native habitats occur along the Santa Ana River and in the nearby Jurupa Mountains.

The Project area is characterized by rural, urban, and suburban development intermixed with agriculture and undeveloped lands. Extensive areas in the central portion of the Project area (Santa Ana River floodplain) are preserved open space, set aside for recreation, wildlife, and protected species. Rapid population growth in the Project area has resulted in increased development with accompanying changes in land use.

1.3.1. Area of Potential Effect

The Project Area of Potential Effect (APE) is divisible into two areas: Area 1 (Wildlife Substation to Mira Loma–Vista 230 kV Transmission Line) and Area 2 (RPU 69 kV, RERC to Harvey Lynn/Freeman substations and Wilderness Substation to Mountain View Substation). Area 1 contains three alternative routes:

- Alternative 1 (Van Buren Route) starts at the proposed Wildlife Substation near the northeast corner of Wilderness Avenue and Ed Perkic Street and extends west along the north side of the Santa Ana River. The route then crosses to the north side of the Union Pacific Railroad at Pedley Road and continues west along Limonite Avenue to the intersection with Eucalyptus Street. The route continues north along Eucalyptus Street to 58th Street, where it continues west until the intersection with Van Buren Boulevard. The route continues northward along the east side of Van Buren Boulevard to its endpoint at the existing Mira Loma–Vista #1 230 kV Transmission Line.
- Alternative 2 (West I-15 Route) begins at the proposed Wildlife 230 kV Substation, and continues west along the south side of the Santa Ana River and adjacent to several City-owned facilities, including the Riverside Energy Resource Center (RERC) at Acorn Street. At the intersection with the I-15, the route continues north along the east side of the I-15, ending at the existing Mira Loma-Vista #1 230 kV Transmission Line.
- Alternative 3 (Bain Street Route) also begins at the proposed Wildlife 230 kV Substation, then continues west along the north side of the Santa Ana River, until the intersection with Bain Street,

where it turns north and continues along Bain Street until it joins with Alternative 2, north of the railroad tracks, ending at the Mira Loma-Vista #1 230kV Transmission Line, north of I-60.

Area 2 contains two routes: Segment 1 (RERC to Harvey Lynn/Freeman substations) and Segment 2 (proposed Wilderness Substation to Mountain View Substation).

- Segment 1 (RERC to Harvey Lynn/Freeman substations) starts at the RERC Substation and extends southward paralleling Doolittle Avenue, then west along Arlington Avenue and parts of Rutland Avenue and Cypress Avenue to Crest Avenue. Extending south on Crest, Wells, Tomlinson and Mull avenues, the segment splits at the intersection of Tyler Street and Mull Avenue with one portion extending along Mull, Jones, and Hole avenues to the Harvey Lynn Substation. The second portion continues south along Tyler Street to the intersection of Tyler Street and approximately Indiana Avenue where it turns northeast and extends to the Freeman Substation on the south side of Highway 91.
- Segment 2 (proposed Wilderness Substation to Mountain View Substation) begins east of the RERC Substation and south of the Santa Ana River. The northern portion, between the proposed Wilderness Substation and Mountain View Substation, continues east along Industrial Avenue, then parallels the Union Pacific Railroad to the Mountain View Substation. The southern portion starts at Wilderness Substation and continues south along Wilderness Avenue, ending at the intersection with Jurupa Avenue.

1.4 PROJECT COMPONENTS

The RTRP project components would be located within Riverside County. Overall, the proposed RTRP would require approximately one year (with workers working 10-hour days, five days a week) to construct. The proposed RTRP includes the following:

1. Construction of approximately 10 miles of new double-circuit 230 kV transmission line from the existing Mira Loma – Vista #1 Transmission Line to the proposed Wildlife Substation;
2. Construction of approximately 11 miles of new 69 kV subtransmission lines between 69 kV substations and other existing subtransmission lines within the City of Riverside:
   - Wilderness – Jurupa double-circuit subtransmission lines
   - RERC – Harvey Lynn/Freeman single- and double-circuit subtransmission lines
   - Wilderness – Mountain View double-circuit subtransmission line
3. Construction of two new substations (Wilderness and Wildlife);
4. Upgrade of two 230 kV substations to replace line protection relays (within existing control houses): Mira Loma and Vista;
5. Upgrade of four substations to conduct minor pole re-alignments: Harvey Lynn, Mountain View, Freeman, and RERC; and
6. New fiber optic communications for system control of Wildlife and Wilderness substations and associated 230 kV transmission and 69 kV subtransmission lines.

The Proposed Project adds a new source of transmission capacity to the City by construction of a new double-circuit 230 kV transmission line that would extend from the existing Mira Loma – Vista #1 230 kV Transmission Line to the proposed Wildlife Substation. This new double-circuit 230 kV transmission line would provide additional capacity to the City by interconnecting at the proposed Wildlife Substation, which would be constructed, owned and operated by SCE. To transfer increased capacity to the City, the proposed RPU-owned Wilderness Substation would be constructed immediately adjacent to Wildlife Substation and would transform or "step down" power from 230 kV to 69 kV.

With SCE providing a second point of delivery for bulk power to the City of Riverside's electrical system, RPU would split its 69 kV subtransmission system into an eastern system served from the

existing Vista Substation and a western system served from Wilderness Substation. To facilitate this, several 69 kV subtransmission lines would be constructed within the City by adding circuits to existing routes or by constructing new lines. Upgrades would be made at various existing RPU substations, as well.

1.4.1. Construction of New 69 kV Subtransmission Lines

The proposed Project would include construction of approximately 11 miles of 69 kV sub-transmission lines located in three discrete sections of RPU's subtransmission system. Within two of these system sections, new lines would consist of multiple subtransmission lines in some segments or would be installed on shared subtransmission poles in others. The proposed new lines include Wilderness – Jurupa Avenue (Segments A and B); RERC – Harvey Lynn/Freeman (Segments A, B, and C); and Wilderness – Mountain View. Construction of the 69 kV subtransmission line component of the Project would require the following tasks:

- Surveying;
- Setting up Marshalling Yards;
- Construction Inspection;
- Foundations;
- Steel (Hauling, Assembly, and Erection);
- Wreck-Out (Conductors and Structures);
- Guard Poles;
- Conductor Installation;
- Transfer Existing Facilities;
- Possible Underground Activities (RERC – Harvey Lynn/Freeman segment only);
- Transmission Pole Installation Activities;
- Conductor Installation; and
- Clean-Up

Most sections of the new 69kV subtransmission lines would be installed on existing ROW and would not require new access road construction, although many of the existing structures would be replaced as part of construction. Subtransmission line steel poles would be a mix of direct-embedded poles and poles requiring foundation construction.

Wilderness – Jurupa Avenue

Segments A and B

Segments A and B are proposed to consist of a double-circuit 69 kV subtransmission line constructed from the proposed Wilderness Substation to the existing double-circuit 69 kV subtransmission line located along Jurupa Ave. and originating from RERC Substation. The double-circuit lines would exit Wilderness Substation to the south and would be constructed along both sides of Wilderness Ave. within public rights-of-way. Segment A would be located on the west side of Wilderness Ave. to Jurupa Ave. and Segment B would be located on the east side of Wilderness Ave. to Jurupa Ave. Both lines would then interconnect to the existing 69 kV double-circuit line. Total length of Segment A would be 1,647 feet, and Segment B 1,588 feet.

RERC – Harvey Lynn/Freeman

Subtransmission lines would be needed as part of the Project to connect the RERC Substation to both Harvey Lynn and Freeman Substations. The subtransmission lines would be single-circuit connections between the substations but would be constructed utilizing both double-circuit and single-circuit poles. The descriptions of these subtransmission lines are described below within Segments A, B, and C.

Segment A

Segment A would be constructed with double-circuit 69 kV poles that would carry both the RERC – Harvey Lynn and RERC – Freeman 69 kV subtransmission lines. From RERC Substation, Segment A would cross over the southern perimeter of the Riverside Water Quality Control Plant and then proceed south on Acorn Ave and west on Jurupa Ave. At the intersection of Jurupa Ave. and Van Buren Blvd., Segment A would continue south along Doolittle Ave. and then Van Buren Blvd. to Arlington Ave, where it would head west for approximately one mile. At the intersection of Arlington Ave. and Rutland Ave., Segment A would turn south and then west on Cypress Ave. to Crest Ave. continuing south along Crest Ave. At the intersection of Crest and Wells Avenues, the line would follow Wells to the intersection of Wells Ave. and Tomlinson Ave., following Tomlinson for a short distance before turning southwest onto Mull Ave. and continuing to the intersection with Tyler St. At this intersection, Segment A ends by "splitting" the circuits into two separate single-circuit subtransmission lines (Segments B and C as described below). The total length of the RERC-Harvey Lynn/Freeman Segment A would be 4.4 miles.

Segment B

Segment B consists of a single-circuit 69 kV subtransmission line beginning from the intersection of Mull Ave. and Tyler St. Segment B would continue southwest along Mull Ave., continue southwest along Mull Ave., then northwest on Mobley Ave., and then south along Jones Ave. At the intersection of Jones Ave. and Cook Ave., Segment B would join an existing single-circuit 69 kV subtransmission line and would be placed on double-circuit poles continuing to Hiers Ave., where it would leave the existing 69 kV line, and then rejoin it along Minnier Ave., continuing to Harvey Lynn Substation. This segment would have a length of 1.5 miles.

Segment C

Segment C would begin at the same intersection as Segment B (Mull Ave. and Tyler St.). The single-circuit subtransmission line would continue south along Tyler St. on single-circuit poles to the intersection of Tyler St. and Magnolia Ave. From this location, Segment C would join with an existing 69 kV subtransmission line onto new double-circuit poles. Segment C would then continue south along Tyler St. and then east along Indiana Ave. into Freeman Substation. To extend from the end of Segment A to Freeman Substation, Segment C would have a length of 3.2 miles.

Wilderness – Mountain View

One double-circuit 69 kV subtransmission line would be constructed from the proposed Wilderness Substation to an existing 69 kV line adjacent to Mountain View Substation. The new double-circuit line would exit Wilderness Substation and parallel the Santa Ana River eastward for approximately 1,000 feet, and then travel along Industrial Avenue to the west side of the Union Pacific railroad corridor and near Martha McLean Anza Narrows Park. The line would then head southeast, parallel to but outside of the railroad right-of-way, and then east parallel to Jurupa Ave., to the connection point with the existing 69 kV subtransmission line near Mountain View Substation. This new 69 kV subtransmission line would have a length of 1.4 miles.

1.4.2. Construction of New 230 kV Double-Circuit Transmission Line

The proposed Project would include construction of approximately 10 miles of 230 kV transmission line. The 230 kV transmission line component of the Project would require the following construction tasks:

- Surveying;
- Setting up Marshalling Yards;
- Right-of-Way Clearing;

- Road and Landing Work;
- Guard Structure Installation;
- Install Tubular Steel Pole (TSPs) Foundations;
- TSP - Hauling, Assembly, and Erection;
- Install Lattice Steel Towers (LSTs);
- LST - Hauling, Assembly, and Erection;
- Conductor Installation;
- Guard Structure Removal; and
- Restoration

Under the Proposed Project, new double-circuit 230 kV transmission line would be constructed that would "loop" the existing Mira Loma – Vista #1 230 kV Transmission Line into the proposed Wildlife Substation. The "loop" would be created by connecting each of the new circuits into the existing single-circuit line between Mira Loma and Vista Substations. The interconnection would occur at approximately the point where the Mira Loma – Vista #1 Transmission Line crosses Wineville Avenue, east of Interstate 15. From here, the new double-circuit line would run south and then west to roughly follow I-15 south, cutting east at 68th Street to a Santa Ana River crossing point within Goose Creek Golf Course. It would then continue east, mostly within the City of Riverside and parallel to the Santa Ana River. In some locations, the line would cross into the Hidden Valley Wildlife Area. Eventually the line crosses over Van Buren Boulevard, and then through the City of Riverside Water Quality Control Plant, before reaching the proposed Wildlife Substation on the south side of the Santa Ana River, east of Wilderness Avenue.

Temporary marshalling yards would be needed along or near the proposed transmission lines for construction crews to store materials and vehicles. Access to structure sites for construction and maintenance would be required at several locations along the corridors. Access work, which would take place primarily within the ROW, would consist of making improvements to existing roads, constructing new roads, and constructing spurs to individual structure sites.

Most new permanent access roads are proposed for construction on previously disturbed areas. Any temporary roads constructed would be removed, and the ground would be restored to its original contour when the line is completed. Land rights, usually easements, for access roads would be acquired from property owners as necessary. After the line is built, access roads would also be used for line maintenance. Subtransmission lines are located along or within existing public road ROWs and would not require new access road construction.

The ROW would not be de-vegetated; however, limited cutting of trees and tall brush in the ROW may occur if they interfere with the construction, operation, and maintenance of the transmission line. Trees would be cut outside the ROW only if, due to their height and condition, they may pose a threat to the transmission line. All potential tree cutting within the City of Riverside would require approval by the City's Public Works Department.

Steel structures for the 230 kV transmission lines would be anchored to the ground with concrete footings. Typically, the footing site is excavated, a steel cage and anchor plates or bolts are positioned, and the excavated site is filled with formed concrete. Structures are assembled at the site and lifted into place by a large crane. Drilling mud will be used for wet holes. The structures are bolted to the footings after they are set in place. After transmission structures are in place, conductors are strung from structure to structure through pulleys. Subtransmission line wood poles would be direct-embedded and would not require foundation construction. Subtransmission line steel poles would be a mix of direct-embedded poles and poles requiring foundation construction.

TABLE 1. ELECTRICAL DESIGN CHARACTERISTICS TRANSMISSION LINES

Feature	230 kV Transmission Line		69 kV Subtransmission Lines
Line Length	**10 miles**		**11 miles**
Type of Structure	57 Tubular Steel Poles 24 Lattice Steel Towers		Single Wood or Steel Pole
Structure Height	90-170 feet (TSPs) 113-180 feet (LSTs)		65-90 feet
Structure Footprint	6-10 ft diameter (TSPs) 34 feet x 34 feet (LSTs)		1.5-6 ft diameter
Span Length	600-800 feet typical Up to 2,200 feet		150-300 feet
Number of Structures per Mile	7-8		20-30
Transmission Line ROW	100 feet		Up to 40 feet
Pulling/Tension Sites	100 x 400 feet		100 x 25 feet
Circuit Configuration	Double-circuit		Double-circuit & Single-circuit
Conductor Size	Double Bundle 1590 kcmil ACSR[1] 45/7 "Lapwing"		954 kcmil ACSR

1: Aluminum conductor, steel-reinforced
Note: All estimates above are preliminary and are subject to change upon final engineering.

1.4.3. Construction of New Substations

The proposed Project would also include construction of one 230/69 kV substation (Wilderness Substation) and one 230 kV switching station (Wildlife Substation). The proposed substations would require the following construction tasks:

- Surveying;
- Setting up Marshalling Yards;
- Grading;
- Civil Engineering Activities;
- Electrical Engineering Activities;
- Transformer Activities (69 kV only);
- Paving Activities;
- Fencing Activities; and
- Testing Activities

Wilderness Substation

The new RPU 230/69 kV Wilderness Substation would be located on 6.4 acres adjacent to the southern end of SCE's Wildlife Substation. Wilderness Substation would be connected to the SCE Wildlife Substation via two short 230 kV transmission line spans over a separating fence between the two substations. The voltage would be transformed to 69 kV through two transformers located within the Wilderness Substation. Electricity would be delivered to the RPU electrical system and ultimately City customers via 69 kV subtransmission lines exiting the substation. As described above, Wilderness Substation would be separated from the Wildlife Substation by a chain link fence. The outside perimeter of the substation would be built with a 10-foot block wall. The anticipated construction duration for the 230/69 kV Wilderness Substation is approximately 125 working days (6.3 months).

Wildlife Substation

The SCE Wildlife Substation would be constructed on three acres of land currently owned by RPU and located near the northeast corner of Wilderness Avenue and Ed Perkic Street. This area is within the City limits. If the Project is approved, SCE would purchase property from RPU to accommodate the new Wildlife Substation. The proposed substation would connect to the SCE system via the proposed double-circuit 230 kV transmission line described above, and would also connect into RPU's proposed adjacent Wilderness Substation. The proposed substation would be enclosed on three sides by a ten-foot high perimeter wall typically constructed of light-colored decorative blocks, with the fourth side being the shared chain-link fence separating Wildlife Substation from Wilderness Substation.

1.4.4. 69 kV Substation Upgrades

To accommodate the new subtransmission lines to be added to the RPU 69 kV system, upgrades would be required at four existing RPU 69 kV substations. Upgrades would include minor structure (pole) re-alignments outside of substations to accommodate modifications of substation layout. All other upgrades would take place within the existing boundaries of each substation.

The four existing 69 kV substations within the City that would require upgrades are Harvey Lynn, Mountain View, Freeman, and RERC. The upgrades consist of the addition of new 69 kV power circuit breakers and associated disconnect switches and busing at RERC and Harvey Lynn Substations, as well as protective relay and control modifications to all four substations. All substation upgrades and equipment installations would occur within the existing footprint.

- **Harvey Lynn Substation.** The substation would be upgraded to include a new 69 kV circuit breaker and associated equipment to form a new line position for relocation of the existing Freeman line. The existing Freeman line position would be reconfigured to terminate a new line to RERC Substation. New line protection would be installed for both the new and reconfigured lines. A new Substation Automation System (SAS) and digital fault recorder would be integrated into the new and existing equipment.

- **Mountain View Substation**. The substation would be reconfigured to add two new lines to Wilderness Substation. One line would terminate in the existing Riverside line position and the other in the existing Freeman line position. New line protective relaying would be included for the two new Wilderness lines.

- **Freeman Substation.** The substation modifications would include changing the existing Mountain View line into the new Wilderness line and adding a new line to the RERC switchyard. A line bypass switch would be installed to directly connect the Orangecrest and Riverside lines and bypass the Freeman Substation. The Orangecrest line termination would be disconnected and the new RERC line would be terminated in its place. New line protection would be added for the relocated line and the one new line. A new SAS and digital fault recorder would be integrated into the new and existing equipment.

- **RERC Substation.** Two new lines would be installed and connected to Harvey Lynn Substation and Freeman Substation. The two existing lines connected to Mountain View and Riverside Substations would be reconnected to Wilderness Substation.

1.4.5. 230 kV Substation Upgrades

Line protection relays would be replaced at both Mira Loma and Vista Substations as part of the Proposed Project. The relay replacements would be placed within existing control houses within each substation.

1.4.6. New Telecommunication Facilities

New fiber optic communications would be required for system control of Wildlife and Wilderness Substations and associated 230 kV transmission and 69 kV subtransmission lines. Communication facilities supporting RTRP 69 kV subtransmission components would be incorporated into the existing RPU fiber optic network. The communications facilities that would support the 230 kV transmission line would meet SCE's reliability standards and connect to the existing SCE network at multiple locations. The 230 kV communication facilities would require construction of diverse communication paths for operation and monitoring of the substation and transmission line equipment. The diverse paths would connect Wildlife Substation to Mira Loma Substation, and Wildlife Substation to Vista Substation. New telecommunication infrastructure would be installed to provide protective relay circuit, Supervisory Control and Data Acquisition (SCADA) circuit, data, and telephone services to Wildlife Substation. For the 69 kV portion of the Proposed Project, telecommunications lines would be installed on new or existing 69 kV subtransmission poles.

SCE Fiber Optic Lines

The Proposed Project would include connecting three diverse fiber optic telecommunication lines to the existing SCE fiber optic network. These three lines would be required for the protective relay circuit between the proposed Wildlife Substation and Mira Loma Substation, for the protective relay circuit between the proposed Wildlife Substation and Vista Substation, and the fiber optic telecommunication line that would provide the SCADA circuit, data, and telephone services to the proposed Wildlife Substation. Approximately seven miles of new fiber optic cable would be constructed as part of the Proposed Project, of which approximately six miles would be placed on existing overhead distribution poles and approximately 3,900 feet would be installed in underground conduit.

Path 1: The first fiber optic telecommunication line is OPGW (Optical Ground Wire) that is proposed for installation on the new 230 kV transmission line structures for the Proposed Project and described above in Section 2.3.1. This OPGW line would intercept and connect to the existing fiber wrap cable on OHGW (Over Head Ground Wire) on the Mira Loma – Vista #1 transmission line tower.

Path 2: A new ADSS (All Dielectric Self Supporting) fiber optic telecommunication line is proposed for installation on the existing SCE distribution structures between the existing Pedley Substation and the new Wildlife Substation, with a path length of approximately six miles. This new line would tie into the existing Mira Loma to Corona fiber optic telecommunication line. A preliminary engineering survey conducted in 2010 of the approximate 100 distribution poles in the existing ADSS fiber optic telecommunication route between Pedley substation and the Wildlife Substation site determined that no new poles would need to be added, and that no existing poles would need to be replaced. However, a final determination of the need for pole replacement will not be made until final engineering is completed. The fiber optic telecommunication line would enter into Pedley and Wildlife Substations in an underground conduit that would be installed to the fence line of the substations for fiber optic telecommunication line entry. This construction method allows ADSS cables on the distribution line poles to be brought into the substations. The approximate length of the underground conduit outside the substations' property lines would be 200 feet at Pedley Substation and 500 feet at Wildlife Substation. In addition, because of the proximity of the proposed new 230 kV transmission line to the existing SCE distribution line, five fiber optic telecommunication line intersection locations would need to be placed underground for cable path

reliability. The required underground paths for the proposed fiber optic telecommunication line are as follows:

- The first proposed fiber optic telecommunication line crossing location would be located approximately 0.25 miles west of the Harrell Street and Etiwanda Avenue intersection under the existing Mira Loma – Vista 230 kV transmission line. The two cables at the crossing location would be: 1) the existing ADSS cable on the distribution line poles, and 2) the existing fiber wrap cable on Mira Loma – Vista 230 kV transmission line OHGW. An approximately 900-foot section of the existing ADSS fiber cable would need to be placed underground. For this diverse path, both (crossed) fiber cables would carry protection circuits to protect against the event that the circuit would fail as a result of the crossed fiber cables failing concurrently.

- The second proposed fiber optic telecommunication line crossing location would be located in an area south of the Santa Ana Regional Park, adjacent to residential areas along the proposed 230 kV transmission line route. The two intersecting fiber cables would be: 1) the proposed new Path 2 ADSS fiber optic telecommunication route between Pedley Substation and new Wildlife substation, and 2) the Path 1 OPGW on the proposed 230 kV transmission line. An approximately 1,000-foot section of the proposed ADSS fiber optic telecommunication line would need to be placed underground in order to prevent single-point failure for the circuit as a result of the crossing fiber optic telecommunication lines.

- The third proposed fiber optic telecommunication line crossing location would be located in an area approximately 1,000 feet west of the proposed Wildlife Substation between Wilderness Avenue and Payton Avenue, along the existing distribution line north of Jurupa Avenue around the northwest perimeter of the existing building and parking area. The two intersecting fiber optic telecommunication lines would be: 1) the proposed new Path 2 ADSS route between Pedley Substation and the new Wildlife substation, and 2) the Path 1 OPGW on the proposed 230 kV transmission line. An approximately 600-foot section of the proposed ADSS fiber optic telecommunication line would need to be placed underground in order to prevent single point failure for the circuit as a result of the crossing fiber optic telecommunications lines.

- The fourth proposed fiber optic telecommunications line crossing location would be located approximately 500 feet southwest of Pedley Substation, close to Pedley Substation Rd. The two cables at the crossing location would be: 1) the existing ADSS cable on the 12 kV pole line, and 2) the Path 1 OPGW on the proposed 230 kV transmission line. An approximately 400-foot section of the proposed ADSS fiber optic telecommunication line would need to be placed underground in order to prevent single point failure.

- The fifth proposed fiber optic telecommunications line crossing location would be located approximately 1,000 feet west of Pedley Substation on the Lab 12 kV distribution pole line. The two cables at the crossing location would be: 1) the existing ADSS cable on the 12 kV pole line, and 2) the Path 1 OPGW on the proposed 230 kV transmission line. An approximately 300-foot section of the proposed ADSS fiber optic telecommunication line would need to be placed underground in order to prevent single point failure.

Path 3: The third proposed SCE fiber optic telecommunications line associated with the 230 kV portion of the Proposed Project would connect the new Wildlife Substation and a fiber optic demarcation point to the Vista Substation to meet the telecommunication diverse path requirements. SCE would lease fiber optic strands within the RPU fiber optic network to create this third telecommunication path. Existing and available fiber optic cable is in place for most of this pathway between Wildlife and Vista Substations.

The new portion of this path would utilize planned RPU telecommunication fiber optic cable to be installed along the proposed 69 kV subtransmission lines as described below.

RPU Fiber Optic Telecommunication Lines

As part of the Proposed Project, the existing RPU fiber optic network would be extended approximately 2,000 feet from the intersection of Jurupa Avenue and Wilderness Avenue to the proposed Wilderness Substation. The new fiber optic telecommunication line would be installed on the new 69 kV subtransmission line poles that would be constructed along both sides of Wilderness Avenue (Wilderness – Jurupa Ave., Segments A and B). This new fiber optic telecommunication line would connect the proposed Wilderness Substation to RPU's existing communication system. Additionally, a new fiber optic telecommunication line would be included as part of the new Wilderness – Mountain View subtransmission line construction.

1.4.7. Construction Work Force and Schedule

Construction of the 230 kV components of the Project is scheduled to begin after the issuance to SCE of a Certificate of Public Convenience and Necessity (CPCN) by the California Public Utilities Commission (CPUC). The CPUC review of SCE's CPCN application, which would include the Final EIR, is expected to be completed within 12 months following the City of Riverside's CEQA Lead Agency determination for the Project. Construction activities associated with the Proposed Project consist of new 230 kV transmission line and 69 kV subtransmission line construction, building two new substations (Wildlife and Wilderness), and upgrading four existing 69 kV substations.

Project components would likely be constructed using a variety of construction crews. These would consist of successful competitively bid contractor(s) and subcontractors, SCE crews (230 kV transmission line, telecommunications, and Wildlife Substation only) or RPU crews (69 kV subtransmission lines, telecommunications, Wilderness Substation, 69 kV substation upgrades). RPU and SCE would be responsible to provide quality assurance, environmental protection oversight, and final design approval. All construction work would be performed with conventional construction techniques in accordance with SCE and RPU construction specifications and other industry-specific standards. Construction crews would be required to work within the stipulations of documents governing compliance with regional environmental, storm water pollution prevention, and fire prevention criteria, as well as owner/operator best management practices, standardized environmental protection elements, and those additional mitigation measures identified within the DEIR.

The workforce necessary for construction of the proposed Project is anticipated to range from approximately 10 to 100 persons, with an estimated average daily workforce of 50 persons. Summaries of the labor force requirements and primary equipment associated with the various Project construction activities can be found in Chapter 2, Proposed Project, of the DEIR.

1.5 CONSTRUCTION SCHEDULE

In general, construction efforts would occur in accordance with accepted construction industry and RPU and SCE standards. Construction activities would generally be scheduled during daylight hours, more specifically 6:00 a.m. to 6:00 p.m. (June to September) and 7:00 a.m. to 6:00 p.m. (October to May), Monday through Friday. In the event construction activities need to occur outside the local noise ordinance, SCE would obtain any variance as necessary from appropriate jurisdictions. All materials associated with construction efforts would be delivered by truck to established marshalling yards. Delivery activities requiring major street use would be scheduled to occur during off-peak traffic hours.

1.5.1. 230 kV Components (SCE)

SCE anticipates that construction of the proposed 230 kV portion of the Proposed Project (which includes the transmission line, Wildlife Substation, and associated telecommunications work) would take approximately 370 working days. Construction would commence following CPUC and regulatory agency approval, final engineering, and procurement activities.

1.5.2. 69 kV Components (RPU)

RPU anticipates that construction of components of the proposed 69 kV portion of the Proposed Project (which includes the subtransmission lines, Wilderness Substation, substation upgrades, and associated telecommunications work) could begin following publication of the Notice of Determination on the Final EIR by the RPU Board and Riverside City Council, including any conditions of approval and statements of overriding considerations (anticipated early 2012). Completion would be timed to synchronize completion date with the 230 kV portion of the Proposed Project, anticipated to be May 2015.

2.0 METHODOLOGY

A review was conducted of relevant published geologic reports (Morton, 2003; Morton, 2004; Morton and Cox, 2001a, Morton and Cox, 2003b, Morton and Miller, 2006), paleontological reports (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer et al., 2009; Anderson et al., 2002), and unpublished museum paleontological locality data (Division of Geological Sciences at the San Bernardino County Museum [Scott, 2007] and Department of Paleontology at the SDNHM). This approach was followed in recognition of the direct relationship between paleontological resources and the geologic formations within which they are entombed. Knowing the geology of a particular area and the fossil productivity of particular formations that occur in that area, it is possible to predict where fossils will, or will not, be encountered.

No walkover field survey of the Project APE was conducted for this report.

3.0 ENVIRONMENTAL SETTING

3.1 PHYSICAL GEOLOGICAL SETTING

The Project areas of the APE occur in the northern portion of the Perris Block (Woodford et al., 1971), a roughly rectangular-shaped geologic region between the Elsinore Fault Zone on the west and the San Jacinto Fault Zone on the east. The Perris Block is the northernmost portion of the Peninsular Ranges Province, a geologically complex region that extends south through Riverside and San Diego counties and into Baja California as far as Loreto. This province is characterized by low resistant hills composed of Paleozoic and early Mesozoic (400 to 140 million years old) pre-batholithic metamorphic rocks, late Mesozoic (120 to 90 million years old) batholithic plutonic rocks, and Cretaceous (70 million years old) and Cenozoic (60 to 0.01 million years old) post-batholithic sedimentary rocks.

In the immediate vicinity of the APE the Perris Block is underlain by a series of Mesozoic-age plutonic igneous rocks, which were deeply eroded throughout the early and late Tertiary (i.e., prior to ~2 million years ago). During the subsequent Pleistocene Epoch (2 to 0.01 million years old) alluvial fans and streams originating from upland areas to the north, east, south, and west buried the older Mesozoic basement rocks beneath a veneer of alluvial and fluvial sedimentary rocks. These Pleistocene deposits were graded to a base level above that of the modern Santa Ana River, whose active channel is now eroding down through the older alluvial and fluvial deposits.

3.2 GEOLOGIC ROCK UNITS AND PALEONTOLOGICAL RESOURCES

The following discussion summarizes the nature, distribution, paleontology, and resource sensitivity (quality) of geologic formations/deposits found within the APE. The acronyms in parentheses are those used in the published geologic maps of Morton (2003) and Morton and Cox (2001a, 2001b). Portions of these maps are reproduced in Figures 1 and 2 (Appendix A).

Artificial Fill - (Qaf)

Introduction – These deposits are of unknown origin and have been previously disturbed.

Paleontology – No fossils are known from the artificial fill due to their disturbed nature.

Distribution – Artificial fill is mapped northwest of the RERC Substation.

Resource Sensitivity – Because of the disturbed nature and unknown origin of these deposits, they are assigned a zero paleontological resource sensitivity.

Quaternary Alluvium - (Qwa, Qywa, Qyfa, Qyf5, Qye, Qya, Qyw, Qyf)

Introduction – Flooring the modern channel of the Santa Ana River and smaller tributary drainages are poorly consolidated stream and alluvial sediments of relatively recent age.

Paleontology – No fossils are known from the Quaternary alluvial deposits, and their relative youthfulness would suggest that none will probably be found.

Distribution – Quaternary alluvial deposits occur extensively in the bed of the Santa Ana River along Area 1, including each of the three SCE 230 kV alternate routes (e.g., West I-15, Van Buren, and Bain Street).

Resource Sensitivity – Because of the young age of these deposits, they are assigned a low paleontological resource sensitivity.

Older Quaternary Alluvium - (Qof, Qoa, Qvoa, Qof1, Qof3, QTs)

Introduction – Much of the low-lying developed areas within the City of Riverside are underlain by moderately consolidated, reddish sandstones and conglomerates of early Quaternary age (Morton and Cox, 2001a, 2001b). These sedimentary rock units were deposited by older alluvial fans and streams that occupied this area during the Pleistocene. Similar deposits occur throughout the Perris Block in areas such as Menifee Valley, Diamond Valley, and Hemet Valley.

Paleontology – No recorded fossil localities are reported within the Project APE (Scott, 2007). However, recorded fossil localities from Older Quaternary Alluvium are known from several sites to the north in and around the City of Ontario and the City of Fontana within two miles of the APE. In addition, there are numerous recorded localities known from similar deposits in the Skinner Lake and Diamond Valley Reservoir areas. These localities, especially those discovered during construction of Diamond Valley Reservoir, have yielded significant remains of fossil land mammals, including ground sloth, rodent, sabertooth cat, dire wolf, horse, camel, bison, mastodon, and mammoth (Springer et al., 2009). Prior to construction of the reservoirs, the older alluvial deposits in these areas were not known to contain fossils. This fact underscores the observation that the reason for poor fossil recovery in an area is often related to poor bedrock exposures and insufficient prospecting. It is felt that increased attention to these older alluvial deposits and/or new exposures created by excavation projects will turn up additional fossil material.

Distribution – The Older Quaternary Alluvium occurs over major portions of Areas 1 and 2.

Resource Sensitivity – Because of the large and diverse collections of fossil land mammals recovered from older alluvial deposits in the northern Perris Block, these deposits are assigned a high paleontological resource sensitivity.

Peninsular Ranges Batholith - (Krg, Kt, Kqd, Kdqd, Kvt, Kgb, Kcg)

Introduction – Plutonic rocks of the Peninsular Ranges Batholith formed approximately 120 to 90 million years ago from molten magma that cooled at depths of several miles in the earth's crust. These rocks intruded into and metamorphosed (altered) the older pre-batholithic rocks that underlie the Perris Block. Today these plutonic rocks are locally exposed at the surface and form the resistant peaks of the upland regions that ring the City of Riverside.

Paleontology – No fossils are known from these rocks.

Distribution – Plutonic igneous rocks are crossed by the east-west portion of the West (I-15) Route in Area 1 between the Pedley Substation and the Wildlife Substation, and by the Tyler Street segment between Cypress Avenue and Cook Avenue within Area 2.

Resource Sensitivity – Because of the magmatic origin of the rocks of the Peninsular Ranges Batholith, they are assigned a zero paleontological resource sensitivity.

Pre-batholithic Metasedimentary Rocks - (Pzq, Pzsgp)

Introduction – A complex series of pre-batholithic metamorphic rocks occurs in many portions of the Perris Block. In the Project APE these rocks consist of quartzites of possible Paleozoic age (Morton and Cox, 2001a).

Paleontology – No fossils are presently known from exposures of the metasedimentary rocks within the Project APE.

Distribution – Pre-batholithic metasedimentary rocks are crossed by Area 1 southeast of the intersection of Jurupa Road and Van Buren Boulevard.

Resource Sensitivity – The pre-batholithic metamorphic rocks are assigned a zero paleontological resource sensitivity.

4.0 IMPACT ANALYSIS

4.1 INTRODUCTION

Direct impacts to paleontological resources occur when earthwork activities, such as mass grading operations, utility line trenching activities, or utility pole boring excavations, cut into the geological deposits (formations) within which fossils are buried. These direct impacts are in the form of physical destruction of fossil remains. Since fossils are the remains of prehistoric animal and plant life they are considered to be nonrenewable. Such impacts can be significant and require mitigation under CEQA guidelines.

Impacts to paleontological resources are rated in this report from high to zero depending upon the resource sensitivity of impacted formations. The specific criteria applied for each sensitivity category are summarized below. These criteria are in line with those found on the Riverside County Land Information System website with respect to paleontological sensitivity.

High significance
Impacts to high sensitivity formations (Older Quaternary Alluvium).

Moderate significance
Impacts to moderate sensitivity formations (none within the APE).

Low significance
Impacts to low sensitivity formations (Quaternary Alluvium).

Zero significance
Impacts to zero sensitivity formations (Artificial Fill, Peninsular Ranges Batholith, and Pre-batholithic Metasedimentary Rocks)

4.2 APE-SPECIFIC IMPACTS

4.2.1. Area 1 (Wildlife Substation to Mira Loma–Vista 230 kV Transmission Line)

Construction in this area would include the drilling of large-diameter (4-foot to 9-foot) boreholes to varying depths for placement 49 to 70 tubular steel poles, as well as grading of the proposed three-acre Wildlife Substation site. The extent of site grading is unknown at this time, but will probably include both mass grading as well as deep utility trench and vault excavations. Figure 1 (Appendix A) shows the general location of high sensitivity formations (Qof, Qoa, Qvoa, Qof1, Qof3, QTs) and therefore areas of high impact significance along Area 1. This would include each of the 230 kV alternate routes (e.g., West I-15, Van Buren, and Bain Street) except for the specific substation locations of Pedley and the proposed Wildlife Substation (both in zero sensitivity formations).

4.2.2. Area 2 (RERC to Harvey Lynn/Freeman substations)

Construction in this area would include the drilling of small diameter (2-foot to 4-foot) boreholes for the placement of wooden or steel poles for 69 kV transmission lines. A total of 320 to 480 boreholes are proposed for the 16 miles of new 69 kV transmission lines being constructed for Area 2. Although upgrades to the existing RERC, Harvey Lynn, and Freeman substations are proposed, it is unlikely that these activities would require extensive earthwork operations. Figure 2 (Appendix A) shows the general location of high sensitivity formations (Qof, Qoa, Qvoa, Qof1, Qof3, QTs) and therefore areas of high impact significance along Area 2.

5.0 MITIGATION MEASURES

It is recommended that the following mitigation measures be implemented to reduce potential negative impacts on paleontological resources to below the level of significance.

PR-1. Prior to construction, a focused survey of paleontological resources shall be made of areas of potential ground disturbance within the Project limits (e.g., substations, poles, and proposed access roads), unless these locations are judged to have low potential for containing intact paleontological resources (e.g., heavily disturbed areas, paved surfaces, recent residential development). The goal of this focused survey shall be to pinpoint the areas where proposed earthwork will directly impact high sensitivity paleontological resources.

PR-2. A qualified paleontologist should be at any pre-construction meetings to consult with grading and excavation contractors concerning excavation schedules, paleontological field techniques, and safety issues. A qualified paleontologist is defined as an individual with a M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology and paleontology of Southern California, and who has worked as a paleontological mitigation project supervisor in the region for at least one year.

PR-3. A paleontological monitor should be on-site on a part-time basis during the original cutting of previously undisturbed deposits of high paleontological resource sensitivity deposits (Older Quaternary Alluvium). A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials. The paleontological monitor should work under the direction of a qualified paleontologist.

PR-4. When fossils are discovered, the paleontologist (or paleontological monitor) should recover them. In most cases this fossil salvage can be completed in a short period of time. However, some fossil specimens (such as a complete large mammal skeleton) may require an extended salvage period. In these instances the paleontologist (or paleontological monitor) should be allowed to temporarily direct, divert, or halt earthwork activities to allow recovery of fossil remains in a timely manner. Because of the potential for the recovering of small fossil remains, such as isolated mammal teeth, it may be necessary to recover bulk sedimentary matrix samples for off-site wet screening.

PR-5. Fossil remains collected during monitoring and salvage should be cleaned, repaired, sorted, and cataloged as part of the mitigation program.

PR-6. Prepared fossils, along with copies of all pertinent field notes, photos, maps, and measured stratigraphic sections, should be deposited (as a donation) in a scientific institution with permanent paleontological collections such as the Western Center for Archaeology and Paleontology, the San Bernardino County Museum, or the San Diego Natural History Museum. Donation of the fossils should be accompanied by financial support for initial specimen cataloguing and storage.

PR-7. A final summary report should be completed that outlines the results of the mitigation program. This report should include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils.

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APPENDIX A: MAPS

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Riverside Transmission Reliability Project

SCE 230 kV Geology

Legend

Route Features

- SCE 230 kV Alternative Route
- Tenth Mile Marker
- Mile Marker
- Link Name
- Link Node
- West (I-15) Route
- Van Buren Route
- Bain Street Route
- Local Routing Option

Utility Features

- SCE 500 kV Transmission Line
- SCE 230 kV Transmission Line
- RPU Lower Voltage Transmission Line
- Other Lower Voltage Transmission Line
- Substation

Municipal Features

- County Boundary
- City Boundary
- Airport

Water Features

- Waterbody
- River or Stream
- Intermittent Stream
- Canal or Aqueduct
- Seasonally Flooded

0 0.25 0.5 0.75 1 Miles

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POWER ENGINEERS

September 23, 2009

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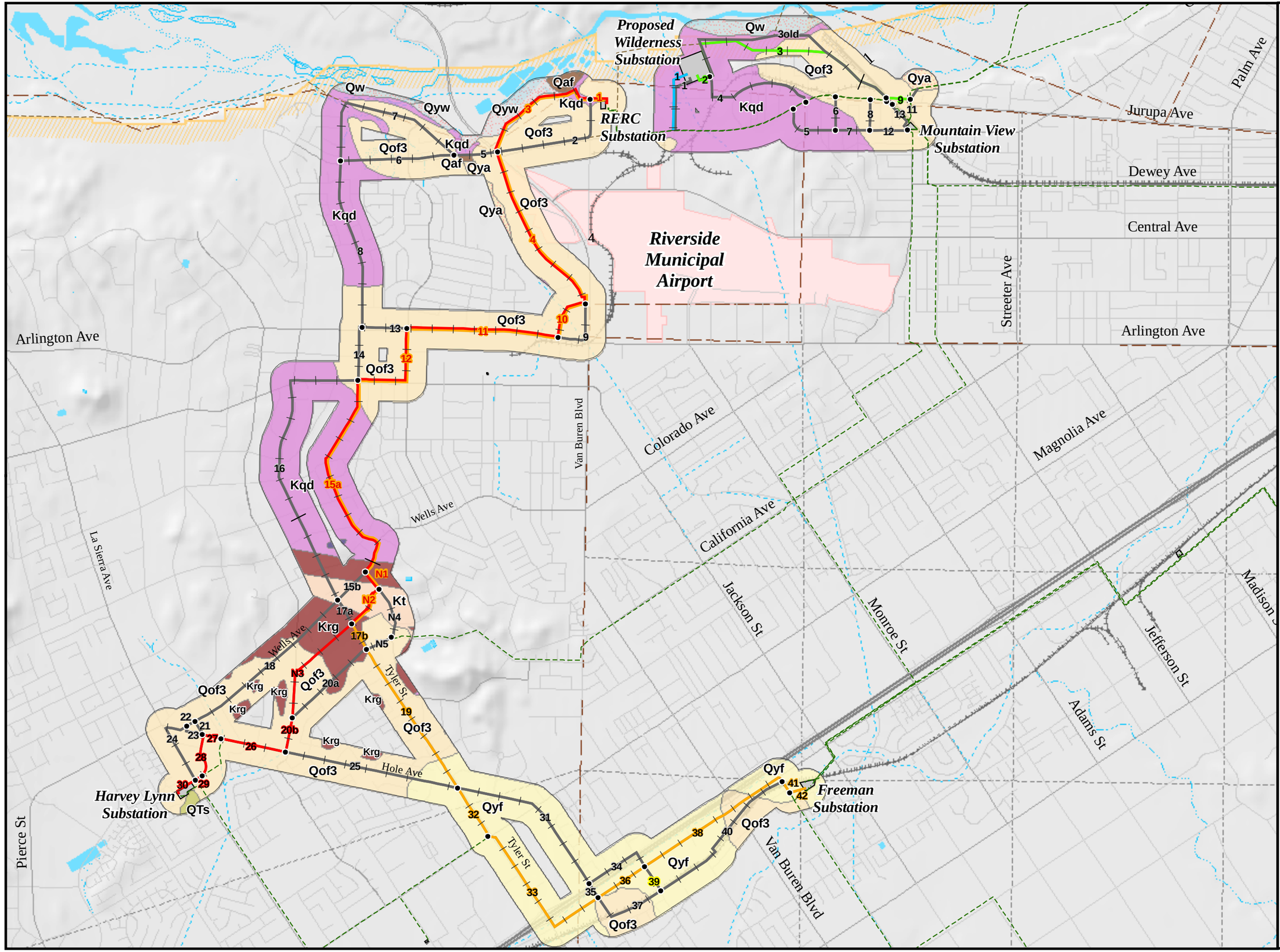

Riverside Transmission Reliability Project

RPU 69 kV Geology

Legend

RTRP 69 kV Routes

- RERC to Freeman Preferred
- RERC to Harvey Lynn Preferrred
- Wilderness to Mountain View Preferred
- Wilderness to RERC Preferred
- Alternative Route

Surface Geology

- Kgb
- Kqd
- Krg
- Kt
- QTs
- Qaf
- Qof3
- Qw
- Qya
- Qyf
- Qyw

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