Initial Study

Environmental Checklist Form

B.1 Project Description

Southern California Edison (SCE) proposes to construct and operate the Downs Substation Expansion Project (Proposed Project), which includes upgrading and expanding the existing Downs 33/12-kilovolt (kV) Substation to a 115/12-kV substation containing a 115-kV switchrack; routing an existing 115-kV subtransmission line into and out of the proposed substation; and installing a fiber optic telecommunication system (including 58 miles of fiber optic telecommunication cable) to provide communication circuits for the protection, monitoring, and control of subtransmission and substation equipment. As part of the installation of the fiber optic telecommunication system, SCE would need to replace approximately six existing Inyokern-McGen-Searles No. 1 115-kV subtransmission line wood poles to support the new fiber optic telecommunications facilities where the existing wood poles do not meet California Public Utilities Commission (CPUC) General Order 95 wind loading requirements and/or SCE design standards. The existing Downs Substation encompasses approximately one acre of land within the city of Ridgecrest. The proposed expansion of Downs Substation would require an additional 2.5 acres of a 4.6-acre parcel of SCE-owned land adjacent to the existing Downs Substation. The Proposed Project has been stated by SCE to be necessary to serve increased electrical demand in the Electrical Needs Area (portions of the city of Ridgecrest and surrounding areas of unincorporated Kern County and San Bernardino County), as well as to improve system reliability and enhance operational flexibility.

B.1.1 Project Title

Southern California Edison's Downs Substation Expansion Project

B.1.2 Project Sponsor's Name and Address

Southern California Edison Company
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

B.1.3 Lead Agency Name and Address

California Public Utilities Commission
Energy Division
505 Van Ness Avenue, Fourth Floor
San Francisco, California 94102

B.1.4 Lead Agency Contact Person and Phone Number

Eric Chiang, Project Manager
Energy Division
California Public Utilities Commission
505 Van Ness Avenue, Fourth Floor
San Francisco, California 94102
(415) 703-1956

B.1.5 Project Location

The proposed Downs Substation expansion and the routing of an existing 115-kV subtransmission line into and out of the proposed substation are located at the southwest corner of the intersection of Ridgecrest Boulevard and Downs Street in the city of Ridgecrest, Kern County, California. The Proposed Project also includes the replacement of six 115-kV subtransmission line poles along the Inyokern-McGen-Searles No. 1 115-kV subtransmission line near the community of Trona in San Bernardino County. Additionally, the stringing of fiber optic telecommunication cable along both the Inyokern-McGen-Searles No. 1 and No. 2 115-kV subtransmission lines would be located in the city of Ridgecrest, the unincorporated communities of Inyokern, Argus, and Trona in the Counties of Kern and San Bernardino. The proposed Downs Substation expansion site would be located approximately 1 mile west of State Route (SR) 178 and approximately 3.9 miles northeast of U.S. Route (US) 395 in northeastern Kern County (Figure B.1-1). It is bounded to the east by Downs Street, to the north by West Ridgecrest Boulevard, and the closest roadways to the south and west are West Church Avenue and South Mahan Street, respectively.

B.1.6 Surrounding Land Uses and Setting

The city of Ridgecrest is located in the southern portion of the Indian Wells Valley in the northeast corner of Kern County and can be characterized as an urban area set within a rural backdrop. The City is situated within the upper Mojave Desert and is surrounded on all sides by four mountain ranges: the Sierra Nevada Mountains to the west, the Coso Range to the north, the Argus Range on the east, and the El Paso Mountains to the south. Vistas of the mountains and the surrounding desert are found throughout the City. Desert landscapes in the Project area are comprised of creosote-white bursage series and a disturbed ruderal sink community at the proposed Downs Substation expansion location. Along the Inyokern-McGen-Searles 115-kV subtransmission lines the landscape includes vegetation communities dominated by desert holly and spiny hopsage, and a rusty molly.

The city of Ridgecrest is characterized by low-rise buildings (one or two stories), lower density residential, and commercial uses surrounded by vast open space. Most of the City's higher intensity development (commercial, office, civic, and institutional uses) lie adjacent to primary thoroughfares such as Ridgecrest Boulevard, SR 178, Bowman Road, and China Lake Boulevard. Less intensive land uses, including rural residential and natural open space, are located on the outer boundary of the City.

The land parcels surrounding the Downs Substation intersection are zoned for commercial and industrial use. A hardware store/lumber yard occupies the northeast corner of the intersection; an automobile recycling operation is located to the east; the northwest corner is vacant land (with a large, single-story light industrial-type building just to the north and visible from the intersection); and the existing Downs Substation occupies the southwest corner. Immediately south and west of the proposed Downs Substation expansion area lies a sports park and vacant land, respectively.

The lands surrounding the existing Downs Substation are mostly zoned for commercial and park use. An undeveloped area zoned residential exists adjacent to the southwestern corner of the Project boundary. The nearest existing sensitive receptors are located approximately 1,600 feet to the southwest, 1,300 feet to the southeast, 2,000 feet to the northeast, and 900 feet to the northwest.

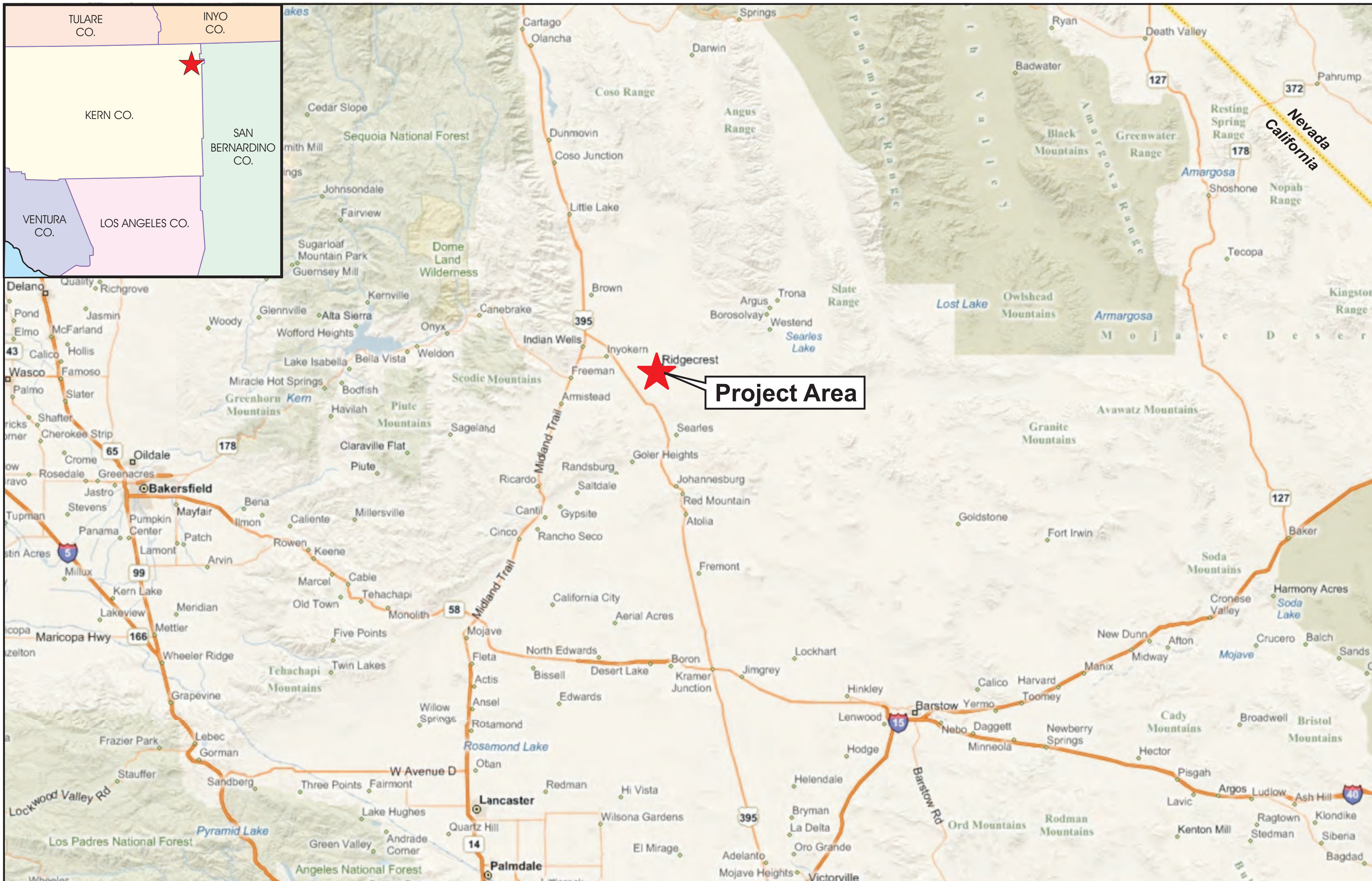


Figure B.1-1
Regional Location Map

Source: SCE, 2010.

The unincorporated communities of Inyokern, Argus, and Trona are located within the Project area. Inyokern is located within Kern County and is situated at the western end of the Project area. Argus and Trona are both located within San Bernardino County and are situated at the east-northeast end of the Project area.

B.1.7 General Plan Designation

The CPUC has primary jurisdiction over the Proposed Project because it authorizes the construction, operation, and maintenance of public utility facilities. Although such projects are exempt from local land-use and zoning regulations and permitting, CPUC General Order 131-D Section 1X.B states that "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the Commission's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters". SCE has considered local and State land use plans as part of the environmental review process.

The General Plan land use designation for the location of the proposed Downs Substation expansion is Commercial and Office use. The surrounding land uses include Commercial and Office (C) to the north, west, and east; Parks and Schools (PS) to the south; and Low Residential Density (LD) to the southwest. The existing 115-kV subtransmission lines and the fiber optic telecommunication cable which would be added to these poles are in public rights-of-way and existing SCE rights-of-way located largely on Bureau of Land Management (BLM)-managed lands, and thus would not change the land use in these areas.

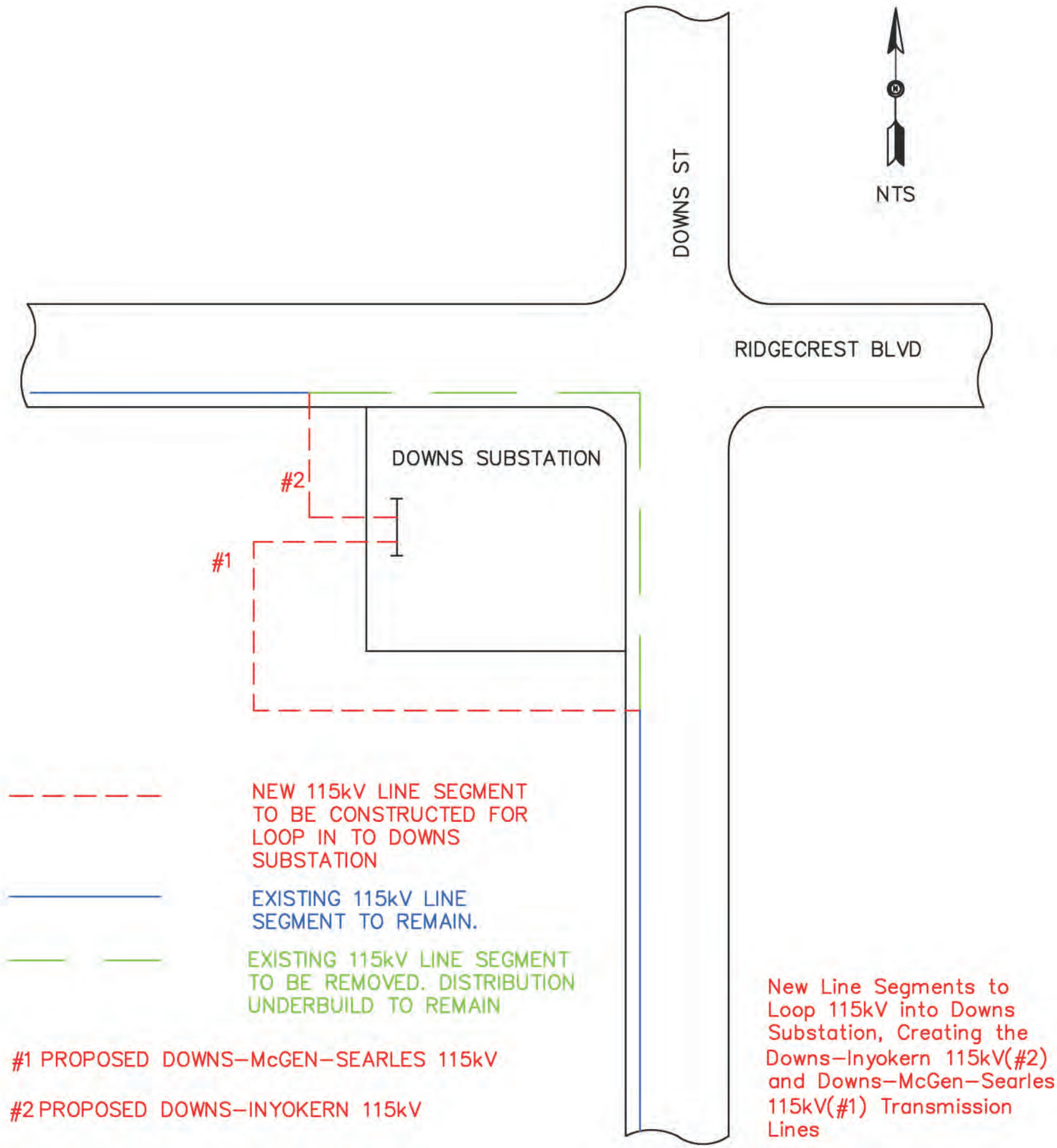
B.1.8 Zoning

The CPUC has primary jurisdiction over the Proposed Project as described above in the General Plan discussion. The location of the Proposed Downs Substation Expansion Project is designated as General Commercial (CG) in the City's municipal code. The surrounding zoning includes Service Commercial (CS) to the north and east; Recreational, School, Public Use (RSP) to the south; multi-family residential (R-2) to the southwest; and CG to the west.

B.1.9 Project Overview

SCE proposes to upgrade the existing Downs 33/12-kV Substation to meet forecasted electrical demand and to maintain safe and reliable service to customers in the Electrical Needs Area. In addition to serving the forecasted electrical demand within the Electrical Needs Area, the Proposed Project would improve system reliability and enhance operational flexibility.

Capacity at the existing Downs 33/12-kV Substation would be increased by the Proposed Project by replacing transformers and upgrading the Downs 33/12-kV Substation to a 115/12-kV substation. The Proposed Project would be served by looping an existing 115-kV subtransmission line into and out of the Downs Substation (Figure B.1-2). Portions of the existing 115-kV subtransmission pole line are shared by both 33-kV and 12-kV distribution circuits.



Source: SCE, 2010.

Figure B.1-2
New Downs 115/12 kV Substation 115 kV Looped Configuration

The Proposed Project is planned to be operational by June 2014 and would include the following major components:

- Upgrading and expanding the existing Downs 33/12-kV Substation to a 115/12-kV substation containing a 33-kV switchrack;
- Routing an existing 115-kV subtransmission line into and out of the substation;
- Installing a fiber optic telecommunication system (including 58 miles of fiber optic telecommunication cable) to provide communication circuits for the protection, monitoring, and control of subtransmission and substation equipment; and

As part of the fiber optic telecommunication system, replacement of six 115-kV subtransmission line poles along the Inyokern-McGen-Searles No. 1 115-kV subtransmission line near the community of Trona in San Bernardino County.

B.1.9.1 Project Objectives

SCE has identified the following objectives to meet the purpose and need described below:

- Meet long-term projected electrical load requirements with additional transformer capacity and a substation that is capable of future expansion;
- Provide safe and reliable electrical service consistent with SCE's criteria and guidelines;
- Meet project needs while minimizing environmental impact; and
- Restore capacity reserve and operational flexibility of the existing 33-kV distribution network.

B.1.9.2 Purpose and Need

System Capacity and Need

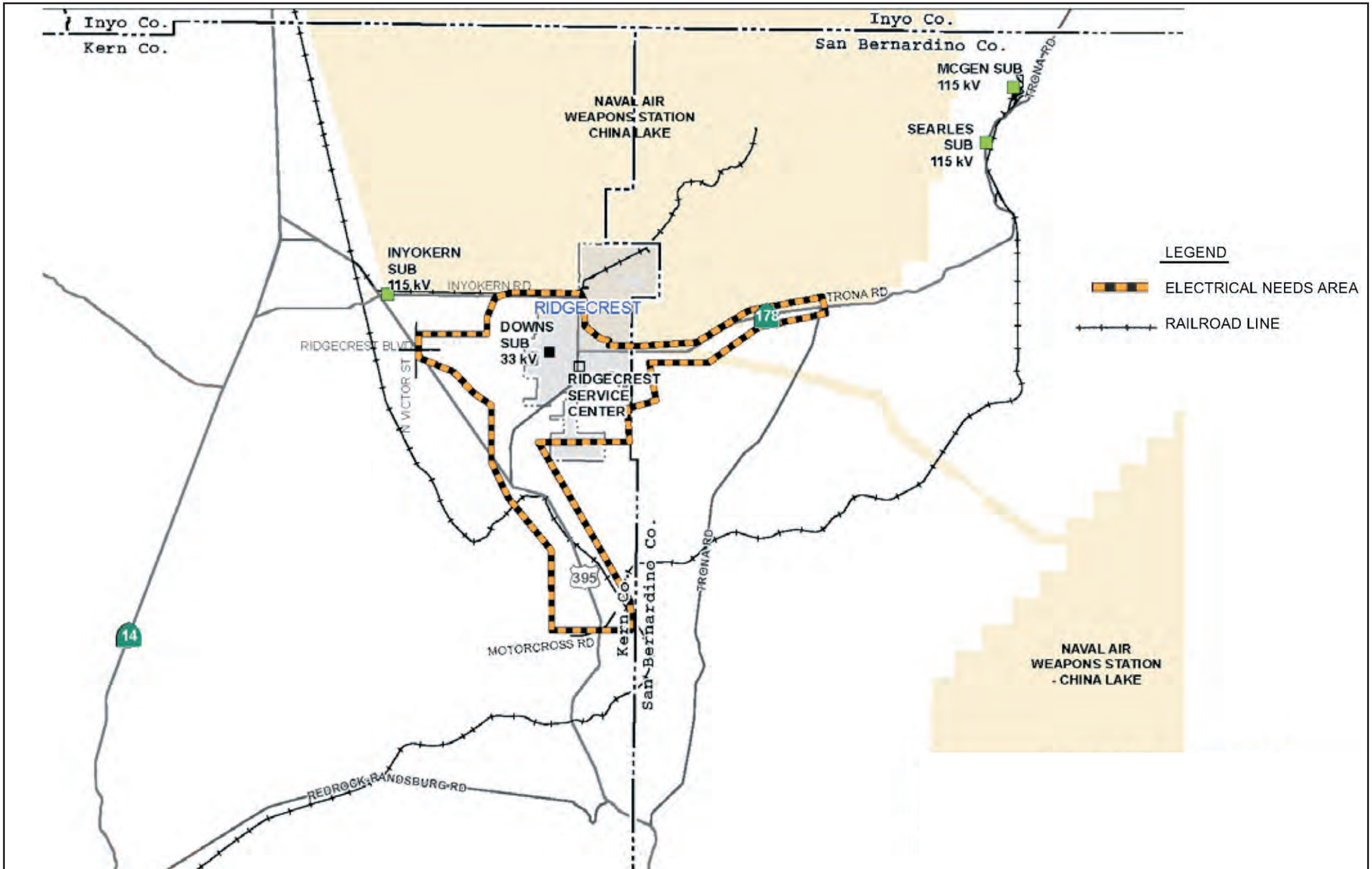
The existing Downs 33/12-kV Substation currently serves portions of the city of Ridgecrest and surrounding areas of unincorporated Kern County and San Bernardino County. However, as discussed below, the Downs 33/12-kV Substation cannot accommodate the anticipated load growth in the area. Therefore, the Proposed Project is needed to serve increased electrical demand in the Electrical Needs Area, as well as to improve system reliability and enhance operational flexibility.

The Electrical Needs Area is defined by the area where customers are served from the 12-kV distribution circuits originating from the Downs 33/12-kV Substation. The Electrical Needs Area encompasses approximately 13,000 SCE metered customers and is roughly bounded by North Victor Street to the west, the China Lake Naval Air Weapons Station (CLNAWS) to the north, Trona Road to the east, and Motorcross Road to the south, as shown in Figure B.1-3.

The Downs 33/12-kV Substation reduces voltage from 33-kV to a distribution voltage of 12-kV with two 22.4 megavolt ampere (MVA) transformers. The amount of electrical load that can be served from the Downs 33/12-kV Substation is limited to the total thermal maximum operating limit of 50.8 MVA. [1,2]

[1] Due to an existing protection setting requirement, when load exceeds 37 MVA, there is an increased risk of dropping all substation load.

[2] The load that is served by the Ridgecrest 33/4.8-kV Substation is not included in the Electrical Needs Area, because it is served at a lower serving voltage of 4.8-kV.



Source: SCE, 2010.

Figure B.1-3
Electrical Needs Area

The Downs Substation currently receives its power from a 33-kV source at the Inyokern Substation. Power is transmitted from the Inyokern Substation to the Downs Substation via a network of three 33-kV circuits. Two of these 33-kV circuits feed the Downs Substation directly, and also feed the Ridgecrest 33/4.8-kV Substation and the CLNAWS customer substation (NWC Substation), where they are joined with a third 33-kV source distribution circuit.

Based upon recorded historical peak demand, SCE has determined that the Electrical Needs Area has seen load growth averaging approximately two percent per year over the past five years, despite the intervening economic recession. According to SCE's annual 10 year peak demand forecast, it is anticipated that this load growth will continue to drive the need for the Proposed Project.

The CLNAWS, located north of the city of Ridgecrest, is expected to see major growth which began in 2010. This growth is attributed primarily to the Base Realignment and Closure Act (BRAC) initiated by Congress in 2005. Under BRAC, the U.S. military plans to relocate additional personnel to CLNAWS. Extensive construction is already underway on and around CLNAWS. While the Downs Substation does not serve CLNAWS directly, the growth on the base will impact the city of Ridgecrest, which provides many support services to CLNAWS.

Based on the most recently completed SCE analysis of the Electrical Needs Area, the area demand is expected to grow by more than 10 percent in 2010 and then over 4 percent per year in the following two years[3] (SCE, 2010). SCE bases its projections for area demand on information concerning planned development projects, increases in electrical usage by existing customers, and recovery in demand due to increased economic activity. The Base Closure and Realignment Commission anticipated up to 2,100 new personnel being located at CLNAWS. Given that personnel at military bases rely upon adjacent cities for many of their non-base needs, the personnel increase at CLNAWS is expected to contribute to continued growth in the city of Ridgecrest, and some portion of the new personnel would be expected to reside within the city of Ridgecrest. SCE's forecast shows that demand in the Electrical Needs Area under a 1-in-10 year heat storm would exceed the maximum operating limit (50.8 MVA) of Downs 33/12-kV Substation as early as 2011[4] (SCE, 2010).

Because the Proposed Project would not be in service by 2011 when the forecasted demand for a 1-in-10-year heat storm exceeds the Downs 33/12-kV Substation's maximum operating limit, a contingency project has been proposed for 2011 to provide additional, interim substation capacity when load is at risk of being dropped. The contingency project consists of installing one normally de-energized 115/12-kV, 28 MVA contingency transformer that would be placed within the existing fence line of the Downs Substation without a concrete foundation. The transformer would be connected to the 115-kV subtransmission line adjacent to the existing Downs 33/12-kV Substation. This contingency project would not be sufficient to provide long-term reliable service to customers and meet future load growth because it reduces operational flexibility and substation protection. Operational flexibility would be limited because the 12-kV load would have to be dropped to switch between the 33-kV and 115-kV source circuits. Reliability would also be compromised because one of the two systems of relay protection for the 115-kV subtransmission line would have to be disconnected while the 115-kV subtransmission line is connected to the 12-kV equipment at the existing Downs Substation. Additionally, the configuration of the contingency project would result in the Inyokern-McGen-Searles

3 Based on preliminary information from the first ten months of 2010, SCE's projected increase in demand for 2010 may not be realized.
4 It should also be noted that SCE's 1-in-10 year heat storm projection exceeded the maximum operating limit in 2006, 2007, and 2008.

No. 2 115-kV subtransmission line failing to conform to SCE's internal standard which does not allow for 4 point connections on subtransmission lines. However, the contingency project would address the capacity need under brief abnormal conditions until the Proposed Project can be licensed and constructed.

Reliability and Operational Flexibility

The Proposed Project would also help address other reliability and operational flexibility issues within the Electrical Needs Area, as described below.

1. The Downs Substation is currently fed from two 33-kV distribution circuits out of Inyokern Substation as part of a 33-kV network configuration. With the current system configuration, during an N-1 event (i.e., either a loss of a single transformer at the source Inyokern 115/33-kV Substation or a loss of one of the source 33-kV distribution lines that serves the Downs Substation), remaining system capacity would be insufficient to serve the entire Electrical Needs Area at peak load conditions. Therefore, a large portion of the Electrical Needs Area would suffer an unplanned outage. Transferring the load served by Downs 33/12-kV Substation to a 115-kV subtransmission source would ensure that SCE can serve the Electrical Needs Area during either of these N-1 events.
2. The current networked arrangement of the 33-kV distribution circuits that feed the Downs 33/12-kV Substation is very inflexible operationally[5]. Transferring the load served by the Downs 33/12-kV Substation off of the 33-kV distribution circuits would greatly increase operability of the remaining 33-kV distribution system.
3. The two 33-kV distribution circuits that currently serve the Downs 33/12-kV Substation do not provide enough short circuit duty (a measurement of the strength of an electrical system) to allow for the necessary protection of the transformer banks at the Downs Substation. To avoid major equipment damage due to undetected transformer or bus faults, SCE has set the protective relays to assure that all transformer and bus faults are cleared. However, there is still risk that the relaying equipment could falsely trip the entire Downs 33/12-kV Substation for non-fault events. This is possible when substation load exceeds 37 MVA and, concurrently, a normal voltage dip condition occurs. The probability of these events occurring simultaneously increases as the load continues to grow. The Proposed Project would eliminate this risk by allowing for proper protection of the proposed Downs 115/12-kV Substation.
4. The existing protection equipment utilized on the Inyokern-McGen-Searles No. 2 115-kV subtransmission line is obsolete. SCE no longer implements this type of equipment for two reasons: (1) certain components of the protection equipment are no longer supported by the manufacturer, and (2) the existing protection operates over a single sideband communication channel that has proven to be unreliable during fault conditions. The Proposed Project would upgrade the existing protection to current SCE standards. The relays would be replaced with standard equipment, and 58 miles of fiber optic telecommunication cable would be installed to provide the necessary digital communication channel between them. Therefore, the Proposed Project would improve 115-kV subtransmission reliability in the Electrical Needs Area.

[5] Distribution circuitry is generally constructed to allow substantial reconfiguration on a temporary operational basis. This flexibility allows planned and unplanned maintenance outages on various system components to take place without widespread customer outages. Because the 33-kV network feeding the Downs Substation serves primarily several large substations rather than smaller separable loads, and because loading is often greater than can be served by a reconfigured network, this flexibility is largely absent from the network.

The Proposed Project effectively addresses all capacity, reliability, and operational flexibility issues described above, while utilizing an existing 115-kV subtransmission line adjacent to the Downs 33/12-kV Substation. Since the Proposed Project uses an existing 115-kV subtransmission line, only short 115-kV subtransmission line segments would need to be constructed, minimizing the environmental impact of the Proposed Project. Additionally, existing area 12-kV distribution circuits currently radiate from the Downs 33/12-kV Substation, so only minimal 12-kV and 33-kV distribution circuit work would be required.

B.1.10 Project Components

B.1.10.1 Downs Substation Expansion

The improvements at the Downs Substation would include the addition of a new 115/12-kV unattended, automated 56 MVA low-profile substation (with a 28 MVA N-1 reserve bank). The proposed Downs Substation expansion capacity would have the potential to expand to 112 MVA as necessary. The existing Downs Substation encompasses approximately one acre of land within the city of Ridgecrest and the proposed expansion of Downs Substation would require an additional 2.5 acres of a 4.6-acre parcel of SCE-owned land adjacent to the existing Downs Substation (Figures B.1-4 and B.1-5). Components of the Downs Substation improvements are provided below; the switchracks, transformers, capacitor banks, Mechanical and Electrical Equipment Room (MEER), and substation access are shown on Figure B.1-6.

115-kV Switchrack

The proposed 115-kV low-profile steel switchrack would be up to 35 feet high, 106 feet wide, and 250 feet long. The 115-kV switchrack would consist of eight 30-foot-wide positions:

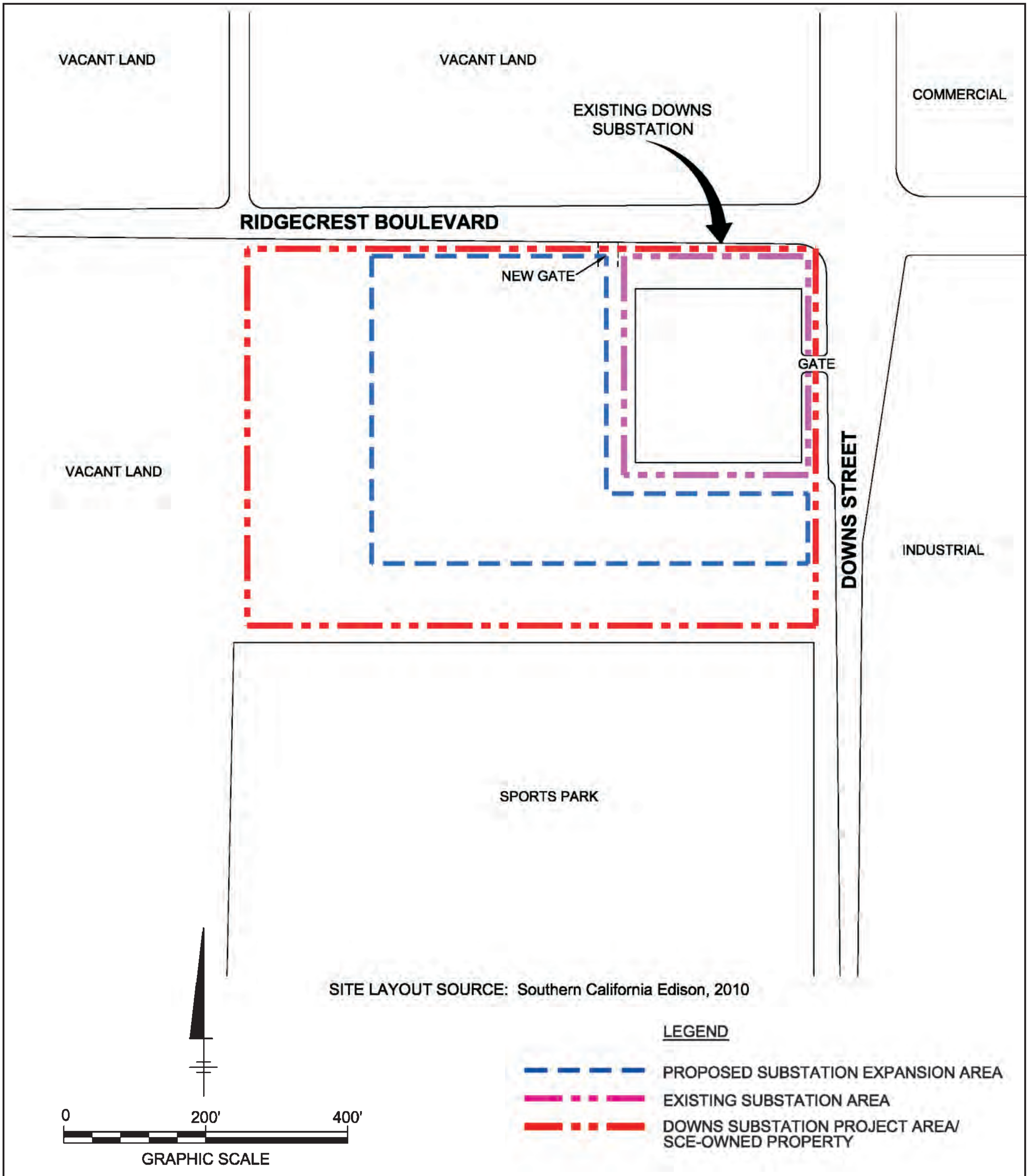
- One switchrack position would be used for the Downs-McGen-Searles 115-kV subtransmission line,
- A second switchrack position would be used for the Downs-Inyokern 115-kV subtransmission line,
- Two switchrack positions would be used for the 115/12-kV transformer banks (Bank No. 1 and Bank No. 2),
- An additional switchrack position would be used for the 115-kV bus tie position, and
- Three switchrack positions would be reserved as vacant positions for future expansion of the substation.

The operating and transfer buses would each be 240 feet long and consist of two 1,590 thousand circular mils (kcmil) Aluminum Conductor Steel Reinforced (ACSR) for each of the three electrical phases.

The two 115-kV subtransmission line positions and the two 115-kV transformer bank positions would each be equipped with a circuit breaker and three group-operated disconnect switches. The 115-kV bus tie position would be equipped with a circuit breaker and two group-operated disconnect switches.

Source: SCE, 2010.

Figure B.1-4
Aerial View of Downs Substation Area

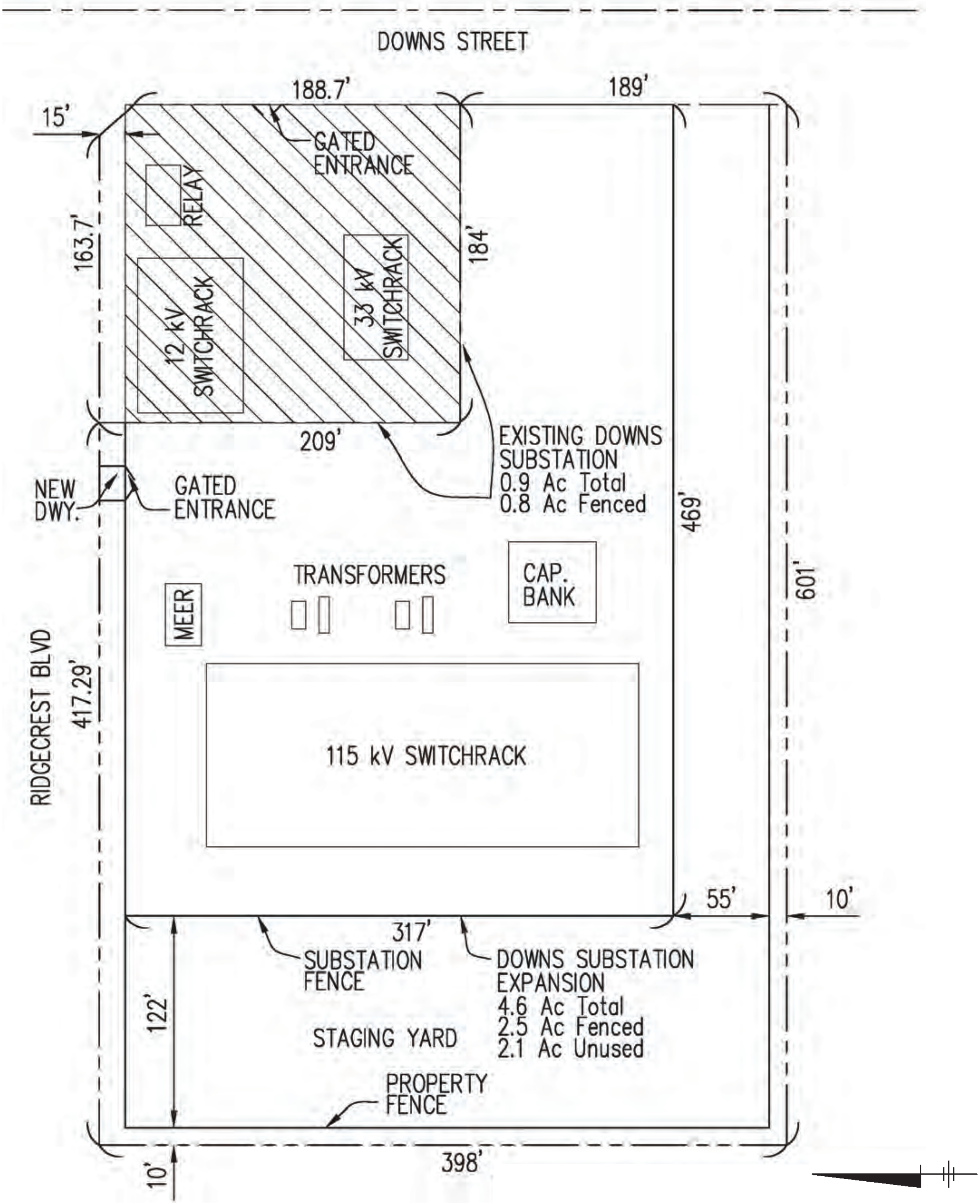


Aspen Environmental Group

Source: SCE, 2010.

Figure B.1-5

Downs Substation Area with Proposed Substation Expansion



Source: SCE, 2010.

Figure B.1-6

Layout of Downs Substation with Proposed Expansion

115/12-kV Transformers

Three 28 MVA, 115/12-kV transformers would be installed, each equipped with group-operated isolating disconnect switches on the high voltage and low voltage sides, surge arresters, and neutral current transformers. The transformer structures would occupy an area approximately 74 feet long and 120 feet wide. The transformer equipment would be approximately 34 feet in height. Two 12-kV underground power circuits would connect the transformers to the existing 12-kV switchrack positions 5A and 11A via power cable trench.

33/12-kV Transformers

The existing two 33/12-kV, 22.4 MVA transformers and one spare 33/12-kV, 14 MVA transformer would be removed.

12-kV Switchrack

The existing 12-kV operating and transfer buses would be extended one position. Two 12-kV bank positions in the 12-kV switchrack would be equipped with 3,500 ampere rated circuit breakers and disconnect switches.

12-kV Capacitor Banks

Two 12-kV 4.8 megavolt-amperes reactive (MVAR) capacitor banks would be installed within the Downs Substation. Each of these capacitor banks would be approximately 15 feet high, 17 feet long, and 13 feet wide.

Substation Control Power

The existing 48 volt direct current (VDC) control power would be upgraded to 125 VDC control power at the existing 33/12-kV Downs Substation. In addition, the 125 VDC control power would be integrated into the proposed 115-kV Downs Substation expansion. The work would require the removal of the existing three 33-kV circuit breakers and ten 12-kV circuit breakers; two 33-kV line relays and ten 12-kV line relays; and one 33-kV bus relay and one 12-kV vacuum switch. In addition, the above relays would be replaced with three 33-kV circuit breakers and ten 12-kV circuit breakers; two 33-kV line relays and ten 12-kV line relays located in the proposed Downs Substation Mechanical and Electrical Equipment Room (MEER); and one 33-kV bus relay and one 12-kV vacuum switch.

Mechanical and Electrical Equipment Room

A MEER is a prefabricated structure that is typically made of galvanized steel and has a grey or beige color roof and side walls. The roofline, wall joints, and doorway may have brown trim. A MEER would be erected and equipped with the following:

- Two heating, ventilation, air conditioning (HVAC) units,
- Temperature and humidity sensor,
- Direct current (DC) paralleling box and distribution panel,
- Single-phase alternating current (AC) and DC distribution panels,
- Two telecommunication racks and equipment,
- Battery charger and associated batteries,

- Station Automation 2 System (SA-2) Human Machine Interface/Programmable Logic Controller (HMI/PLC), and
- Telephone.

Control cable trenches would be installed to connect the MEER to various pieces of equipment within the 115-kV and the 12-kV switchracks. An alarm system would be installed to alert SCE personnel when an unauthorized entry into the MEER is detected. Underground conduit would be used to connect the MEER to outside fiber optic telecommunication cable splice locations. Telecommunication equipment would be installed in equipment racks located in the MEER. Fiber optic telecommunication cable would attach to the telecommunication equipment, exit the Downs Substation MEER, and splice to an existing fiber optic telecommunication cable located outside of the Downs Substation expansion property. The MEER dimensions would be approximately 11 feet tall, 36 feet long, and 15 feet wide.

Restroom Facility

The proposed Downs Substation expansion would be equipped with a permanent restroom facility should water and sewer connections be available. The approximate dimensions of the restroom facility would be 10 feet high, 14 feet long, and 14 feet wide. A portable chemical restroom would be located within the Downs Substation perimeter enclosure should water and sewer connections not exist and no public restroom or another SCE facility exists within 1.5 miles. The portable restroom would be maintained by a qualified service company.

B.1.10.2 Substation Access

Access to the Downs Substation currently exists from Downs Street. An additional access driveway would be constructed from Ridgecrest Boulevard and would have a 24-foot wide asphalt cement paved driveway that would extend approximately 55 feet from Ridgecrest Boulevard to the Downs Substation entry gate. The automated entry gate would be approximately 8 feet high and 24 feet wide. In addition to the entry gate, a 4-foot-wide personnel gate would be installed within the proposed Downs Substation expansion fence for personnel access into the substation. SCE would secure all necessary permits required by the city of Ridgecrest for construction of the driveway.

B.1.10.3 Substation Drainage

The real property where the proposed Downs Substation expansion would occur presently drains naturally to the east into a topographic low point adjacent to Downs Street. The expanded portion of the Downs Substation would be graded to a slope between 1 and 2 percent and compacted to 90 percent of the maximum dry density; preliminary data indicate that existing compaction ranges from 80 to 85 percent, and therefore 90 percent compaction would not significantly increase runoff. The existing drainage patterns throughout the location would be interrupted by construction of the proposed Downs Substation expansion, and would be modified to divert drainage around the proposed Downs Substation expansion to the existing discharge point adjacent to Downs Street along the east side of the property. The construction drainage would be designed to maintain or reduce discharge of stormwater runoff from the location through the use of an engineered detention basin, and would be in compliance with a construction Storm Water Pollution Prevention Plan (SWPPP). SCE would consult with the city of Ridgecrest prior to finalizing the drainage design.

The proposed Downs Substation expansion grading design would incorporate Spill Prevention Control and Countermeasure (SPCC) Plan requirements due to the planned operation of oil-filled transformers at the proposed Downs Substation expansion area (in accordance with 40 Code of Federal Regulations

[CFR] Part 112.1 through Part 112.7). Typical SPCC features include curbs and berms designed and installed to contain spills should they occur. These features would be part of SCE's final engineering design for the Proposed Project.

The ground surface of the proposed Downs Substation expansion would be finished with materials imported to the location and materials excavated from and used at the location. Based on preliminary design, approximately 3,970 cubic yards of soil would be cut from and 4,470 cubic yards of soil would be filled at the proposed Downs Substation expansion area. Approximately 500 cubic yards of soil would need to be imported for fill. In order to construct foundations and footings for the proposed Downs Substation expansion equipment, approximately 180 cubic yards of soil would be excavated from the proposed Downs Substation expansion location. Additionally, approximately 15 cubic yards of soil would be excavated for the cable trenches. The excavated soil would be stockpiled during excavation and would ultimately be graded and compacted at the proposed Downs Substation expansion location.

B.1.10.4 Substation Lighting

Lighting at the proposed Downs Substation expansion would consist of high-pressure sodium, low intensity lights located in switchyards, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours for emergency and/or scheduled work. Maintenance lights would be controlled by a manual switch and would normally be in the "off" position. The lights would be directed downward to reduce glare outside the facility. One light would indicate the operation of the rolling gate and this light would automatically switch on when the gate is opened and switch off when the gate is closed.

B.1.10.5 Substation Perimeter

An eight-foot-high chain-link fence would enclose the proposed Downs Substation expansion area on all sides. Five strands of barbed wire would be affixed to the top of the fence. The remaining parcel would be enclosed on all sides by an eight-foot-high chain-link fence without barbed wire. Landscaping around the proposed Downs Substation expansion property would be designed to filter views for the surrounding community and other potential sensitive receptors. Following construction of the proposed Downs Substation expansion fence, landscaping and irrigation would be installed. Water service from a 5/8 inch service connection to the water supply system at the Indian Wells Valley Water District has been established at the Downs Substation. Prior to the start of construction, SCE would develop an appropriate landscaping plan that would be submitted to the city of Ridgecrest for review and comment.

B.1.10.6 Substation Dimensions

The proposed expansion portion of the Downs Substation would encompass approximately 2.5 acres of a 4.6-acre parcel located within the city of Ridgecrest, as shown on Figure B.1-5. The dimensions of the enclosed upgraded Downs Substation would be approximately 469 feet by 317 feet. The dimensions of the SCE-owned property would be approximately 601 feet by 398 feet. The property limits of the existing Downs Substation are approximately 209 feet by 184 feet. Figure B.1-6 provides a layout for the proposed Downs Substation expansion.

B.1.10.7 Upgraded Relay Protection at Inyokern, McGen and Searles Substations

To protect the newly created 115-kV subtransmission lines from abnormal electrical conditions, SCE would install appropriate protective relays within the MEERs of Inyokern Substation, McGen Substation, and Searles Substation. SCE would also install telecommunication equipment to provide communication channels for the protective relay equipment at these substations. All of the work described above would occur within the interior perimeter of these substations. No grading or ground disturbance would occur as a result of this work.

B.1.10.8 115-kV Subtransmission Line Description

Modifications to the Existing Inyokern-McGen-Searles No. 2 115-kV Substransmission Line

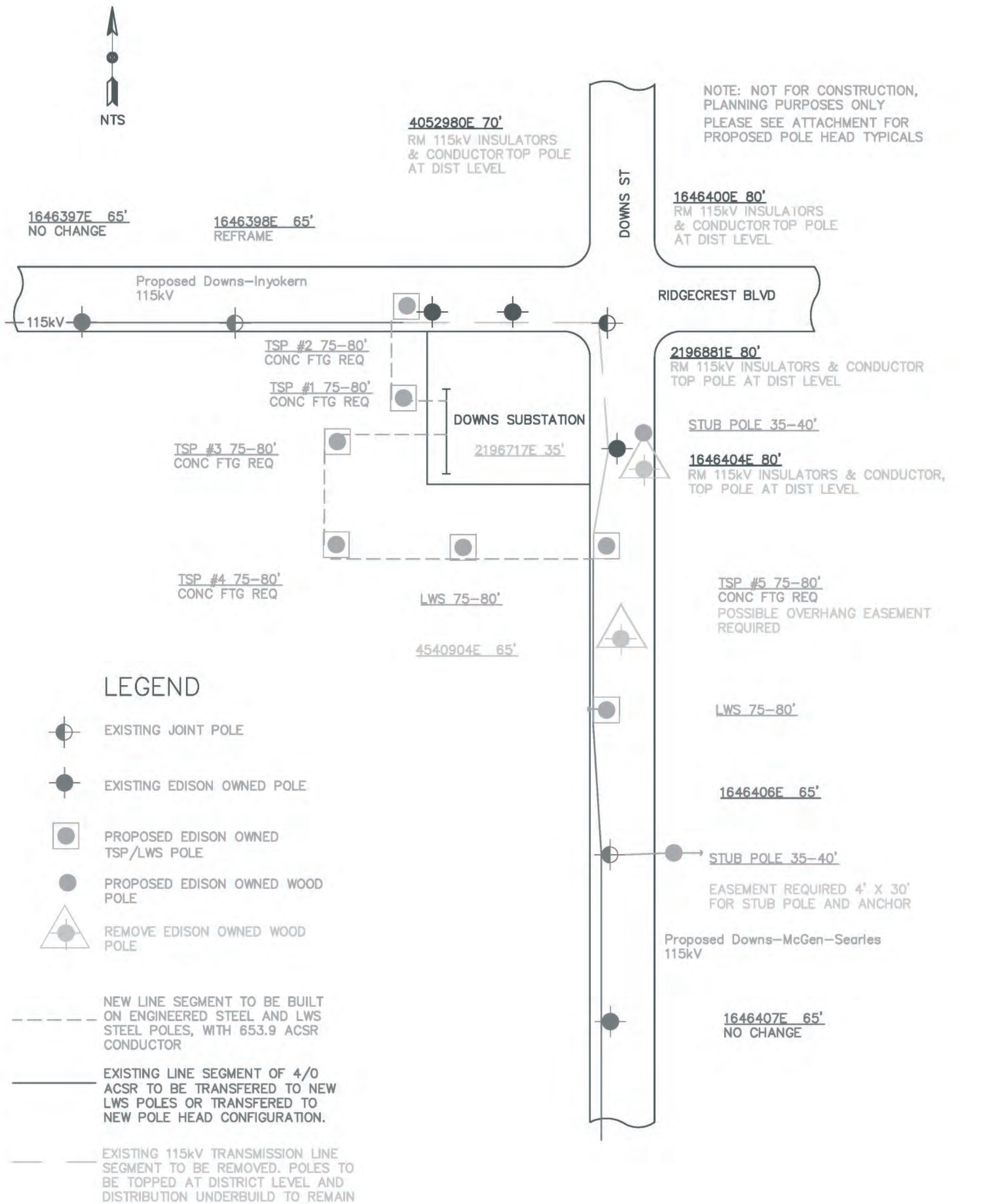
The existing Inyokern-McGen-Searles No. 2 115-kV subtransmission line currently runs in a northerly direction along Downs Street to the intersection of Downs Street and Ridgecrest Boulevard, then in a westerly direction along Ridgecrest Boulevard (Figure B.1-7). This line would be rerouted by intercepting the existing 115-kV subtransmission line at the southeast and northwest corners of the proposed Downs Substation expansion area and terminating it into the Downs Substation to form the Downs-McGen-Searles and Downs-Inyokern 115-kV subtransmission lines. At the intercept points, SCE would construct two new 115-kV subtransmission line segments to connect the proposed Downs-McGen-Searles and the proposed Downs-Inyokern 115 kV subtransmission lines to the proposed Downs Substation expansion area (Figure B.1-7).

To loop the proposed Downs-McGen-Searles 115-kV subtransmission line, SCE would intercept the existing Inyokern-McGen-Searles No. 2 115-kV subtransmission line at the southeast corner of the proposed expanded Downs Substation on Downs Street. Under the initial design, the following activities would occur:

- Along Downs Street, two wood stub poles, one Light Weight Steel (LWS) pole, and one Tubular Steel Pole (TSP) would be installed;
- On the expanded Downs Substation property, two TSPs and one LWS pole would be installed;
- Along Downs Street, two existing wood poles would be topped, and the 115-kV conductor and related line hardware would be removed.
- One existing wood pole would be removed along Downs Street; and
- A Fault Return Conductor (FRC) would be installed at the getaway TSP (first structure to which a line or cable is routed after the line or cable leaves a substation) located at the Downs Substation.

To loop the proposed Downs-Inyokern 115-kV subtransmission line, SCE would intercept the existing Inyokern-McGen-Searles No. 2 115-kV subtransmission line at the northwest corner of the proposed Downs Substation expansion on Ridgecrest Boulevard. Under the preliminary design, the following activities would occur:

- Along Ridgecrest Boulevard, one TSP would be installed;
- On the expanded Downs Substation property, one TSP would be installed;
- Along Ridgecrest Boulevard, two existing wood poles would be topped, and the 115-kV conductor and related line hardware would be removed;
- One existing wood pole would be reframed; and
- An FRC would be installed at the getaway TSP located at Downs Substation.



Source: SCE, 2010.

Figure B.1-7
Proposed Subtransmission Line Route

The installation of the FRCs would require two trenches to be excavated approximately 30 inches deep, 18 inches wide, and backfilled with native soil. The trench from TSP #3 on the proposed Downs-McGen-Searles 115-kV subtransmission line would be approximately 100 to 150 feet in length, and the trench from TSP #1 on the proposed Downs-Inyokern 115-kV subtransmission line would be approximately 50 to 100 feet in length. The FRC for the proposed Downs-Inyokern 115-kV subtransmission line would be located on TSP #1, and the FRC for the proposed Downs-McGen-Searles 115-kV subtransmission line would be located on TSP #3. Each trench would be constructed at the TSP footings and would be routed and connected to the proposed Downs Substation expansion ground grid. A two-inch diameter conduit would be located within each trench. A 4/0 copper wire would be installed in the conduits to connect the FRCs to the Downs Substation ground grid.

The added segment to the southerly portion of the Inyokern-McGen-Searles No. 2 115-kV subtransmission line, which forms the proposed Downs-McGen-Searles 115-kV subtransmission line, would be approximately 800 circuit feet in length. The added segment to the westerly portion of the Inyokern-McGen-Searles No. 2 115-kV subtransmission line, which forms the proposed Downs-Inyokern 115-kV subtransmission line, would be approximately 200 circuit feet in length. The overall route of the 115-kV subtransmission lines associated with the Proposed Project (existing and proposed) is shown on Figures B.1-8 and B.1-9.

Components of the 115-kV subtransmission line that would be used to complete the reroute would include wood stub poles, LWS poles and TSPs, 653.9 Aluminum ACSR conductor, insulators, line hardware, guying, and anchors. Based on initial engineering design, the approximate height above ground of the wood stub poles would be no higher than 40 feet, the approximate height above ground of the LWS poles would range between 65 to 70 feet, and the approximate height of the TSPs would range between 75 to 80 feet.

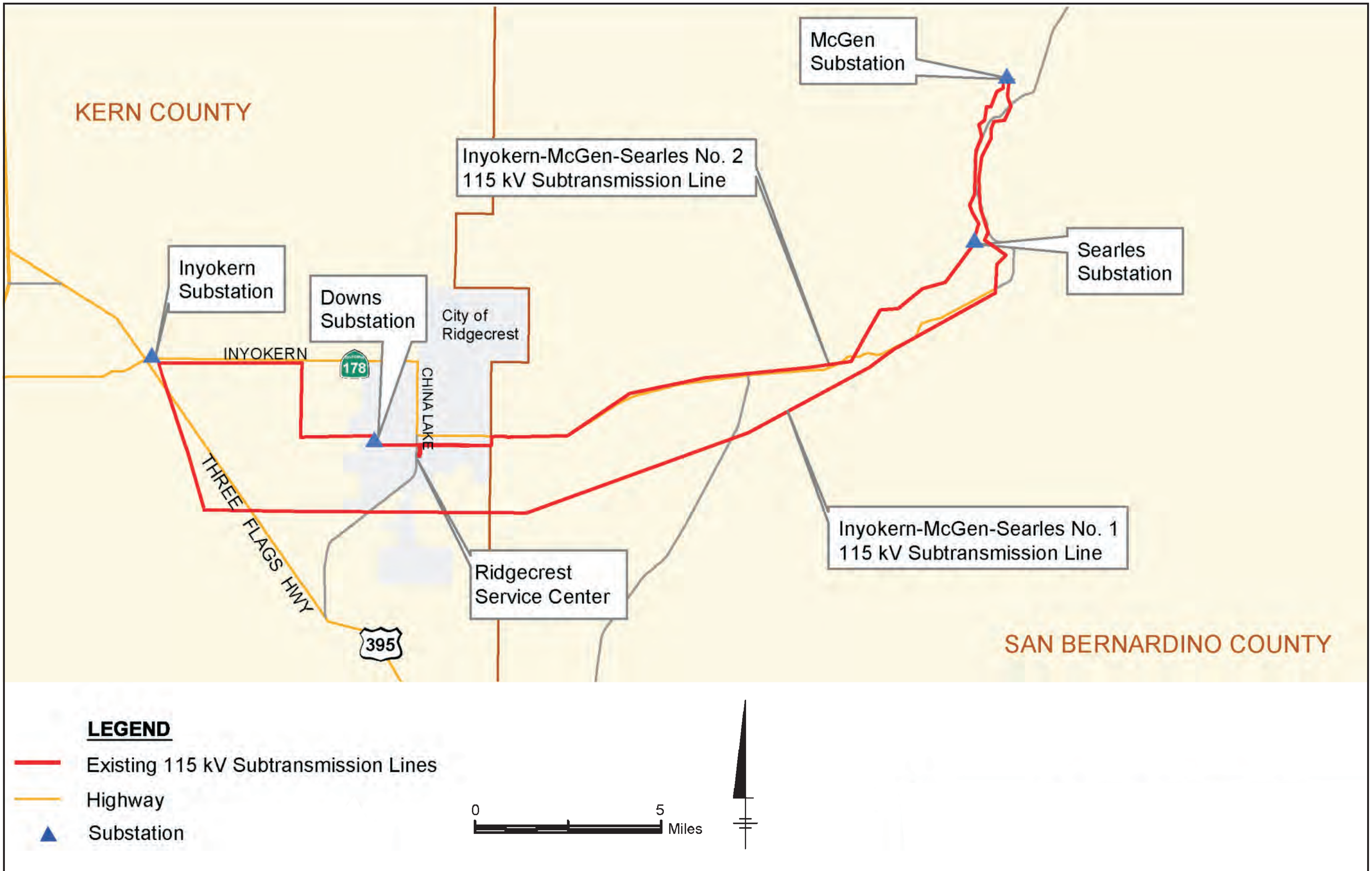
Approximate dimensions of the LWS subtransmission poles and TSPs are shown in Figure B.1-10. The 115-kV subtransmission poles would be designed consistent with the Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006 (APLIC, 2006).

The Proposed Project would utilize TSPs approximately 2 to 4 feet in diameter and extend 75 feet to 80 feet above grade. The TSPs would be attached to the concrete foundations that extend underground approximately 20 to 30 feet, with approximately 0 to 3 feet of concrete visible above grade. In some instances, some TSPs may be installed in direct-buried concrete. TSPs are typically used:

- Where location limitations or restrictions prohibit guy and anchor installation;
- Where strength or height of a wood or LWS pole is exceeded;
- Where TSPs are a condition of the easement; or
- Where the location is subject to extreme or severe environmental conditions such as damage from fire, birds, insects, or weather.

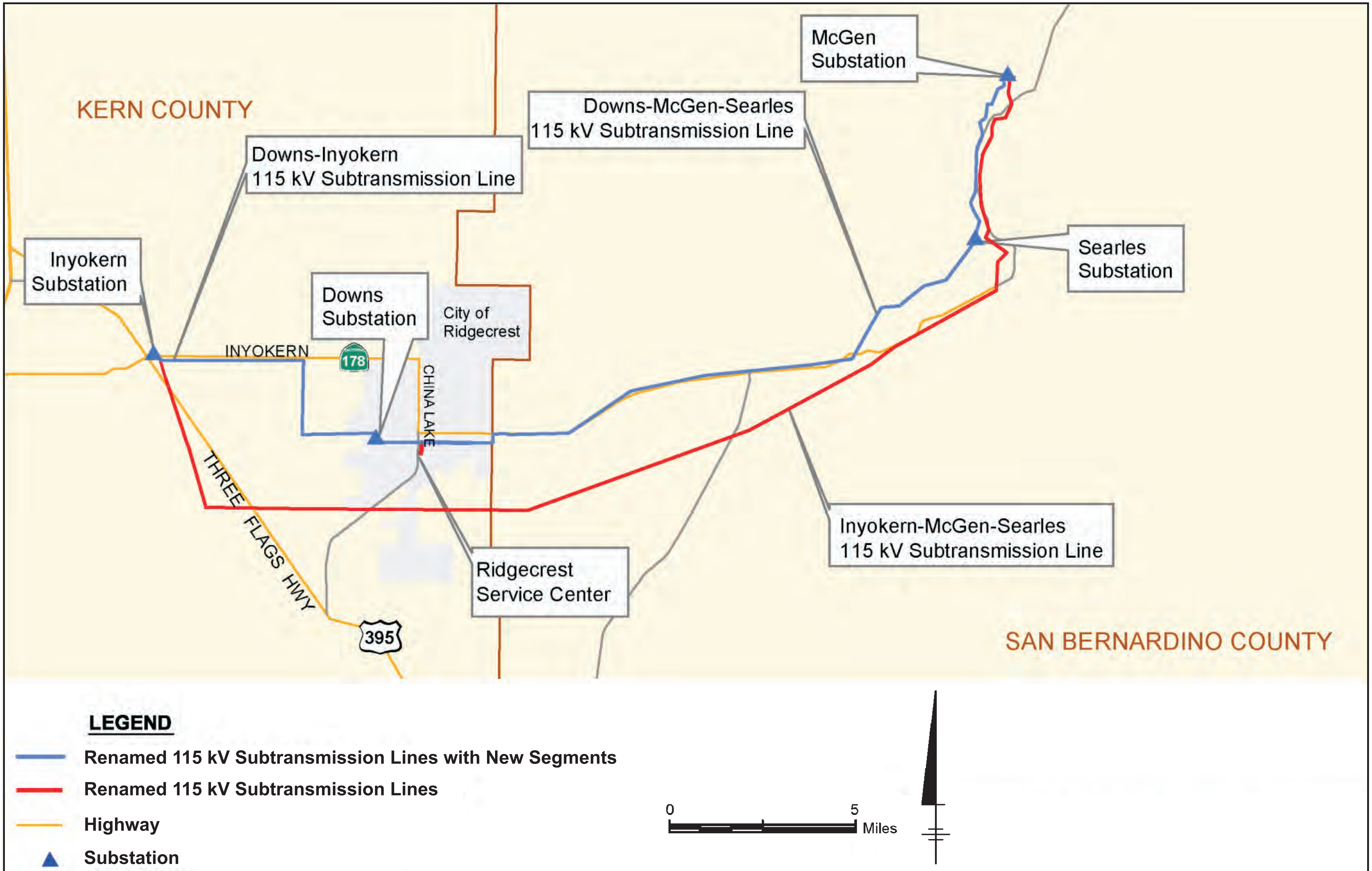
LWS poles utilized for the Proposed Project would be direct buried to a depth of approximately 8 to 10 feet below grade and extend approximately 65 to 70 feet above grade. The diameter of LWS poles would be approximately 2 to 3 feet.

It is anticipated that the 115-kV subtransmission structures would be installed within the franchise ROW of Downs Street and Ridgecrest Boulevard. Acquisition of new right-of-way or easement rights, however, may be required in order to install the wood stub pole and the associated guying. Access to the new 115-kV subtransmission facilities would be from the existing public streets.



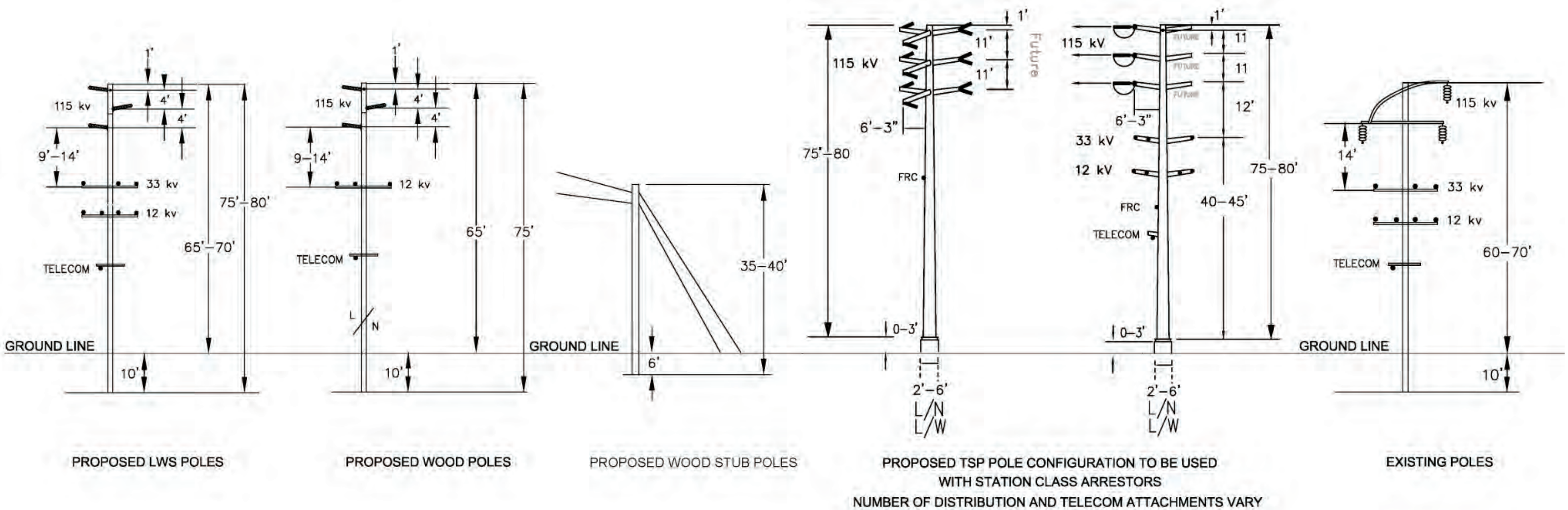
Source: SCE, 2010.

Figure B.1-8
Existing 115-kV Subtransmission Line Routes in the Vicinity of the Project Area



Source: SCE, 2010.

Figure B.1-9
Proposed 115-kV Subtransmission Line Routes in the Vicinity of the Project Area



NOTE:

Pole Configurations assume Station Class Arrestors to be used at Downs Substation. Number and elevation of Distribution and Telecom attachments may vary

Aspen Environmental Group

Source: SCE, 2010.

Figure B.1-10
Subtransmission Structure Dimensions

Modifications to the Existing Inyokern-McGen-Searles No. 1 115-kV Subtransmission Line

Approximately six existing Inyokern-McGen-Searles No. 1 115-kV subtransmission line wood poles would need to be replaced by SCE as required to support the new fiber optic telecommunications facilities where the existing wood poles do not meet CPUC General Order 95 wind loading requirements and/or SCE design standards. The existing wood poles range between 58 to 70 feet above grade. SCE would replace the existing wood poles with approximately six new wood poles of various head configurations that range between 65 to 70 feet above grade on the existing Inyokern-McGen-Searles No. 1 115-kV subtransmission line. The diameter of the wood poles would be approximately 2 to 3 feet and direct-buried to a depth of approximately 8 to 10 feet below grade. See Figure B.1-10 for an illustration of wood pole structures. The construction methodology is further described below in Fiber Optic Telecommunication System Construction.

B.1.10.9 Fiber Optic Telecommunication System Description

The Proposed Project requires the installation of a new fiber optic telecommunication system to provide proper protection, control, and monitoring of the transmission/subtransmission lines and major equipment. This new fiber optic telecommunication system would also provide voice and data communications between the expanded Downs Substation and other SCE facilities. The proposed new fiber optic telecommunication system, as described further below, would provide redundant routing of the communication circuits to reliably support the Proposed Project.

The telecommunications work would include installing approximately 58 miles of new fiber optic telecommunication cable primarily on existing wood poles located between Downs, Searles, McGen, and Inyokern Substations. Based on preliminary engineering, approximately six of the existing wood poles would need to be replaced in order to support the new fiber optic telecommunication cable. An overview of the fiber optic telecommunication route and the locations of the six poles that need to be replaced are shown on Figure B.1-11.

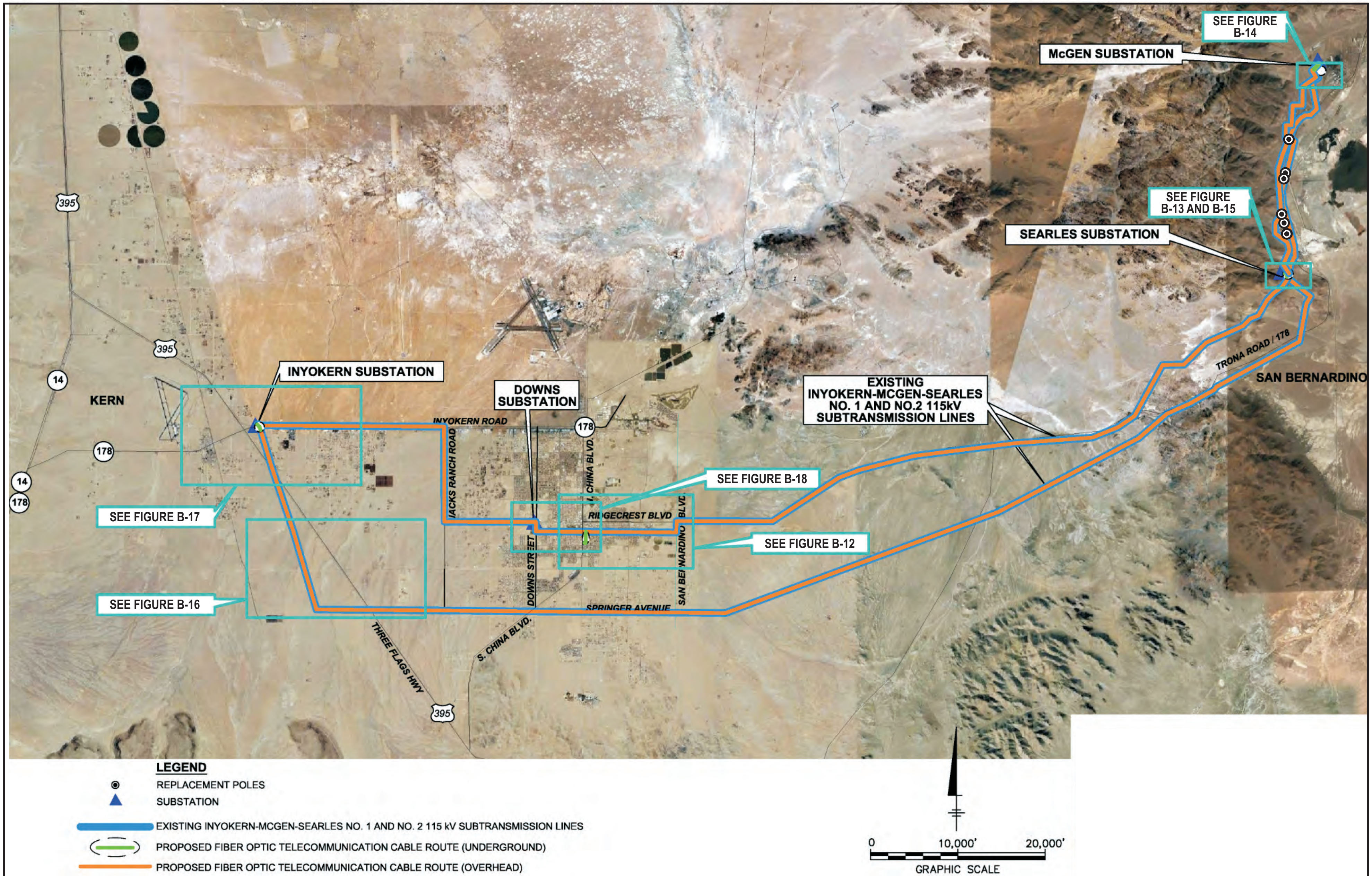
To provide fiber optic telecommunication cable connectivity to the proposed Downs 115-kV Substation, an existing fiber optic telecommunication cable that runs between Inyokern Substation and Ridgecrest Service Center (ISRSC cable) would be utilized by installing two new fiber optic telecommunication cable taps from the ISRSC cable into the proposed Downs Substation MEER, as described below.

Installation of new telecommunication equipment would consist of fiber optic terminals, multiplexers, and other telecommunication equipment devices installed at each of the above substations. Fiber optic telecommunication equipment located at Ridgecrest Service Center would be fitted with additional equipment capacity to provide the necessary gain to allow the telecommunications to travel the increased distance created by the new fiber optic telecommunication cable.

Fiber Optic Telecommunication Cable Route

The proposed fiber optic telecommunication cable route would consist of approximately 58 miles of new fiber optic telecommunication cable and approximately 10 miles of existing fiber optic telecommunication cable. The fiber optic telecommunication cable would interconnect Ridgecrest Service Center, Searles Substation, McGen Substation, and Inyokern Substation.

The approximately 58 miles of proposed new fiber optic telecommunication cable would consist of the following four main segments, as shown on Figures B.1-12 through B.1-18:

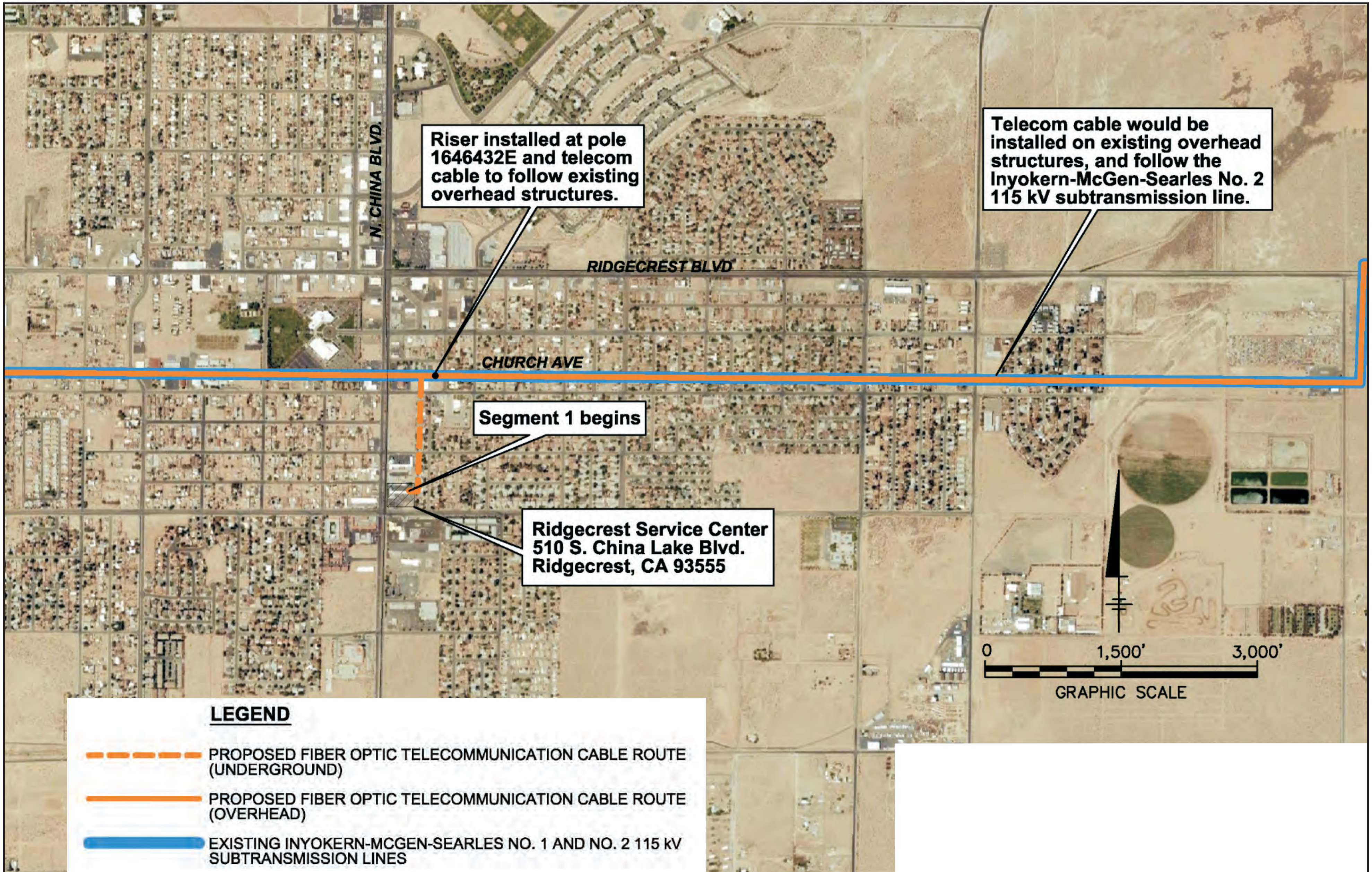


Aspen Environmental Group

Source: SCE, 2010.

Figure B.1-11

Overview of Proposed Fiber Optic Telecommunication Cable Route



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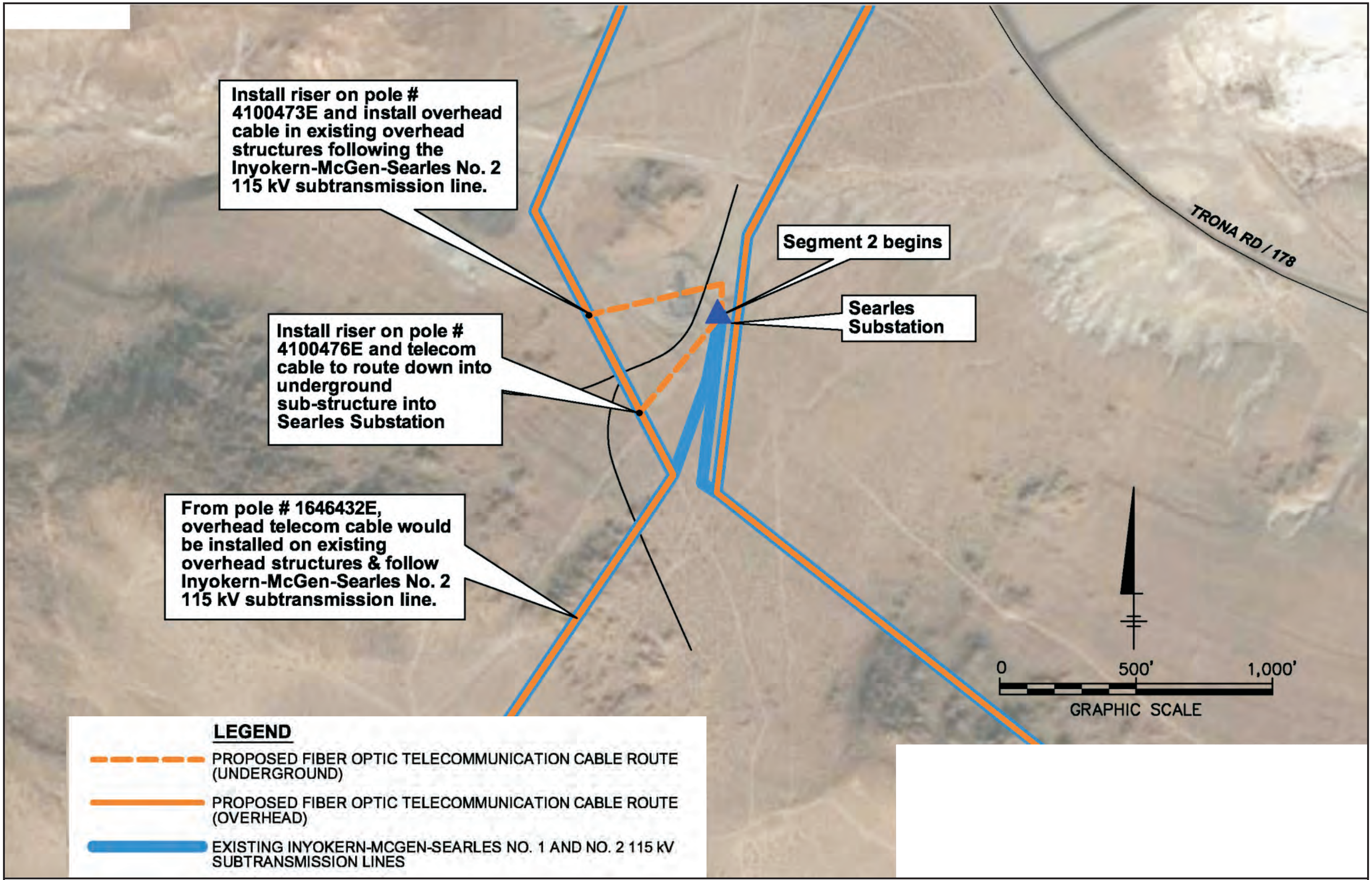
Source: SCE, 2010.

Figure B.1-12

Proposed Fiber Optic Telecommunication Cable Route - Segment 1



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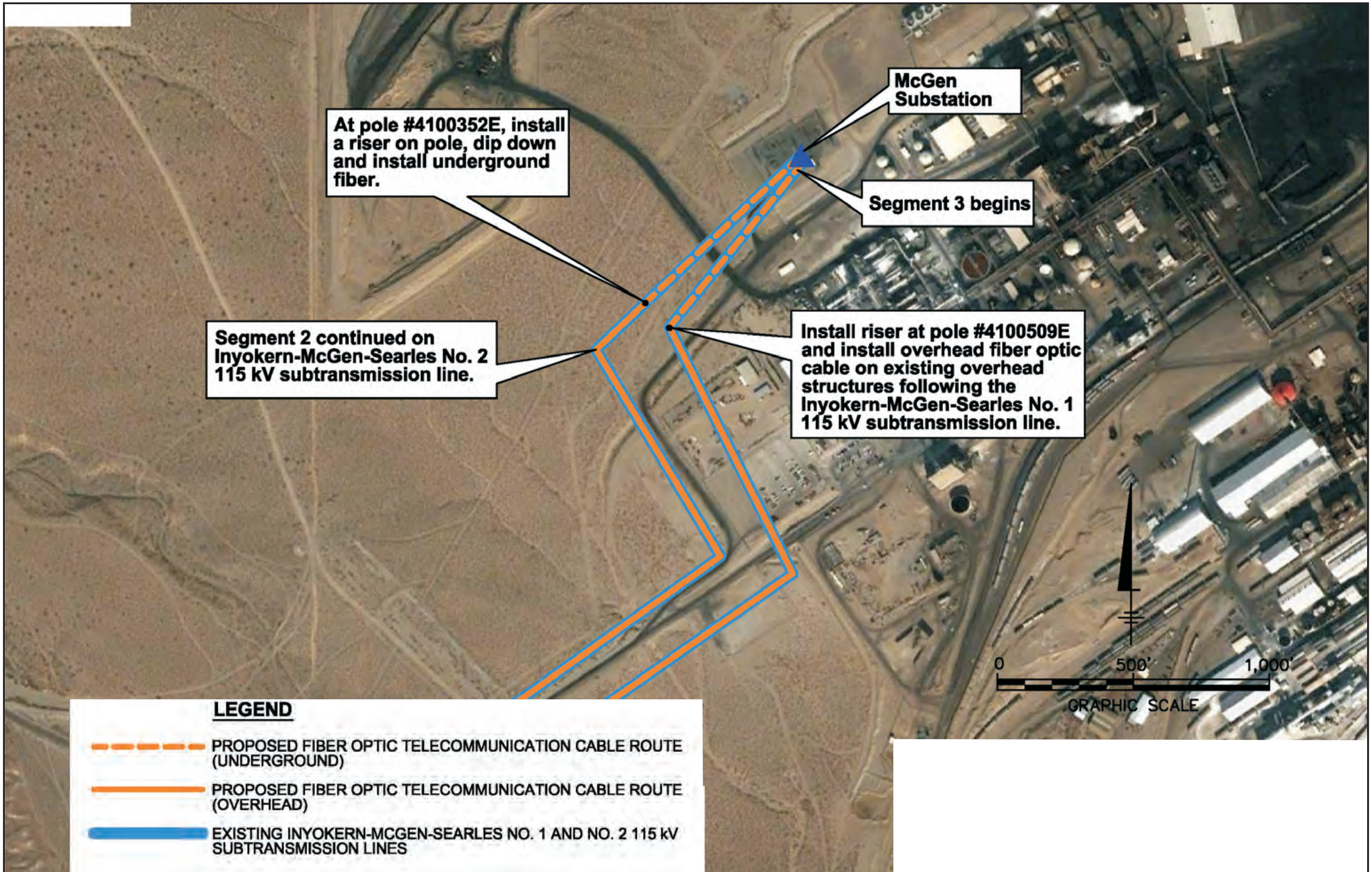
Source: SCE, 2010.

Figure B.1-13

Proposed Fiber Optic Telecommunication Cable Route - Segments 1 and 2



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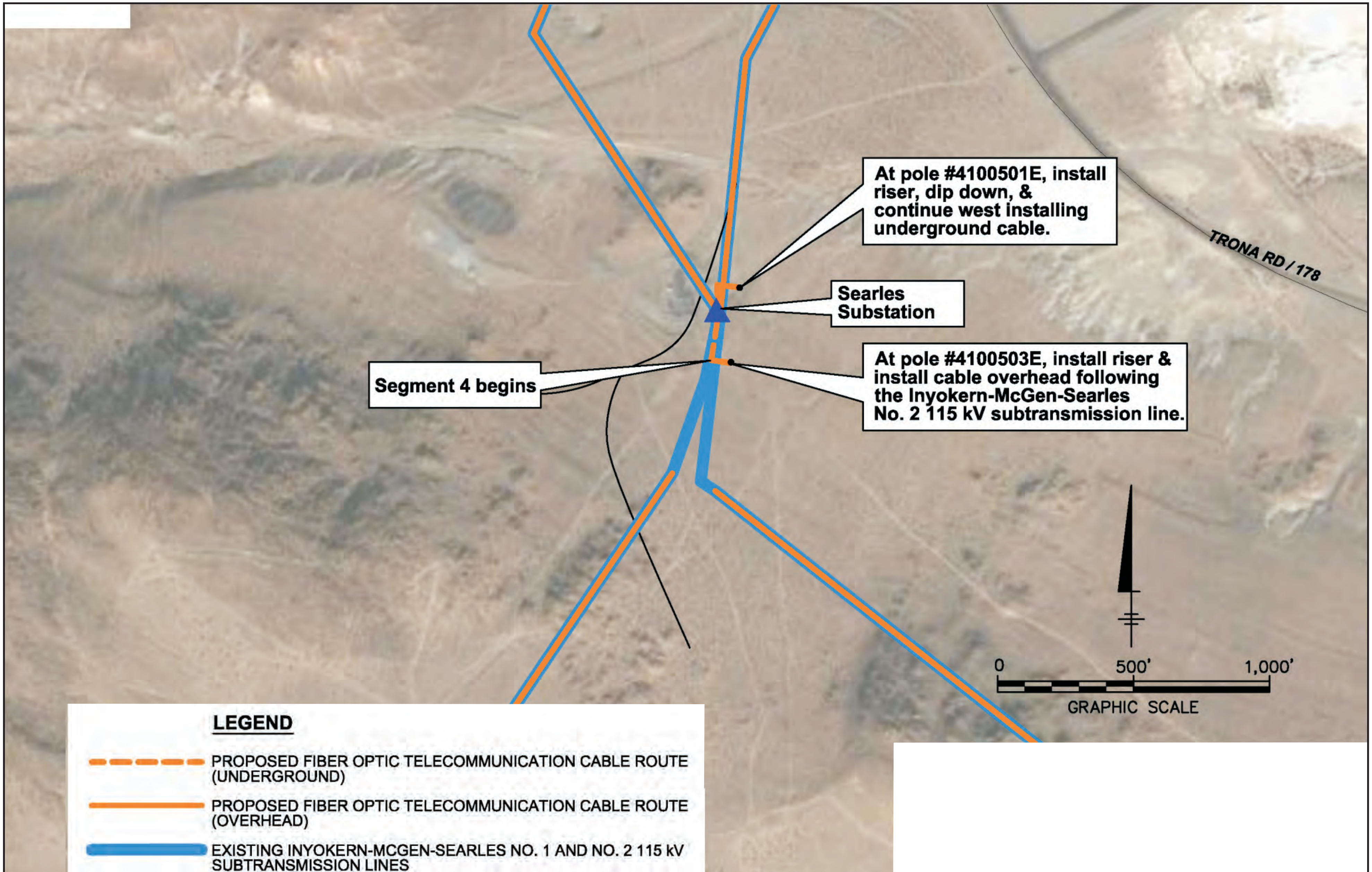
Source: SCE, 2010.

Figure B.1-14
Proposed Fiber Optic Telecommunication Cable Route - Segments 2 and 3



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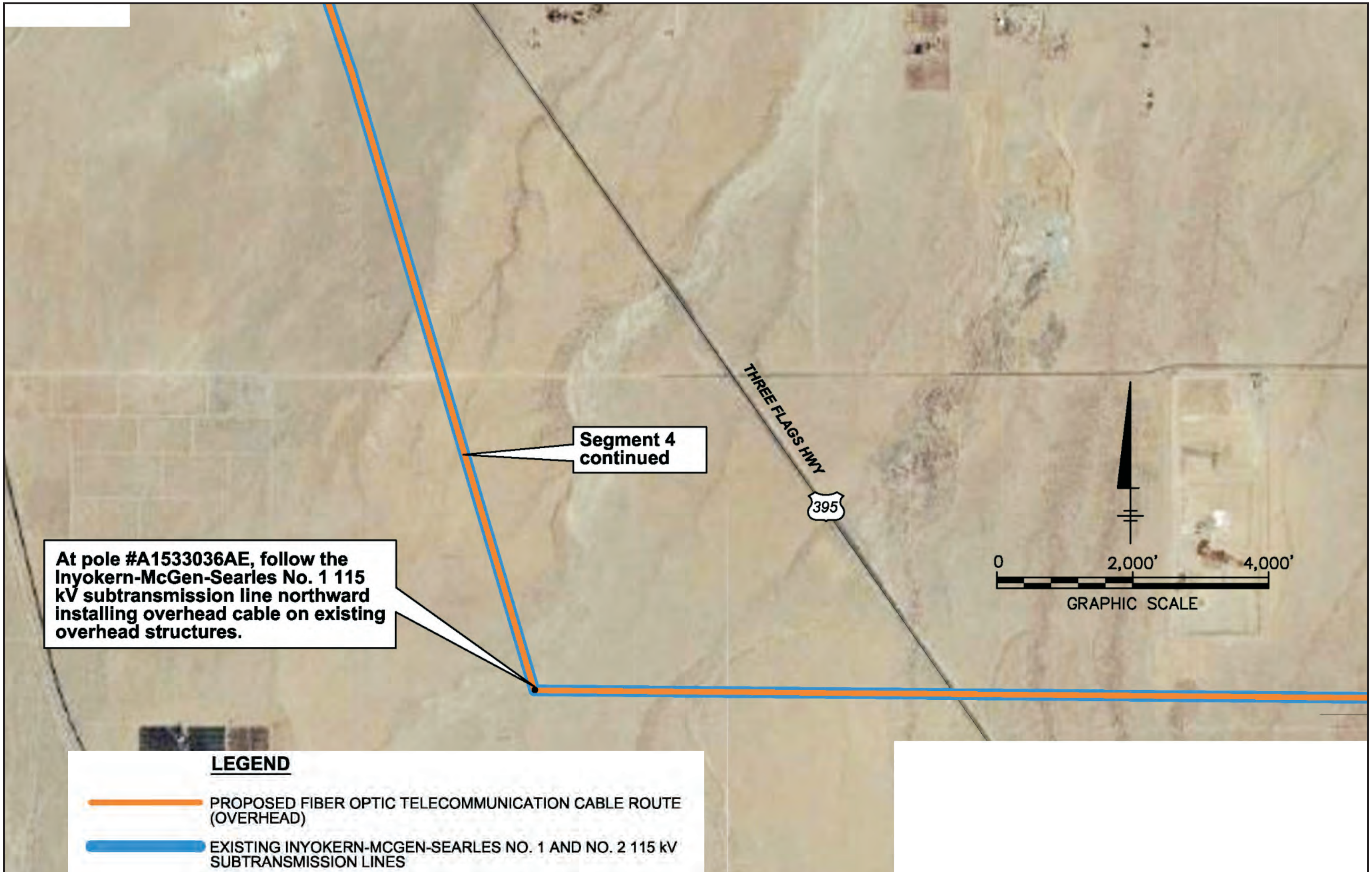
Source: SCE, 2010.

Figure B.1-15
Proposed Fiber Optic Telecommunication Cable Route - Segments 3 and 4



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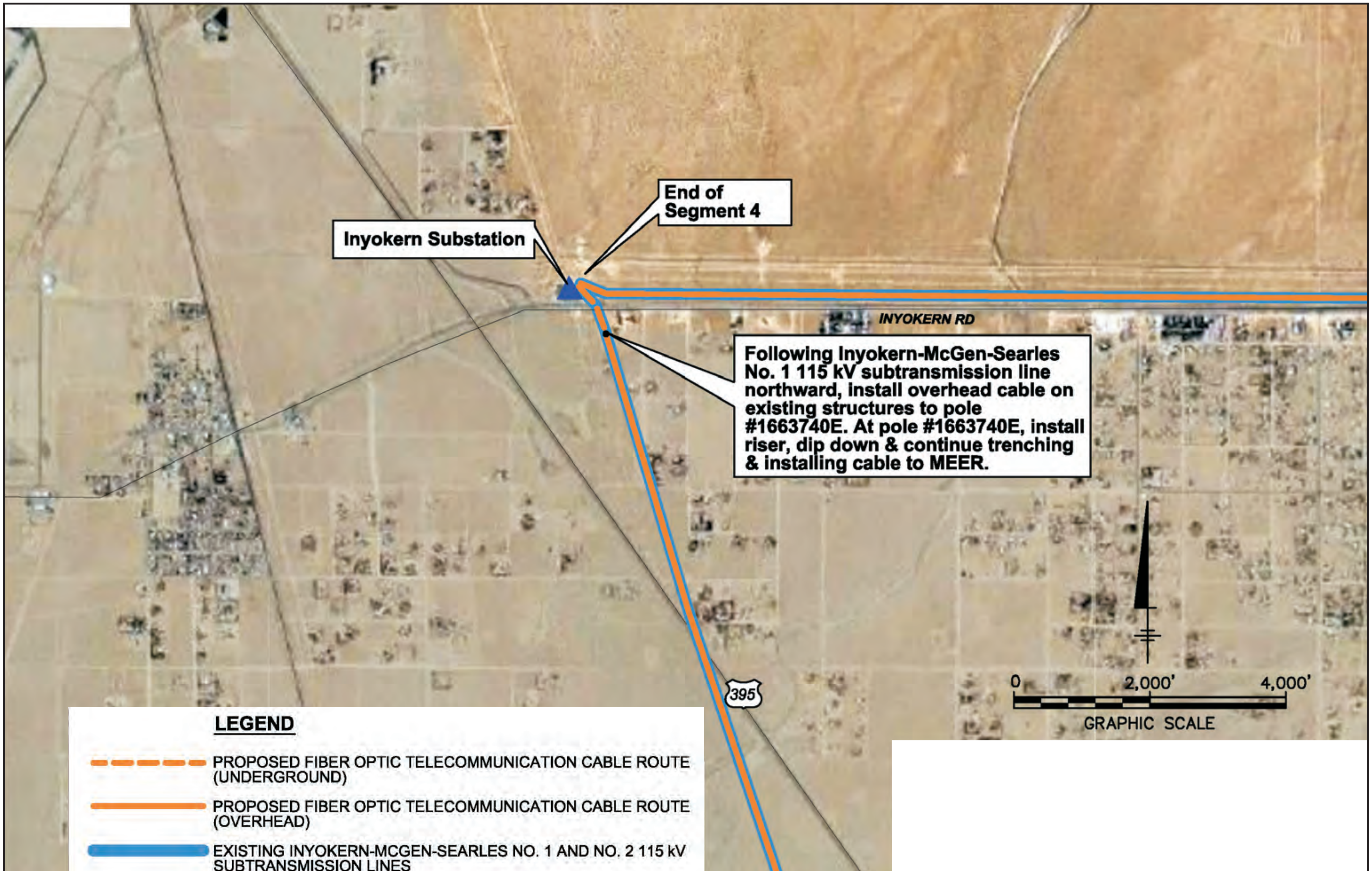
Source: SCE, 2010.

Figure B.1-16

Proposed Fiber Optic Telecommunication Cable Route - Segment 4 (Continued Southern Part)



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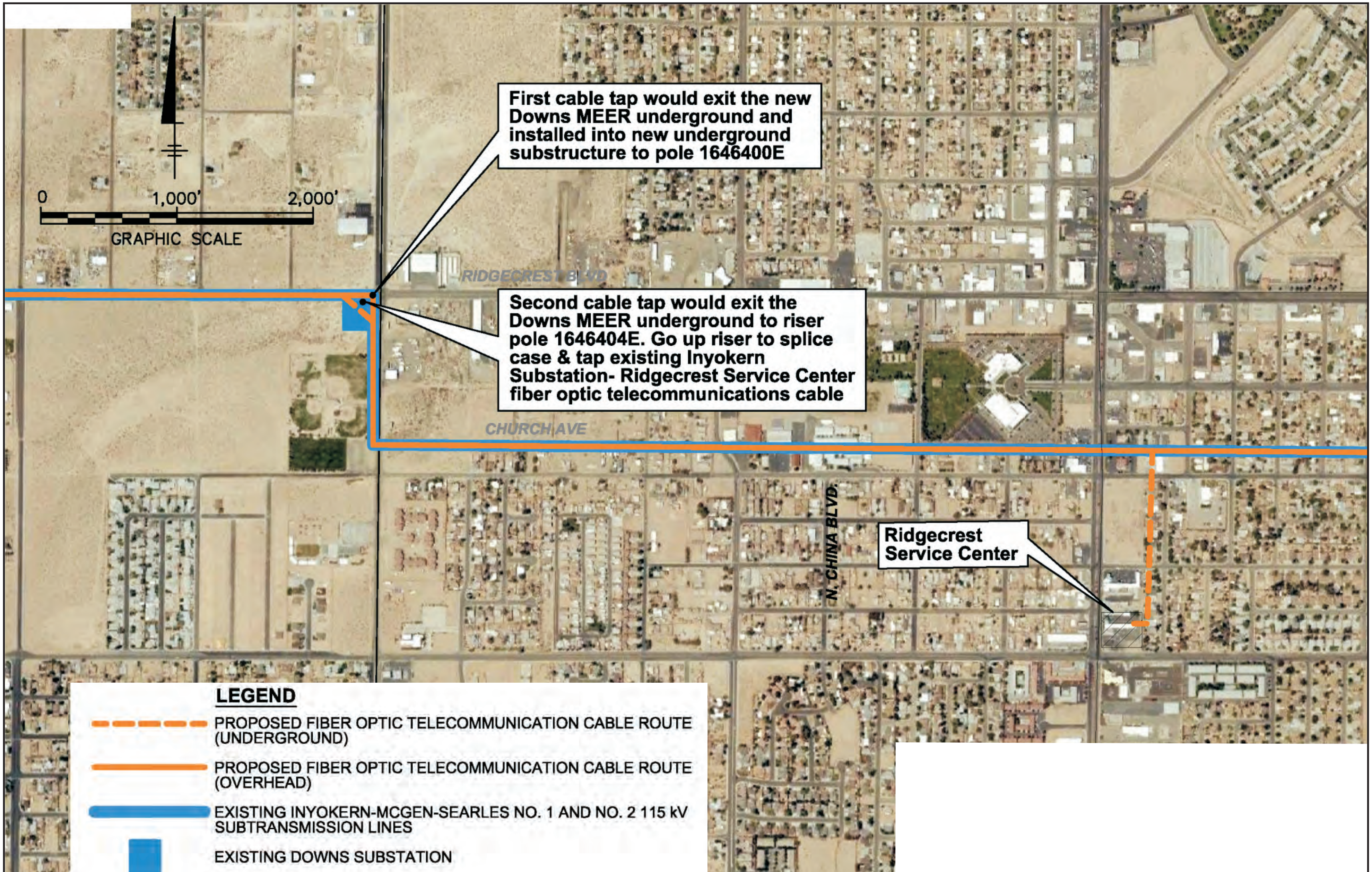
Source: SCE, 2010.

Figure B.1-17

Proposed Fiber Optic Telecommunication Cable Route - Segment 4 (Continued Northern Part)



Aspen Environmental Group

Source: SCE, 2010.

Figure B.1-18

Proposed Fiber Optic Telecommunication Cable Route - Segment 4 (End)

- Approximately 18 miles of new fiber optic telecommunication cable between Ridgecrest Service Center and Searles Substation. Portions of this cable would attach to the Inyokern-McGen- Searles No. 2 115-kV subtransmission pole line.
- Approximately 6 miles of new fiber optic telecommunication cable between Searles Substation and McGen Substation. Portions of this cable would attach to the Inyokern-McGen-Searles No. 2 115-kV subtransmission pole line.
- Approximately 5 miles of new fiber optic telecommunication cable between McGen Substation and Searles Substation. Portions of this cable would attach to the Inyokern-McGen-Searles No. 1 115-kV subtransmission pole line.
- Approximately 29 miles of new fiber optic telecommunication cable between Searles Substation and Inyokern Substation. Portions of this cable would attach to the Inyokern-McGen-Searles No. 1 115-kV subtransmission pole line.

The Proposed Project would use approximately 10 miles of existing fiber optic telecommunication cable between Inyokern Substation and Ridgecrest Substation. This fiber optic telecommunication cable would provide connectivity and telecommunication services to the proposed Downs Substation expansion. It is anticipated that two fiber optic telecommunication cable taps would be made from the proposed Downs Substation MEER to the ISRSC fiber optic telecommunication cable. The fiber optic telecommunication cable would enter into the Downs Substation and the Downs Substation MEER through the use of risers attached to poles and underground conduit.

Fiber Optic Telecommunication Equipment

New fiber optic terminal equipment, channel multiplexing equipment, equipment cabling, and other telecommunication equipment devices would be installed within the proposed Downs Substation MEER, Searles Substation MEER, McGen Substation MEER, and Inyokern Substation telecommunications room. Upgrading the optical terminal equipment at the Ridgecrest Service Center telecommunication room would allow for the increased distance incurred by the additional fiber optic telecommunication cable to Searles Substation. This work would provide the required telecommunication circuit connection to subtransmission and substation equipment.

B.1.11 Project Construction

Proposed Project construction would include activities associated with the following:

- Land surveying,
- Replacement of existing poles,
- Installation of new subtransmission poles,
- Transfer of existing distribution facilities from the existing poles to the new subtransmission poles,
- Substation construction,
- Telecommunications installation,
- Establishment of staging yards, and
- Development of access roads.

SCE anticipates that Proposed Project construction would take approximately nine months. Construction would commence following CPUC approval, final engineering, and procurement activities. Construction is anticipated to commence after a decision is issued by the CPUC. In order to meet the June 2014 operating date, construction would be required to start in August 2013 and would last through May 2014.

The following subsections describe the construction activities associated with the Proposed Project.

B.1.11.1 All Components

Dust Control

Water trucks and other Best Available Control Measures would be used to minimize the quantity of fugitive dust created by construction, per the Eastern Kern Air Pollution Control District (EKAPCD) Rule 402, Fugitive Dust and the Mojave Desert Air Quality Management District's Rule 403.1, Fugitive Dust Control for the Searles Valley Planning Area. Water use for dust control would vary depending on weather conditions and the specific construction activities occurring at that particular time. During the period when grading is occurring, approximately 5,000 gallons of water per day would be used at the Downs Substation site for dust control. Grading is anticipated to occur over a 25 day period. Once grading is completed, the daily water use for dust control would be approximately 1,000 gallons per day for an additional 50 days.

Water for dust control would be obtained by an SCE contractor from the Indian Wells Valley Water District, most likely from a metered connection (i.e., a hydrant) located within a 1/2 mile from the Downs Substation. The construction contractor would likely use a water truck with 5,000 gallon capacity tank to carry the water from the metered connection to the Downs Substation site.

Traffic Control

Traffic control measures may be required for construction activities conducted within public streets. Any potential lane closures required for construction of the Proposed Project would be consistent with local ordinances.

Construction Hours

Construction efforts for the Proposed Project would occur in accordance with Kern County Municipal Code Section 8.36.020 (Prohibited Sounds) and would generally occur between the hours of 6:00 a.m. and 9:00 p.m. on weekdays. Construction activities would generally adhere to the noise ordinance of the local jurisdiction. In the event construction activities are necessary on days or hours outside of what is specified by ordinance (for example, if existing lines must be taken out of service for the work to be performed safely and the line outage must be taken at night for system reliability reasons), SCE would obtain variances as necessary from appropriate jurisdictions where the work would take place.

Post-Construction Cleanup

All areas that are temporarily disturbed by Proposed Project activities would be restored, to the extent feasible, by SCE, once construction is complete. Restoration areas could be inclusive of, but not limited to, some access roads, staging yards and staging areas, pull, tension and splicing sites, and pull box locations. Activities associated with restoration of these areas would include restoring original contours and reseeding (with native seed mix). All construction materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws. Soil would be disposed of at one of the following facilities:

- Tehachapi Sanitary Landfill, 12001 Tehachapi Boulevard, Tehachapi, CA 93561
- Ridgecrest-Inyokern Sanitary Landfill, WDR Class III 15-AA-0059, 3301 Bowman Road, Ridgecrest, CA 93555

Construction Equipment and Personnel

The estimated elements, materials and number of personnel and equipment required for construction of the Proposed Project are summarized below in Table B.1-1.

Construction would be performed by either SCE construction crews or contractors. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a total of approximately 15 to 25 construction personnel working on any given day and crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon local jurisdiction permitting, material availability, and construction scheduling.

Table B.1-1. Construction Equipment and Workforce Estimates by Activity

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Work-force	Estimated Schedule (Days)	Duration of Use (Hours/Day)	Estimated Production Per Day
Survey (1)				4	2		2 Miles
1-Ton Truck, 4x4	300	Gas	2		2	8	1 Mile/Day
Temporary Equipment & Material Staging Area (2)				4			
1-Ton Truck, 4x4	300	Gas	1		Duration of Project	2	
Boom/Crane Truck	350	Diesel	1			4	
Water Truck	300	Diesel	1			8	
R/T Forklift	125	Diesel	1			6	
Truck, Semi, Tractor	400	Diesel	1			2	
Roads & Landing Work (3)				5	3		0.2 Mile & 14 Pads
1-Ton Truck, 4x4	300	Gas	1		3	2	1 Mile/Day & 7 Pads/Day
Motor Grader	250	Diesel	1		2	4	
Water Truck	300	Diesel	1		3	8	
Backhoe/Front Loader	125	Diesel	1		3	6	
Drum Type Compactor	100	Diesel	1		2	4	
Track Type Dozer	150	Diesel	1		2	4	
Lowboy Truck/Trailer	450	Diesel	1		3	2	
Guard Structure Installation (4)				6	2		6 Structures
3/4-Ton Truck, 4x4	275	Gas	1		2	4	4 Structures/ Day
1-Ton Truck, 4x4	300	Gas	1		2	4	
Compressor Trailer	60	Diesel	1		2	6	
Manlift/Bucket Truck	250	Diesel	1		2	6	
Boom/Crane Truck	350	Diesel	1		2	8	
Auger Truck	210	Diesel	1		2	4	
Extendable Flat Bed Pole Truck	400	Diesel	1		2	8	
Remove Existing Conductor (5)				14	1		0.1 Circuit Mile
1-Ton Truck, 4x4	300	Gas	2		1	8	0.3 Mile/Day
Manlift/Bucket Truck	250	Diesel	2		1	8	
Boom/Crane Truck	350	Diesel	2		1	6	

Table B.1-1. Construction Equipment and Workforce Estimates by Activity

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Work-force	Estimated Schedule (Days)	Duration of Use (Hours/Day)	Estimated Production Per Day
Bull Wheel Puller	350	Diesel	1		1	6	
Static Truck/ Tensioner	350	Diesel	1		1	6	
Lowboy Truck/ Trailer	450	Diesel	2		1	4	
Wood Pole Removal / Top-Off (6)				6	2		11 Poles
1-Ton Crew Cab, 4x4	300	Gas	2		2	5	8 Poles/Day
Boom/Crane Truck	350	Diesel	1		2	4	
Manlift/Bucket Truck	250	Diesel	1		2	6	
Compressor Trailer	60	Diesel	1		2	6	
Flat Bed Pole Truck	400	Diesel	1		2	8	
Light Weight Steel / Wood Pole Haul (7)				4	2		2 LWS & 7 Wood Poles
1-Ton Truck, 4x4	300	Gas	1		2	4	6 Poles/Day
Boom/Crane Truck	350	Diesel	1		2	6	
Flat Bed Pole Truck	400	Diesel	1		2	8	
Light Weight Steel / Wood Pole Assembly (8)				8	3		2 LWS & 7 Wood Poles
3/4-Ton Truck, 4x4	275	Gas	2		3	4	4 Poles/Day
1-Ton Truck, 4x4	300	Gas	2		3	4	
Compressor Trailer	60	Diesel	1		3	8	
Boom/Crane Truck	350	Diesel	1		3	6	
Light Weight Steel / Wood Pole Erection (9)				8	3		2 LWS & 7 Wood Poles
3/4-Ton Truck, 4x4	275	Gas	2		3	4	4 Poles/Day
1-Ton Truck, 4x4	300	Gas	2		3	4	
Compressor Trailer	60	Diesel	1		3	8	
Boom/Crane Truck	350	Diesel	1		3	6	
Install Tubular Steel Pole Foundations (10)				7	10		5 TSPs
3/4-Ton Truck, 4x4	275	Gas	2		10	4	0.5 TSP/Day
Boom/Crane Truck	350	Diesel	1		10	5	
Backhoe/Front Loader	125	Diesel	1		10	6	
Auger Truck	210	Diesel	1		6	6	
Water Truck	300	Diesel	1		10	8	
Dump Truck	350	Diesel	1		10	6	
Concrete Truck	350	Diesel	3		6	3	
Tubular Steel Pole Haul (11)				4	2		5 TSPs
3/4-Ton Truck, 4x4	275	Gas	2		2	4	3 TSPs/Day
Boom/Crane Truck	350	Diesel	1		2	6	
Flat Bed Pole Truck	400	Diesel	1		2	8	
Tubular Steel Pole Assembly (12)				8	5		5 TSPs
3/4-Ton Truck, 4x4	275	Gas	2		5	4	1 TSP/Day
1-Ton Truck, 4x4	300	Gas	2		5	4	
Compressor Trailer	60	Diesel	1		5	8	
Boom/Crane Truck	350	Diesel	1		5	6	

Table B.1-1. Construction Equipment and Workforce Estimates by Activity

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Work-force	Estimated Schedule (Days)	Duration of Use (Hours/Day)	Estimated Production Per Day
Tubular Steel Pole Erection (13)				8	5		5 TSPs
3/4-Ton Truck, 4x4	275	Gas	2		5	4	1 TSP/Day
1-Ton Truck, 4x4	300	Gas	2		5	4	
Compressor Trailer	60	Diesel	1		5	6	
Boom/Crane Truck	350	Diesel	1		5	8	
Install Conductor (14)				20	2		0.2 Circuit Miles
1-Ton Truck, 4x4	300	Gas	2		2	8	0.10 Mile/Day
Wire Truck/Trailer	350	Diesel	2		2	2	
Dump Truck	350	Diesel	1		2	2	
Manlift/Bucket Truck	250	Diesel	4		2	2	
Boom/Crane Truck	350	Diesel	1		2	6	
Sock Line Puller	300	Diesel	1		2	6	
Bull Wheel Puller	350	Diesel	1		2	6	
Static Truck/ Tensioner	350	Diesel	1		2	6	
Backhoe/Front Loader	125	Diesel	1		2	2	
Lowboy Truck/Trailer	450	Diesel	2		2	2	
Guard Structure Removal (15)				6	1		6 Structures
3/4-Ton Truck, 4x4	275	Gas	1		1	4	6 Structures/ Day
1-Ton Truck, 4x4	300	Gas	1		1	4	
Compressor Trailer	60	Diesel	1		1	6	
Manlift/Bucket Truck	250	Diesel	1		1	8	
Boom/Crane Truck	350	Diesel	1		1	8	
Extendable Flat Bed Pole Truck	400	Diesel	1		1	8	
Restoration (16)				7	2		1 Mile
1-Ton Truck, 4x4	300	Gas	2		2	2	0.5 Mile/Day
Motor Grader	250	Diesel	1		2	6	
Water Truck	300	Diesel	1		2	8	
Backhoe/Front Loader	125	Diesel	1		2	6	
Drum Type Compactor	100	Diesel	1		2	6	
Lowboy Truck/Trailer	450	Diesel	1		2	3	

<u>Crew Size Assumptions:</u>

#1 Survey = one 4-man crew	#10 LWS/Wood Pole Erection = one 8-man crew
#2 Staging Yards = one 4-man crew	#11 Install Foundations for Tubular Steel Poles = one 7-man crew
#3 Roads & Landing Work = one 5-man crew	#12 Tubular Steel Pole Haul = one 4-man crew
#4 Guard Structure Installation = one 6-man crew	#13 Tubular Steel Pole Assembly = one 8-man crew
#5 Remove Existing Conductor = one 14-man crew	#14 Tubular Steel Pole Erection = one 8-man crew

#6 Remove Existing LSTs = one 8-man crew	#15 Conductor Installation = one 20-man crew
#7 Remove Existing LST Foundations = one 4-man crew	#16 Guard Structure Removal = one 6-man crew
#8 LWS/Wood Pole Haul = one 4-man crew	#17 Restoration = one 7-man crew
#9 LWS/Wood Pole Assembly = one 8-man crew	

B.1.11.2 Downs Substation Construction

Temporary Staging Yards

Proposed Project construction would require the establishment of temporary staging yards (Figure B.1-19). A portion of the SCE-owned property adjacent to the existing Downs Substation is anticipated to be used as a staging yard for the expansion of Downs Substation and 115-kV subtransmission line construction activities at or near Downs Substation (Figure B.1-5). Additionally, SCE anticipates using the Ridgecrest Service Center or a portion of the SCE-owned property adjacent to the existing Downs Substation as a staging yard for the subtransmission poles that would need to be replaced in connection with the telecommunications construction activities.

Each staging yard could be used as the following:

- Reporting location for workers,
- Vehicle and equipment parking (200 feet by 65 feet at Downs Substation; 100 feet by 25 feet at Ridgecrest Service Center);
- Material storage;
- Location for construction trailers for supervisory and clerical personnel; and
- Maintenance and refueling of construction equipment.

Preparation of the Downs Substation staging yard may, depending on existing ground conditions at the yard site, include grading of the area prior to use. SCE grading and staging yard use would comply with appropriate dust control measures imposed by the EKAPCD. Temporary perimeter fencing would be installed for security and theft control purposes.

The staging yards would store the following construction materials:

- Construction trailers;
- Portable sanitation facilities;
- Electrical equipment such as circuit breakers, disconnect switches, lightning arresters, transformers, capacitor banks, reactor banks, vacuum switches, conduit, grounding, insulators, conductor, cable reels, pull boxes, line hardware, steel/wood poles, conductor reels, ground wire reels, insulators, and cross arms;
- Steel beams;
- Rebar;
- Foundation cages;
- Signage;
- Consumables (such as fuel and filler compound);
- Waste materials for salvaging, recycling, or disposal; and
- Best Management Practices (BMP) materials (straw wattles, gravel, and silt fences).

Aspen Environmental Group

Source: SCE, 2010.

Figure B.1-19
Temporary Staging Yard Locations

A majority of materials associated with the construction efforts would be delivered by truck to a staging yard, while some materials may be delivered directly to the lay down area. Activities would be scheduled in accordance with the city of Ridgecrest Municipal Code. SCE would obtain variances as needed.

Storm Water Pollution Prevention Plan

Proposed Project construction would disturb a surface area greater than one acre, therefore SCE would be required to obtain a Construction General Permit-2009-0009-DWQ (2009 CGP) from the State Water Resources Control Board. To acquire this permit, SCE would comply with the requirements of the 2009 CGP, including preparation of a SWPPP inclusive of Proposed Project information, design features, and monitoring and reporting procedures. The SWPPP would be based on final engineering design and would include all Proposed Project components.

Site Preparation and Grading

The proposed Downs Substation expansion location would be prepared by clearing existing vegetation within the boundaries of the proposed Downs Substation expansion footprint. Once vegetation clearance is completed, the location would be graded in accordance with approved grading plans. A chain link fence would be installed around the proposed Downs Substation expansion perimeter. As previously discussed, the proposed Downs Substation expansion location would serve as a staging yard for construction activities and would have a construction trailer, security guard trailer, construction equipment, and electrical equipment located thereon.

Below-Grade Construction

Below-grade facilities would be installed after the proposed Downs Substation expansion location is graded. Below-grade facilities include a ground grid, cable trenches, equipment foundations, conduits, duct banks, utilities, footings for the perimeter fence, and an uncovered detention basin. The design of the ground grid would be based on soil resistivity measurements collected during the geotechnical investigation. Excavations would generally be no deeper than 3 feet, with the exception of the foundation for the 115-kV deadend racks (which would require an excavation of approximately 20 feet), and the uncovered detention basin (which would require an excavation of approximately 6 feet).

Above-Grade Construction

Above-grade installation of proposed Downs Substation expansion facilities would generally commence after the below-grade structures are in place. Above-grade facilities include buses, capacitors, switchracks, disconnect switches, circuit breakers, transformers, steel support structures, perimeter fence, restroom facilities, and the Downs Substation MEER.

Access to the Substation Location

A new access gate located in the existing substation's northern fence line to Ridgecrest Boulevard would be installed to provide access to the proposed Downs Substation expansion location for both construction and operations (Figures B.1-5 and B.1-6). SCE would construct an access road 24 feet in width, with a 2-foot wide shoulder on each side. Construction of the access road would require the compaction of the sub-soil and placing a six-inch thick layer of compacted aggregate road-base. In order to accomplish the above road improvements, an average width of 30 feet of land disturbance has been assumed, including allowances for side slopes and surface runoff control, resulting in a total land disturbance of approximately 0.2 acre.

B.1.11.3 Overhead 115-kV Subtransmission Line Construction

Survey

Construction activities would begin with the survey of the 115-kV subtransmission line segments. The survey crew would stake the pole locations, including reference points and centerline hubs. The survey crew would include the limits of the grading for pole excavations.

Access Roads

Transmission line roads are classified into two groups: access roads and spur roads. Access roads are through roads that run between structure sites along a ROW and serve as the main transportation route along the transmission line ROW. Spur roads branch from access roads and terminate at one or more structure sites.

The 115-kV subtransmission line portion of the Proposed Project involves construction within existing 115-kV subtransmission line easement areas, public road ROWs (franchise areas[6]), and BLM grant areas (collectively, "ROW"). The Proposed Project would use existing public roads and existing transmission line roads as much as possible during construction. SCE currently possesses three ROW Grants (CALA-0131328, CALA-096498, and CACA-16918) that cover all access roads located on BLM lands. In June 2010, SCE filed two separate Applications for Transportation and Utility Systems and Facilities on Federal Lands (referred to as an SF-299 application) with BLM in which SCE requested authorization to consolidate the existing the ROW grants into a single grant and to amend the grants to allow the addition of fiber optic telecommunication cables to the existing 115-kV subtransmission poles, and replacement of an existing wood pole (the other five poles are located on private land) on the 115-kV subtransmission route. BLM determined the addition of the fiber optic cable does not constitute a substantial deviation because the project would not be changing the use or location of the authorized ROW (BLM, 2011). The criteria for substantial deviation as defined by 43 CFR 2807.20(a), states that "you must amend your application or seek amendment of your grant when there is a proposed substantial deviation in location or use." SCE is not meeting this definition for the proposed project; therefore, an amendment is not required (BLM, 2011). BLM noted that SCE will request a Notice to Proceed and must provide the following documentation to the Ridgecrest Field Office prior to proceeding with construction: (1) A clearance document from California Fish and Game for the Mohave Ground Squirrel, and (2) An Encroachment permit from CalTrans for the pole located on public lands (BLM, 2011).

Additionally, portions of the 115-kV subtransmission line route cross CLNAWS. Although such portions of the route are authorized by SCE's current ROW Grants, SCE is required to obtain approval from the Department of the Navy to install fiber optic telecommunication cable on those portions of the Inyokern-McGen-Searles No. 1 and No. 2 115 kV subtransmission lines that are on CLNAWS. As discussed in more detail in Section B.3.10 (Land Use and Planning), SCE has initiated communications with the Department of the Navy to request authorization for this purpose.

New access roads would be required by portions of the new 115-kV subtransmission line segments; currently, the only new access roads planned would be located near the Downs Substation. Approximately 1,000 feet of new access road would need to be constructed adjacent to the new 115-kV subtransmission line segments, resulting in a disturbance of approximately 0.4 acre. No new access

[6] A franchise is a grant to permit public and private utilities to use and occupy the right-of-way of public roads for the construction and maintenance of public and private utilities.

roads are planned for the telecommunication portion of the Proposed Project. Similar to road maintenance of existing roads, construction activities for new access roads include the following:

- New road alignments would be cleared and grubbed of vegetation and then blade-graded to remove potholes, ruts, and other surface irregularities. Fill material would be deposited, where necessary, and roads would be re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment;
- Roads would be a minimum of 14 feet in width, with 2 feet of shoulder on each side, but roads may be wider depending on final engineering; and
- Road gradients would be leveled so that any sustained grade does not exceed 12 percent. All curves would have a curvature radius of not less than 50 feet measured at the center line of the usable road surface. Roads typically would have turnaround areas near the structure locations.

After grading the access roads, any excess excavated material would be properly disposed of off site in accordance with all applicable laws.

Light-Weight Steel Pole Installation

LWS poles would be installed in native soil and pole holes would be drilled to individual pole specifications as required. A backhoe may be utilized to dig the pole holes as well, depending on site-specific conditions. Once the LWS poles are set in place, bore spoils (material from holes drilled) would be used to backfill the holes. If the bore spoils are not suitable for backfill, imported fill material, such as clean fill dirt or crushed rock, would be used. The specific source location for import fill will be selected by SCE's construction contractor in a nearby location to minimize transportation costs. There are several potential locations within a 25-mile radius, including (1) other sites within Ridgecrest, (2) Trona, and (3) Inyokern.

Excess bore spoils would be distributed at each pole site, used as backfill for the holes left after removal of nearby poles (if any), or disposed of off site in accordance with all applicable laws.

LWS poles consist of separate base and top sections. Steel pole installation consists of hauling the pole sections from a staging yard to the structure site using semi-trucks with 40-foot trailers. Where feasible, a line truck would unload the individual steel pole sections on the ground in the temporary laydown area at each pole location. The typical laydown area for LWS poles would be approximately 150 feet by 75 feet (0.26 acre). While on the ground, the top section could be configured with the necessary cross arms, insulators, and wire-stringing hardware before being set in place.

A line truck with an attached boom would be used to set LWS poles into previously prepared holes. When the base section is secured, the top section would be placed above the base section and the two sections would be slip joined together. The two sections may also be spot welded together for additional stability. The pole sections could also be assembled into a complete structure and then set by jacking both sections together while on the ground, but this would depend largely on the terrain and available equipment.

Wood Pole Installation

Approximately six existing 115-kV subtransmission line wood poles of various pole head configurations that range between 58 to 70 feet above grade would need to be replaced by SCE. SCE would install approximately six new poles of various head configurations that would be direct-buried to a depth of approximately 8 to 10 feet below grade and that range between 65 to 70 feet above ground on the existing Inyokern-McGen-Searles No. 1 115-kV subtransmission line as required to support the new fiber optic telecommunication cable where the existing wood poles do not meet CPUC General Order 95 wind loading requirements and/or SCE design standards. Additionally, two wood stub poles (one new and one replaced) and associated guying and anchors would be required.

Each wood pole would require a hole to be excavated using either an auger, backhoe, or hand digging. The wood poles would be placed in temporary laydown areas at each pole location. While on the ground, the wood poles may be configured (if not preconfigured) with the necessary cross arms, insulators, and wire-stringing hardware before being set in place. The wood poles would then be installed in the holes, typically by a line truck with an attached boom. The excavated material would be distributed at each structure site, used to backfill excavations from the removal of nearby structures (if any), or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with all applicable laws.

Tubular Steel Pole Installation

The installation of TSPs would be required by the Proposed Project and would be performed in two phases: foundation installation and structure assembly/erection. Each TSP location would require a temporary laydown area that could be cleared and/or graded to provide a reasonably level surface free of vegetation for footing construction, assembly, and erection of the TSPs. The typical laydown area for TSPs would be approximately 200 feet by 100 feet (0.46 acre). If the existing terrain around the structure is not suitable to support crane activities, a temporary crane pad measuring 50 feet by 50 feet (0.06 acre) would be constructed within the laydown area.

Each TSP would require a single drilled, poured-in-place, concrete footing that would form the structure foundation. The foundation process starts with drilling the hole for each structure. The holes would be drilled using truck or track-mounted excavators with various diameter augers to match the diameter requirements of the structure. Based on preliminary engineering, TSPs would require an excavated hole approximately 2 to 6 feet in diameter and approximately 20 to 30 feet deep. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at each site, and would be determined during final engineering. The excavated material would be distributed at each structure site, used to backfill excavations from the removal of nearby structures (if any), or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with all applicable laws.

Following excavation of the foundation footing, a steel reinforced rebar cage would be set, anchor bolts would be positioned and survey verified, and concrete would then be poured. Steel reinforced rebar cages would be assembled off site and delivered to each structure location by flatbed truck. Typically, TSP structures would require approximately 25 to 40 cubic yards of concrete delivered to each structure location. TSP footings could project approximately 0 to 3 feet above ground level.

Foundations in soft or loose soil that extend below the groundwater level may be stabilized with drilling mud slurry, a commercially-available product. Mud slurry would be placed in the hole after drilling to prevent the sidewalls from sloughing. The concrete for the foundation would then be pumped to the bottom of the hole, displacing the mud slurry. During this process, no groundwater would come to the surface; therefore, no de-watering of the hole would be necessary. The mud slurry brought to the surface would be collected in a Baker tank and stored for re-use for the same purpose or transported to an off-site disposal facility in accordance with all applicable laws. Mud slurry is non-hazardous and bio-degradable. Mud slurry would not be used if groundwater is not encountered. Groundwater levels will be determined during final engineering. If no groundwater is present, caissons or corrugated pipe would be inserted into the hole where loose soils are a factor to keep the hole from caving or sloughing.

Concrete would be obtained from area vendors (mixing would not occur on location) during construction. Concrete samples would be drawn at time of pour and tested to ensure engineered strengths were achieved. A normally specified SCE concrete mix typically takes approximately 20 working days to cure to an engineered strength. This strength is verified by controlled testing of sampled concrete. Once this strength has been achieved, crews would be permitted to commence erecting the structure.

TSPs consist of separate base and top sections; depending on the height of the TSP, the base and top sections may be fully assembled by the manufacturer prior to shipment to SCE, or the base and top sections may be shipped in sections. TSP installation consists of hauling the assembled pole or pole sections from a staging yard to the structure location using semi-trucks with trailers. Where feasible, a crane would unload the individual pole sections or the assembled pole on the ground within the designated laydown area. While on the ground, the assembled pole or the top section of the pole (if there are separate base and top sections) would be configured with the necessary cross arms, insulators, and wire-stringing hardware before being set in place.

A crane would be set up approximately 60 feet from the centerline of each structure. From that location, the crane would be utilized to set each base section or assembled pole on top of previously prepared foundations. If separate base and top sections are utilized, the top section of the TSP would be set into place onto the secured base section and the two sections would be welded together.

After construction is completed, the TSP site would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could damage the structure footing. The graded area would be compacted and capable of supporting heavy vehicular traffic.

Conductor/Wire Stringing

Wire-stringing activities would be conducted in accordance with SCE specifications that are similar to process methods detailed in Institute of Electrical and Electronics Engineers (IEEE) Standard 524-2003, Guide to the Installation of Overhead Transmission Line Conductors.

To ensure the safety of workers and the public, safety devices such as traveling grounds , guard structures (as defined below), and radio-equipped public safety vehicles or linemen would be in place prior to the initiation of wire-stringing activities. Advanced planning by supervision is required to determine circuit outages, pulling times, and safety protocols to ensure that the wire installation is accomplished safely.

Wire-stringing includes all activities associated with the installation of the primary conductors onto subtransmission structures. These activities typically include the installation of conductor, shield wire (OHGW or OPGW), vibration dampers, weights, and suspension and dead-end hardware assemblies for the entire length of the proposed 115 kV subtransmission route. Insulators and stringing sheaves (rollers or travelers) are also attached as part of the wire-stringing activities.

The puller, tensioner, and splicing set-up locations associated with the Proposed Project would be temporary, and the land would be restored to its previous condition, to the extent feasible, following completion of pulling and splicing activities. The set-up locations require level areas to allow for maneuvering of the equipment and, when possible, these locations would be located on existing roads and level areas to minimize the need for grading and cleanup. The number and location of these sites would be determined during final engineering. The approximate area needed for stringing set-ups associated with wire installation is variable and depends upon terrain. The preferred set-up areas are 400 feet by 100 feet (0.92 acre) for tensioning equipment, 300 feet by 100 feet (0.69 acre) for pulling equipment, and 150 feet by 100 feet (0.34 acre) for splicing equipment. However, crews can work from within smaller areas when space is limited.

Wire pulls are the length of any given continuous wire installation process between two selected points along the line. Wire pulls are selected based on availability of dead-end structures, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment set-up locations. On relatively straight alignments, typical wire pulls occur approximately every 6,000 to 8,000 feet in flat terrain. When the alignment contains multiple deflections or is situated in rugged terrain, the length of the wire pull is diminished. Generally, pulling locations and equipment set-ups would be in direct line with the direction of the overhead conductors and established approximately a distance of three times the height away from the adjacent structure.

Each stringing operation consists of a puller set-up positioned at one end and a tensioner set-up with wire reel stand truck positioned at the opposite end of the wire pull.

The following five steps describe the wire installation activities proposed by SCE:

Step 1. Develop a wire-stringing plan to determine the sequence of wire pulls and the set-up locations for the wire pull/tensioning/splicing equipment.

Step 2. Sock Line Threading: A bucket truck would be used to install a lightweight sock line from structure to structure. The sock line would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for the wire pull.

Step 3. Pulling: The sock line would be used to pull in the conductor pulling cable. The conductor pulling cable would be attached to the conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel.

Step 4. Sagging and Dead-ending: After the conductor is pulled in, if necessary, all midspan splicing would be performed. Once the splicing has been completed, the conductor would be sagged to proper tension and dead-ended to structures.

Step 5. Clipping-in: After the conductor is dead-ended, the conductors would be secured to all tangent structures (a process called clipping-in).

Guard Structures

Guard structures are temporary facilities that would typically be installed at transportation, flood control, and utility crossings for wire stringing activities. These structures are designed to stop the movement of a conductor should it momentarily drop below a conventional stringing height. Typical guard structures are standard wood poles, 40 to 60 feet tall. Depending on the overall width of the conductors being installed, two to four guard poles would be required on either side of a crossing. Temporary netting could also be installed to protect some types of under-built infrastructure. The guard structures are removed after the conductor is secured into place. In some cases, the wood poles may be substituted with the use of specifically equipped boom trucks staged to prevent the conductor from dropping.

SCE estimates approximately six guard structures would need to be constructed along the proposed route. For highway, railroad, and open channel aqueduct crossings, SCE would work closely with the applicable jurisdiction to secure the necessary permits to string conductor over the applicable infrastructure.

Energizing of the 115-kV Subtransmission Lines and Top/Removal of Existing Poles

In order to connect the new 115-kV subtransmission line segments to the proposed Downs Substation expansion location, the existing Inyokern-McGen-Searles No. 2 115-kV subtransmission line would be de-energized, as required. Once the transfer of existing 115-kV subtransmission lines to the new structures is complete, the 115-kV subtransmission lines would be returned to service (re-energized). Thereafter, the distribution lines and fiber optic telecommunication cable would be transferred to the new structures as well.

Approximately 1,000 feet of existing conductor, insulators, and line hardware would be removed from the existing wood poles at the Downs Substation along Ridgecrest Boulevard and Downs Road, after the cutover (energizing of the new line segments) of the new Downs-McGen-Searles 115-kV subtransmission line and the new Downs-Inyokern 115-kV subtransmission line. Thereafter, these existing wood poles would remain in place, but would be topped (cut) above the distribution lines.

The existing poles that are not topped would be completely removed, after the transfer of existing 115-kV subtransmission lines, distribution lines, and fiber optic telecommunication cable to the new structures. Structure footings, if any, would be removed to a depth of approximately two feet below ground level. Holes would be backfilled, compacted, and the area would be smoothed to match surrounding grade. Depending on their condition and original chemical treatment, any wood poles removed may be reused by SCE, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a Regional Water Quality Control Board (RWQCB)-certified municipal landfill.

A temporary laydown area adjacent to each existing structure being worked on would be required for equipment and material staging and would be approximately 150 feet by 75 feet (0.26 acre) in size. Each structure would require a line truck or rough terrain crane to support the structure during dismantling and removal. A temporary crane pad measuring 50 feet by 50 feet (0.06 acre) would be constructed within the laydown area, if the existing terrain is not suitable to support crane activities.

B.1.11.4 Fiber Optic Telecommunication System Construction

To meet the Proposed Project requirements for the 115-kV subtransmission line protection and substation, the following would be constructed:

- Supervisory Control And Data Acquisition (SCADA) communication, control, and monitoring; and
- Fiber optic telecommunications system connecting Downs Substation, Ridgecrest Service Center, Searles Substation, McGen Substation, and Inyokern Substation.

The following provides detail on the construction activities associated with this telecommunications system. SCE or contractor crews would install telecommunications equipment and construct the required fiber optic telecommunication cable.

The following sections provide detail on the construction activities associated with the telecommunications improvements. SCE or contractor crews would use standard construction methods to install telecommunications equipment and construct the required fiber optic telecommunication cable. The crews would comply with all rules, regulations, standards, and agency requirements while in their performance of the construction phase.

The telecommunications facilities represented in this document and the proposed construction activities are based on the present Proposed Project requirements and planning level assumptions. Upon completion of preliminary and final engineering, identification of field conditions, verification of availability of materials and equipment, and compliance with applicable environmental and permitting requirements, the detail presented in the telecommunication sections may change as further details are developed and as the Proposed Project progresses.

Equipment Construction Activities

New fiber optic terminal equipment, channel multiplexing equipment, and other telecommunication equipment devices would be installed on equipment racks located within the Downs Substation MEER, Searles Substation MEER, McGen Substation MEER, and Inyokern Substation telecommunications room. Upgrading the existing optical terminal equipment at the Ridgecrest Service Center telecommunication room would be required. The new telecommunication equipment installation and the attachment of the proposed new fiber optic telecommunication cable would allow the configuration of new optical cable lightwave system connecting the above locations. Telecommunication circuits for line protection, SCADA, communication, control, and monitoring would be configured and wired to the appropriate transmission/substation relays or equipment.

Equipment installation activities would be performed by SCE technicians and/or contractors. All work would occur within existing or proposed substations or buildings. Anticipated telecommunication construction personnel and equipment are summarized below in Table B.1-2.

Fiber Optic Telecommunication Cable Route

The approximately 58-mile long fiber optic telecommunication line would be constructed in segments, as illustrated on Figures B.1-12 through B.1-18.

Segment 1, approximately 18 miles in length, is located between Ridgecrest Service Center and Searles Substation. This segment would be constructed as follows:

> At the Ridgecrest Service Center telecommunications room, proceed east, trenching approximately 20 feet and installing new underground substructure. Fiber optic telecommunication cable would then be installed through the new underground substructure. Proceeding north, the trenching and installation of the underground substructure and telecommunication cable would continue for approximately 145 feet to Upjohn Avenue. Thereafter, the work would proceed east, approximately 80 feet to Lenore Street. From Lenore Street, the work would proceed north, approximately 1,335 feet to East Church Avenue. From East Church Avenue, the work would proceed east to pole No. 1646432E. At this point, a riser would be installed on pole No. 1646432E. The fiber optic telecommunication cable would be routed up through the riser, and then would be installed on existing overhead structures. The fiber optic telecommunication cable route then would follow the Inyokern-Searles-McGen No. 2 115 kV subtransmission pole line ROW eastward to pole No. 4100476E. At pole No. 4100476E, a riser would be installed, allowing the fiber optic telecommunication cable to route down into

the underground substructure that would be constructed, continuing northeast approximately 225 feet into the MEER at Searles Substation.

Segment 2, approximately six miles in length, is located between Searles Substation and McGen Substation. This segment would be constructed as follows:

At Searles Substation, starting at the MEER, proceed north, trenching approximately 200 feet and installing new underground substructures. Fiber optic telecommunication cable would then be installed through the new underground substructure. Proceeding west, the trenching and installation of the underground substructure and telecommunication cable would continue for approximately 200 feet to pole No. 4100473E. At this point, a riser would be installed on pole No. 4100473E. The fiber optic telecommunication cable would be routed up through the riser and then would be installed on existing overhead structures. The fiber optic telecommunication cable route then would follow the Inyokern-Searles-McGen No. 2 115-kV subtransmission pole line ROW northward to pole No. 4100352E. At pole No. 4100352E, a riser would be installed, allowing the fiber optic telecommunication cable to route down into the underground substructure that would be constructed. Proceeding northeast, the trenching and installation of the underground substructure and telecommunication cable would continue for approximately 375 feet to the McGen Substation property line. Trenching and installation of the underground substructure and telecommunication cable would continue northwest approximately 56 feet, then continue northeast for approximately 255 feet. The trenching and installation of the underground substructure and telecommunication cable would continue southeast for approximately 165 feet into the McGen Substation MEER.

Segment 3, approximately five miles in length, is located between McGen Substation and Searles Substation. This segment would be constructed as follows:

At McGen Substation, starting at the MEER, proceed west, trenching approximately 675 feet and installing new underground substructures. Fiber optic telecommunication cable would then be installed through the new underground substructure to pole No. 4100509E. At this point, a riser would be installed on pole No. 4100509E. The fiber optic telecommunication cable would be routed up through the riser, and then would be installed on existing overhead structures, and would follow the Inyokern-Searles-McGen No. 1 115-kV subtransmission pole line ROW southward to pole No. 4100501E. At pole No. 4100501E, a riser would be installed, allowing the fiber optic telecommunication cable to route down into the underground substructure that would be constructed. The trenching and installation of the underground substructure and telecommunication cable would continue westward for approximately 390 feet. The trenching and installation of the underground substructure and telecommunication cable would continue south approximately 50 feet into the Searles Substation MEER.

Segment 4, approximately 29 miles in length, is located between Searles Substation and Inyokern Substation. This segment would be constructed as follows:

At Searles Substation, starting at the MEER, proceed south, trenching approximately 85 feet and installing new underground substructures. Fiber optic telecommunication cable would then be installed through the new underground substructure. Proceeding east, the trenching and installation of the underground substructure and telecommunication cable would continue for approximately 395 feet to pole No. 4100503E. At this point, a riser would be installed on pole No. 4100503E. The fiber optic telecommunication cable would be routed up through the riser, and then would be installed on existing overhead structures, and would follow the Inyokern-

Searles-McGen No. 1 115-kV subtransmission pole line ROW westward to pole No. A1533036AE. At pole No. A1533036AE, the fiber optic telecommunication cable would be installed on existing overhead structures, and would follow the Inyokern-Searles-McGen No. 1 115-kV subtransmission pole line ROW northward to pole No. 1663740E. At pole No. 1663740E, a riser would be installed, allowing the fiber optic telecommunication cable to route down into the underground substructure that would be constructed. Proceeding northeast, the trenching and installation of the underground substructure and telecommunication cable would continue for approximately 1,000 feet, under Highway 178 and into the Inyokern Substation MEER.

The **existing ISRSC cable**, approximately 10 miles in length, would be tapped twice to effectively loop the fiber optic telecommunication cable through the new Downs Substation MEER, as follows:

The first cable tap would splice into the existing ISRSC fiber optic telecommunication cable at pole No. 1646400E. At pole No. 1646400E, a riser would be installed, allowing the fiber optic telecommunication cable to route down into the underground substructure that would be constructed. Proceeding southwest, trenching and installation of the underground substructure and telecommunication cable would continue for approximately 150 feet into Downs Substation and into the new Downs Substation MEER.

The second cable tap would exit the Downs Substation MEER through new and existing portions of the substation control cable trench. Proceeding east, the fiber optic telecommunication cable would be routed through the substation control cable trench for approximately 225 feet. Proceeding southeast, the fiber optic telecommunication cable would be routed through existing 1- to 5-inch diameter polyvinyl chloride (PVC) conduit for approximately 150 feet to pole No. 1646404E. At pole No. 1646404E, the fiber optic telecommunication cable would be routed through an existing riser and splice into the existing ISRSC fiber optic telecommunication cable.

Fiber Optic Telecommunication Cable Construction Activities

The proposed fiber optic telecommunication cable construction would utilize an All-Dielectric Self-Supporting (ADSS) 48 strand single mode fiber optic telecommunication cable. Approximately 58 miles of new fiber optic telecommunication cable would be installed. Portions of the fiber optic telecommunication cable would be constructed on existing overhead distribution and transmission wood and LWS poles. In addition, portions of the cable would be constructed on new overhead structures and newly constructed underground conduit system(s), subject to determination through final engineering.

The fiber optic telecommunication cable would be attached to existing overhead pole structures utilizing a five-foot wood cable arm and high-strength engineered dielectric suspension support block. This suspension support block is oriented vertically and attached to the cable arm. One support block per overhead structure would be required. For the installation in the new underground conduit and underground structures, the fiber optic telecommunication cable would utilize a high density polyethylene smooth wall inner-duct which provides protection and identification for the cable. The fiber optic telecommunication cable and inner-duct would be installed in and throughout the length of the new underground conduit structure within 5-inch diameter schedule 40 PVC. The underground conduit structures would be excavated by backhoe or by manually excavating a trench approximately 18 inches wide and 36 inches deep. The 5-inch diameter schedule 40 PVC conduit would be placed in the open trench, encased with slurry, covered with back-filled material, and then compacted.

The franchise area and existing transmission access roads would be utilized during construction of the fiber optic telecommunication cable. Lane closure permits within the franchise area would be obtained, as necessary, from the applicable local government jurisdictions. Construction activities requiring major street use would be scheduled in accordance with applicable local ordinances. For purposes of fiber optic telecommunication cable stringing, the existing and new overhead structures which do not have vehicle access would be approached by the construction crew on foot.

Fiber optic telecommunication cable stringing includes all activities associated with the installation of cables onto the overhead poles. This activity includes the installation of vibration dampers, and suspension and dead-end hardware assemblies. Stringing sheaves (rollers or travelers) are attached during the framing process. A standard wire stringing plan includes a sequenced program of events starting with determination of cable pulls and cable pulling equipment set-up positions. Advanced planning would be done by experienced crew foremen who would determine pulling locations, times, and safety protocols needed to ensure that the installation of fiber optic telecommunication cable is accomplished correctly. Typically, fiber optic telecommunication cable pulls occur every 6,000 feet to 10,000 feet on flat and mountainous terrain. Fiber optic telecommunication cable splices are required at the end and beginning of each cable pull.

A “fiber optic telecommunication cable pull” is the length of any given continuous cable installation process between two selected points along the overhead or underground structure line. Fiber optic telecommunication cable pulls are selected, where possible, based on availability of pulling equipment and designated dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of fiber optic telecommunication cable stringing and splicing equipment set ups. The dimensions of the area needed for stringing set ups varies depending upon the terrain. However, a typical stringing set up is 40 feet by 60 feet. Where necessary due to suitable space limitations, crews can work from within a substantially smaller area.

The proposed overhead fiber optic telecommunication cable construction method may be summarized using the following five steps:

Step 1. Develop a cable-stringing plan to determine the sequence of cable pulls and the set-up locations for the cable pull/tensioning/splicing equipment.

Step 2. A bucket truck would be used to install a five-foot cable arm and a high-strength engineered dielectric suspension support block to the overhead pole structure. At pole locations where it is not feasible to use a bucket truck, the construction crew would walk up and climb the pole.

Step 3. Threading. A bucket truck would be used to install a lightweight nylon rope line from structure to structure. At pole locations where it is not feasible to use a bucket truck, the construction crew would walk up and climb the pole. The nylon rope line would be threaded through the suspension support block. This threading process would continue between all structures of a particular set of spans selected for the cable pull.

Step 4. Pulling. The nylon rope line would be attached to the fiber optic telecommunication cable and, using the specified cable tension, a pull would occur through all structures of a particular set of spans selected for the cable pull.

Step 5. Splicing. After the fiber optic telecommunication cable has been pulled in, each cable pull section would be spliced together. Once the splicing has been completed, slack fiber optic telecommunication cable used in the splicing process would be coiled to the overhead structure or laced to the fiber optic telecommunication cable spans.

The proposed laydown area for fiber optic telecommunication cable construction activities would be at the Ridgecrest Service Center. If approved, the crews would utilize Ridgecrest Service Center as a laydown area for all material for the proposed fiber optic telecommunication cable, which would be delivered by truck. Material would be placed inside the perimeter of the fenced Ridgecrest Service Center in a designated area during construction. The majority of the truck traffic would use major streets and would be scheduled for off-peak traffic hours. All construction debris would be placed in appropriate on-site containers and periodically disposed of off site in accordance with all applicable regulations of the local jurisdiction.

Telecommunication Equipment Construction Schedule and Typical Construction Equipment

Approximately 99 man-days would be required to complete the telecommunication equipment installation at the previously mentioned existing SCE locations. Technician crew size would vary depending on final project schedule timelines. Anticipated telecommunication construction personnel and equipment are summarized below in Table B.1-2.

Table B.1-2. Telecommunication Construction Personnel and Equipment

Construction Element	Number of Man-days	Equipment Requirements	Location
Equipment / Circuit installation	15	1 – Van or Truck, (1 Ton – Gas) per two technicians	Inyokern Substation
Equipment / Circuit installation	23	1 – Van or Truck, (1 Ton – Gas) per two technicians	Downs Substation
Equipment / Circuit installation	15	1 – Van or Truck, (1 Ton – Gas) per two technicians	Ridgecrest Service Center
Equipment / Circuit installation	23	1 – Van or Truck, (1 Ton – Gas) per two technicians	Searles Substation
Equipment / Circuit installation	23	1 – Van or Truck, (1 Ton – Gas) per two technicians	McGen Substation

Fiber Optic Telecommunication Cable Construction Schedule and Typical Construction Equipment

Approximately 300 man-days or 60 crew days (5-man crew) would be required to complete the Proposed Project fiber optic telecommunication cable construction. Construction would be performed by SCE Energy Curtailment Specialists construction crews and/or contractors. Anticipated fiber optic telecommunication cable construction personnel and equipment are summarized below in Table B.1-3.

Table B.1-3. Fiber Optic Telecommunication Cable Construction Personnel and Equipment

Construction Element	Number of Personnel	Equipment Requirements	
Cable Construction	5	2 – Bucket Trucks (Diesel) 1 – Pick-up (Diesel) 2 – Cable Dollies	1 – Single Drum Puller (Diesel) 1 – 2 Axle Trailer
Receive and Load Out Materials	5	1 – 5-Ton Forklift (Diesel) 1 – Pick-up (Diesel)	
Cleanup	5	2 – Bucket Trucks (Diesel) 1 – Pick-up (Diesel)	

B.1.12 Operation and Maintenance

The Downs Substation would be unattended and electrical equipment within the Downs Substation would be remotely monitored and controlled by an automated system from SCE's Lugo Switching Center. SCE personnel would visit for electrical switching and routine maintenance purposes. Routine maintenance would include equipment testing, monitoring, and repair. SCE personnel would generally visit the Downs Substation three to four times per month.

The new 115-kV subtransmission line segments would be maintained in a manner consistent with CPUC General Order No. 165. Normal operation of the 115-kV subtransmission lines would be controlled remotely through SCE control systems.

SCE maintains an inspection frequency of the energized 115-kV subtransmission overhead facilities a minimum of once per year via ground and/or aerial observation. The frequency of inspection and maintenance activities would depend upon weather effects and any unique problems that may arise due to such variables as substantial storm damage or vandalism. Maintenance activities include repairing conductors, replacing insulators, replacing poles, and access road maintenance.

B.1.13 Applicant Proposed Measures

SCE proposes to implement measures to ensure the Proposed Project would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. SCE proposes to implement these measures during the design, construction, and operation of the Proposed Project in order to avoid or minimize potential environmental impacts.

Applicant Proposed Measures (APMs) listed in Table B.1-4 are considered part of the Proposed Project and are considered in the evaluation of environmental impacts (see Section B.3, Environmental Analysis and Mitigation). CPUC approval would be based upon SCE adhering to the Proposed Project as described in this document, including this project description and the APMs, as well as any adopted mitigation measures identified by this Initial Study.

Table B.1-4 details each APM by environmental issue area. In some cases, mitigation measures presented in Section B.3 either expand upon or add detail to the APMs presented in Table B.1-4 if necessary, to ensure that potential impacts would be reduced to less than significant levels.

Table B.1-4. Applicant Proposed Measures (APMs)

APM Number	Issue Area
	Biological Resources
APM BR-1	In areas where the six subtransmission pole replacements would occur and where the telecommunication cable would be strung, the speed limits on all unpaved areas of the Proposed Project would be a maximum of 15 mph.
APM BR-2	A Worker Environmental Awareness Program (WEAP) would be prepared, and all construction crews and contractors would be required to participate in WEAP training prior to starting work on the project. The WEAP training would include a review of the special status species and other sensitive resources that could exist in the Project site and vicinity, the locations of the sensitive biological resources, their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all personnel trained would be maintained.
APM BR-3	Pre-construction biological clearance surveys including surveys and monitoring would be performed to avoid or minimize impacts on special status plants, breeding birds, or wildlife species.
APM BR-4	All replaced poles would be designed to be avian-safe in accordance with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC, 2006).

Table B.1-4. Applicant Proposed Measures (APMs)	
APM BR-5	During the installation of fiber optic telecommunication cable and subtransmission poles, potential habitat for the desert tortoise and Mohave ground squirrel will be avoided to the extent feasible. This will be accomplished through restricting vehicles to previously established access roads, with the oversight of biological monitors, and accessing the poles via bucket truck or climbing of the poles. In addition, the biological monitors will be responsible for avoiding impacts to nesting migratory birds (including burrowing owls) and drainages during construction through the use of appropriate mitigation measures, as determined by the monitoring biologist.
Cultural Resources	
APM CR-1	An archaeologist would monitor the grubbing, pad preparation, and construction earthwork in the event that a significant buried deposit is inadvertently encountered during construction activity at the location of the Downs Substation expansion. In such case, SCE would develop an archaeological monitoring plan describing archaeological monitoring activities and treatment of any unanticipated discoveries, as warranted.

B.1.14 Other Permits and Approvals

The CPUC is the lead agency for CEQA review of this Proposed Project. In accordance with CPUC General Order No. 131-D, SCE prepared and submitted a Proponent's Environmental Assessment as part of its application for a Permit to Construct (PTC). The CPUC has exclusive authority to approve or deny SCE's application; however, various permits from other agencies may also need to be obtained by SCE for the Proposed Project. If the CPUC issues a PTC, it would provide overall project approval and certify compliance of the Proposed Project with CEQA. In addition to the PTC, Table B.1-5 summarizes the permits from other federal, State, and local agencies that may be needed for the Proposed Project.

Table B.1-5. Permits that May Be Required for the Proposed Downs Substation Expansion Project

Agency	Jurisdiction	Requirements
Federal/State Agencies		
California Department of Transportation	Highways and State-owned roadways	Transportation Permit for movement of vehicles that may qualify as an oversized or excessive load (if required)
California Office of Historic Preservation	Consultation (through CEQA review process)	Cultural resources management (if appropriate)
Regional Water Quality Control Board (RWQCB) – Lahontan Region	National Pollution Discharge Elimination System, General Construction Storm Water Pollution Prevention Plan (SWPPP)	Submittal of Notice of Intent (NOI) to Regional Board and preparation of SWPPP
RWQCB – Lahontan Region	Spill Prevention Control and Countermeasure (SPCC) for mineral oil in transformers	Calculation of containment requirements and system design
California Department of Fish and Game	Endangered species consultation	Consultation on State-listed species; possible impacts to threatened and endangered species
Local/Regional Agencies		
City of Ridgecrest	Building and Grading Permits and Safety Requirements	Ministerial approval for construction of new facilities
City of Ridgecrest	Roadway Encroachment and/or Transportation Permit	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of facilities within public roadway right-of-way

Table B.1-5. Permits that May Be Required for the Proposed Downs Substation Expansion Project

Agency	Jurisdiction	Requirements
Kern County	Roadway Encroachment and/or Transportation Permit	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of facilities within public roadway right-of-way
San Bernardino County	Roadway Encroachment and/or Transportation Permit	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of facilities within public roadway right-of-way