

# **Southern California Edison's Banducci Substation Project**

**Mitigation Monitoring, Compliance,  
and Reporting Program**

## **FINAL CONSTRUCTION COMPLETION REPORT**

Prepared for  
California Public Utilities Commission



Prepared by  
Aspen Environmental Group



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## 1.0 Introduction and Project Overview

This Final Construction Completion Report has been developed to summarize the construction and compliance activities conducted for the Southern California Edison (SCE) Banducci Substation Project. The Banducci Substation Project involved the following:

- Construction of a new Banducci 66/12 kilovolt (kV) Substation. Banducci Substation is an unstaffed, automated, 56.0 megavolt-ampere (MVA), low-profile substation with a potential capacity of 112 MVA at final buildout. The 66/12 kV distribution substation is located on an approximately 6.3 acre parcel in the unincorporated Cummings Valley area of Kern County.
- Construction of two new 66 kV subtransmission line segments that loop the existing Correction-Cummings-Kern River 1 66 kV Subtransmission Line: one that enters and one that exits the substation creating the new Banducci-Kern River 1 66 kV Subtransmission Line and the new Banducci-Correction-Cummings 66 kV Subtransmission Line.
- Construction of three new underground 12 kV distribution getaways.
- Installation of telecommunications facilities to connect Banducci Substation to SCE's existing telecommunications system.

The California Public Utilities Commission (CPUC), as the Lead Agency for the Project, conducted the environmental review process and granted final approval of the project. A Mitigated Negative Declaration (MND) was prepared in accordance with the California Environmental Quality Act (CEQA) to inform the public and to meet the needs of local, State, and federal permitting agencies in considering the project proposed by SCE, including CPUC. On March 10, 2015, the CPUC approved a Permit to Construct for the Banducci Substation Project (Decision 15-06-009) and a Notice of Determination was submitted to the State Clearinghouse (SCH #2014111032). The MND was prepared by Aspen Environmental Group under contract to the CPUC. Aspen Environmental Group also implemented the Mitigation Monitoring Compliance and Reporting Plan (MMCRP) to ensure compliance with project mitigation measures, compliance plans, and permit conditions during all phases of construction.

Chapter 1, Introduction and Project Overview, provides a brief overview of the Banducci Substation Project and project approvals granted by the CPUC. In addition, Chapter 1 outlines the role and responsibility undertaken by Aspen Environmental Group as the mitigation monitoring team, including pre-construction compliance and Notice to Proceed (NTP) request review. The methods established for addressing non-compliance issues and processing Minor Project Changes (MPCs) are also discussed.

NTP #1 was issued by CPUC on January 19, 2017, for the Banducci Substation and the associated 66 kV subtransmission features located on Pelliser Road near the town of Tehachapi. NTP #2 was issued on August 31, 2017, for the telecommunications portion of the project, and NTP #3 was issued on March 29, 2017 for the construction of the distribution getaways and a portion of the telecommunication route #1 along Pelliser and Highline roads.

Chapter 2 of this report discusses the Banducci Substation portion of the Project. Chapter 3 of this report discusses the subtransmission and distribution work. Chapter 4 discusses the telecommunication work. Chapter 5 provides a summary of post-construction requirements for the Project.

Construction of the Banducci Substation Project began in July 2017 and energization is projected for early September 2018. Construction at the Banducci Substation site was conducted Monday-Friday between 6:00 am and 5:00 pm, with occasional work on Saturdays. Telecom work generally occurred Monday-Thursday, 7:00 am to 5:00 pm.



## 1.1 Overview of the SCE Banducci Substation Project

The 3.3-acre Banducci Substation is located on a 6.3-acre site in south central Kern County, west of the City of Tehachapi. The site is at the southeast corner of Pelliser Road and unimproved Dale Road in the community of Cummings Valley (see Figure 1, Project Location). The Project site is in close proximity to the existing Correction-Cummings–Kern River #1 66 kV subtransmission line. Two new subtransmission segments were constructed on new and replaced poles along Pelliser Road, Highline Road, and within the substation perimeter. Approximately 32 miles of fiber optic telecommunications cable were installed in a loop between Banducci Substation and the existing Cummings and Monolith Substations, located approximately 6 and 12 miles east of the Project site, respectively.

## 1.2 Role of Aspen Monitoring Team

The Aspen Monitoring Team was composed of the MND Preparation Manager (Hedy Koczwara), Monitoring Project Manager (Vida Strong), and Environmental Monitors (EM) (Jenny Slaughter).

Aspen's MND Preparation Manager, Hedy Koczwara, oversaw the preparation of the MND and was responsible for all contractual matters.

Aspen's Monitoring Project Manager, Vida Strong, supervised all project monitoring activities. She was responsible for direct communication with the CPUC, including preparation of weekly reports. Other responsibilities included managing the field monitoring team, reviewing compliance documentation, reviewing resource buffer reduction requests, and preparing recommendations for CPUC consideration on Project NTPs and MPC Requests.

The CPUC EM, Jenny Slaughter reviewed pre-construction compliance materials for completeness and performed in-field monitoring for compliance with mitigation measures, approved plans, and agency requirements during all construction activities. Resource specialists who assisted in the preparation of the MND provided their assistance when required. In the field, the CPUC EM served as the main point of contact for SCE. The CPUC EM prepared and submitted monitoring compliance reports to the Aspen Monitoring Project Manager. The CPUC EM also provided field input on MPC and Temporary Extra Workspace (TEWS) requests. The CPUC EM, Jenny Slaughter, has a degree in biological sciences and holds current Qualified SWPPP Practitioner/Developer (QSP/QSD) certificates.

## 1.3 Pre-Construction Compliance Review and Notices to Proceed

As part of the NTP requests, SCE provided Detailed Project Components Maps which depicted the activities requested and the temporary workspaces required to construct each component, as approved by the Project's Final MND. The NTP requests also included a Mitigation Memorandum which provided pre-construction compliance information for the issue areas addressed by the Banducci Substation Project Substation Final MND. These measures were detailed in the MMCRP. In addition, several specific compliance plans, memos and reports were submitted to satisfy local agency requirements, including:

- Nesting Bird Management Plan
- Notice to Adjacent Agricultural Operations at least 30 days in advance
- APLIC Guidelines Consistency Memo
- Jurisdictional Delineation Report
- Cultural Resources Treatment Plan
- Paleontological Resources Management Plan





Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**Legend**

- |                                |                               |   |                                |
|--------------------------------|-------------------------------|---|--------------------------------|
| ● Proposed Banducci Substation | ● Monolith Substation         | --- Proposed Telecommunications Route 1 | --- Freeway / Major Highway    |
| ● Cummings Substation          | ▨ CA Correctional Institution | --- Proposed Telecommunications Route 2 | --- Major Road / Minor Highway |

Source: SCE, 2014a.

**Figure 1**

**Project Overview Map**



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- Geotechnical Investigation
- Worker Environmental Awareness Program
- Soil Sampling for pesticide and herbicides
- Fire Management Plan
- Stormwater Pollution Prevention Plan
- Coordination with Emergency Access and Response
- Preconstruction Biological Survey Reports
- Traffic Management Plan

These compliance submittals were reviewed by Aspen prior to and during construction to ensure that appropriate environmental protection occurred. In addition, Aspen tracked the necessary permitting requirements to ensure that all the applicable agency permits had been issued prior to construction. Permits issued for the project included:

#### **State**

- **California Public Utilities Commission (CPUC):** MND Certification; Permit to Construct; Notice to Proceed
- **State Water Resources Control Board (SWRCB):** National Pollutant Discharge Elimination System General Construction Permit.
- **California Department of Transportation (Caltrans):** Encroachment Permit

#### **Local**

- **Kern County and City of Tehachapi:** Ministerial approval for possible closure of roads for transportation of heavy equipment and construction of facilities within public roadway right-of-way.
- **Union Pacific Railroad:** Encroachment permit to cross railroad facilities.

#### **Environmental Setting**

**Biological Resources:** SCE conducted preconstruction surveys prior to construction. No special-status wildlife species were identified during the surveys. Sensitive vegetation communities were noted during vegetation mapping surveys and one California Native Plant Society List 4.2 species (*Androsace elongata* ssp. *acuta*) was identified along the telecommunication route. Nesting birds were identified and mapped during preconstruction surveys in and surrounding construction areas. Buffers were established for nesting birds, jurisdictional drainages, and sensitive plants for avoidance.

**Cultural and Paleontological Resources:** A Cultural Resources Construction Phase Management Plan was prepared for the Banducci Substation Project. A total of nine cultural resources are located within the Study Area. Of these, seven are located outside of the area of direct impact (ADI), within areas where no ground disturbing work was conducted. Prior to construction, archaeological sites were marked as an Environmentally Sensitive Area (ESA) using high-visibility flagging and were avoided by construction.

A Paleontological Monitoring and Treatment Plan (PRMP) was prepared to provide procedures and protocols to reduce impacts to scientifically significant paleontological resources potentially encountered during construction of the project. The PRMP provided monitoring guidelines that were implemented during construction, procedures to be followed if paleontological resources were discovered during construction, and the procedures for preparation, conservation and curation of recovered fossils.

**Hazards and Hazardous Materials:** During construction, hazardous materials such as cleaning solvents, paints, adhesives, vehicle fuels, oil, hydraulic fluid, and other vehicle and equipment maintenance fluids

were used and stored in construction staging areas. Spills and leaks of hazardous materials during construction activities could result in soil or groundwater contamination. All hazardous materials were stored, handled, and used in accordance with applicable regulations, worker training on hazardous material protocols was provided, and best management practices (BMPs) were employed. A Fire Management Plan was prepared as required by MM H-4 and was implemented during construction. Hazardous material spills were reported in the contractor weekly reports. No spills occurred that affected sensitive resources.

**Air Quality:** SCE's contractor implemented Eastern Kern Air Pollution Control District Dust Control Measures during construction, consistent with Mitigation Measure (MM) AQ-1.

**Agricultural Resources:** SCE provided documentation of compensation for the loss of Prime Farmland as required by MM AG-2. Documentation was provided to demonstrate that 10 acres of mitigation lands were acquired, more than was disturbed during project construction.

**Hydrology and Water Quality:** During construction of the Banducci Substation Project, non-potable water sources were used for dust control and compaction as required by MM HYD-2. A Stormwater Pollution Prevention Plan (SWPPP) was also prepared and routine monitoring and inspections took place as required. Inspection results were reported in the contractor weekly reports.

## 1.4 Compliance Monitoring

Compliance monitoring by the CPUC EM is intended to chronicle and document SCE's compliance with project mitigation measures, compliance plans, and permit conditions. Compliance monitoring is implemented to minimize or eliminate potential significant impacts and to protect environmental resources. Per the MMRP, there are four levels of compliance:

- **Level A Compliance.** All mitigation measures and permit conditions are being complied with. No corrective action is necessary.
- **Level B Non-Compliance.** One aspect of a mitigation measure is not in compliance, resulting in only partial implementation of a measure or permit condition, but there has been no significant impact as a result.
- **Level C Non-Compliance.** One or more of the aspects of a mitigation measure or permit condition are not in compliance, and the implementation of a mitigation measure is deficient or non-existent, resulting in potentially significant impact(s) or an immediate threat of major, irreversible environmental damage or property loss.
- **Level D Stop Work Order.** The CPUC has the authority to shut down project construction. Stop Work Orders halt construction and are issued when a compliance violation continues over an extended period of time, is repeated several times, or when a violation could cause harm to a resource.

Non-compliance incidents were documented by the CPUC EM and were communicated to SCE. Additionally, SCE reported issues/incidents to the CPUC EM and the CPUC as appropriate. The compliance record for the Banducci Substation Project is discussed in Chapters 2 through 4.

## 1.5 Coordination and Communications

In-field communications were conducted by the CPUC EM with SCE's Environmental Project Manager (EPM), the Construction Contractor's Field Lead (FL), and other project personnel. Field observations were logged by the CPUC EM. Reports were submitted to the CPUC documenting compliance, requested project changes, construction progress, and applicant submittals. Construction activities were performed by Henkels and McCoy, and construction management was conducted by TRC.

## 1.6 TEWS and MPCs

In cases where additional work space is needed on a temporary basis, but those areas were not previously identified, the applicant requests use of a work space under the Temporary Extra Work Space (TEWS) process, which is then verified and approved by the CPUC EM. TEWS areas are approved for use for up to 60 days and are previously disturbed or develop and do not support sensitive resources. For other project changes that involve permanent minor changes or use of TEWS areas beyond 60 days, a Minor Project Change (MPC) is requested and reviewed and approved by the CPUC. One TEWS and five MPC requests were submitted by SCE to the CPUC for changes in the approved Project. The requests were first reviewed by Aspen for completeness. When complete, the request was analyzed, including field verification and resource/local agency consultation, to determine if new impacts or an increase in significant impacts would result. After analysis of the request, Aspen prepared a written recommendation of approval for the MPCs for the CPUC; CPUC EM had authorization to approve TEWS in the field. As appropriate, mitigation measures or other agency conditions were required by the CPUC to avoid, or reduce to a less than significant level, any identified impacts. The TEWS and MPCs submitted for the SCE Banducci Substation Project are summarized in Table 1 below.

**Table 1. Temporary Extra Work Spaces (TEWS) and Minor Project Changes (MPCs)**

TEWS/ MPC	Date Requested	Date Issued	Phase	Description
<b>Temporary Extra Work Spaces (TEWS)</b>				
TEWS #1	07/20/17	07/24/17	Substation	Use of a non-potable water source located outside of the approved work area.
<b>Minor Project Changes (MPCs)</b>				
MPC #1	07/31/17	08/31/17	Telecom	Changes to Telecommunication Routes #1 and #2 (see NTP #2, Table 1).
MPC #2	08/09/17	08/11/17	12 kV	Relocation of 12 kV distribution infrastructure to avoid an existing, unmarked utility.
MPC #3	08/21/17	08/25/17	All	Use of water source approved under TEWS #1 for more than 60 days.
MPC #4	10/25/17	11/09/17	Telecom	Modify Telecom route at S. Curry and Valley due to City road construction moratorium.
MPC #5	03/07/18	03/20/18	Substation	Additional temporary and permanent work area around the substation.

## **2.0 Banducci 66/12 kV Substation**

### **2.1 Description of the Banducci Substation**

The Banducci Substation is a new unstaffed, automated, 66/12 kV, 56 MVA low-profile substation. The dimensions of the walled substation are approximately 440 feet by 326 feet. The substation will have the potential to expand capacity to 112 MVA as necessary.

The substation footprint encompasses approximately 3.3 acres of an approximately 6.3-acre parcel in the unincorporated Cummings Valley area of Kern County. The substation site is located at the southeast corner of Pelliser Road and unimproved Dale Road, as shown in Figure 1 (Project Location).

#### **66 kV Switchrack**

The 66 kV low-profile steel switchrack is approximately 25 feet high, 82 feet wide, and 186 feet long and has an operating and transfer bus. The switchrack consists of eight 22-foot-wide positions:

- One switchrack position used to terminate the newly created Banducci-Correction-Cummings 66 kV Subtransmission Line.
- One switchrack position used to terminate the newly created Banducci-Kern River #1 66 kV Subtransmission Line.
- Two switchrack positions used to terminate the 66/12 kV transformer banks (Bank No. 1 and Bank No. 2).
- One switchrack position used for the 66 kV bus tie position.
- Three switchrack positions remain vacant for future needs.

The operating and transfer buses are each 186 feet long and consist of two 2,156 thousand circular mils (kcmils) aluminum conductor steel reinforced (ACSR) conductors for each of the three electrical phases.

The two 66 kV subtransmission line positions and the two 66 kV transformer bank positions are each equipped with a circuit breaker and three group-operated horizontal mount disconnect switches. Surge arresters and 66 kV potential transformers (PTs) are installed on the line positions. The 66 kV bus tie position is equipped with a circuit breaker and two group-operated horizontal mount disconnect switches. Three 66 kV bus PTs are connected to the operating bus through a three-phase group-operated disconnect switch.

#### **66/12 kV Transformers**

Banducci Substation's initial transformation consists of two 28 MVA, 66/12 kV load tap changing (LTC) transformers with adjacent group-operated disconnect switches on the high-voltage and low-voltage sides, surge arresters, and neutral current transformers. Two 12 kV underground power cables connect the transformers to the 12 kV switchrack positions via two power cable trenches. The transformer equipment area's dimensions are approximately 25 feet high, 113 feet long, and 42 feet wide. Based on SCE's current forecast for 2012–2021 peak demand, SCE does not foresee adding additional transformer capacity at Banducci Substation during the 10-year planning horizon.

#### **12 kV Switchrack**

The 12 kV low-profile steel switchrack is approximately 17 feet high, 34 feet wide, and 126 feet long and would have an operating bus and a transfer bus. The 14-position switchrack consists of the following:

- Six 12 kV positions, each equipped with a circuit breaker and either six or nine disconnect switches. Three of these positions are assigned to 12 kV circuits, two positions are assigned to transformer banks, and one position is assigned to a bus tie between the operating bus and transfer bus.
- Four 12 kV positions are equipped with three disconnect switches each.
- Four 12 kV positions are vacant for future use.

At maximum capacity (with four transformers operating), the Banducci Substation could be built out to accommodate a maximum of 16 separate 12 kV distribution circuits.

### **Capacitor Banks**

Two 12 kV, 4.8 megavolt-ampere reactive (MVAR), low side capacitor banks were installed at the substation. Each 12 kV capacitor bank area is approximately 17 feet high, 27 feet long, and 13 feet wide. Each 12 kV capacitor bank is equipped with a circuit breaker and three current-limiting reactors.

### **Mechanical and Electrical Equipment Room (MEER)**

The MEER is a pre-fabricated structure approximately 10 feet high, 38 feet long, and 15 feet wide. The MEER is equipped with heating, ventilation, and air-conditioning (HVAC) units and houses protective relaying equipment, telecommunications equipment, substation automation and control equipment, batteries, and associated equipment. Control cables installed in trenches connect the MEER to the 66 kV and the 12 kV switchracks.

### **Perimeter and Landscaping**

The substation has a light-colored, decorative, pre-cast or concrete masonry material perimeter wall enclosing the substation on all sides. On at least three sides, this 8-foot high wall has barbed wire affixed near the top of the inside of the perimeter enclosure. The barbed wire would not be visible from outside. Prior to commencing construction, SCE developed an appropriate drought-resistant landscaping plan and perimeter wall design in consultation with Kern County.

### **Lighting**

Lighting at the Banducci Substation consists of low intensity LED (light emitting diodes) lights located in the switchracks, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours. Maintenance lights are controlled by a manual switch and would normally be in the “off” position. The maintenance lights are directed downward to reduce glare outside the facility. A light at the site’s rolling gate automatically turns on once the gate begins to open and turns off shortly after the gate is closed.

### **Drainage**

Existing drainage at the Project site slopes from southeast to northwest. As part of construction of the Project, runoff was diverted around the enclosed bank towards the natural drainage pattern.

SCE prepared final engineering drawings for grading and drainage and submitted these to Kern County. SCE also prepared a Spill Prevention Control and Countermeasure (SPCC) Plan in accordance with 40 Code of Federal Regulations (CFR) Parts 112.1-112.7, which included features such as curbs/valves, trenches, berms, and retention ponds (if required), or other features/structures designed and installed to contain spills, should they occur.

### **Restroom Facilities**

Currently, there is no water source serving the site and no sewer service available.





Figure 2. Construction of the stabilized construction entrance to the Banducci Substation built consistent with SWPPP requirements



Figure 3. Foundation work inside of the Banducci Substation was conducted by Professional Engineering



Figure 4. The MEER building at the Banducci Substation site

## 2.2 Construction of the Banducci Substation

Construction of the Banducci Substation began on July 26, 2017. Erosion control BMPs were installed around the perimeter of the substation site prior to earth-moving activities. Construction equipment and materials were delivered to the site and grading activities began. A temporary construction entrance was installed along Pelliser Road, with rock and shaker plates to minimize track out of sediment onto the adjacent public roadway.

Civil work at the substation site included soil import and export to achieve the necessary compaction. Dust control during construction was provided by a nearby non-potable well located on private property. Because this water source was not included in the project description, a TEWS was approved by the CPUC EM allowing the temporary use of the well. Water trucks hauled water to the substation site, less than one-half mile away. An MPC was ultimately requested and approved to allow for long term use of the well during Project construction.

Professional Engineering, the concrete contractor, built forms and set foundations throughout the substation site. Material for the perimeter wall was delivered and the block wall installation took place.

Civil preparation of the substation site was completed in October 2017. Henkels and McCoy continued with cable trenching, ground grid and conduit installation at the substation site for the below grade components. The two transformers were delivered and installed. V-ditch installation surrounding the outside of the perimeter wall took place for drainage. Above ground components including the MEER building and bus structures were completed as new material was delivered to the site. Wiring of project components and testing followed.

Vertical steel erection of the substation components was conducted by Henkels and McCoy.

Work was suspended during high winds and rain/snow events, consistent with approved plans.

Final grading within the substation site was conducted followed by the installation of base rock throughout the substation site. Once the surrounding drainage grading was complete, soil stabilization (soil binder) was applied and landscaping was installed around the substation perimeter.

## 2.3 Environmental Compliance during the Banducci Substation Construction

The CPUC EM conducted spot checks of the Banducci Substation Project during construction on a regular basis and reports were submitted to the CPUC to document construction, monitoring, and compliance activities.

Worker Environmental Awareness Trainings were held for new workers to the Project site and sign-in sheets were submitted to the CPUC on a regular basis. TRC's Project Field Leads (FL) monitored construction activities and performed preconstruction surveys and sweeps. No special-status species were observed during construction at the Banducci Substation.

Compliance incidents observed during construction of the Banducci Substation were minor in nature and are summarized in Table 2.

On July 18, SCE notified the CPUC EM that construction crews had begun to install erosion control BMPs at the substation site without having the required preconstruction surveys completed and began within the 30-day notification period for adjacent agricultural operators. In addition, several preconstruction submittals had not yet been received. SCE directed the contractor to cease the operations until the notification period had ended (July 24) and the other submittals were provided to the CPUC. The CPUC EM documented the items as four Level B non-compliance incidents and the incident report was provided to SCE. See Table 2 for CPUC Compliance Incidents during construction of the project.

On February 13, the CPUC EM noted that sections of bird netting used to cover conduit was left on the ground unsecured. On February 14, two sections of bird netting were found caught in the perimeter sand bag berm surrounding the substation. The CPUC EM documented this as a Level B compliance incident, because of the threat to wildlife (entrapment) and also for microtrash (see Table 2).



Figure 5. Bus structures and circuit breakers were installed at the Banducci Substation



Figure 6. Base rock and rock driveway completed inside of the Banducci Substation (Photo courtesy of SCE)



Figure 7. Landscaping and mulch was installed surrounding the Banducci Substation (Photo courtesy of SCE)





*Figure 8. Monofilament netting used to cover open pipes had become loose and blew to the edge of the substation site creating a wildlife entrapment hazard*



*Figure 9. Spill and containment of the mineral oil spill from the damaged transformer*



*Figure 10. Crews swept any trackout from the substation site onto Pelliser Road*

A major spill occurred on January 16 when a man-lift bumped into Transformer #1 at the Banducci Substation site. Approximately 125 gallons of mineral oil spilled out of the damaged transformer onto the ground. A professional environmental clean-up company was deployed to perform clean-up. The area contaminated was estimated to be 20-ft by 30-ft and impacted soil was removed. Repairs were made to the damaged transformer and additional mineral oil was added.

Paleontological monitoring took place on a spot-check basis, consistent with approved plans. No paleontological resources were identified.

Street sweeping along Pelliser Road occurred as needed to control track out from construction traffic.

Other minor compliance concerns identified by the CPUC EM during construction of the substation included leaking equipment, microtrash, trackout, and uncovered haul trucks. Once reported to the site construction manager, all incidents were resolved in a timely manner.

Excavations and trenches were covered or wildlife escape ramps were installed at the end of each work day to prevent wildlife entrapment. Open pipes were covered using mesh netting to prevent wildlife from entering, consistent with permit conditions.

Dust suppression was implemented appropriately during grading activities. Stormwater BMPs were utilized appropriately to protect soil stockpiles and contain work areas. Driveway aprons were inspected for track-out and swept as needed. Spill kits were kept on site and all spills were reported, cleaned up, and disposed of properly. New equipment arriving on site was inspected for leaks and parked in the staging area or substation area. Concrete washouts were properly contained.

Table 2 provides a summary of environmental incidents that occurred and were reported by the CPUC EM.

**Table 2. Incidents and CPUC Project Memoranda and Non-Compliance Reports**

Incident/ PM/NCR	Regulatory Requirement	Date Issued	Phase	Description
Level B Incident	MM AG-1	07-19-17	Banducci Substation	Crews began construction related activities within 30 days of the notification of agricultural operators.
Level B Incident	MM B-9	07-19-17	Banducci Substation	Construction related activities began without the required nesting bird surveys being conducted.
Level B Incident	CPUC NTP	07-19-17	Banducci Substation	Documentation was not provided to the CPUC prior to construction.
Level B Incident	MMCRP	07-19-17	Banducci Substation	Timely notification of the start of construction was not provided to the CPUC EM.
Level B Incident	MM B-4	02-14-18	12 kV Distribution	Plastic bird-deterrent netting used to cover stored conduit was found along the perimeter of the substation creating an animal entrapment and trash concern.

## 2.4 TEWS and MPCs Requested for Banducci Substation Construction

As discussed in Section 1.6, one TEWS and two MPCs were requested for the Banducci Substation construction. The TEWS was for the temporary use of a water source not originally proposed for Project use, and the MPCs were for the extended use of the water source approved as a TEWS, and for additional workspace surrounding the substation for final grading and vegetative screening installation.

## 2.5 Final Inspection of Banducci Substation

During Final Inspections conducted between February and April, completed Project areas were inspected to ensure that all trash had been removed and other construction debris was properly disposed of. The substation property was still considered to be in the active construction phase, although minimal construction activities were occurring. Stabilization of the site included base rock installation, driveway paving, and landscaping was completed.



*Figure 11. Open pipes were covered consistent with Mitigation Measure requirement to minimize wildlife entrapment*

## 3.0 66 kV Subtransmission and 12 kV Distribution Lines

### 3.1 Description of the 66 kV Subtransmission and 12 kV Distribution Lines

#### Subtransmission Route

The existing Correction-Cummings–Kern River #1 66 kV Subtransmission line lies in close proximity to the proposed Banducci Substation site. The 66 kV subtransmission line route entails opening the existing Corrections-Cummings–Kern River #1 66 kV Subtransmission Line on Pelliser Road south of Dale Road and looping it into the substation. Two independent source line segments were created by looping in the existing Correction-Cummings–Kern River #1 66 kV Subtransmission Line. These are the new Banducci–Kern River #1 66 kV Subtransmission Line to the south and west of the substation and the new Banducci-Correction-Cummings 66 kV Subtransmission Line to the north and east.

#### Subtransmission Structures

To loop the existing Correction-Cummings–Kern River #1 66 kV Subtransmission line into and out of the substation, six new tubular steel poles (TSPs), two new TSP guy stubs, two new light-weight steel (LWS) poles, and seven new wood poles were installed.

All 66 kV subtransmission facilities were designed to be avian-safe in accordance with the *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (Avian Power Line Interaction Committee, 2006).<sup>1</sup> All 66 kV subtransmission facilities were evaluated for potential collision risk and, if determined to be high risk, lines would be marked with collision reduction devices in accordance with *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (Avian Power Line Interaction Committee, 1994). (SCE, 2014a)

The LWS poles were dull galvanized gray in color and installed with conductor and polymer insulators. Both of the LWS poles were constructed with horizontal polymer post type insulators to attach the 66 kV subtransmission conductor. Four of the wood poles were installed with horizontal post type insulators to attach the 66 kV subtransmission conductor. The other three wood poles were installed with wood cross arms and polymer suspension insulators to attach the 66 kV subtransmission conductor. Six of the TSPs were all dead-end structures to support the approximate 90 to 105 degree angles in the 66 kV subtransmission line. The insulators were polymer dead-end insulators. The other two TSPs were guy stubs to support the angle of the conductor on the wood poles.

Upon completion of the installation of the TSPs, wood poles, and LWS poles outside of the substation, the existing overhead distribution conductors and third-party utilities that exist will be left on the existing poles, which will be topped to distribution level. This work is expected to occur immediately prior to energization, in September 2018.

#### 12 kV Distribution Lines

SCE constructed three new 12 kV distribution circuits, and at ultimate build-out, the substation could accommodate a total of 16 separate 12 kV distribution circuits. The first 12 kV distribution circuit exited the

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<sup>1</sup> *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* published by the Edison Electric Institute and the Avian Power Line Interaction Committee in collaboration with the Raptor Research Foundation. This document can be found at <http://www.aplic.org>.



Banducci Substation to the northwest and extended approximately 150 feet to a new distribution vault and telecommunications manhole installed on the Project parcel.

The second 12 kV distribution cable was installed in the second duct bank and exited the Banducci Substation enclosure to the southwest for approximately 150 feet to a location where a second new distribution vault was installed on the Project parcel.

The third distribution circuit was installed in the same duct bank as the first up to the new northern vault. The distribution cable then continued underground for approximately 2,800 feet to the corner of Highline Road and Pelliser Road. From there, the underground distribution cable extended east approximately 450 feet and then rise onto a replaced existing wood pole with a new 12 kV overhead switch.

### 3.2 Construction of the 66 kV Subtransmission and 12 kV Distribution Lines

While conducting utility locations for the underground 12kV distribution work along Pelliser Road, it was discovered that an unmarked fiber-optic utility cable was in close proximity to the 12 kV distribution trench. SCE requested an MPC to relocate the 12 kV distribution trench approximately 8 feet away.

Underground work along Pelliser Road began in August. Vault excavations followed by trenching and tie into vaults took place by Henkels and McCoy. Potholing for utilities took place prior to excavations. The adjacent fiber optic line was shifted slightly to avoid damage during excavations, as approved under the MPC. Traffic control was in place along Pelliser and included a lane closure during construction along the roadway. Flaggers were present on each end of the closure to control traffic. Excavations were covered and surrounded by barriers at the end of the work day.

Boring equipment was used to install the cable trench under two road crossings to avoid impacts to other utilities. Entry and exit pits were excavated near the intersection of Pelliser and Highline Roads.



Figure 12. Crews installing conduit for the underground distribution line along Pelliser Road

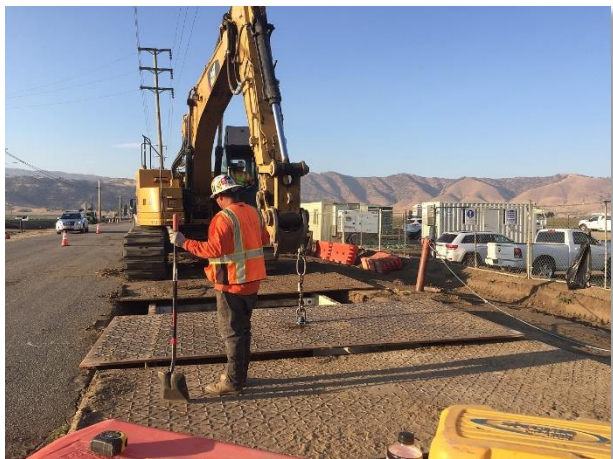


Figure 13. Steel plates were used to cover trench and vault excavations along Pelliser Road outside of the Banducci Substation



Figure 14. Traffic control was in place during vault excavation for the underground distribution work along Pelliser Road

Foundations for 66 kV subtransmission poles were installed and TSPs were erected in the substation boundary for the loop into the substation from the existing poles along Pelliser Road.

### **3.3 Environmental Compliance during 66 kV Subtransmission and 12 kV Distribution Line Construction**

Paleontological monitoring took place on a spot-check basis, consistent with approved plans. No paleontological resources were identified.



*Figure 15. Bore pit for conduit installation under a culvert near Highline Road*

One Level B on-compliance incident were reported by SCE during the underground work. H&M crews used a disturbed area outside of the approved work limits to set up equipment for vault placement along Pelliser Road on October 6.

### **3.4 TEWS and MPCs Requested for 66 kV Subtransmission and 12 kV Distribution Lines**

One MPC was requested during construction of the 66 kV Subtransmission and 12 kV Distribution work. The request was submitted to document a slight shift in the underground distribution alignment due to conflicts with existing underground utilities. Please see Table 1 in Chapter 1.

### **3.5 Final Inspection of 66 kV Subtransmission and 12 kV Distribution Lines**

During Final Inspections conducted between February and April, completed Project areas were inspected to ensure that all trash had been removed and other construction debris was properly disposed of. Areas along the underground subtransmission and distribution route along Pelliser Road were clear of construction materials and clean. Final grading of the road shoulder had not been completed during the inspection, but was subsequently conducted by civil crews at the direction of the County Inspector.

## 4.0 Telecommunication Lines

### 4.1 Description of the Telecommunication Lines

Telecommunications infrastructure was added to connect the Banducci Substation to SCE's telecommunications system and to provide Supervisory Control and Data Acquisition (SCADA), protective relaying, data transmission, and telephone services for the new Banducci Substation and associated facilities.

New telecommunications equipment was installed within the MEER at Banducci Substation and within the existing MEER at Monolith Substation. In addition, approximately 28 miles of overhead fiber optic telecommunications cable was installed on 751 existing poles, 30 of which were scheduled to be replaced prior to attaching new fiber optic telecommunications cable to them. The new poles were similar in size to the existing poles. They were buried to a depth of approximately 6 to 9 feet below the ground surface and are 38 to 50 feet high and approximately 12 to 18 inches in diameter at ground level and taper toward the top of the pole.

Approximately 4 miles of underground fiber optic telecommunications cable was installed in 17 existing vaults and seven new 5 feet x 5 feet x 8 feet manholes. Overhead and underground fiber optic telecommunications cables was installed on or in new and existing structures. The two telecommunications routes are shown in Figure 1 and are described below.

**Telecommunication Route #1** is approximately 14.5 miles long and connects the Banducci Substation to the existing Cummings Substation on Highland Road and then continues to the existing Monolith Substation east of Tehachapi, as described below.

The Route #1 of the fiber optic telecommunications cable route:

- Exits Banducci Substation to the west and extends north in approximately 2,800 feet of new conduit to Highline Road.
- Continues east on Highline Road in approximately 450 feet of new conduit and then transitions to an overhead position on an existing pole.
- Continues east overhead on Highline Road for approximately 6 miles then transitions into an underground position from an existing pole.
- Continues east in approximately 270 feet of new conduit into the existing Cummings Substation.
- Exits the existing Cummings Substation to the east in 240 feet of new conduit, then transitions to an overhead position on an existing pole.
- Continues east overhead for approximately 6.5 miles to Jameson Street.
- Continues north overhead for approximately 1 mile to an existing pole outside the existing Monolith Substation, where the fiber optic telecommunications cable transitions to an underground position.
- Continues west in approximately 160 feet of existing conduit into the existing Monolith Substation.

**Telecommunication Route #2** is approximately 17.5 miles long and connects the Banducci Substation to the existing Monolith Substation.

The Route #2 fiber optic telecommunications cable route:



- Exits Banducci Substation to the west and turns north in approximately 290 feet of new conduit and then transitions to an overhead position on a new wood riser pole on Pelliser Road.
- Continues north overhead on Pelliser Road for approximately 1.5 miles.
- Continues east overhead on Giraudo Road for approximately 2 miles to West Valley Boulevard.
- Continues east on West Valley Boulevard overhead for approximately 6 miles to Woodford-Tehachapi Road, and transitions to an underground position on an existing pole.
- Continues south on Woodford-Tehachapi Road underground in approximately 810 feet of conduit to an existing pole, where it transitions to an overhead position.
- Continues south overhead for approximately 1,000 feet to Cherry Lane (Commercial Street).
- Continues east overhead for approximately 2.5 miles to South Curry Street.
- Continues north on South Curry Street for approximately 125 feet in new underground conduit and east for approximately 125 feet in existing underground conduit to an existing vault on West Valley Boulevard.
- Continues east on West Valley Boulevard in existing underground conduit for approximately 5,200 feet to Dennison Road.
- Continues north along Dennison Road in existing underground conduit for approximately 2,200 feet to Tehachapi Boulevard.
- Continues east on Tehachapi Boulevard underground for approximately 3 miles, where it enters Monolith Substation through an existing conduit.

## 4.2 Construction of the Telecommunication Lines

Work on the Telecom routes began on September 27, 2017. Separate Henkels and McCoy crews began on each of the two routes. Overhead cable was installed on Route #1 beginning at the Highwind Yard going west toward the Banducci Substation. Telecom installation on Route #2 began at the Monolith Substation in the existing underground infrastructure.

Work on the Telecom lines was suspended during Red Flag warnings, consistent with the approved Fire Management Plan.

During the placement of the underground conduit into the Cummings Substation, a slight shift in the manhole location had to be made due to an unmarked fiber optic line in the immediate area.

During telecom work along Highway 202 and across Highway 58, encroachment permits were obtained and conditions for work hours and land closures were followed. During construction within the City of Tehachapi, minor modifications to the telecom alignment were made to avoid trenching newly paved city streets. Alternate routes were untimely approved which avoided impacting the newly paved areas.

After the telecom routes were completed, pole replacements occurred.##18 Although 39 poles were originally planned for replacement, final engineering took place and the number of poles needing replacement was reduced to 19.



Figure 16. Henkels and McCoy telecom crews installing cable on existing wood poles along Highline Road near Tehachapi



Figure 17. Telecom cable installed onto existing pole with excess cable ready for the Highway 58 Freeway crossing

### 4.3 Environmental Compliance during the Telecommunication Lines Construction

Paleontological monitoring took place on a spot-check basis, consistent with approved plans. No paleontological resources were identified. ESAs for rare plants were installed and maintained during telecom construction activities.



Figure 18. Distribution pole replacement along Highway 202 in Tehachapi



Figure 19. ESA avoidance signage surrounding CNPS List 4 plant population identified along the telecom route near the Prison



On February 7, during a final sweep of the work location near Tehachapi Woodford Road, the Project biologist noted that approximately 135 square feet of fresh ground disturbance was observed outside of the limits of disturbance. The impact occurred from back-dragging while backfilling an adjacent trench. No sensitive resources were impacted, and SCE documented this as a Level 1 non-compliance incident. Corrective actions were taken, including installation of additional signage and roping off the approved work limits. The disturbed area was stabilized with erosion control BMPs and ultimately sprayed with a hydroseed mix.

#### 4.4 TEWS and MPCs Requested for the Telecommunication Line Construction

Two MPCs were approved to document minor shifts in the telecommunication alignment; see Table 1.

#### 4.5 Final Inspection of the Telecommunication Lines

During Final Inspections conducted between February and April, completed Project areas were inspected to ensure that all trash had been removed and other construction debris was properly disposed of. Areas disturbed by the Telecom work were stabilized with BMPs and hydroseeded. The CPUC EM noted that the Telecommunication routes were clean and all project signage was removed.



Figure 20. Areas disturbed during trenching activities were stabilized with erosion control blankets and later sprayed with hydroseed



Figure 21. Watering hydroseeded area near Woodford Tehachapi Road (Photo courtesy of SCE)

## 5.0 Post-Construction Requirements

The following summarizes the post-construction mitigation measure requirements and documentation status:

**MM B-3: Minimize Noxious Weeds.** Precautions shall be taken to minimize the introduction of any invasive weeds. Construction vehicles and equipment shall be clean before they arrive at work areas in the project corridor. Any landscaping involving vegetation other than trees and shrubs shall consist of native seed mix or other ecologically appropriate, non-invasive plants. Only weed-free straw or mulch shall be used.

Several hundred vehicle inspection reports were generated. As a result, SCE uploaded a representative sample of these inspection reports to meet the compliance requirement.

**MM N-2: Minimize Construction Vehicle and Traffic Noise.** SCE shall maintain construction equipment and vehicle mufflers in accordance with equipment vendor specifications on all engines used in construction. Where feasible, construction traffic shall be routed to avoid noise-sensitive areas, such as residences, schools, religious facilities, hospitals, and parks.

Several hundred vehicle inspection reports were generated. As a result, SCE uploaded a representative sample of these inspection reports to meet the compliance requirement.

**MM B-13: Identify Trees Affected by the Project.** In compliance with MM B-13, SCE obtained permits to trim two blue oaks. Ultimately, the oaks were avoided.

SCE provided documentation of correspondence with the County construction's avoidance of the trees.

**MM B-11: Replace or Offset Sensitive Habitat Loss.** Native vegetation in Big Sagebrush Scrub, Blue Oak Woodland, and Foothill Pine-Oak Woodland vegetation communities and aquatic features in construction sites shall be flagged for avoidance prior to construction activities. If avoidance is not feasible, SCE shall implement one or both of the following measures (onsite restoration or compensation) to offset or compensate for those impacts.

Sensitive habitat was avoided during construction, therefore no restoration or compensation is required.

**MM C-7: Conduct Curation and Final Reporting.** At the conclusion of laboratory work and museum curation of any discovered paleontological resources, a final report will be prepared and submitted to the CPUC describing the results of the paleontological resource monitoring efforts associated with the project. The report will include a summary of the field and laboratory methods, an overview of the project area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. A copy of the report will also be submitted to the designated museum repository.

No significant fossils were collected during construction, so no curation or final reporting is required.