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BIOLOGICAL ASSESSMENT

PROPOSED PANOCHE ENERGY CENTER

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Appendix B California Natural Diversity Database Records for the Panoche Energy Center Project

LIST OF ACRONYMS

ACSR	aluminum conductor steel reinforced
API	American Petroleum Institute
APN	assessor's parcel number
ASTM	American Society for Testing Materials
BA	Biological Assessment
BMP	Best Management Practices
BOP	balance-of-plant
CAISO	CA Independent System Operator
CalOSHA	California Occupational Safety and Health
Caltrans	California Department of Transportation
CDFG	California Department of Fish & Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act and
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon Monoxide
CTG	combustion turbine generator
DOT	Department of Transportation
EPC	engineering, procurement, and construction
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
HHV	MMBtu/hr
hr	hour
ISO	Independent System Operator
km	kilometers
kV	kilovolts
LORS	laws, ordinances, regulations, and standards
m	meter
MMBtu	Million British thermal units
MW	megawatt
NOx	Nitrogen Oxides
OSHA	Occupational Safety and Health
PEC	Panoche Energy Center
PG&E	Pacific Gas & Electric
PLC	programmable logic control

ppmvd	parts per million, volumetric dry
RO	reverse osmosis
SCADA	supervisory control and data acquisition system
SCR	Selective Catalytic Reduction
SJKF	San Joaquin kit fox
SWPPP	Storm Water Pollution Prevention Plan
UIC	Underground Injection Control
URS	URS Corporation
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey

1.0 EXECUTIVE SUMMARY

This Biological Assessment (BA) has been prepared for the Panoche Energy Center (PEC) project (project) pursuant to Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S. Code 1531 et seq.). This BA identifies and assesses the potential direct, indirect, and cumulative affects of the project on any designated critical habitat and the San Joaquin kit fox *[Vulpes macrotis mutica,* (SJKF)]; a federally endangered species that has the potential to occur within the project boundaries.

The PEC project is a proposed nominal 400-megawatt (MW) peaking facility consisting of four (4) General Electric LMS100 natural gas-fired combustion turbine generators, emissions control equipment, one cooling tower, and process water treatment equipment and other associated equipment. The project area is anthropogenically disturbed and includes an active pomegranate orchard adjacent to the southwest corner of the existing Panoche Substation in Fresno County. For the purposes of this document, the proposed project site and defined "study area" encompass the following elements: construction and operation of 14.3 acre permanent energy center; 2.2 acre permanent expansion of the existing Panoche substation; creation and restoration of an 9.0 acre temporary storage and construction parking lot; and ancillary upgrades to existing natural gas and electrical distribution facilities within the aforementioned permanent disturbance footprint. However, the "study area" also includes sufficient adjacent lands to adequately assess the direct, indirect, and cumulative effects of the project on SJKF, and any designated critical habitat. The project is located approximately 2 miles east of Interstate 5, southeast of the intersection of West Panoche Road and Davidson Avenue, off the alignment of Davidson Avenue (Figure 1-1).

Based on field studies (e.g., habitat level and focused field surveys), consultation with experts, and consultation with resource specialists, the project may affect, is not likely to adversely affect, the SJKF without adverse modification of designated critical habitat (Table 1-1). Furthermore, field evaluations, consultation with resource specialists, and literature review confirmed there were no known occurrences of any other ESA protected species within or immediately adjacent to the study area. Moreover, constituent habitat elements for other ESA protected species and historical records of ESA protected species are extremely limited within the vicinity of the study area. Therefore, the project would not affect any other plant or wildlife species which is afforded ESA protection. As a result, SJKF will be the only species addressed any further in this BA.

TABLE 1-1 SUMMARY OF PROJECT IMPACTS TO THE SJKF

COMMON NAME AND SCIENTIFIC NAME	STATUS	SUMMARY OF IMPACTS	HABITAT IMPACTED TEMPORARILY (ACRES)	HABITAT IMPACTED PERMANENTLY (ACRES)	IMPACTS TO CRITICAL HABITAT	DETERMINATION OF EFFECT
San Joaquin kit fox *(Vulpes macrotis mutica)*	Endangered	Permanent, and Temporary	9.0	16.5	None	May affect, is not likely to adversely affect

FIGURE 1-1 GENERAL VICINITY MAP

2.0 INTRODUCTION

Section 7 of the ESA directs all Federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the Secretary (i.e., USFWS and/or National Marine Fisheries Service) ensure that any action authorized, funded or carried out by such agency does not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of Federal lands as well as other Federal actions that may affect listed species such as Federal approval of private activities through the issuance of Federal permits, licenses, or other actions. This document identifies the potential environmental biological effects that may result from implementation of the construction and operation of the proposed project and a range of other reasonable alternatives.

To that end, an extensive literature search was performed and reasonably ascertainable commercial information was reviewed from resource management plans and other documents containing pertinent information on the species as well as on general biological resources in the project study area. For the purposes of this document, the "study area" is defined as the temporary and permanent construction areas, plus sufficient adjacent area, to adequately assess the direct, indirect, and cumulative affects of the proposed action on the SJKF. The direct ground disturbance area always refers to an approximate 14.3 acre permanent energy center, 2.2 acre permanent expansion of the existing Panoche substation, creation and restoration of an 9.0 acre temporary storage and construction parking lot, and ancillary upgrades to existing natural gas and electrical distribution facilities within the permanent disturbance footprint.

Information was reviewed to determine the locations and types of biological resources that could exist in the study area. Initial database information on species occurrence was gathered from the California Natural Diversity Database (CNDDB) maintained by the California Department of Fish and Game (CDFG), and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants. Additionally, species experts and resource specialists from the California Energy Commission (CEC), USFWS, CDFG, and others were contacted to gather file information on biological resources in the project study area, including maps and database records. Some of the pertinent public documents, scientific studies, technical publications, and resource specialists consulted include, but are not limited to, the following. For a complete listing of all documents, publications, and experts consulted refer to Section 7.0.

- Jones, S. 2007. United States Fish and Wildlife Service, Sacramento, California. Personal communications with URS Corporation.

- Sloan, J. CDFG Biologist, Fresno, California, Personal communications with URS Corporation.

- Blair, H. CEC Biologist, Sacramento, California. Personal communications with URS Corporation

- County of Fresno. 2000. Fresno County General Plan. Conservation and Open Space Element.

- JRP Historical Consulting. 2006. *Historical Resources Inventory and Evaluation Report for the Panoche Energy Center*.
- U.S. Fish and Wildlife Service. 1998. *Recovery plan for upland species of the San Joaquin Valley, California*. Region 1, Portland, OR. 319 pp.
- N.L. Brown, C.D. Johnson, P.A. Kelly, and D.F. Williams. Endangered Species Recovery Program. Species account.
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- Koopman, M.E., et al. February 2000. Dispersal patterns of San Joaquin kit foxes. Journal of Mammalogy. 81(1):213-222.
- Thelander, C. ed. 1994. Life on the edge: a guide to California's endangered natural resources. BioSystem Books. Santa Cruz, California. p 86-89.
- U.S. Fish and Wildlife Service. 1967. Native Fish and Wildlife, Endangered Species. Washington, D.C.
- Link, M. A. 1995. Kit fox (*Vulpes macrotis*) distribution in western Colorado., College of Arts & Sciences, Department of Biological Sciences, University of Northern Colorado, Greeley.
- Fitzgerald, J. P. 1996. Status and distribution of the kit fox (*Vulpes macrotis*) in western Colorado. Final Report. Colorado Division of Wildlife Project No. W-153-R-7.

This BA includes CNDDB and CNPS records that are organized by United States USGS 7.5-Minute Topographic quadrangle maps. The Chaney Ranch quadrangle was used primarily; however, the Hammonds Ranch, Broadview Farms, Firebaugh, Chounet Ranch, Chaney Ranch, Coit Ranch, Tumey Hills, Monocline Ridge, and Levis, California quadrangles were also used.

2.1. PROJECT DESCRIPTION

FACILITY LOCATION

The project area is located in the unincorporated area of western Fresno County. The project site is more specifically described as the Southwest Quarter of Section 5, Township 15 South, Range 13 East, on the Chaney Ranch United States Geological Survey (USGS) Quadrangle map. The assessor's parcel number (APN) is 027-060-78S.

The permanently constructed energy center will be located within a 128-acre parcel. The construction area includes a 9.0-acre temporary laydown and parking site as well within the 128-acre parcel; immediately south of the 14.3-acre energy center. The project site and construction area are leased by the applicant from the property owners. The 128-acre parcel is currently in agricultural production with pomegranate trees. Offsite improvements associated with the project include a 400-foot access road south of West Panoche Road to the project site, 2,400 linear feet of new gas

pipeline, 300-foot transmission line to tie into the Panoche Substation, and an expansion of the Panoche Substation by approximately 2.2 acres south of the existing substation boundary. The PEC includes the plant site, construction laydown area, and all of the described offsite improvements.

The project site is within western Fresno County adjacent to the Panoche Hills and east of the San Benito County line. The project is approximately 50 miles west of the City of Fresno and approximately 2 miles east of Interstate 5. The surrounding area is predominantly used for agriculture with two existing power generation facilities nearby (Starwood and Midway).

FACILITY DESCRIPTION

The generating facility will consist of four (4) General Electric LMS100 natural gas-fired combustion turbine generators (CTGs), each equipped with water injection to the combustors for reducing production of oxides of nitrogen (NOx), a Selective Catalytic Reduction (SCR) system with 19 percent aqueous ammonia injection to further reduce NOx emissions and an oxidation catalyst to reduce carbon monoxide (CO) emissions. The total net generating capacity will be approximately 400 MW. Auxiliary equipment will include inlet air filters with evaporative coolers, turbine compressor section inter-cooler, mechanical draft cooling tower, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks. Each CTG will generate 100 MW net at summer design ambient conditions. The project will have an annual capacity factor no higher than 57 percent, depending on dispatch to meet summer load demand.

Associated equipment will include emission control systems necessary to meet the proposed emission limits. Stack emission NOx in normal operation will be controlled to 2.5 parts per million, volumetric dry (ppmvd) corrected to 15 percent oxygen through a combination of water injection in the combustors and operation of the SCR system. The oxidation catalyst will limit normal operation CO stack emissions to 6 ppmvd adjusted to 15 percent oxygen. The plant will connect to the PG&E electrical transmission system at the adjacent Panoche Substation. The connection will require approximately 300 feet of 230kV transmission line located within the plant site and PG&E's substation. Interconnection at this substation minimizes impacts to the PG&E transmission system while providing efficient peaking power for use during peak demand as projected by PG&E.

FUEL GAS SUPPLY

At full load, each CTG will require approximately 900 Million British thermal units per hour [MMBtu/hr (HHV)] of natural gas, for a total plant demand of 3,600 MMBtu/hr (HHV). The project will connect to a PG&E high-pressure gas trunk line located east of PG&E's electrical substation through a 16-inch lateral pipeline. The 16-inch high-pressure lateral pipeline will be approximately 2,400 feet in length. The lateral pipeline will connect to the project site along the east side. A new gas metering station and associated on-site piping will be located on the eastern side of the site.

WATER SUPPLY AND DISCHARGE

Process water for the PEC will be supplied via two onsite supply wells connected to a deep brackish aquifer. The deep well water requirements include fire protection water, plant service water, cooling tower makeup, combustion turbine NOx injection (after treatment), and combustion turbine inlet air evaporative cooler makeup (partly from treated water). The CTG injection water will be treated using a Reverse Osmosis (RO) system, followed by a mixed-bed deionizer.

Safety water requirements include facility showers, sinks, toilets, eye wash stations, and safety showers in hazardous chemical areas. The safety water will be supplied by a single shallow well and will be treated as necessary to meet all federal, state, and local requirements. Potable drinking water will be supplied by a bottled water purveyor.

Wastewater will be disposed of using a new deep well injection system. The combined wastewater discharge from the plant will consist of cooling tower blowdown, RO rejects, evaporative cooler blowdown, CTG intercooler condensation and effluent from the oil-water separator. Sanitary wastes drains are sent to a septic tank and leach field in ground that has been determined to be acceptable by a percolation test.

Storm water will be conveyed by overland flow and swales to an infiltration basin located at the southeast corner of the project. The infiltration basin will serve as a storm water treatment facility to manage the quality and quantity of storm water runoff from the project.

TRANSMISSION FACILITIES

The proposed 230kV transmission lines will be overhead conductor design with a transmission line span of 300 feet. There will be two dead-end take off structures. One structure will be at the originating outdoor switchyard located in the new facility and the other structure will be a dead end structure to terminate the incoming 230kV line at the PG&E Panoche Substation.

2.2. PURPOSE AND NEED

PEC will provide energy to meet growth in electricity demand in Central California. This energy center is a nominal 400 MW peaking power plant facility consisting of four natural-gas-fired turbines and associated equipment. Electricity generated by the PEC will be delivered to the existing PG&E electrical transmission system at the adjacent Panoche Substation. Interconnection at this substation will minimize impacts to the PG&E transmission system while providing efficient peaking power during peak demand.

2.3. HISTORY OF CONSULTATION TO DATE

This BA reflects the salient discussions, data, and species information exchanged between the USFWS, CDFG, CEC, and the applicant during the informal consultation period. The USFWS office in Sacramento, California was contacted in April, 2007 to assist the PEC in determining which, if any, threatened, endangered, and candidate species occur or could potentially occur in the project study area. To facilitate this information gathering, a CEC biology workshop was held April 13, 2007 with representatives from the USFWS, CDFG, California Energy Commission (CEC), and PEC staff. These agency representatives were asked to review the project, draft project documents, and ancillary project features to help identify significant environmental issues, species of concern, and the potential scope and intensity of direct, indirect, and cumulative impacts to Federal and State protected species.

In addition to field and office meetings, the applicant convened and facilitated telephone conferences with the USFWS and other resource agency staff to gather biological data relating to federally protected species. These telephone conversations yielded a better understanding of the CEC and resource agency perspective on potential effects and identified pertinent technical documents that

could be applied to the analysis of effects. Based on these interactions and communications, the initial species list and potential construction, operational, and maintenance related impacts and proposed mitigation were augmented and refined. The results were then further supplemented with findings from the focused field surveys performed in 2007 (see Appendix A, PEC Application for Certification Section 5.6, Biological Resources). As a result of the informal consultation process, the PEC's project related proposed compensation measures were refined to include the following:

- Development and implementation of an environmental education program for any employees and contractors working in the study area; and

- A commitment by the PEC to support the long term preservation of SJKF by providing conservation funding for land dedication to help secure the protection of important habitat on private and potentially developable parcels. The Applicant's contributions will help ensure that needed habitat, wildlife linkages and functional connectivity will be maintained for SJKF which benefits a robust suite of additional plant and wildlife species.

3.0 PROPOSED ACTION

3.1. CONSTRUCTION SEQUENCE, SCHEDULE & EQUIPMENT

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from October 2007 to August 2009.

PROJECT SCHEDULE AND WORKFORCE

The major construction schedule milestones are listed below.

TABLE 3-1 PROJECT SCHEDULE

Activity	Date
Begin Construction	January 2008
Startup and Test	February 2009
Commercial Operation	August 2009

EXECUTION PLANS – ENGINEERING AND CONSTRUCTION PHASES

This is an engineering, procurement, and construction (EPC) type project. As such, a single General Contractor will be selected for the design, procurement, and construction of the facility. Subcontractors will be selected by the General Contractor for specialty work portions as needed.

Engineering and Pre-Construction Mobilization

Engineering activities will begin following the CEC Final Approval of the project and completion of obligatory discretionary permitting process; which is anticipated by fall, 2007. Staff from the engineering and construction groups will work together in the same office to prepare a safe, qualitative, cost effective, and sequentially effective plan for the project. The initial focus will include the purchase and delivery of engineered equipment and specialty, long-lead material. Facility design will include early milestones to complete the civil, structural, and mechanical equipment aspects of the project. As the ground breaking occurs and site grading commences, the design and procurement continues to support the overall schedule and reliability of the final project. Contractor is anticipated to mobilize within four months after notice to proceed.

Construction Facilities

Mobile trailers or similar suitable facilities (e.g., modular offices) will be used as construction offices for owner, contractor, and subcontractor personnel.

Construction Parking

Construction parking areas will be within existing site boundaries of the designated laydown area, south of the plant site. Construction access will be from West Panoche Road, via a new access road, as shown on Figure 3-1. These areas will provide adequate parking space for construction personnel and visitors during construction and will be maintained for stability and safety.

Laydown and Storage

Areas within the energy center boundary and the 8-acre laydown area immediately to the south of the proposed energy center locale, shown on Figure 3-1, will be used as off-load and staging areas. These areas will be restored to agricultural use once construction is complete.

Emergency Facilities

The General Contractor will have a Safety Coordinator who will prepare a site-specific safety plan. Emergency services will be coordinated with the County of Fresno Fire Department and local hospital in the City of Mendota. An urgent care facility will be contacted to set up non-emergency physician referrals. First aid kits will be provided in the construction offices and regularly maintained. At least one person trained in first aid will be part of the construction crew. In addition, all foremen and supervisors will be given first aid training.

Construction Utilities

During construction, temporary utilities will be provided for the construction offices, laydown area, and the project site. Temporary construction power will initially be provided by using diesel- and gas-powered generators. Eventually, temporary construction power will be supplied by a connection to the adjacent PG&E electrical substation. Water trucks and potable water delivery will initially provide construction water. As the project matures and the build-out of water wells is completed, the onsite water wells will then be used as the source of construction water. Portable toilets will be provided throughout the site during construction.

Site Services

The General Contractor will provide the following site services:

- Environmental health and safety training
- Site security
- Site first aid
- Construction testing (e.g., nondestructive examination, soil compaction)
- Site fire protection and extinguisher maintenance
- Furnishing and servicing of sanitary facilities
- Trash collection and disposal
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations

Construction Equipment and Materials Delivery

Materials and supplies will be delivered to the site by truck. Truck deliveries of construction materials and equipment will generally occur on weekdays between 6:00 a.m. and 6:00 p.m.; however, some larger heavy load deliveries may be delivered outside those hours. Site access will be controlled for personnel and vehicles.

3.2. PROJECT FEATURES & CONSTRUCTION ACTIVITIES

The following subsections describe the specific project features and construction-related activities.

CIVIL/STRUCTURAL FEATURES

OVERVIEW

The power block will consist of four separate simple-cycle combustion turbine power generation trains, each consisting of one General Electric Energy LMS100 CTG, an Air Inlet System, an Intercooler and Variable Bleed Valve Silencer, a SCR system, one stack, a power control module, an intercooler motor control center, a fuel gas filter/separator, and a step-up transformer.

In addition to the four combustion turbine power generation trains, there will be a five-cell cooling tower, an ammonia storage tank, a natural gas compressor facility, a water treatment facility, and two auxiliary transformers. There will also be balance-of-plant (BOP) mechanical and electrical equipment.

The major equipment will be supported on reinforced concrete foundations at grade, with pile-supports as necessary. Individual reinforced pads at grade will be used to support the BOP mechanical and electrical equipment. The gas compressors will be in an enclosed acoustic building for noise attenuation. The water treatment equipment will also be in an enclosed building.

STACKS

The SCR system will include an integral stack/silencer system. The stack will be a self-supporting steel stack, 90 feet tall, and will include the associated appurtenances, such as sampling ports, exterior ladders, side step platforms, a lighting system if required by Federal Aviation Administration (FAA) regulations, and electrical grounding.

BUILDINGS

The plant buildings will include an administration and control building, a warehouse building, a water treatment building, a firewater pump building, switchgear modules, and a gas compressor building. Building dimensions are shown on Figure 3-1,. The administration and control building will house the administrative areas and the control room for the new facility. All of the buildings will be supported on mat foundations or individual spread footings.

TRANSFORMER FOUNDATIONS AND FIRE WALLS

There will be four 13.8kV to 230kV step-up oil-filled transformers and two auxiliary oil-filled transformers. Each will be supported on reinforced concrete foundations at grade, with pile-supports as necessary. Construction of a concrete retention basin around each transformer will provide oil containment, in the event of a failure of a transformer. Concrete firewalls are planned for each step-up transformer and auxiliary transformer to limit a potential transformer fire to its concrete basin area.

YARD TANKS

The yard water storage tanks will include the demineralized water storage tank (240,000 gallons), the raw water/firewater storage tank (500,000 gallons), and the wastewater collection tank (20,000 gallons).

The yard storage tanks will be vertical, cylindrical, field-erected, or shop-fabricated steel tanks. Each tank will be supported on a suitable foundation consisting of either a reinforced concrete ring wall with an interior bearing layer of compacted sand for the tank bottom, or a reinforced concrete mat.

ROADS

The new facilities will be served by the road network shown on Figure 3-1. The new site will be accessed from Panoche Road via a new asphalt paved entrance road. All new roads, miscellaneous access drives, and permanent parking areas within the site boundaries will be asphalt paved.

SITE SECURITY FENCING

A chain-link security fence surrounding the perimeter of the site will enclose the new facility. In addition, the switchyard will be enclosed within a chain-link fence for the safety of the workforce. A controlled-access gate will be located at the entrance off the new access road from Panoche Road. During construction, a temporary chain-link security fence will be erected around the outside perimeter of the laydown site. This fence will be removed at the conclusion of the construction phase.

SITE GRADING AND DRAINAGE

The plant site will consist of paved roads, paved parking areas, and graveled areas. Storm water will be conveyed by overland flow and swales to an infiltration basin located at the southeast corner of the project site. The infiltration basin will serve as a storm water treatment facility to manage the quantity of storm water runoff from the project site. The infiltration basin is sized to capture 85 percent of the annual storm water runoff from the site according to standards set in the "California Storm Water Best Management Practices (BMP) Handbook." The infiltration basin will also serve to manage peak storm water runoff during 100-year 24-hour storm events. The peak runoff for the developed conditions will not exceed the peak runoff rate of the existing conditions. The site grading and drainage plan for the project is shown on Figure 3-2.

A Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to construction of the PEC. This plan will be utilized at the PEC site to control and minimize storm water during the construction of the facility. The plan will use BMPs such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas.

SITE FLOOD ISSUES

According to the Federal Emergency Management Agency (FEMA), a portion of the site is within the 100-year flood plain of the San Joaquin River. The site will be raised in conformance with the Fresno County Ordinance Title 15, Flood Hazard Areas to ensure that in the event of a 100-year storm, the site and equipment is not subjected to any flood damage.

EARTHWORK

Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stockpiled at designated locations using proper erosion protection methods. Excess material will be removed from the site and disposed of at an acceptable location. If contaminated material is encountered during excavation, its disposal will comply with applicable laws, ordinances, regulations, and standards (LORS).

The site is currently an agricultural area. Existing trees and topsoil will be removed. Fill will be imported to establish finish grade. Finish grade will be approximately one to three feet higher than existing grade. The quantity of fill for the project is approximately 60,000 cubic yards.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations for Seismic Zone 4. For slopes requiring soil reinforcement to resist seismic loading, geogrid reinforcement will be used for fills and soil nailing for cuts. Slopes for embankments will be no steeper than 2:1 (horizontal:vertical). Construction will be at one to three feet above existing grade, which is fairly level; therefore major cuts and fills are not anticipated.

Areas to be backfilled will be prepared by removing unsuitable material and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction. Structural fill supporting foundations, roads, and parking areas will be compacted to at least 95 percent of the maximum dry density as determined by American Society for Testing Materials (ASTM) D-1557. Embankments, dikes, bedding for buried piping, and backfill surrounding structures will be compacted to a minimum of 90 percent of the maximum dry density. Backfill placed in remote and/or unsurfaced areas will be compacted to at least 85 percent of the maximum dry density.

Where fills are to be placed on subgrades sloped at 6:1 (horizontal:vertical) or greater, keys into the existing subgrade may be provided to help withstand horizontal seismic ground accelerations.

The subgrades (original ground), subbases, and base courses of roads will be prepared and compacted in accordance with California Department of Transportation (Caltrans) standards. Testing will be in accordance with ASTM and Caltrans standards.

ELECTRICAL INTERCONNECTION

The new generation will be interconnected to the PG&E transmission grid through the facility's 230kV outdoor switchyard via a 230kV transmission line to the PG&E Panoche Substation. To accommodate the new generation by the four new combustion turbine generators, the Panoche Substation and the transmission system owned by PG&E may be upgraded in accordance with the final PG&E facility study report.

PANOCHE SUBSTATION EXPANSION

The project will interconnect to PG&E's existing Panoche Substation's 230kV bus. The 230kV conductor will exit from the northeast corner of the project site and run northeast approximately 300 feet to tie in to the Panoche Substation. There is limited space within the existing Panoche Substation, and PG&E will extend the existing 230kV bus. Approximately 320 feet x 300 feet of land on the south side of the existing 230kV bus will be acquired by PG&E to accommodate this expansion. The land to be acquired currently supports agricultural production.

TRANSMISSION LINE SPECIFICATIONS

The onsite interconnection facilities will consist of an outdoor switchyard which includes:

- A transmission line strain bus
- Bus structures
- Transmission line dead end structure
- Line surge arresters
- High voltage disconnect switches
- High voltage circuit breakers
- Metering and relaying devices
- Foundations
- Ground grid
- Fencing
- Any other components necessary to connect the generators to the switchyard

The switchyard design will be coordinated with PG&E as required. The new overhead transmission line from the switchyard to the substation will be 230kV.

Conductor

The generation-tie line connecting the project to the expanded existing Panoche Substation will be constructed using 795 aluminum conductor steel reinforced (ACSR) conductor or equivalent.

Ground Wire

The transmission line will have shield or ground wires in place. The location of the shield wires in relation to conductors shall be in accordance with best industry practices and determined by the surrounding terrain. The shield wire shall be extra high strength galvanized steel or copper-clad steel as determined by the location and the detailed design.

Route

The proposed transmission line will originate from the plant switchyard located on the north side of the site. The 230kV transmission line will exit from the northeast corner of the project site and run northeast approximately 300 feet to tie into the Panoche Substation.

Panoche Substation Interconnect

In order to interconnect to the Panoche Substation it is necessary for PG&E to extend the existing 230kV double busses on the south side of the substation outside the existing fence line by about 300 feet for two new 230kV bays, one for the relocation of the Gates-Panoche Line #1 and the other for the new generation-tie line. The relocation of the Gates-Panoche Line #1 and use of the existing spare bay are necessary to provide for the interconnection. The main ground grid will be expanded to cover the two new bays. Lighting and fencing for the new area will also be installed by PG&E.

TRANSMISSION STRUCTURES

The proposed 230kV transmission lines will be overhead conductor design with a transmission line span of 300 feet. There will be two dead-end take off structures. One structure will be at the originating outdoor switchyard located in the new facility and the other structure will be a dead end structure to terminate the incoming 230kV line at the PG&E Panoche Substation.

Types

The take off or the dead end structures will be H or A frame type. They will be 65 feet high with additional 15-foot lightning masts. The power conductor will be attached 50 feet from the ground and the shield wire will be attached at a height of 65 feet. There will be three additional structures in the facility outdoor 230kV switchyard to support the strain bus assembly.

Foundations

Foundations will be required for 230kV disconnect switches, 230kV circuit breakers, voltage and current transformers, strain bus termination structures, and outgoing dead end structure. The foundations will be drilled pier concrete foundations with the necessary anchor bolts.

Access to Structures

The entire interconnection phase of the project will be located within the confines of the generating facility outdoor switchyard and the PG&E substation. The transmission line will have only a 300-foot span. It will originate at the facility outdoor switchyard dead end structure and terminate at the Panoche Substation incoming dead end structure. No access to the electrical interconnection facilities will be required across any private property. The public will not have access to any portions of the transmission lines or the switchyard.

Wilson-Gregg Transmission Line Reconductoring

To effectively move this new generation of electricity, a portion of the existing Wilson-Gregg 230kV Line must be reconductored. The Wilson-Gregg 230kV Line related to the one-mile reconductoring is located immediately north of the Gregg Substation, north of the City of Fresno in Madera County between tower 101/674 and 102/681. This process will occur from the top down using helicopters to minimize ground disturbance and maximize safety. All material and equipment

storage and staging will occur at the existing Gregg Substation located adjacent to the towers. Activities involved with the preparation of the towers include a staging area to assemble the tower extensions, preparation of the towers to take the tower extensions and installation of the tower extension. A landing location for the helicopter will be located inside the Gregg Substation. All assembled tower extensions, workers, materials and equipment/tools will be flown to the towers with a helicopter. Methods used to "install the new conductor" will require some ground vehicle(s) activity which will occur either in a developed orchard or on dirt access roads. These areas in the orchard or on the access road may (depending on the soil) require the laying down rock on top (a SWPPP measure) to move set up equipment to remove the old conductor and install the new conductor. Helicopters will once again be used to deliver workers, equipment/tools and materials to and from the towers. These activities are considered temporary impacts and will not require soil excavation or vegetation removal.

NATURAL GAS SUPPLY PIPELINE

The project includes a natural gas supply pipeline (lateral connection from trunk line and onsite). Natural gas will be delivered to the plant site from a connection to a PG&E trunk line. A new gas compressor, metering, and regulator station will be provided on the east side of the site. The gas will be metered by PG&E as it enters the project site. The gas will be compressed as required and directed to each CTG. Additional flow metering will be provided at each CTG.

The piping will be routed to the aboveground gas metering and regulation station and either routed aboveground or belowground to the gas compressors. From the gas compressors the pipeline will be routed underground to each CTG. The gas piping system will be constructed of carbon steel materials suitable for the design pressures and temperatures. Isolation and control valves will be provided as required by design, operational, and safety requirements.

Pipeline Routes

The PEC project will require the construction of approximately 2,400 linear feet of offsite pipeline, up to 16-inches in diameter, to supply natural gas to the project site. Primary and alternate routes for the pipeline are indicated in Figure 3-1. The primary route runs north of the PG&E electrical substation along Panoche Road. An alternate route is under consideration which would be located to the south of the substation. Either route is technically acceptable.

Buried Pipe

Construction will primarily use an open trench method. The pipeline will be constructed of carbon steel in accordance with the American Petroleum Institute (API) specifications for gas pipelines or specifications of the ASTM. The pipe will have corrosion-protection coating that is either factory- or field-applied. Joints will be welded, inspected using x-ray, and wrapped with a corrosion-protection coating. Construction of the natural gas pipeline is described in the following subsections.

Trenching

The width of the trench is dependent on the soil type encountered and requirements of governing agencies. The optimal dimensions of the trench will be about 18 inches wide and 48 inches deep. For loose soil, a trench of up to 8 feet wide at the top and 2 feet wide at the bottom may be required. The

pipeline will be buried with a minimum 36-inch cover. The excavated soil will be piled on one side of the trench and later used for backfilling after the pipe is installed in the trench.

Stringing

The pipe will be laid out (stringing) on wooden skids along the side of the open trench during installation.

Installation

Installation consists of:

• Welding, coating, and bending of pipe

• Laying sand or fine spoil on the trench floor

• Lowering the pipe string into the trench

Welding will meet the applicable API and ASTM standards and shall be performed by qualified welders. Welds will undergo radiographical inspection by an independent, qualified radiography contractor. All coatings will be checked for holidays and will be repaired before lowering the pipe into the trench.

Backfilling

Backfilling consists of returning excavated soil back into the trench around and on top of the pipe, and up to the original grade of the surface. The backfill will be compacted to protect the stability of the pipe and minimize subsequent subsidence.

Plating

Plating consists of covering any open trenches, for safety purposes, with solid rectangular plates in areas of foot or vehicular traffic at the end of a workday. Plywood plates can be used in areas of foot traffic and steel plates on areas of vehicular traffic.

Pneumatic Testing

Pneumatic testing consists of plugging both open ends of a pipeline that is to be tested, filling the pipe with air up to a pressure specified by code requirements, and maintaining the pressure for a period of time.

Clean up

Clean up consists of restoring the ground surface by removing construction debris, grading the surface to its original state, and replanting vegetation.

Commissioning

Commissioning consists of cleaning and drying the interior of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

Safety

Safety consists of complying with all applicable California Occupational Safety and Health (CalOSHA), OSHA, and other regulations and standards as well as contractor's specific safety plans for the project, which will address specific pipeline safety issues.

WATER SUPPLY AND TREATMENT

PEC process water will be supplied via two on-site production wells connected to a lower aquifer. Process water uses include fire protection water, plant service water, sanitary water, cooling tower makeup, combustion turbine NOx injection (after treatment), and combustion turbine inlet air evaporative cooler makeup (partly from treated water). The CTG injection water will be treated using a RO system, followed by trailer-mounted demineralizers.

These wells will also supply facility showers, sinks, toilets, eye wash stations, and safety showers in hazardous chemical areas. Signs will be posted to alert personnel that production well water is not for human consumption.

3.3. FACILITY OPERATIONS & MAINTENANCE

This section discusses operation and maintenance procedures that will be followed by the PEC staff to ensure safe, reliable, and environmentally acceptable operation of the power plant, transmission system, and pipelines.

POWER PLANT FACILITY

The PEC is designed as a simple cycle; intermediately loaded peaking facility with four LMS100 CTGs. PEC will require approximately 12 full time employees. Plant operations will be directed from a new control room. All system equipment will be controlled through a programmable logic control (PLC) and the project equipment will be integrated into this proven control system.

The plant will be operated to provide its maximum available electrical output during the periods when the demand for electricity is greatest. As an intermediate load and peaking facility, the plant is estimated to operate no more than 5,000 hours per year. The plant will be dispatched by PG&E in accordance with their economic dispatch procedures. The project equipment will be integrated with a PEC plant performance monitoring program that allows plant staff to make critical decisions as to when the equipment performance has deteriorated to the extent requiring corrective action. This program also allows the plant staff to accurately determine the cost of electrical production. This ability in conjunction with an experienced and adaptable staff will allow the plant to be operated and maintained in the most efficient method possible.

Planned maintenance will be coordinated to coincide with periods of low power demand on the CAISO (independent system operator) system.

TRANSMISSION SYSTEM OPERATION AND MAINTENANCE

PEC will be responsible for the maintenance, inspection, and normal operation of the new 300-foot 230kV interconnecting transmission line in agreement with PG&E and Independent System Operator (ISO) protocols. Operation of the electrical interconnection facilities will be locally controlled at the new generating plant. Operation may also be remotely monitored and controlled by PG&E via the PEC supervisory control and data acquisition system (SCADA). Control and protection equipment at the plant and within the PG&E switchyard will monitor and control the safe operation of the line, and will automatically trip the plant (or a portion of it) and/or the line in the event of a fault. The PEC will have continuous access to all of the electrical interconnection facilities in the event of an emergency.

The control, protection, and metering equipment for the interconnection will be tested for proper operation. The protection and metering equipment will be calibrated and tested approximately every 12 months in accordance with the PEC and PG&E procedures. Inspections of the transmission line and structures are anticipated to occur every 6 to 12 months. Periodic cleaning of the transmission line and switchyard insulators and bushings may be required to remove contamination. The cleaning will be performed based on visual inspections scheduled by plant and switchyard operating personnel. Washing operations will consist of spraying insulators with deionized water through high-pressure equipment mounted on a truck.

PIPELINES

There are no water lines that leave the PEC property. A natural gas pipeline from PG&E Gas Line 2 to the project will be owned by PG&E. Operation and maintenance of the natural gas pipeline from the existing fuel gas supply lines will be performed by PG&E in accordance with applicable Federal Energy Regulatory Commission (FERC) and U.S. Department of Transportation (DOT) regulations. This piping system will receive periodic inspections as part of PG&E's pipeline maintenance program. Industrial wastewater will be discharged to the onsite deep well injection system. The connection to the system will be built, owned, and operated by the PEC.

3.4. GENERAL AVOIDANCE & MINIMIZATION MEASURES

The minimization and avoidance measures provided below are proposed as part of the proposed action. These measures are intended to address potential adverse affects on federally listed species that are known to occur within the study area or have the potential to occur.

- In order to support the long-term preservation of the SJKF, PEC is contributing to conservation funding efforts to secure private parcels of SJKF habitat. The PEC's contribution is intended for use to ensure that needed wildlife linkages and functional connectivity will be maintained for SJKF, which will benefit a wide variety of plant and wildlife species. To meet this objective, PEC will make a monetary contribution toward the conservation SJKF habitat totaling approximately 16.5 acres at a Service-approved compensation bank.
- PEC will develop and implement an environmental education program prior to the start of work. Employees and contractors working in the field will be required to complete an environmental training session before beginning work. The program will include discussions of the biology, distribution, and ecology of ESA listed species within the construction area

and surrounding geographic area; protection afforded such species under applicable federal and state laws and regulations; all protection measures that must be followed to protect such species during Project activities; penalties for noncompliance; reporting requirements; and the importance of compliance with all protection measures. To ensure proper focus, emphasis will be placed on the specific aspects of compliance applicable to the particular audience's activities on the Project.

- PEC will retain the services of a Biological Monitor who will be responsible for overseeing project environmental protection measures.
- Project personnel will exercise caution when commuting to the construction area to minimize any chance for the inadvertent injury or mortality of species encountered on major roads leading to and from the construction area. PEC's contractors and employees will report all such incidents directly to the Biological Monitor.
- Existing routes of travel and approved access roads will be used to and from construction areas. Cross-country travel by vehicles and equipment will be prohibited. Except on County or state-maintained roads, vehicle and equipment speeds will not exceed 25 miles (40 kilometers [km]) per hour (mph) within potential habitat for SJKF.
- All trash and food items generated by construction and maintenance activities will be promptly contained and regularly removed from the project site. All trash containers will have sealed and secured lids.
- Firearms and domestic pets will be prohibited from work sites.
- Employees and contractors will look under vehicles and equipment for the presence of protected species prior to movement. No equipment will be moved until the animal has left voluntarily or it is removed by a biologist authorized to do so.
- At the conclusion of construction, all trenches and holes will be completely filled, and surfaces will be cleaned, smoothed, and re-contoured to match the original profiles as closely as possible.
- If a listed species is located during construction, and a contingency for avoidance, removal, or transplant has not been approved by USFWS or appropriate agency, PEC will not proceed with project activities that could affect that species until specific consultation with USFWS or other appropriate agency is completed.
- All encounters with listed species will be reported to the Biological Monitor, who will record the following information: species name; location (narrative and maps) and dates of observations; general condition and health, including injuries and state of healing; diagnostic markings, including identification numbers or markers; and locations moved from and to (if appropriate).
- Upon locating a dead or injured ESA protected species, PEC will notify the USFWS, and CDFG should it involve a state-listed species. Written notification must be made within 15 days of the date and time of the finding or incident (if known) and must include: location of the carcass, a photograph, cause of death (if known), and other pertinent information.
- All stakes, flagging, and fencing used to delineate the construction area will be removed no later than 30 days after construction and restoration are complete.
- All vehicles and construction-related equipment would be refueled only within designated refueling areas. General maintenance of construction equipment will also only occur within designated maintenance areas.
- Within one month of Project completion, PEC will submit a standardized report to the USFWS. The report will document the effectiveness of the conservation measures, the

number of individuals of any ESA protected species discovered during construction and the number of individuals killed or injured, and other pertinent information. The report will also make recommendations for modifying the stipulations in order to enhance species protection in the future. The final report will provide the actual acreage disturbed by project activities by habitat type.

- Limits of grading and construction activities should be clearly delineated so that no vegetation outside the delineated grading limits would be disturbed by construction personnel or equipment. Project personnel will drive only on existing roads outside of construction limits.
- PEC will implement the Best Management Practices identified in the project specific SWPPP
- In order to comply with the Migratory Bird Treaty Act and relevant sections of the CDFG Code (e.g., 3503, 3503.4, 3504, 3505, et seq.), any vegetation clearing would take place outside of the typical avian nesting season (i.e., February 1st – August 31st), to the maximum extent practical. If this is not possible, prior to ground-disturbing activities, construction, and so forth within the study area, a qualified biologist will conduct and submit a migratory nesting bird and raptor survey report. A qualified biologist is an individual with sufficient education and field experience in local California ecology and biology to adequately identify local plant and wildlife species. The survey shall occur not more than 72 hours prior to initiation of Project activities and any occupied passerines and/or raptor nests occurring within or adjacent to the study area will be delineated. To the maximum extent practicable, a minimum buffer zone from occupied nests will be maintained during physical ground-disturbing activities. Once nesting has been determined to cease, the buffer may be removed.

FIGURE 3-1 PROJECT SITE PLAN

FIGURE 3-2 GRADING & DRAINAGE PLAN

4.0 ENVIRONMENTAL BASELINE

4.1. METHODS FOR EVALUATION

Biological field surveys were conducted by a URS biologist on April 21, 2006 according to the CEC regulations (CEC, 2000). The "project area" is defined as the area that could potentially be directly disturbed during project construction, and includes the power plant site, construction laydown and parking areas, electric transmission line, access road, substation expansion, and natural gas line. The "project survey area" includes the project area and a buffer of a 1-mile radius surrounding the PEC where field surveys were conducted for botanical and wildlife resources.

Prior to conducting field surveys a review of literature was performed including a search of the California Native Plant Society (CNPS) Inventory of Rare Plants Database and California Natural Diversity Database (CNDDB) in order to determine special-status species[1] known to occur or that could potentially occur within the project survey area. The following USGS 7.5- minute quadrangles were searched for records of special-status species: Hammonds Ranch, Broadview Farms, Firebaugh, Chounet Ranch, Chaney Ranch, Coit Ranch, Tumey Hills, Monocline Ridge, and Levis quadrangle. The project survey area is within the Chaney Ranch, and all of the surrounding quadrangles were searched (see Figure 4-1).

The reconnaissance field survey included walking transects through the project area and visually scanning areas within the 1-mile buffer (see Figure 4-2). All botanical and wildlife species observed were documented, and all plant communities and habitats that could support potentially occurring special-status species were described.

4.2. GENERAL ENVIRONMENTAL SETTING

The project area was historically sagebrush and native grass covered arid landscape. Dense riparian vegetation grew only along the banks of the area's few creeks (JRP Historical Consulting, 2006). Nonetheless, as a result of heavy agricultural and industrial use in the area, no native vegetation is present within the project area or vicinity. The project area and adjacent lands are anthropogenically disturbed and provide limited habitat for few wildlife species as a result of traditional agricultural practices (e.g., active pomegranate orchard, herbicide applications, etc.), electrical facilities, vehicle traffic, noise, lights, dust, illegal dumping, and so forth. Additionally, any individual species present in the survey area or in adjacent/surrounding lands are assumed to have acclimated and developed tolerance to substantial noise, light, and other affects resulting from the present disturbance regime. Certainly, the operational pomegranate orchard, electrical substation, and adjacent multi-lane road have influenced wildlife behavior and ecology locally. The existing Panoche Substation is adjacent to the northern corner of the project site. Panoche Road is to the north and the remainder of the site is surrounded by agriculture primarily consisting of apricot and pomegranate trees.

[1] Special-status species are defined as any species that has been afforded special recognition by federal, state, or local resources agencies (e.g., USFWS, CDFG, etc.), and conservation organizations (e.g., CNPS). However, for the purposes of this analysis, the term "special-status species" excludes those avian species solely identified under Section 10 of the Migratory Bird Treaty Act for federal protection.

4.3. GENERAL VEGETATION COMMUNITIES SURVEY RESULTS

The dominant vegetation present is pomegranate trees and scattered ruderal vegetation (covering less than 5 percent of the area) in the understory of the pomegranate trees. Negligible quantities, of low quality native plant communities are present within the project area. To that end, the only native plant species observed was miner's lettuce (*Claytonia perfoliata*). Vegetation within the larger survey area is similar except some areas have apricot trees instead of pomegranate trees. Personnel tending the orchards regularly apply herbicide to manage weeds.

4.4. SPECIAL STATUS PLANT SPECIES

No special-status plant species were observed during the field survey and there are no records in the CNDDB within the project survey area. The CNDDB identifies the following 11 special-status plant species as having a low[2] potential for occurrence within the project vicinity: Lost Hills crownscale (*Atriplex vallicola*), hispid bird's-beak (*Cordylanthus mollis ssp. hispidus*), Hall's tarplant (*Deinandra halliana*), recurved larkspur (*Delphinium recurvatum*), Temblor buckwheat (*Eriogonum temblorense*), round-leaved filaree (*Erodium macrophyllum*), Munz's tidy-tips (*Layia munzii*), Panoche pepper-grass (*Lepidium jaredii ssp. album*), showy madia (*Madia radiate*), San Joaquin woollythreads (*Monolopia congdonii*), and Sanford's arrowhead (*Sagittaria sanfordii*). In addition, CNPS lists paleyellow layia (*Layia heterotricha*). These species are likely to have been extirpated from the project survey area due to the conversion of native vegetation to intensive agriculture. Few native plant species were observed during field surveys and these species are not expected to occur in the project study area.

4.5. GENERAL WILDLIFE COMMUNITIES SURVEY RESULTS

The PEC and adjacent lands provide limited habitat for few wildlife species due to the high level of anthropogenic disturbance and non-native habitat. Sixteen species of birds were observed during field surveys of the study area. Typical species observed include western kingbird (*Tyrannus verticalis*), red-tailed hawk (*Buteo jamaicensis*), American goldfinch (*Carduelis tristis*), and American pipit (*Anthus rubescens*), but none of the birds detected are sensitive at a state or federal level. Raptors are protected by CDFG and pursuant to Section 10 of the Migratory Bird Treaty Act. Most of the species detected, such as house finch (*Carpodacus mexicanus*), brown-headed cowbird (*Molothrus ater*), killdeer (*Charadrius vociferus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), American crow (*Corvus brachyrhynchos*), morning dove (*Zenaida macroura*), cliff swallow (*Petrochelidon fulva*), Brewer's blackbird (*Euphagus cyanocephalus*), and Northern mockingbird (*Mimus polyglottus*), are typically found in disturbed/developed areas. Some breeding activity was observed, including morning doves that were breeding in the pomegranate trees, cliff swallows with nests at the top of the water tank at the southeast corner of the orchard outside of the project area, and an active red-tailed hawk nest in the transformer towers at the Panoche Substation. A coyote (*Canis latrans*) was observed moving through the orchard within the project area and two western toads (*Bufo boreas*) were observed in burrows just outside of the project area to the northwest. A few gopher (*Thomomys bottae*) burrows were observed, but rodent activity was minimal.

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[2] Species distribution is restricted by substantive habitat requirements, which are negligible within the study area, and no further survey or study is obligatory to determine likely presence or absence of this species within the study area.

4.6. SPECIAL STATUS WILDLIFE SPECIES

No special-status wildlife species were observed during the field survey and there are no records in the CNDDB within the project survey area. The CNDDB lists the following 21 special status wildlife species have a low[3] potential for occurrence in the project vicinity: Ciervo aegilian scarab beetle (*Aegialia concinna)*, tricolored blackbird (*Agelaius tricolor)*, San Joaquin antelope squirrel (*Ammospermophilus nelsoni)*, silvery legless lizard (*Anniella pulchra pulchra)*, short-eared owl (*Asio flammeus)*, burrowing owl (*Athene cunicularia)*, Swainson's hawk (*Buteo swainsoni)*, western yellow-billed cuckoo (*Coccyzus americanus occidentalis)*, San Joaquin dune beetle (*Coelus gracilis)*, giant kangaroo rat (*Dipodomys ingens)*, western pond turtle (*Emys (=Clemmys) marmorata)*, *californicus)*, blunt-nosed leopard lizard *(Gambelia sila)*, Morrison's blister beetle *(Lytta morrisoni),* Tulare grasshopper mouse *(Onychomys torridus tularensis)*, San Joaquin pocket mouse *(Perognathus inornatus inornatus)*, California horned lizard *(Phrynosoma coronatum frontale*), bank swallow *(Riparia riparia),* American badger *(Taxidea taxus)*, and giant garter snake *(Thamnophis gigas).*

However, the project survey area and study area have a moderate potential for occurrence of SJKF. Even though SJKF distribution is restricted by substantive habitat requirements which only marginally occur within the survey area, the study area does include suitable foraging habitat for the fox. No kit foxes have been identified within the project survey area, but CNDDB records from 2.2 miles west of the study area (along Panoche Creek in the Tumey Hills west-southwest of the intersection of Interstate 5 and Panoche Road [Figure 4-2]) exist. Furthermore, the study area is in the vicinity of Panoche Creek; a known corridor for SJKF (USFWS Jones, S. 2007 personal communication). However, the study area does not bisect the Creek (Figure 4-3), and no den sites have ever been identified within the study area or any of the immediately surrounding properties. Additionally, a large known populations of SJKF have been identified approximately 5 miles southwest from the study area; across Interstate 5 (USFWS Jones, S. 2007 personal communication).

4.7. ENDANGERED SPECIES DESCRIPTION

SAN JOAQUIN KIT FOX

Status and Distribution

SJKF is currently listed as an endangered species by both the federal government and the State of California (USFWS, 1998). The SJKF historically ranged throughout the San Joaquin Valley from Contra Costa County in the north to northern Santa Barbara County in the south (REF). Currently the SJKF still has a wide distribution. Kit foxes primarily live in grassland and to a lesser extent, shrub and agricultural habitat (Brown *et al.*, 1997). Kit foxes predominantly eat rodents, ground squirrels, rabbits and hares, and ground-nesting birds (Brown *et al.*, 1997). Kit fox pups are born in late winter and early spring, and the male provides most of the food for the female while she is nursing (Brown *et al.*, 1997). Kit foxes change dens frequently, and often enlarge existing ground squirrel burrows in order to make new dens. Predation or competitive exclusion of kit foxes may occur in the presence of coyotes, introduced red foxes, domestic dogs, bobcats, and large raptors.

[3] Species distribution is restricted by substantive habitat requirements, which are negligible within the study area, and no further survey or study is obligatory to determine likely presence or absence of this species within the study area.

Threats/Reasons for Decline.

Loss and degradation of SJKF habitat (e.g., agricultural, industrial, and urban developments) has decreased the carrying capacity of remaining habitats and threatened the species long term survival (Morrell 1975, Orloff *et al*. 1986). Such habitat losses contribute to SJKF declines through displacement, direct and indirect mortalities, barriers to movement, and reduction of prey populations. Human threats to kit fox include destruction of habitat, habitat fragmentation, predator and pest control programs, and anthropogenic accidents (e.g., electrocution, roadkills, suffocation from accidental burial in dens, and so forth) (USFWS 1998). Furthermore, natural factors such as drought, flooding, and rabies cause a significant percent of kit fox deaths.

FIGURE 4-1 REGIONAL MAP OF BIOLOGICAL RESOURCES

FIGURE 4-2 BIOLOGICAL RESOURCES WITHIN ONE MILE OF THE PROJECT AREA

FIGURE 4-3 USFWS SAN JOAQUIN KIT FOX POPULATIONS INFORMATION

5.0 EFFECTS DETERMINATION

The environmental baseline for this assessment includes a substantial anthropogenic disturbance regime (e.g., active pomegranate orchard, electrical facilities, vehicle traffic, noise, and so forth). Certainly, the aforementioned disturbance regime has influenced wildlife behavior and local ecology within the study area and within surrounding lands. To that end, any individuals present in the study area or in adjacent/surrounding areas are assumed to have acclimated and developed tolerance to substantial noise, light, and other affects resulting from the presence of an active orchard, electrical substation, and a well traveled road. This section includes the analysis of the direct, indirect, and cumulative effects of the project on the SJKF. The analysis identifies the project features and/or activities that are anticipated to adversely impact the species and when feasible, quantifies such impacts.

5.1. SAN JOAQUIN KIT FOX

Proposed ground disturbance and physical habitat alteration resulting from construction activities for the proposed project will result in 9.0 acres of temporary impacts and 16.5 acres of permanent impacts to SJKF habitat, none of which are within Federally designated critical habitat. Nonetheless, the cumulative 25.5 acres of affected habitat exists within a substantial anthropogenic disturbance regime.

In the absence of any recent empirical data, SJKFs that are known to forage or may occur in the project vicinity are assumed to have acclimated and developed tolerance to substantial noise, light, and other affects resulting from the presence of an active pomegranate orchard, electrical facilities, vehicle traffic, noise, etc. An additional unquantifiable acreage of suitable foraging habitat will be affected by construction and operational noise, light, and other impacts discussed below. Adequate research has not been conducted specifically on the SJKF to quantify these affects. However, the PEC has committed to implement a number of avoidance and minimization measures and support the long-term preservation of the SJKF. This is being accomplished by contributing conservation funding to help secure the highest quality habitat that is in private ownership and on potentially developable parcels. The PEC's contributions will help ensure that needed habitat, wildlife linkages and connectivity are maintained; which benefit a robust suite of plant and wildlife species, including SJKF.

Affects and impacts from the proposed action to SJKF were based on the proposed project location, construction methods, and the resource protection measures adopted as part of the project and detailed in Section 3.4. Additional considerations and sensitivities included:

- Construction-related impacts (e.g., construction, vegetation clearing and grading, increased traffic, lighting, noise, vibrations, etc.);
- Post-construction operational noise, light and vibration impacts from PEC use;
- Post-construction PEC maintenance activities (e.g., herbicides, road maintenance, etc.);
- Affects on habitat connectivity (e.g., upland and breeding connectivity, movement corridors, landscape linkages, etc.); and

- Direct loss/mortality (e.g., habitat loss and or modification).

In general, construction activities and post-construction maintenance and operations could directly kill SJKF, crush potential burrows, and/or temporarily displace them from some foraging habitat areas. The incremental increases in noise, light, vibration, and human activities associated with the construction activities are also expected to have the potential to cause SJKF to avoid an area until the disturbances are eliminated or the animals become accustomed to the disturbance. However, ascertainable studies have been conducted to assess or quantify impacts of noise, light or vibration on SJKF.

Kit fox seem to be fairly tolerant of human presence, although Link (1995) noted that Colorado kit foxes seemed to spend longer periods in their dens during weekend peaks of noise and disturbance by off-road vehicles or other forms of recreating. Vehicles passing on roads did not cause foxes to alter their behavior unless people stopped to watch them. Link (1995) located one occupied whelping den within 4 meters of a busy road. As the increase in human population in the Grand Valley and surroundings brings increased highway and off-highway travel, the likelihood of vehicle-related kit fox mortalities will rise (Fitzgerald 1996).

Construction could result in a short-term loss of habitat, which is likely to only temporarily and incrementally increase foraging habitat fragmentation on a regional level. Some breeding potential could be lost during the spring of 2008 for SJKF that may breed in close relation to the study area and other areas proposed for disturbance. This loss of productivity would be for only one season and individuals would be expected to reoccupy adjacent habitats following completion of construction activities. Post-construction maintenance and operations could also temporarily displace SJKF from some habitat areas. Noise, light, vibration, and human activities may even cause SJKF to avoid an area until the disturbed conditions are eliminated or the SJKF become accustomed to the disturbance.

DETERMINATION OF EFFECT

In summary, construction, and long-term operations are expected to interfer the potential movement or foraging opportunities for SJKF within the project vicinity. In addition, 16.5 acres of potential SJKF habitat would be permanently lost. In consideration of the aforementioned analysis, USFWS has determined the proposed project may affect, but not likely to adversely affect San Joaquin Kit Fox.

5.2. CUMULATIVE EFFECTS

Section 7 of the Endangered Species Act, cumulative effects analyses are limited to future State and private actions that are reasonably certain to occur within the area prior to the completion of the Federal project. For Section 7 consultations, the cumulative impacts should not include future Federal actions (e.g., undertakings that require Federal authorization or Federal funding) since they are actions that themselves would be subject to the restraints of Section 7 at some later date. Indicators of "reasonably certain" projects must show more than the possibility that the non-Federal project would occur. They must demonstrate with reasonable certainty that it would occur. Accordingly, only those State or private projects that satisfy all major land use requirements and that appear to be economically viable are considered. Cumulative effects involve only future non-Federal actions: past and present impacts of non-Federal actions are part of the environmental

baseline. The following subsections identify and describe potential cumulative effects that could result from the project in combination with other reasonably foreseeable future non-Federal actions or natural events in or near the PEC project area.

ACTION AREA DEFINED

The cumulative effects assessment is defined within the following geographic areas:

- Surrounding area within approximately 5 miles (8.0 km) from the study area.

FUTURE ACTIONS CONSIDERED BUT ELIMINATED

Although identified in scoping comments and/or previous project analysis, the following actions (Table 5-1) were determined not to be reasonably foreseeable future actions and consequently were not considered in the cumulative effects assessment.

TABLE 5-1 DISMISSED POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS

PROJECT DESCRIPTION	PROJECT LOCATION	PROJECT APPLICANT	STATUS/TIMING
Plan Check Power Generation Facility	APN: 027-060-61 This is the parcel directly adjacent and to the northeast of the subject site	Unknown	Plan Check submitted in June of 2001. Project has not yet been finalized (i.e., is not complete)
New shell building with a convenience store	APN: 027-190-25	Unknown	Permit finalized in October of 2003

CalPeak Power Panoche No. 2. This existing power plant, which has been in operation since 2001, is directly adjacent to the project. It is unclear what the specific project that was submitted in June of 2001 was and why County of Fresno records indicates this project's permits have not been finalized. Since this plant is currently in operation, it can be assumed that any permits submitted subsequently are for relatively minor work and probably do not meet the 30,000 square foot criteria for projects that could potentially cause cumulative impacts. Thus, this project can be dismissed from the cumulative impact analysis because no cumulative impacts would occur.

Convenience Store Building. From the project description provided by the County of Fresno, this seems to be an addition to an already existing convenience store. Detailed information on this specific project was unavailable. However, it is highly unlikely that this building permit was for a structure that was equal to or over 30,000 square feet. Thus, this project can be dismissed from the cumulative impact analysis because no cumulative impacts would occur.

REASONABLY FORESEEABLE FUTURE ACTIONS

Potential reasonably foreseeable future non-Federal actions were identified using the scoping comments; personal communication with resource experts, land use plans; and current events reported in local and regional news. Reasonably foreseeable future non-Federal actions considered in this cumulative impact assessment include projects that 1) are greater than 30,000 square feet; 2) have submitted a defined project application for required approvals or permits; or 3) have been previously approved and may be implemented in the near future. Cumulative impacts analysis

focuses on the potential overlap of construction and operation impacts among various projects meeting the criteria described above.

Projects that will potentially contribute to cumulative impacts are those located in the same general geographic area of influence of the PEC. For this cumulative assessment, the area of influence is defined as the area within a 5-mile radius of the power plant. Projects or proposed projects of potential regional significance are also considered in the cumulative analysis. Table 5-2 presents a list of potential projects considered in this cumulative impacts assessment.

TABLE 5-2 PROJECTS CONSIDERED FOR CUMULATIVE EFFECTS

PROJECT DESCRIPTION	PROJECT LOCATION	PROJECT APPLICANT	STATUS/TIMING
Proposed Starwood Power Plant to be 120 MW and operational in 2009	South of West Panoche Road and adjacent to the existing CalPeak Power Plant	Unknown	This proposed facility will be constructed at the same time as the PEC

Starwood Power Project. The proposed Starwood Power Project is a 120 MW peaker plant to be operational by 2009. This proposed power project will be a combustion turbine plant. Limited information is operational dates are similar to the PEC. The cumulative impacts associated with the concurrent construction schedules would be insignificant due to the short duration and lack of other pending development in the area. The operation of the proposed Starwood Power Project will occur during operation of the PEC. The simultaneous operation of both power plants will not result in significant cumulative impacts on environmental resources in the area except for noise impacts due to the relatively remote locations of the two power facilities.

5.3. SAN JOAQUIN KIT FOX MINIMIZATION/MITIGATION

Conservation measures are to benefit or promote the recovery of general and special status species as an integral part of the proposed action. These actions will be taken by the Federal agency and PEC to minimize or compensate for project effects on the SJKF.

As part of the project, PEC proposes to implement a number of avoidance, minimization, and conservation measures that would be applicable and common to all species and any designated critical habitats (Section 3.4, General Minimization Measures). These measures are intended to reduce, ameliorate, and/or avoid potential adverse effects on the SJKF. The avoidance and minimization measures that follow are expected to augment other project-related environmental commitments, best management practices (BMPs), and mitigation measures that would be required under separate Federal and State laws, regulations, and executive orders.

- Impacts to SJKF habitat will be offset through either an acceptable land acquisition or an assessed financial contribution. Total compensation has been determined based on the area permanently impacted (16.5 acres) at a ratio of 1:1. This contribution will occur at a Service-approved compensation bank.

5.4. CONCLUSION

The primary impacts to the SJKF include an unquantifiable incremental adverse effect resulting from foraging habitat loss. These effects could be cumulatively significant when added to the existing effects and environmental baseline condition. This additional impact would be limited by the number of projects actually constructed and the number being constructed at one time. In general, construction activities and post-construction operations could cause direct mortality of SJKF and temporarily displace individuals from some habitat areas. Noise, light, vibration, and human activities may even cause SJKF to avoid an area until the disturbance conditions are eliminated or the individuals become accustomed to the disturbance.

6.0 PREPARERS & REVIEWERS

At the request of the PEC, URS prepared this BA. A list of the professional members of the BA team is provided below.

URS Corporation

Maggie Fitzgerald	Program Manager: 20 years of experience
Dr. Patrick Mock	Senior Biologist: 23 years of experience
Lenny Malo	Natural Resources Group Manager, Biologist: 11 years of experience
Johanna Kisner	Biologist 5 Years of experience
Lincoln Hulse	Biologist: 6 years of experience
Amanda Johnson	Environmental Scientist/Planner 6 Years of experience

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APPENDIX A

PANOCHE ENERGY CENTER APPLICATION FOR CERTIFICATION SECTION 5.6, BIOLOGICAL RESOURCES

APPENDIX B

CNDDB RECORDS FOR THE PANOCHE ENERGY CENTER PROJECT