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August 8th, 2001

Mr. Steve Larson
Executive Director
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Dear Mr. Larson:

In accordance with the provisions of Title 20, California Code of Regulations, Inland Empire Energy Center, LLC hereby submits 135 copies of an Application for Certification (AFC) seeking authority to construct and operate the Inland Empire Energy Center, a 670-megawatt (nominal output) natural gas-fired, combined cycle energy center to be located in Riverside County near the town of Romoland, California. Inland Empire Energy Center, LLC respectfully requests that the Inland Empire Energy Center AFC be reviewed under the standard twelve-month and the expedited six-month licensing processes as set forth in Public Resources Code 25550.

As an officer of Inland Empire Energy Center, LLC, I hereby attest, under penalty of perjury, that the contents of this application are truthful and accurate to the best of my knowledge.

Dated this 8th day of August, 2001.

Sincerely,

Rob Lamkin, Vice President
INLAND EMPIRE ENERGY CENTER, LLC

Attachments

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1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

Inland Empire Energy Center, LLC is seeking approval from the California Energy Commission (CEC) to construct and operate the Inland Empire Energy Center (IEEC or Energy Center). The proposed project will be fueled with natural gas and will have a nominal electrical output of 670 MW. The in-service date is planned for late 2004. The plant will generate and supply power to the Southern California Edison (SCE) Valley Substation less than 1 mile east of the project site. The project facilities will consist of a natural gas-fired combined cycle power plant and associated linear facilities. The project will employ advanced combustion turbine technology and state-of-the-art emissions control systems to provide a highly efficient, and environmentally sound source of electricity for California.

The Energy Center will be a "merchant plant," which is a facility that is not owned by a utility or utility affiliate, yet it will produce and sell energy into the electric utility system. A merchant plant is not supported by any power purchase agreement with a utility. Instead, a merchant plant, such as IEEC, will sell its output on short-term, mid-term, and long-term contracts directly to customers or into the spot power market. As a result, the project will provide California electric customers with a highly competitive source of clean energy, with all project economic risks being borne by the owner.

The Energy Center offers the following features and benefits:

- Provides an additional 670 MW of power to the State of California (enough electricity to supply approximately 670,000 homes).
- Provides direct employment by creating approximately 490 peak period construction jobs and 23 full-time jobs for operation of the plant.
- Contributes to the local economy by the purchase of goods and services during project construction and provides sales and property tax revenues and employment during project operation.
- Provides a net reduction in regional air pollutant emissions (emission reductions supplied by the project will substantially exceed project emissions).
- Provides year-round user for Eastern Municipal Water District's (EMWD) recycled water, thus playing a major role in EMWD's long-term water management plans.
- Uses available recycled water (recycled water available to IEEC will increase over time).

This Application for Certification (AFC) for the proposed project has been prepared in accordance with the Warren-Alquist Act, the CEC's siting regulations, and the CEC guidelines and provides:

- A description of the proposed project.
- A description of the objectives and need for the project.

- An assessment of project impacts on the existing environment.
- A description of proposed mitigation measures to assure that environmental issues are properly and responsibly addressed.
- Discussion of compliance with applicable laws, ordinances, regulations and standards.

1.2 PROJECT OWNERSHIP

The project owner and Applicant submitting this AFC is Inland Empire Energy Center, LLC, a wholly-owned subsidiary of Calpine Corporation.

Calpine Corporation is a California-based independent power developer, owner, and operator headquartered in San Jose. As of July 2001, Calpine owns an interest in 50 operating power generation facilities and geothermal steamfields that have an aggregate capacity in excess of 5,900 MWs. In addition, Calpine currently has 14,000 MWs in construction and 16,200 MWs in announced development throughout the United States and Canada. In California, Calpine has an interest in more than eight cogeneration facilities, including the Gilroy, King City, and the Greenleaf 1 and 2 plants. Calpine recently brought on-line the Sutter Generating Facility near Yuba City, and the Los Medanos Energy Center in Pittsburg, California. Both of these facilities were permitted by the CEC and are now collectively producing more than 1000 MW of clean, efficient, and reliable generation for California. Calpine is a publicly traded company with the NYSE stock symbol CPN.

1.3 PROJECT OBJECTIVES AND NEED

The objective of the IEEC is to construct and operate a facility for the production of economical, reliable, and environmentally sound electrical energy and capacity to meet California's growing energy demands. The Energy Center will be located within a mile of the SCE Valley substation – a major Inland Empire load center. The significance of this load center is evidenced by SCE's planned 1,000 MW load bank expansion project within the Valley substation. In addition to adding system reliability, siting new generation at the load center reduces the real and reactive system losses, improves area transmission voltage levels, and is generally superior to transmission-based solutions. The replacement of older generating plants with efficient new facilities like the Energy Center will reduce the environmental impacts of power generation in California.

1.4 PROJECT SCHEDULE

On-site construction of the project is expected to take place from the third quarter of 2002 to September 2004, a total of about 24 months. Commercial operation is planned for late 2004. The average and peak on-site construction workforce is estimated to be approximately 250 and 490 individuals, respectively.

1.5 FACILITY LOCATION AND DESCRIPTION

1.5.1 Facility Location

The Energy Center will be located on an approximately 46-acre parcel (Assessor's Parcel No. 331-180-08) in Section 14, Township 5S, Range 3W, near Romoland, Riverside County. The project site, controlled under an option agreement, is bordered by McLaughlin Road to the south, San Jacinto Road to the east and Antelope Road to the west. The north side of the site is adjacent to an asphalt plant and the Burlington Northern Santa Fe (BNSF) railway. Site access from Ethanac Road will be provided by paved improvements to Antelope Road.

1.5.2 Facility Description

The generating facility will consist of two combustion turbine generators (CTG) with heat recovery steam generators (HRSG) and one steam turbine generator (STG), with a total nominal generating capacity of 670 MW. The turbines are expected to be General Electric PG 7251 (FB) units. One nominal 100,000-pound-per-hour auxiliary boiler will also be included to provide steam as needed for auxiliary purposes. A 14-cell mechanical-draft evaporative cooling tower will also be installed to provide cooling of water for the steam turbine condenser. Additional auxiliary equipment will include a natural-gas-fired 1,000-kW emergency generator and a 370-horsepower (hp) diesel fire pump.

1.5.3 Site Arrangement

A new 30-foot wide paved road extending from Antelope Road extension will provide access to the Energy Center site. A 20-foot wide, paved loop road will provide access to facilities on the Energy Center site.

Approximately 24 fenced acres and 35 acres of permanent disturbance are required to accommodate the Energy Center, including the parking area, administration building, control building, water treatment building, storage tanks, generation facilities, emission control equipment, and site switch yard.

1.5.4 Fuel Supply

Natural gas for the facility will be delivered by one of two alternative pipelines. Alternative A Menifee Road natural gas pipeline is a new 0.9 mile, 20-inch pipeline that will connect to the Sempra Energy existing gas transmission lines that run along Menifee Road, less than one mile east of the project site. Alternative A will include construction of a compressor station to maintain the required pipeline pressure south of the Energy Center. The Alternative B Moreno Valley natural gas pipeline, a new 14.8 mile, 20-inch pipeline will connect to a main Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.

1.5.5 Transmission Interconnection

The interconnection to the SCE transmission system will be at an on-site switchyard. A new 0.9-mile 500 kV transmission line will be constructed to connect the project switchyard to the SCE Valley substation, less than 1 mile east of the project site.

SCE has conducted both a System Impact Study and a Detailed Facility Interconnection Study for the proposed interconnection. The reports conclude that the proposed generating facility and interconnection would not cause voltage drops or generation congestion and that the Energy Center would have no adverse impact on system reliability.

1.5.6 Water Supply

The IEEC will use up to 5,000 acre-ft per year of recycled water for cooling and process make-up that will be supplied by the EMWD. During the early years of operation when EMWD does not have sufficient recycled water, the water supply will be supplemented with raw water from Metropolitan Water District, under contract with EMWD. Recycled water will be supplied to the IECC from EMWD's existing pipeline that runs along McLaughlin Road, near the southern boundary of the project site.

1.5.7 Wastewater Disposal

The Energy Center will have two separate wastewater collection systems. The first system will collect process wastewater from all of the plant equipment, including the HRSGs, cooling tower, and water treatment equipment. Process wastewater will be recycled and reused, to the extent possible. The leftover wastewater, high in total dissolved solids (TDS), will be discharged to EMWD's existing non-reclaimable wastewater collection system via a new 12- to 18-inch diameter, 4.7 mile pipeline.

The second system will collect sanitary wastewater from sinks, toilets, showers, other sanitary facilities, and backwash wastewater from the microfiltration system, and discharge it to an existing 33-inch diameter EMWD sewer line located in McLaughlin Road near the southern property boundary.

1.6 FACILITY OPERATION

The Energy Center will be operated up to 7 days per week, 24 hours per day and will employ about 23 full-time personnel. Overall annual availability of the Energy Center is expected to be in the range of 92 to 98 percent. The Energy Center's capacity factor will depend on market prices for electricity, ancillary services, and natural gas. The design of the Energy Center provides for operating flexibility (i.e., ability to start up, shut down, turn down, and provide peaking output) so that operations may be readily adapted to changing conditions in the energy and ancillary services markets.

1.7 SAFETY

The proposed project will emphasize safety throughout its design, construction, and operation. Safety and emergency systems will be incorporated into the design of the Energy Center to ensure safe and reliable operation. The project will be designed in conformance with California Building Code (CBC) criteria for Seismic Zone 4. The Energy Center site is not located in the 100-year floodplain. Fire protection will include both automatic and manual fire suppression systems. Worker safety programs will be developed for both construction and

operation, and these programs will be implemented to assure compliance with federal and state occupational safety and health requirements.

1.8 ENVIRONMENTAL CONSIDERATIONS

1.8.1 Introduction

The Energy Center will avoid or minimize potential environmental impacts through project design and incorporation of mitigation measures.

1.8.2 Air Quality

The project will not have a significant adverse impact on air quality. The project will have emissions of criteria pollutants including nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), sulfur dioxide (SO_2) and particulates less than or equal to 10 microns in diameter (PM_{10}). The project will create a net reduction in regional emissions by providing emission reductions from other regional emission sources. The net reductions will substantially exceed the emissions from the project. In addition, the following mitigation measures will reduce the direct impacts of these pollutants to insignificance:

- The facility will incorporate the following state-of-the-art air pollution controls that reflect Best Available Control Technologies (BACT) to reduce emissions:
  - Dry-low NO_x burner technology and selective catalytic reduction (SCR) to reduce annual NO_x emissions to 2 ppm @ 15% O_2 dry.
  - An oxidation catalyst to limit CO emissions to 6 ppm @ 15% O_2 dry and VOC emissions to 2.0 ppm @ 15% O_2 dry.
  - Natural gas as a primary fuel to limit SO_2, and PM_{10} emissions.
  - Low drift cooling towers to reduce fine particulate emissions.
- Short-term air quality impacts associated with construction activities will be reduced by compliance with South Coast Air Quality Management District (SCAQMD) requirements, including the following measures:
  - Construction contractors will use water trucks and sprinklers as needed to control dust.
  - Construction contractors will leave the ground outside the project area undisturbed to prevent wind erosion.
  - Construction equipment exhausts will meet emissions regulations.

As demonstrated by the air quality modeling, criteria pollutant emissions from the Energy Center will not cause or contribute to violations of federal or state ambient air quality standards. Therefore, no significant adverse impacts on air quality from criteria pollutant emissions are anticipated.

1.8.3 Biological Resources

The project has the potential for impacts to biological resources including vegetation and wildlife. Biological impacts have been minimized to the extent practicable by siting facilities

away from sensitive habitats. The Energy Center site will be located in an existing agricultural area that is zoned for heavy industrial use. All of the project linear facilities have been sited adjacent to existing roadways, thereby eliminating the need for new access roads.

Alternative B Moreno Valley natural gas pipeline is the project area with the most potential for biological impacts. In addition to the mitigation measures incorporated into the project design, the Applicant proposes mitigation measures, as appropriate based on the gas pipeline routing, to reduce potential impacts to biological resources to a level of insignificance.

The following mitigation measures will reduce or eliminate the potential for impacts during project construction:

- The Applicant will designate a biologist to manage all biological resource conditions of certification.
- The Applicant will develop and institute an Employee Environmental Awareness Program to inform construction and operations workers about biological resources associated with the project.
- The Applicant will develop construction mitigation and monitoring plans to protect Stephens' kangaroo rat and burrowing owl.
- The Applicant proposes to acquire compensation lands or credits to satisfy the requirements of the Federal and California Endangered Species Acts, consistent with standard USFWS and CDFG requirements for compensation of impacts to habitats of Stephens' kangaroo rat.

1.8.4 Water Resources

The IEEC will use recycled water for cooling and process make-up that will be supplied by the EMWD. During the early years of operation when EMWD does not have sufficient recycled water, the recycled water supply will be supplemented with raw water from Metropolitan Water District, under contract with EMWD. Non-reclaimable wastewater will be discharged to an existing non-reclaimable wastewater collection system and sanitary wastes will be directed to an existing sewer line on Ethanac Avenue.

Although the project is designed to conserve water and minimize wastewater discharge, the project has the potential to affect water resources during construction and operation. Implementation of the following mitigation measures will reduce potential impacts to water resources to a level of insignificance:

- The project will utilize recycled water for cooling to the extent available.
- Site runoff basins will be provided to collect storm water runoff from the project site. The basins will be sized to hold runoff of water from the site as required by the County of Riverside.
- Secondary spill containment will be provided around chemical delivery and storage areas, diesel fuel tanks and transformers.

No adverse impacts to surface or groundwater are anticipated from project construction or operation.

1.8.5 Geologic Resources and Hazards

No significant geological or soil-related impacts are anticipated from the construction or operation of the proposed project. Implementation of the following design features and mitigation measures will reduce the potential for any minor construction or operational impacts to a level of insignificance:

- Final placement and design of the proposed facilities and foundations will follow the recommendations of the soils engineer provided in the site-specific geotechnical report.
- The proposed facilities will be designed in accordance with the CBC Seismic Zone 4.
- The Alternative B Moreno Valley natural gas pipeline route crosses the Casa Loma Fault approximately 13.5 miles north of the Energy Center. If this pipeline route alternative is selected, pipeline construction will include a trapezoidal trench cross section and automatic shutoff valves or other measures to reduce the potential for natural gas hazards in the event of a rupture.
- Erosion control measures will be implemented to maintain water quality, protect property from erosion damage, and prevent accelerated soil loss. Temporary erosion control measures will be installed before construction begins and removed from the site after construction is completed and permanent drainage systems and landscaping are installed.
- Potentially adverse foundation conditions, such as expansive or otherwise unsuitable foundation soils, perched water tables, and corrosive soils, will be mitigated through appropriate design and construction of the facility in accordance with the recommendations in the geotechnical report (Appendix G). Likewise, seismic hazards will be minimized through the implementation of the recommended seismic design criteria.

1.8.6 Agriculture and Soils

None of the Energy Center facilities are located on lands qualifying as farmland of statewide importance or unique farmland, as defined by the California Department of Conservation. However, approximately one acre of land at the southeast corner of the Energy Center site and the 2.6-acre compressor station site has soils that are classified as prime farmland. The loss of prime farmland at the Energy Center site was addressed in the Menifee North Specific Plan when the site was zoned for industrial development. If the Alternative A Menifee Road natural gas pipeline route is selected, the compressor station associated with that alternative will permanently occupy approximately 2.6 acres of prime farmland.

On agricultural areas crossed by the alternative natural gas pipeline routes, the pipeline will be buried at a depth that will allow continued use for agriculture. Some of these lands are designated prime farmland, however the project will not change or limit agricultural use. The

Applicant is proposing to coordinate with the County of Riverside and California Department of Conservation to mitigate, as appropriate, the negligible loss of 2.6 acres of prime farmland. No significant impacts to agricultural use are anticipated.

Appropriate erosion control measures will be required to help maintain soil resources, water quality, protect property from erosion damage, and prevent accelerated soil loss, which destroys soil productivity and its capacity to support and maintain vegetation. Temporary erosion control measures will be installed before construction begins and will be removed from the site after completion of construction. No significant impacts to soil resources are anticipated.

1.8.7 Land Use

Agriculture is the predominant land use in the project vicinity, intermixed with commercial, industrial, and rural residential uses.

The Energy Center will be located on lands that are designated Industrial under the County's Menifee North Specific Plan. The project site is zoned M-H under the County's Zoning Ordinance, the heaviest industrial-related zoning district provided in the County's Zoning Ordinance. The M-H zoning in Riverside County allows for uses such as refineries and explosives manufacturing with conditional use permits. The Energy Center facility will occupy approximately 35 acres of the 45.8-acre project site. The Energy Center will be consistent with county and local government planning and policies. IEEC will apply for a height variance in accordance with County Ordinances. Operation of the Energy Center will not significantly impact land use of the project site or surrounding land uses.

1.8.8 Socioeconomics

The Energy Center will have a positive impact on fiscal resources in the region. The project will bring both sales tax and property tax revenues to Riverside County in addition to construction and operating payrolls. Annual property taxes and sales taxes are anticipated to be approximately $4.0 million and $300,000, respectively.

An average of 250 construction workers (490 workers at peak) will be employed on the Energy Center for approximately 24 months. The estimated 24-month construction payroll will be approximately $25.0 million. Upon commercial operation, operational payroll for the Energy Center is estimated to be $1.3 million and will have a lasting positive impact on the surrounding community.

Local and regional socioeconomic impacts were evaluated for the projected demands presented by construction and operation of the Energy Center. It is not anticipated that the Energy Center will have any significant adverse impacts on socioeconomic aspects of the local or regional areas.

On-site construction of the Energy Center will provide short-term job opportunities. There is sufficient supply of labor for the project in and around Riverside County. The Energy Center is expected to employ about 23 full-time personnel once it is operational. The increased

employment should not cause substantial growth in population or disrupt existing population since jobs are expected to be filled mostly by Riverside County residents. The construction and operation of the Energy Center will not have a significant adverse impact on law enforcement, fire, emergency, medical, utility, or education services. The socioeconomics analysis includes racial and income demographic by census tract, and it concluded that no environmental impacts disproportionately affected minority or low-income demographic populations.

1.8.9 Noise

The project has been designed with noise control features to meet the Riverside County and Menifee North Specific Plan typical criteria for outdoor noise levels of less than 65 CNEL and indoor noise levels of less than 45 CNEL. Field background noise measurements were taken at numerous locations around the project site. A computer model was used to evaluate sources of noise and to determine the degree of silencing required on each piece of equipment to meet the noise limits. Natural attenuating mechanisms employed in the modeling exercise included divergence of the sound waves, atmospheric absorption, and directivity of sound from the vertical stacks. Based on the modeling results, attenuation was incorporated in the project design. Noise control measures include equipment enclosures, silencers, and insulation.

Although the project has the potential for increased noise levels during construction and operation, Applicant proposed mitigation measures would reduce noise impacts to a level of insignificance.

1.8.10 Visual Resources

Although the project is near existing industrial uses on the north (asphalt plant), east (asphalt recycling facility), and west (construction equipment storage yard), and is crossed by two transmission lines on the southern border of the site, there is some potential for impacts to public views of the project from surrounding areas. The generating facility has been placed near the center of the 45.8-acre project site, thus providing a setback of approximately 300 feet to the eastern and western property lines and the major facility structures. The northern and southern property lines are more than 500 feet from the major facility structures. The following mitigation measures are proposed to reduce potential visual impacts from the project to a level of insignificance:

- Chain link fencing of non-reflective materials will be installed around the project facilities.
- Drought resistant landscaping will provide partial screening along selected portions of the project property boundary and around the main buildings and parking areas.
- Lighting on the project site will be limited to areas required for safety and shielded from public view to the extent possible. Lights will also be directed on-site so that significant light or glare impacts will not be created.
- Structures, stacks, buildings, and tanks will be painted in earth tones. The colors will provide subtle variations and contrast.

1.8.11 Traffic and Transportation

Construction and operation of the project has the potential to contribute to delays on existing roadways or affect traffic circulation in the area. While no significant impacts to traffic and circulation are expected, the following mitigation measures are proposed to reduce any potential construction impacts to a level of insignificance:

- All construction deliveries and worker traffic will enter the site from the Antelope Road entrance.
- Parking for all construction workers will be provided on-site.
- The security gate will be within the property to ensure that vehicles waiting to enter the site are not on local roads.
- Preparation of a construction traffic control plan and implementation program that addresses timing of heavy equipment and building materials deliveries, an employee trip reduction plan; and signing, lighting and traffic control device placement.

Project operation will require a maximum of approximately 10 employees working during the day shift at the project site. The traffic generated by project operations will not cause a significant impact to area roads. The following mitigation measures will reduce any potential operational impacts to traffic to a level of insignificance:

- Sixteen parking spaces will be provided on-site to accommodate all employee and visitor vehicles.
- The project's main entrance will be from Antelope Road. The security gate will be within the project site so vehicles waiting to enter the site will not extend to Antelope Road.

1.8.12 Hazardous Materials Handling

The Energy Center will implement accident prevention and mitigation measures to reduce the risk associated with use and storage of hazardous materials. Quantities of hazardous materials used or stored on-site will be evaluated to determine which exceed threshold levels of federal and state risk management and process safety requirements. Plans and programs will be developed and implemented including hazard assessments, release prevention programs, emergency response programs, and process management systems. Engineering and procedural features will minimize the possibility and potential consequences of a release.

On-site storage of hazardous materials will be minimized. Hazardous materials include aqueous ammonia for the NO_x control system, various water additives and water treatment chemicals including acids and caustics, various cleaning chemicals, and hydrogen for generator cooling. Equipment and containers will be located inside containment berms, and incompatible materials will be stored in separate containment areas. Areas susceptible to potential leaks or spills will be paved and bermed. Piping and tanks will be protected from potential traffic hazards by concrete and/or steel barriers.

1.8.13 Waste Management

Wastes generated by the Energy Center during construction and operation will be recycled to the extent practicable. Wastes include non-hazardous solid and liquid wastes (e.g., scrap metal and treated wastewater) as well as hazardous solid and liquid wastes (e.g., spent SCR catalyst and waste lubrication oil). Appropriate procedures and personnel training will provide assurance that non-hazardous and hazardous wastes are properly handled and do not significantly affect the environment or health and safety.

Disposal of non-hazardous waste from the Energy Center will not significantly impact the capacity of the Class II and III waste disposal facilities identified as available for use by the project. With active recycling efforts in place, the incremental non-hazardous waste disposal capacity needed by the project is not significant.

Similarly, hazardous waste generation and disposal from the Energy Center will be minimized by recycling and will not significantly impact the capacity of Class I hazardous waste disposal facilities identified as available for use by the project.

1.8.14 Worker Safety

Construction, operation, and maintenance activities associated with the Energy Center may expose workers to physical and chemical hazards. However, worker exposure to these hazards will be minimized through adherence to appropriate engineering design criteria, implementation of appropriate safety and administrative procedures, use of personal protective equipment, and compliance with applicable health and safety regulations. The Riverside County Fire Department in cooperation with the California Department of Forestry and Fire Protection will provide for fire services.

During construction of the Energy Center, written safety programs and procedures will include a hearing conservation program, respiratory protection program, fall protection procedures, hot work procedures, heavy equipment procedures, and others. An emergency action plan will be developed to designate responsibilities and actions to be taken in the event of an emergency during construction of the project. A Phase I Site Assessment has been conducted on the site and the results indicate there is little or no potential for encountering toxic or hazardous waste during construction of the project.

Upon startup of the Energy Center, the construction health and safety programs will transition into an operation and maintenance oriented program. The primary mitigation measures for worker hazards present during normal operation and maintenance of the Energy Center will be contained in an Injury and Illness Prevention Plan. Fire protection will include automatic and manual fire suppression systems as well as fire prevention measures. The Energy Center will have a site-specific Emergency Action Plan that addresses potential emergencies, actions, and responsibilities. Additional written safety programs will be developed as components of the overall health and safety plan for operation and maintenance of the Energy Center.

1.8.15 Public Health

The Energy Center will be fueled with clean burning natural gas to minimize potentially toxic air emissions. The maximum incremental cancer risk from project emissions was estimated to be 0.28 in one million, well below the significance level of 1.0 in one million. For sensitive receptors, the maximum chronic "total hazard index" (THI) was estimated to be 0.048, and the maximum acute THI was estimated to be 0.1275, both well below the significance level of 1.0. Based on this evaluation using conservative assumptions, the Energy Center emissions are expected to pose no significant cancer or non-cancer health effects.

As demonstrated by the air quality analysis, criteria pollutant emissions from the Energy Center will not cause or contribute to violations of federal or state ambient air quality standards, which have been set at levels designed to protect pubic health. Therefore, no significant adverse health effects from criteria pollutant emissions are anticipated.

1.8.16 Cultural Resources

Previous reports, inventories, and evaluations of cultural resources in the project area were reviewed, and a record search was conducted. Site-specific field surveys indicate that there will not be any significant impacts to cultural resources. Impacts to cultural resources will be reduced to insignificance by implementing a cultural resource monitoring program during project construction and making minor adjustments in transmission and pipeline routes as needed.

1.8.17 Paleontological Resources

Literature and archival reviews did not provide evidence of any paleontological resources that would be impacted by the construction or operation of the Energy Center. Prior to construction, the Applicant will retain a qualified Project Paleontologist to design and implement a mitigation program during project-related earth-moving activities. The paleontological resource mitigation program, in accordance with the mitigation measures included in the Menifee North Specific Plan, will include the preparation of a mitigation and monitoring plan for construction monitoring. No impacts to paleontological resources are anticipated during the construction or operation of the Energy Center.

1.9 SUMMARY

The IEEC will provide a state-of-the-art, highly efficient and environmentally sound source of electricity for California. Inland Empire Energy Center, LLC, a wholly-owned subsidiary of California-based Calpine Corporation, one of the nation's leading independent power producers, is proposing to build, own, and operate the Energy Center. The Energy Center is similar in design to both the Sutter and Los Medanos Energy Centers. Both of these facilities were permitted by the CEC and recently commissioned and now collectively supply in excess of 1,000 MW of clean efficient generation to California's energy markets.

Environmental impacts associated with construction and operation of the proposed IEEC has been considered throughout an extensive planning process. Numerous meetings have been

held with community leaders, local landowners, and citizens groups to ensure a responsible development that fully incorporates, and accounts for, local issues and concerns. In those few instances where potential impacts on the environment have been identified, mitigation measures have been selected to ensure that any impacts are not significant. In general, the local community has expressed support for the project and the identified mitigation measures.

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2.1 PROJECT OBJECTIVES 2-1

2.2 PROJECT NEED 2-1

2.0 PROJECT OBJECTIVES AND NEED

2.1 PROJECT OBJECTIVES

The objective of the Inland Empire Energy Center (IEEC) is to construct and operate a facility for the production of economical, reliable, and environmentally sound electrical energy and capacity to meet California's energy demands.

2.2 PROJECT NEED

The California Energy Commission is no longer required to determine whether or not a proposed project conforms to an integrated assessment of need. Senate Bill 110 (California Construction Articles 4, Section 8), which took effect on January 1, 2000, states:

> Before the California electricity industry was restructured, the regulated cost recovery framework for generating facilities justified requiring the commission to determine the need for new generation, and site only generating facilities for which need was established. Now that generating facility owners are at risk to recover their investments, it is no longer appropriate to make this determination.

Accordingly, this AFC does not include a traditional assessment of need. Nonetheless, new efficient generation located in industrial zones such as the IEEC is needed. IEEC, a 670 MW state-of-the-art gas fired combined cycle facility, will be located within a mile of Southern California Edison's (SCE) Valley substation - a major Inland Empire load center. The significance of this load center is evidenced by SCE's planned 1000 MW load bank expansion project within the Valley substation. In addition to adding system reliability, siting new generation at the load center reduces the real and reactive system losses, improves area transmission voltage levels, can greatly improve the reactive margin in the area, and is generally superior to transmission-based solutions. Furthermore, the continued replacement of older generating plants with efficient new facilities like IEEC will reduce the environmental impacts of power generation in California.

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3.0 FACILITY LOCATION AND DESCRIPTION

3.1 INTRODUCTION

The Inland Empire Energy Center (IEEC or Energy Center) will be a 670-megawatt (MW) (nominal output) natural-gas-fired combined cycle energy center, with a 500-kilovolt (kV) switchyard and less than one-mile of new 500-kV transmission lines that will be owned by Southern California Edison (SCE).

Natural gas for the facility will be delivered by one of two alternative pipelines. Alternative A Menifee Road natural gas pipeline, a new 0.9 mile, 20-inch pipeline will connect to the Sempra Energy existing gas transmission line that runs along Menifee Road, about one mile east of the project site. Alternative A Menifee Road natural gas pipeline will include construction of a compressor station to maintain the required pipeline pressure south of the IEEC. Alternative B Moreno Valley natural gas pipeline, a new 14.8 mile, 20-inch pipeline will connect to a main Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.

The IEEC will use up to 5,000 acre-ft per year of recycled water for cooling tower and process make-up that will be supplied by the Eastern Municipal Water District (EMWD). During the early years of operation when EMWD does not have sufficient recycled water, the water supply will be supplemented with raw water from Metropolitan Water District, under contract with EMWD. Recycled water will be supplied to the IECC from an existing pipeline which runs along McLaughlin Road, less than 0.1 mile south of the project site. Cooling water will be cycled five to thirteen times (depending on water quality) in the cooling tower. Non-reclaimable wastewater will be disposed of via a new pipeline to an EMWD non-reclaimable wastewater pipeline that presently terminates approximately 4.7 miles southwest of IEEC. Sewer service will be provided by EMWD via a lateral from an existing pipeline that runs in McLaughlin Road, less than 0.1 mile south of the project site. Potable water will be supplied by EMWD via a new lateral along Antelope Road that will connect existing EMWD potable water lines that run along Ethanac and McLaughlin roads. The following sections describe the location, site, design of IEEC, associated electric transmission lines, pipelines, project construction, operation, closure, and alternatives.

3.2 LOCATION OF FACILITIES

The IEEC will be located near the town of Romoland on approximately 45.8 acres (Assessor's Parcel Number 331-180-08; Section 14, Township 5S, Range 3W) currently under IEEC's control. The site is located in unincorporated Riverside County in the Menifee North Specific Plan Area between Ethanac Road to the north and McLaughlin Road to the south with Antelope Road forming the western boundary of the site. Figure 3.2-1 is a regional location map, and Figure 3.2-2 (see pocket at end of section) illustrates the location of the generating facility, electric transmission line, natural gas supply line alternatives, and non-reclaimable wastewater discharge line.

3.3 ENERGY CENTER SITE DESCRIPTION

The power plant and switchyard will occupy approximately 35 acres within the 45.8-acre project site, as illustrated in Figure 3.3-1. The site is presently cultivated agricultural land used for growing wheat. Site topography is flat with an elevation of approximately 1,445 feet above mean sea level (amsl). The project site is not within a projected 100-year flood plain designated by the Federal Emergency Management Agency (FEMA, 1996) as recently amended. The site general arrangement is illustrated in Figure 3.3-2.

3.4 POWER GENERATION FACILITY

The following sections describe the power generation facility site arrangement, process flow diagrams and heat and material balances, major equipment and ancillary systems, including buildings and structures that constitute the proposed combined cycle power plant. IEEC will be designed, constructed, and operated in accordance with applicable laws, ordinances, regulations, and standards (LORS). In addition, IEEC facilities will be designed and constructed in accordance with the design criteria provided in Appendices A through E.

3.4.1 Energy Center Site Arrangement

The site arrangement drawings – site plan, general arrangement, north and south elevation view, east and west elevation view, and an aerial view of the proposed power generation facility are provided in Figures 3.3-1, 3.3-2, 3.4-1, 3.4-2 and 3.4-3, respectively.

Access to the site will be provided via a 30-foot-wide road leading from Antelope Road to the site, terminating at a controlled gate. Most of the site will be paved to provide internal access to all project facilities and on-site buildings. The switchyard and areas around equipment, where not paved, will have gravel surfacing.

Approximately 24 fenced acres will be required to accommodate the generation facilities, including the storage tank areas, parking area, control/administration building, water treatment facility, stormwater detention basin, switchyard, emission control equipment, and generation equipment. The remaining 11 acres of the 35 acres of permanent disturbance include areas outside the fence such as landscaping and access roads.

3.4.2 Process Description

This section describes the power generation process and thermodynamic cycle employed by the proposed project.

The energy center will consist of: two combustion turbine generators (CTGs) equipped with dry, low oxides of nitrogen (NO_x) combustors and steam injection for power augmentation, two heat recovery steam generators (HRSGs) with duct burners, one condensing steam turbine generator (STG), a deaerating surface condenser, a 14-cell mechanical draft cooling tower, and associated support equipment providing a nominal total generating capacity of 670 MW. The combustion turbines are expected to be General Electric PG7251(FB) units. One nominal 100,000 pound per hour auxiliary boiler will also be included in order to provide steam as

needed for auxiliary purposes. Additional auxiliary equipment will include a 1,000 kW natural gas-fired emergency generator and a 370 hp diesel fire pump.

Each CTG will generate approximately 174 MW at base load under average ambient conditions. The CTG's exhaust gases will be used to generate steam in the HRSGs. The HRSGs will incorporate duct firing for additional peaking capacity. Steam from the HRSGs will be admitted to a condensing steam turbine generator. Approximately 204 MW will be produced by the steam turbine when the CTGs are operating at base load at average ambient conditions. The project is expected to have an overall annual availability in the general range of 92 to 98 percent. The power plant's capacity factor will depend on market prices for electricity, ancillary services, and natural gas. The design of the power plant provides for operating flexibility (that is, ability to start up, shut down, turn down, and provide peaking output) so that operations may be readily adapted to changing conditions in the energy and ancillary service markets.

Associated equipment will include emission control systems necessary to meet the proposed emission limits.

A heat and mass balance diagram for the power plant is shown in Figure 3.4-4. Heat and mass balance data for the design case, average day, are summarized in Table 3.4-1. At base load, under average ambient conditions, the plant net output will be approximately 538 MW, operating at a heat rate of approximately 6,700 Btu/kwh on a higher heating value (HHV) basis. With duct firing and steam injection for power augmentation, the peak output on a 97°F day will be approximately 670 MW. The incremental heat rate for peaking capacity will range from 8,100 to 9,000 Btu/kwh (HHV basis), depending on ambient and operating conditions.

The following provides a brief description of the power plant's thermodynamic cycle:

CTG combustion air flows through the inlet air filter and fogging section and associated air inlet ductwork, is then compressed in the gas turbine compressor section, and then flows to the CTG combustor. Natural gas fuel is injected into the compressed air in the combustor and ignited. The hot combustion gases expand through the power turbine sections of the CTGs, causing them to rotate and drive the electric generators and CTG compressors. The hot combustion gases exit the turbine sections at approximately 1165°F and enter the HRSGs. In the HRSG's, boiler feedwater will be converted to superheated steam and delivered to the steam turbine at three pressures: high-pressure (HP), intermediate-pressure (IP), and low-pressure (LP). The use of multiple steam delivery pressures increases cycle efficiency and flexibility. High-pressure steam expands through the HP section of the steam turbine. This expanded steam, referred to as "cold reheat" steam is combined with the IP steam and returned to the reheater section of the HRSGs. This mixed, reheated steam (called "hot reheat") is then expanded in the IP steam turbine section. Steam exiting the IP section of the steam turbine is mixed with LP steam and expanded in the LP steam turbine section. Steam leaving the LP section of the steam turbine enters the surface condenser where it is condensed. The heat energy of the condensing steam transfers to a circulating water loop, which, in turn, exhausts heat to the atmosphere by means of a mechanical draft cooling tower.

Table 3.4-1 Heat and Mass Balance Data – Design Case: Average Day

Stream No.	Units	1	2	3	4	5	6	7	8
Mass Flow	lb/hr	3,319,311	3,323,114	77,840	77,840	0	0	3,401,219	443,170
Temperature	°F	61	56	60	330	n/a	n/a	1,165	1,050
Pressure	psia	13.95	13.80	425	415	n/a	n/a	14.55	1,100
Stream No.	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Mass Flow	lb/hr	443,170	886,340	864,357	432,179	432,179	57,094	489,272	503,673
Temperature	°F	1,050	1,050	724	724	724	556	704	1,051
Pressure	psia	1,100	1,100	336	336	336	336	336	307
Stream No.	**Units**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Mass Flow	lb/hr	503,673	1,007,345	59,747	59,747	1,145,849	1,145,849	1,219,591	609,796
Temperature	°F	1,051	1,051	580	580	592	85	85	85
Pressure	psia	307	307	53	53	53	1.22	120	120
Stream No.	**Units**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
Mass Flow	lb/hr	609,796	550,047	92,479	412,958	30,213	35,385	35,385	0
Temperature	°F	85	290	292	295	295	424	128	n/a
Pressure	psia	120	57	435	1,285	1,285	410	400	n/a
Stream No.	**Units**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Mass Flow	lb/hr	3,401,219	72,394,531	0	0	1,223,011	244,402	14,398	
Temperature	°F	191	65	80	n/a	n/a	70	80	292
Pressure	psia	13.95	35	25	n/a	n/a	20	25	435
Stream No.	**Units**	**41**	**42**	**43**	**44**				
Mass Flow	lb/hr	0	3,803	0	20				
Temperature	°F	n/a	70	n/a	290				
Pressure	psia	n/a	13.80	n/a	57				

3.4.3 Combustion Turbine-Generators, HRSGs, and Steam Turbine-Generator

This section describes the major components and systems of the proposed project: the CTGs, HRSGs, STG, and Heat Rejection (Cooling) System.

3.4.3.1 Combustion Turbine-Generators

Thermal energy is produced in the CTGs through the combustion of natural gas, which is converted into mechanical energy required to drive the combustion turbine compressors and electric generators. Two General Electric "F" class CTGs have been selected for the IEEC.

Each CTG system consists of a stationary combustion turbine generator, supporting systems, and associated auxiliary equipment. The CTGs will have power augmentation capability by use of steam injection upstream of the power turbine section.

The CTGs will be equipped with the following required accessories to provide safe and reliable operation:

- Inlet air foggers
- Inlet air filters
- Metal acoustical enclosure
- Lube oil cooler
- Dry low NO_x combustion system
- Compressor wash system
- Fire detection and protection system
- Fuel heating system

The metal acoustical enclosure, which contains the CTGs and accessory equipment will be located outdoors.

3.4.3.2 Heat Recovery Steam Generators

The HRSGs provide for the transfer of heat from the exhaust gases of the CTGs to the feedwater, which is turned into steam. The HRSGs will be three-pressure, natural circulation units equipped with inlet and outlet ductwork, duct burners, insulation, lagging, and separate exhaust stacks.

Major components of each HRSG include LP economizers, LP drum, LP evaporator, LP superheaters, IP economizer, IP drum, IP evaporator, IP superheaters/reheaters, HP economizers, HP drum, HP evaporator, and HP superheaters. The LP economizers receive condensate from the condenser hot well via the condensate pumps. The LP economizers are the final heat transfer sections to receive heat from the combustion gases prior to their exhausting to the atmosphere. Water leaving the second LP economizer enters the LP steam drum, providing make-up to the LP steam system and the source for the boiler feed pumps.

The boiler feed pumps provide additional pressure to serve the separate IP and HP sections of the HRSG. Feedwater from the boiler feed pumps is sent to the HP section of the HRSG.

High-pressure feedwater flows through the HP economizers where it is preheated prior to entering the HP steam drum. Within the HP steam drum, a saturated liquid state will be maintained. The saturated water will flow through downcomers from the HP steam drum to the inlet headers at the bottom of the HP evaporator. The saturated water will flow upward through the evaporator tubes by natural circulation. Saturated steam will form in the tubes as energy from the combustion turbine exhaust gas is absorbed. The HP- saturated liquid/vapor mixture will then return to the steam drum where the two phases will be separated by the steam separators in the drum. The saturated water will return to the HP evaporator, while the vapor continues on to the HP superheaters. Within the HP superheaters, the temperature of the HP steam will be increased above its saturation temperature, or "superheated" prior to being admitted to the HP section of the steam turbine.

Feedwater will also be sent to the IP section of the HRSG by an interstage bleed from the boiler feed pumps. Similar to the HP section, feedwater will be preheated in the IP economizer and steam will be generated in the IP evaporator. The saturated IP steam will pass through two IP superheaters and then be mixed with "cold reheat" steam from the discharge of the steam turbine HP section. The blended steam will then pass through two additional IP superheaters reheating the steam to a superheated state. The "hot reheat" steam will then be admitted to the steam turbine IP section.

Condensate will be preheated by the LP economizer prior to entering the LP steam drum. Similar to the HP and IP sections, steam will be generated in the LP evaporator and superheated in the LP superheaters. The superheated LP steam will then be admitted to the LP section of the steam turbine along with the steam exhausting from the steam turbine IP section.

Duct burners will be installed in the HRSGs. These burners will provide the capability to increase steam generation, and provide greater operating flexibility and improved steam temperature control. The duct burners will burn natural gas. The duct burner for each HRSG will be sized for a heat output of up to 630 million British thermal units (Btus) per hour on a lower heating value (LHV) basis.

The HRSG will be equipped with a SCR emission control system that will use ammonia vapor in the presence of a catalyst to reduce NO_x in the exhaust gases. The catalyst module will be located within the HRSG casing. Diluted ammonia vapor (NH_3) will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction will reduce NO_x to nitrogen and water.

3.4.3.3 Steam Turbine

The steam turbine system consists of a condensing steam turbine with reheat, gland steam system, lubricating oil system, hydraulic control system, and steam admission/induction valving.

Steam from the HRSG HP, IP, and LP superheaters enter the associated steam turbine sections through the inlet steam system. The steam expands through the multiple stages of the turbine, driving the generator. On exiting the turbine, the steam is directed into the surface condenser.

3.4.3.4 Auxiliary Boiler

An auxiliary boiler, capable of providing up to 100,000 pounds per hour (lb/hr) of saturated steam at 400 pounds per square inch gauge (psig), will be provided for HRSG HP steam drum sparging, condenser hotwell sparging, steam turbine gland steam, and deaeration steam, when the plant is offline. An electric superheater will be provided for the steam turbine gland steam. The auxiliary boiler will be a forced-draft unit served by a feedwater deaerator and boiler feedwater pump system. It will be equipped with an economizer to maximize fuel efficiency.

The auxiliary boiler will be equipped with a low-NO_x combustor, and an SCR system and CO catalyst to control NO_x and CO concentrations in the exhaust gas. The boiler will exhaust through a free-standing steel stack.

3.4.3.5 Cooling System for Heat Rejection

The cycle heat rejection system will consist of a deaerating steam surface condenser, cooling tower and circulating water system. The heat rejection system will receive exhaust steam from the low-pressure steam turbine and condense it to water for reuse. The surface condenser will be a shell and tube heat exchanger with the steam condensing on the shell side and the circulating water flowing in one or more passes inside the tubes. The condenser will be designed to operate at sub-atmospheric pressure, ranging from 0.5 to 3.0 inches of mercury, absolute (in HgA.), depending on ambient temperature and plant load. It will remove between 330 and 1,835 MMBtu/hr, depending on ambient temperature and plant load. Approximately 145,000 gallons per minute (gpm) of circulating cooling water is required to condense the steam at maximum plant load.

The circulating water will circulate through a counter flow mechanical draft cooling tower, which uses electric motor driven fans to move the air in a direction opposite to the flow of the water. The heat removed in the condenser will be discharged to the atmosphere by heating the air and through evaporation of some of the circulating water. Maximum drift, that is, the fine mist of water droplets entrained in the warm air leaving the cooling tower, will be limited to 0.0005 percent of the circulating water flow.

A closed loop auxiliary cooling system will be provided for cooling plant equipment other than the steam condenser. Equipment served by the auxiliary cooling water system includes the CTG and STG lube oil coolers, STG generator cooler, STG hydraulic control system cooler, boiler feed pump lube oil and seal water coolers, air compressor, and sample coolers. The circulating water pumps will pump circulating water from the cooling tower basin through heat exchangers to remove heat from the closed loop system. An auxiliary cooling water pump will be provided to pump circulating water through the auxiliary heat exchangers when the plant is off-line.

3.4.4 Major Electrical Systems and Equipment

This section describes the major electrical systems and equipment for the proposed project. The electric power produced by the facility will be transmitted to the SCE grid. A small amount of electric power will be used on-site to power auxiliaries such as pumps and fans, control systems, and general facility loads including lighting, heating, and air conditioning. Some will also be converted from alternating current (AC) to direct current (DC), which is used as backup power for control systems and other uses. Transmission and auxiliary uses are discussed in the following subsections.

3.4.5 AC Power—Transmission

Power will be generated by the two CTGs and one STG at 18 kV and then stepped up by three transformers to 500 kV for transmission to the grid. An overall single-line diagram of the facility's electrical system is shown in Figure 3.4-5. The 18-kV generator outputs will be connected by isolated phase bus to oil-filled generator step-up transformers, which increase the voltage to 500 kV. Surge arresters will be provided at the high-voltage bushings to protect the transformers from surges on the 500-kV system caused by lightning strikes or other system disturbances. The transformers will be set on concrete pads within containments designed to contain the transformer oil in the event of a leak or spill. Fire protection systems will be provided. The high voltage side of the step-up transformers will be connected via overhead conductors to the plant's 500-kV switchyard. From the switchyard, power will be transmitted via a new 0.9-mile 500-kV transmission line to existing SCE Valley Substation.

3.4.6 AC Power—Distribution to Auxiliaries

Auxiliary power to the combustion turbine and steam turbine power block will be supplied at 4,160 volts AC by a double-ended 4,160-volt switchgear lineup. Primary power to the switchgear will be supplied by two oil-filled, 18-kV to 4.16-kV unit auxiliary/station service stepdown transformers. The high voltage side (18-kV) of the unit auxiliary/station service transformers will be connected to the outputs of the CTGs. This connection will allow the switchgear to be powered from either of the two CTGs or by back-feeding power from the 500-kV switchyard. Low-side (18-kV) generator circuit breakers will be provided for the two CTGs. These circuit breakers, used to isolate and synchronize the generators, will be located between the generators and the connections to the unit auxiliary/station service transformers. A natural gas-fired emergency generator will be provided to supply power to emergency loads and auxiliary boiler loads when power is not available through the 500-kV interconnection to the grid.

The 4,160-volt switchgear lineup supplies power to the various 4,160-volt motors, to the combustion turbine starting system, and to the load centers (LC) transformers rated 4,160 to 480 volts for 480-volt power distribution. The switchgear will have vacuum interrupter circuit breakers for the main incoming feeds and fused switches for power distribution.

The LC transformers will be oil-filled, each supplying 480-volt, three-phase power to the double-ended load centers.

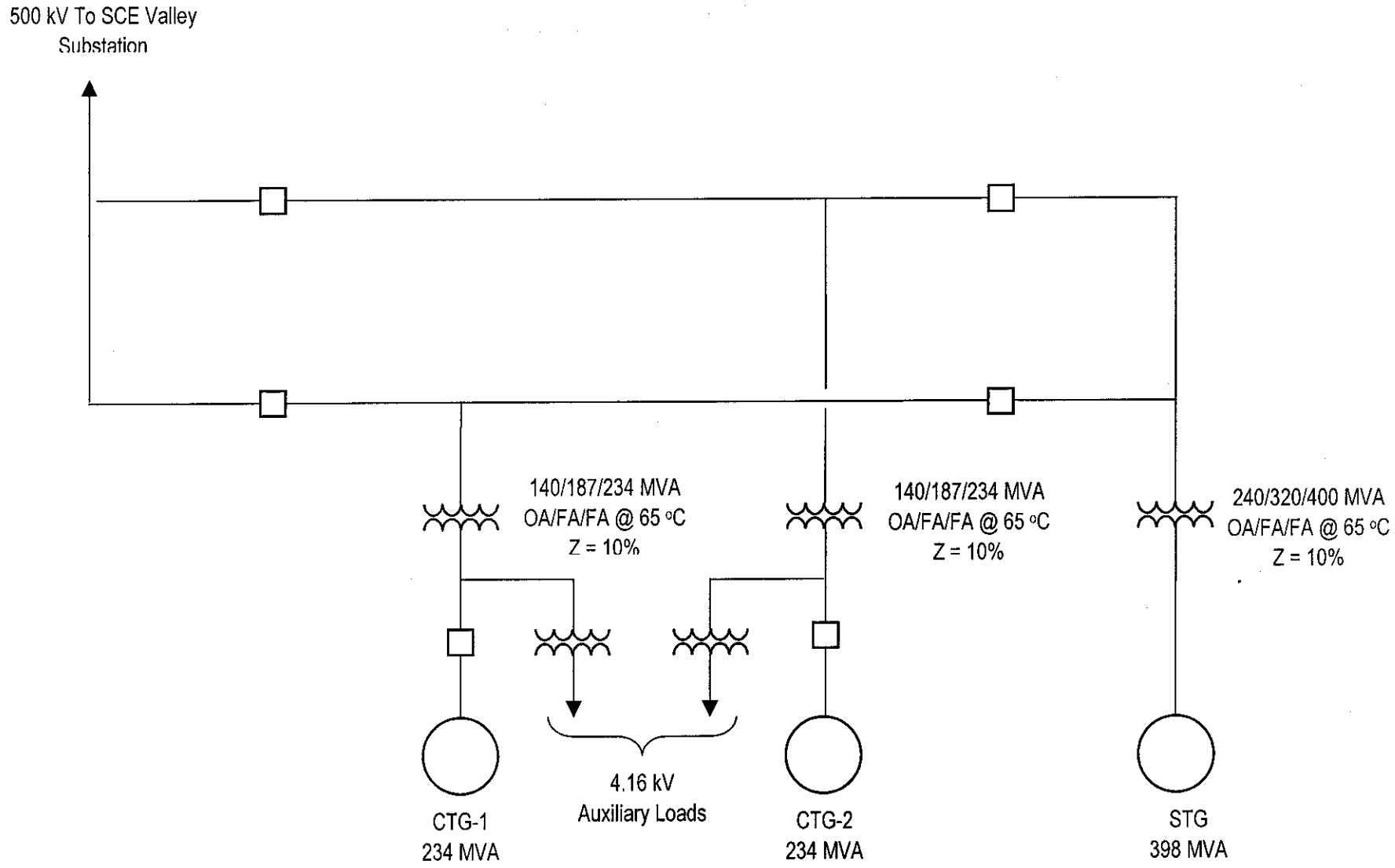


Figure 3.4-5 Single-Line Diagram - Inland Empire Energy Center

The load centers will provide power through feeder breakers to the various 480-volt motor control centers (MCCs). The MCCs will distribute power to 460-volt motors, to 480-volt power distribution panels, and lower voltage lighting and distribution panel transformers. Power for the AC power supply (120-volt/208-volt) system will be provided by the 480-volt MCCs and 480-volt power panels. Transformation of 480-volt power to 120/208-volt power will be provided by 480-120/208-volt dry-type transformers.

3.4.6.1 125-volt DC Power Supply System

One common 125-volt DC power supply system consisting of one 100 percent capacity battery bank, two 100 percent static battery chargers, a switchboard, and two or more distribution panels will be supplied for balance-of-plant and STG equipment. Separate battery systems and redundant chargers will be provided for each CTG and the switchyard protection relay panel.

Under normal operating conditions, the battery chargers supply DC power to the DC loads. The battery chargers receive 480-volt, three-phase AC power from the AC power supply (480-volt) system and continuously load charge the battery banks while supplying power to the DC loads. Under abnormal or emergency conditions when power from the AC power supply (480-volt) system is unavailable, the batteries supply DC power to the DC power supply system loads. Recharging of a discharged battery occurs whenever 480-volt power becomes available from the AC power supply (480-volt) system. The rate of charge is dependent on the characteristics of the battery, battery charger, and the connected DC load during charging. The anticipated maximum recharge time will be 12 hours. The 125-volt DC system will also be used to provide control power to the 4,160-volt switchgear, the 480-volt LCs, to critical control circuits, and to the emergency DC motors.

3.4.7 Uninterruptible Power Supply (UPS) System

The combustion turbines and steam turbine power block will also have an essential service 120-volt AC, single-phase, 60-Hz UPS system to supply AC power to essential instrumentation, to critical equipment loads, and to unit protection and safety systems that require uninterruptible AC power. Redundant UPS inverters will supply 120-volt AC single-phase power to the UPS panel boards that supply critical AC loads. The UPS inverters will be fed from the station 125-volt DC power supply system. Each UPS system will consist of one full-capacity inverter, two static transfer switches, a manual bypass switch, an alternate source transformer, and two or more panelboards.

The normal source of power to the system will be from the 125-volt DC power supply system through the inverter to the panelboard. A solid-state static transfer switch will continuously monitor both the inverter output and the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter for testing and maintenance without interruption to the essential service AC loads. The Distributed Control

System (DCS) operator stations will be supplied from the UPS. The continuous emissions monitoring system (CEMS) equipment, DCS controllers, and input/output (I/O) modules will be fed using either UPS or 125-volt DC power directly.

3.4.7.1 Emergency Generator

A 1,000 kW natural gas-fired emergency generator provides power to the essential service AC system in the event of grid failure or loss of outside power to the plant. The generator can be started via a remote control or local panel and has a day tank.

3.4.8 Fuel Supply and Use

Natural gas for the facility will be provided by one of two alternative pipelines as illustrated in Figure 3.2-2, and described in Section 3.10.3, Natural Gas Supply Pipeline Alternatives.

The CTGs, emergency generator and auxiliary boiler will be designed to burn natural gas. Natural gas requirements during base load operation are approximately 3,600 million Btu/hr (HHV basis). Maximum natural gas requirements during peak load operation are approximately 5,350 million Btu/hr (HHV basis).

The expected pressure of natural gas delivered to the site via pipeline will be at least 550 psig. The high pressure natural gas will flow through gas scrubber/filtering equipment, a gas pressure control station, a fuel gas heater, and a flow metering station prior to entering the combustion turbines. Low pressure gas for the emergency generator, auxiliary boiler and HRSG duct burner systems will be provided by a central pressure reduction station and an LP gas distribution system. Table 3.4-2 presents a typical fuel gas analysis.

Table 3.4-2 Typical Pipeline Quality Natural Gas Analysis

Constituent	Percent by Mass
Methane	92
Ethane	3
Propane	0.6
n-Butane	0.2
i-Butane	0.1
n-Pentane	0.00
i-Pentane	0.1
Hexane+	0.1
Oxygen	0.00
Carbon dioxide	2.8
Nitrogen	1.4
TOTAL	100.00
Sulfur (grains per 100 scf)	<0.25
Specific Gravity (air = 1.00)	0.58
Higher Heating Value (Btu per scf)	1010

Btu = British thermal units.
scf = standard cubic feet.
Source: Sempra Energy (SoCal Gas at the time), 2001.

3.4.9 Water Supply and Use

This section describes the quantity of water required, the water supply source, and water treatment requirements.

The IEEC site is located within the EMWD. EMWD will deliver recycled and raw water to the project in a new 0.1 mile long, 12 to 24-inch recycled water pipeline connecting to an existing 48-inch recycled water pipeline, located in McLaughlin Road adjacent to the project site southern boundary. EMWD operates five regional water reclamation facilities (RWRF) with 135 miles of distribution pipelines (EMWD, 2000). Recycled water for IEEC will be provided by EMWD from their Moreno Valley and Perris Valley RWRFs.

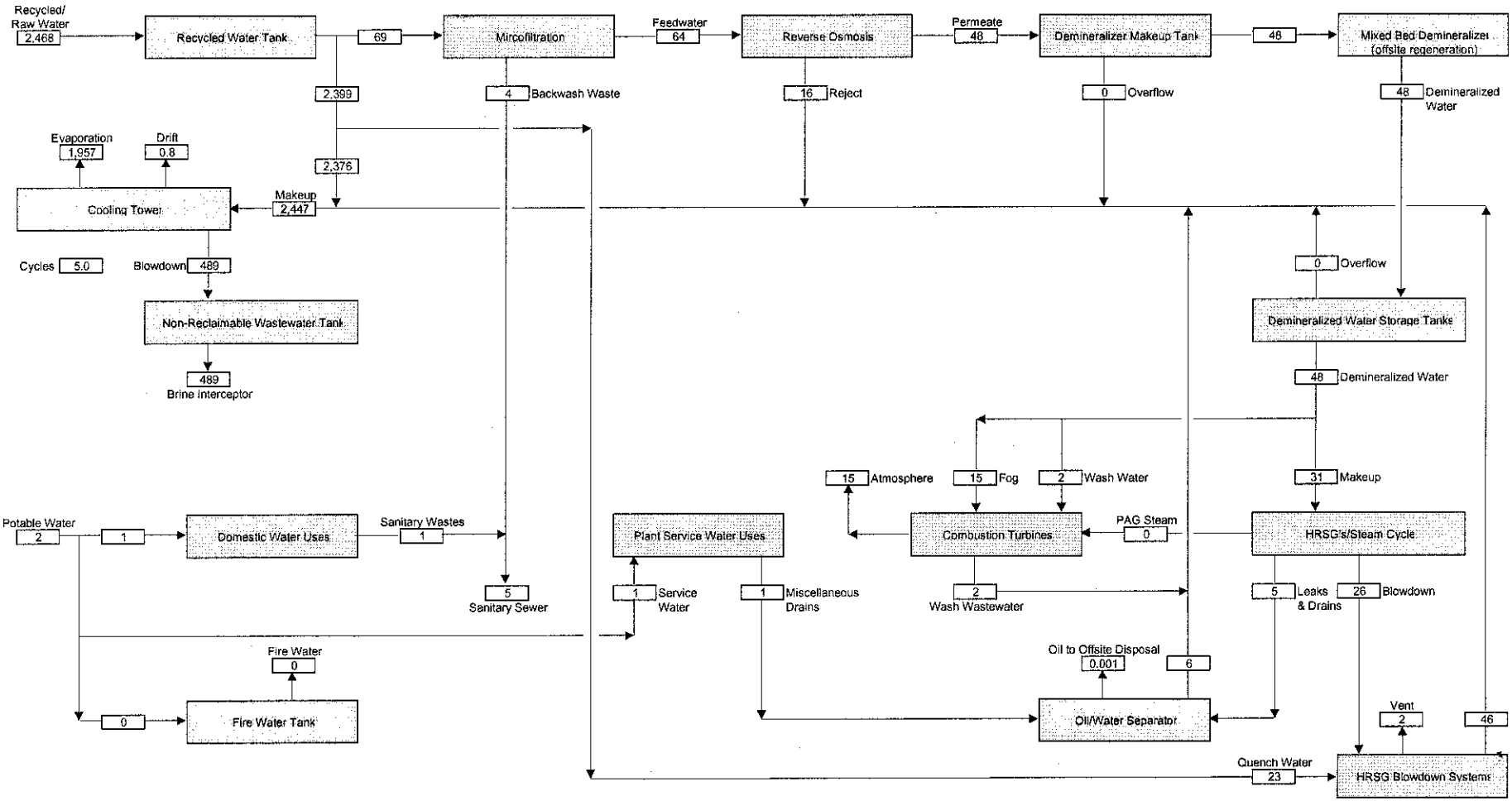
During normal operation, approximately 99 percent of the total water requirements for the IEEC are for cooling water that is used for auxiliary cooling and to condense steam discharging from the steam turbine. The cooling water is then circulated through the cooling tower to transfer the heat to the atmosphere. During peak operation (maximum HRSG duct firing, CTG inlet air fogging, and CTG power augmentation steam injection), approximately 96 percent of the total water requirements are for cooling water make-up. The remaining water needed for the plant is for process make-up water for the HRSGs, CTG inlet air fogging, CTG power augmentation steam, miscellaneous leaks and drains, plant general service water, and potable water for domestic use.

Two water balance diagrams are provided, representing two operating conditions as follows:

- Figure 3.4-6. Annual average operation at 61°F with two CTGs operating at 100 percent load, no HRSG duct firing, CTG inlet air fogging, and no CTG power augmentation steam injection; and
- Figure 3.4-7. Peak operation at 97°F with two CTGs operating at 100 percent load, maximum HRSG duct firing, CTG inlet air fogging, and CTG power augmentation steam injection.

EMWD will need to supplement recycled water with raw water provided by Metropolitan Water District (MWD). Farmland throughout EMWD's service territory is being developed for residential use. As farmland is converted to residential use there will be a decrease in the demand for recycled water and an increase in the amount of recycled water produced. EMWD long-term plans (to year 2020) show the availability of recycled water increasing over time. Table 3.4-3 is a projected summary of recycled and raw water use by month and year. The recycled water quantities indicated in Table 3.4-3 are based on the Applicant's assumption that 35 percent of EMWD's projected increase to year 2020 in recycled water supply is allocated to the IEEC. During the first full year of operation, recycled water is projected to make-up 52 percent of the water supplied to the IEEC. By the fifteenth year, it is projected that recycled water will be available in sufficient quantities to meet 72 percent of the Energy Center's demands.

Notes:
1. All flow rates are in gallons per minute.
2. Water treatment system is designed fc 16.0 hrs/day of augmentation (PAG) with 24 hrs/day of demin water production
3. Filter backwash rates shown are average flows. Maximum flows will be much greater.
4. Fire flow shown is normal operation. Fire flow capacity is 2000 gpm.



Average Day

Rev.	Description	By	Date
C	Changed multi-media filter to microfilter.	JBM	07/02/01
B	Revised format, added demin and brine equalization	JBM	04/29/01
A	Issued to EMWD	JBM	11/28/00

Design Case: Average Day

Configuration: 2 x 1, HPD Site Altitude: 1,440 ft
Dry Bulb Temp. 61 deg F Wet Bulb Temp. 54 deg.F
Fogging: Yes
Power Augmentation: No
Duct Firing: No

CALPINE

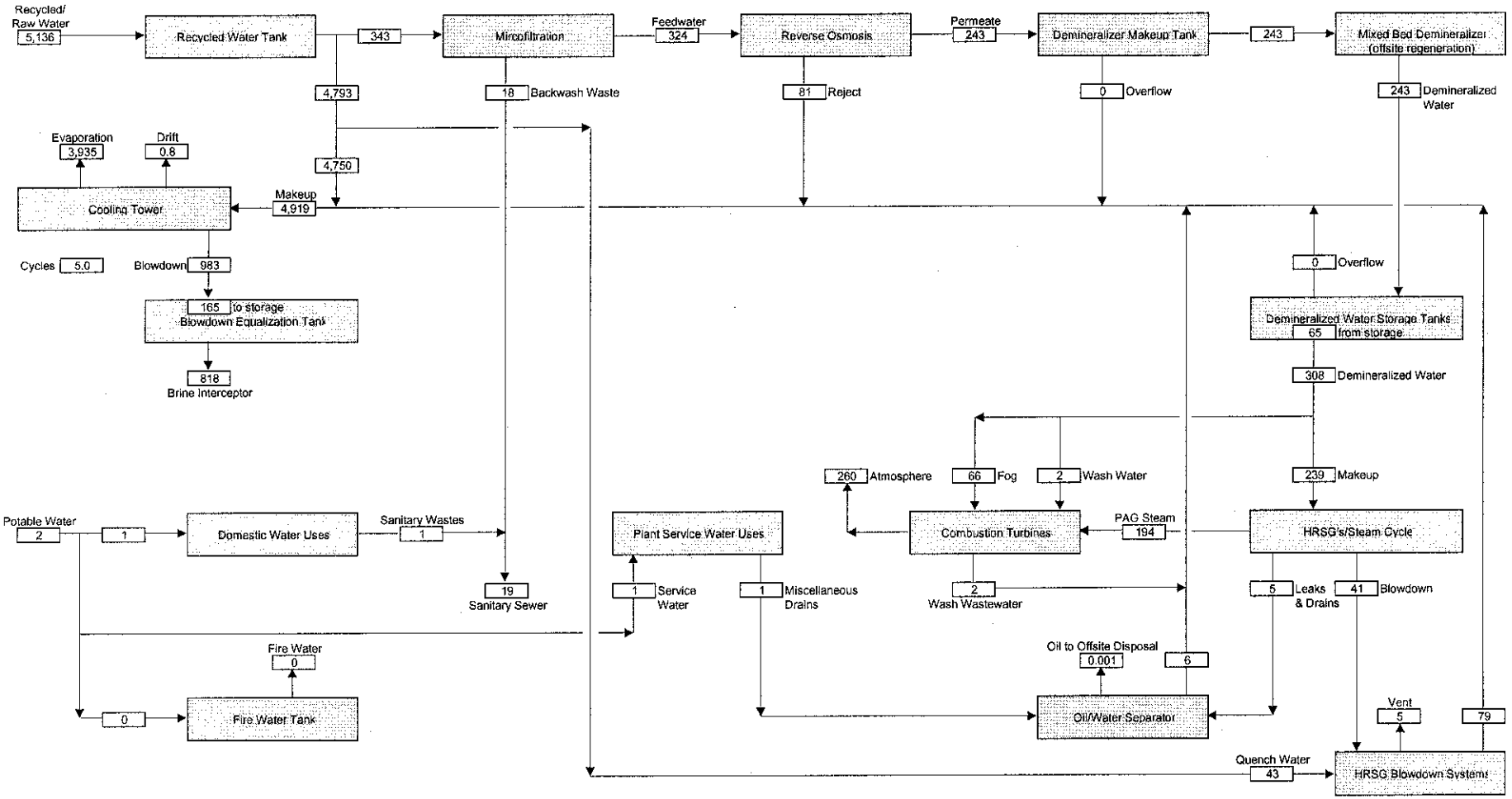
Inland Empire Energy Center

Water Balance

Figure 3.4-6

Rev. C

Notes:
1. All flow rates are in gallons per minute.
2. Water treatment system is designed fc 16.0 hrs/day of augmentation (PAG) with 24 hrs/day of demin water production
3. Filter backwash rates shown are average flows. Maximum flows will be much greater.
4. Fire flow shown is normal operation. Fire flow capacity is 2000 gpm.



Peak Day

Rev.	Description	By	Date
C	Changed multi-media filter to microfilter	JBM	07/02/01
B	Revised format, added demin and brine equalization	JBM	04/29/01
A	Issued to EMWD	JBM	11/28/00

Design Case: Peak Day

Configuration: 2 x 1, HPD
Site Altitude: 1,440 ft
Dry Bulb Temp. 97 deg F
Wet Bulb Temp. 72 deg.F
Fogging: Yes
Power Augmentation: Yes
Duct Firing: Yes

CALPINE

Inland Empire Energy Center

Water Balance

Figure 3.4-7

Rev. C

Table 3.4-3 Projected Summary of Recycled and Raw Water Use by Year (acre-feet/year)

Year	Recycled Water	Raw Water	Total
2005	2,591	2,327	4,918
2006	2,657	2,261	4,918
2007	2,725	2,193	4,918
2008	2,791	2,127	4,918
2009	2,857	2,061	4,918
2010	2,921	1,997	4,918
2011	2,985	1,933	4,918
2012	3,047	1,871	4,918
2013	3,109	1,809	4,918
2014	3,171	1,747	4,918
2015	3,233	1,685	4,918
2016	3,317	1,601	4,918
2017	3,401	1,517	4,918
2018	3,465	1,453	4,918
2019	3,528	1,390	4,918
2020	3,589	1,329	4,918

Potable water for sinks, showers, toilets, and eye wash/safety showers will also be provided via a separate pipeline by EMWD. Potable water will also be used for plant service water and fire protection water. In order to deliver potable water to the IEEC, a new 12-inch potable water pipeline will be installed in Antelope Road, connecting the 20-inch pipe in Ethanac Road with the 16-inch pipe in McLaughlin Road.

3.4.9.1 Recycled Water Pump Station

A new recycled water pump station will be constructed at EMWD's existing Moreno Valley Regional Water Reclamation Facility (MVRWRF), located northwest of Lake Perris, east of Kitching Street, between Mariposa Avenue and Oleander Avenue. This new pump station will allow EMWD to pump recycled water from the MVRWRF to the IEEC, thus increasing the reliability of the recycled water supply to the IEEC and also allowing EMWD more flexibility in the operation of their recycled water system.

The MVRWRF currently occupies approximately 115 acres and treats sanitary wastewater, producing both secondary and tertiary treated effluent for recycled water uses. EMWD is presently undertaking an expansion of the MVRWRF so that all wastewater will be treated to the tertiary level. The expanded capacity will be 15.2 MGD. The new facilities, scheduled to come online in the summer of 2002, will include processes for secondary effluent flow

equalization, tertiary influent pumping, coagulation, flocculation, granular media filtration, disinfection, and tertiary effluent pumping.

Presently, recycled water is pumped to the north from the MVRWRF and flows by gravity to the south. In order to provide recycled water to the IEEC from the MVRWRF, the recycled water will need to be pumped through the existing 36-inch recycled water pipeline that runs south from the MVRWRF along Kitching Street and then Redlands Avenue. New recycled water pumps will be incorporated into the tertiary effluent pump station. In addition to the seven pumps originally contemplated for effluent pumping and internal plant uses, the pump station has spaces available for four additional pumps. Two of these spaces will be used for the new recycled water pumps that will pump water south towards the IEEC. Improvements necessary for the new recycled water pump station will consist of installing two new variable speed, vertical turbine pumps in an existing wet well and connections to an existing discharge header. Based on current hydraulic design requirements, the recycled water pumps are estimated to be 100 horsepower each. Electrical equipment for the new pump station will be installed in an existing electrical room, adjacent to the pump station. This equipment will be added to existing, already disturbed areas.

3.4.9.2 Raw Water Pump Station

The supplemental raw water pump station will be located at a EMWD's existing turnout, EM-4, off of MWD's Colorado River Aqueduct near Evans Road. At this location, there exists EMWD facilities for pumping raw water into the EMWD potable water system, which are currently not used. At the same location, EMWD is about to begin construction of their new Perris Water Treatment Plant (PWTP). This plant initially will treat 10.2 MGD of raw Colorado River water from the MWD's aqueduct as a supply of potable water for the EMWD service area. Construction is scheduled to be complete in the summer of 2002. Future expansions of the plant are planned to increase its capacity first to 20 MGD and then as high as 50 MGD.

The PWTP facilities will occupy approximately 2.5 acres and will include an influent pump station to draw raw water from the aqueduct, screening to remove large solids from the raw water, microfiltration, disinfection, and a final pumping to EMWD's potable water transmission/distribution system. Much of the equipment at the PWTP will be contained within buildings with one building housing control and electrical equipment and another housing pumps, blowers, and other process equipment. There will also be a partially enclosed containment area for chemical storage and feed equipment.

The PWTP influent pump station will consist of a wet well initially containing four submersible pumps providing raw water to the water treatment process and also the raw water pump station proposed to supplement the recycled water supply. An air gap will be provided at the discharge into the raw water pump station wet well to assure there is no cross connection between the recycled and raw water systems.

The raw water pump station will be designed to provide up to 7.4 MGD of raw water to supplement EMWD's recycled water system. The pump station will be located adjacent to the PWTP influent pump station and will be of similar design with a below-grade reinforced concrete wet well, approximately 12 feet square, and two pumps, approximately 50 horsepower each, equipped with variable speed drives. Submersible pumps will be used to minimize noise and visual impacts. Above-grade facilities will include a pump discharge header, valves, and a flow meter. Electrical equipment for the raw water pumps will be mounted inside one of the PWTP buildings. The facilities for IEEC will be constructed at existing and planned EMWD sites.

3.4.9.3 Water Consumptive Requirements

Daily and annual consumption requirements are summarized in Table 3.4-4. The daily water requirements shown are estimated quantities based on the combined cycle plant operating at a constant 538 MW at an ambient temperature of 61°F without duct firing or steam injection. Peak water requirements shown in Table 3.4-4 are based on the plant operating at a constant 670 MW at an ambient temperature of 97°F with maximum duct firing and steam injection. The water balances and water requirements for the peak condition reflect the use of CTG power augmentation steam injection on a continuous basis. The plant will actually be designed for only 16 hours per day of steam injection.

Table 3.4-4 Daily and Annual Average and Maximum Water Consumption Requirements

Water Consumption Requirements	Amount
Average Daily (US gal x 1000)	3,560
Maximum Daily (US gal x 1000)	6,190
Average Annual (acre-feet/year)	4,150
Maximum Annual (acre-feet/year)	5,000

3.4.9.4 Water Quality

The IEEC will use up to approximately 5,000 acre-ft per year of recycled/raw water for cooling tower and process make-up that will be supplied by the EMWD. Cooling water will be cycled 5 to 13 times (depending on water quality) in the cooling tower; wastewater will then be disposed of via connection to an existing non-reclaimable wastewater line. Water quality analysis for recycled and raw water supplied by EMED is provided in Table 3.4-5.

3.4.9.5 Water Treatment

The Water Balance Diagrams, Figures 3.4-6 and 3.4-7, illustrate the Energy Center's water treatment processes and the distribution of treated water. Water use can be divided into the following four levels based on the quality required: (1) water for the circulating or cooling water system; (2) service water for the plant, which includes all other miscellaneous uses; (3) demineralized water for make-up to the HRSGs and an auxiliary boiler, CTG inlet air fogging, and CTG water wash; and (4) potable water. The following sections describe the plant's water uses and treatment.

Table 3.4-5 Water Analysis for Recycled and Raw Water Supplied by EMWD

Water Quality Parameter	Recycled Water Perris Valley RWRF[1] mg/l	Recycled Water Moreno Valley RWRF[2] mg/l	Raw Water San Jacinto Tunnel[3] mg/l	Design Water Quality[4] mg/l as Constituent	Design Water Quality[4] mg/l as $CaCO_3$
Cations					
Calcium	40.2	23.2	73.3	73.3	182.9
Magnesium	12.3	11.3	26.9	26.9	110.7
Sodium	111.5	93.7	87.0	111.5	242.8
Potassium	14.2	12.7	4.3	14.2	18.2
Ammonium	0.2	0.2	-	0.2	0.6
Total Cations	-	-	-		555.2
Anions	-	-	-		
Carbonate	0.3	0.3	1.0	1.0	1.7
Bicarbonate	131.4	103.0	158.5	158.5	130.0
Hydroxyl	0.3	0.3	No data	0.3	0.9
Carbon Dioxide	No data	No data	1.2	1.2	2.8
Sulfate	76.2	48.8	237.8	237.8	247.7
Chloride	156.0	131.0	76.5	156.0	220.2
Nitrate	0.4	2.9	0.9	2.9	2.4
Phosphate	No data	No data	No data	No data	-
Fluoride	0.2	0.1	0.3	0.3	0.8
Total Anions					606.4
Hardness	146.5	104.7	294.0	294.0	293.7
Alkalinity					
Total Alkalinity	108.5	84.8	131.3	131.3	132.5
Bicarbonate Alkalinity	107.8	84.5	130.0	130.0	130.0
Miscellaneous					
pH	7.3	7.2	8.3	7.6	
Silica	23.4	18.7	9.0	23.4	
Turbidity	No data	No data	0.8	0.8	
Total Dissolved Solids (TDS)	509.2	426.7	596.0	596.0	
Total Suspended Solids (TSS)	<3	<3	No data	3.0	
Total Organic Carbon	8.4	9.5	3.7	9.5	
Specific Conductivity, umho/cm	880.8	735.0	948.8	948.8	

Notes:

1. Based on EMWD year 2000 water quality data for Perris Valley RWRF tertiary treated water.

2. Based on EMWD year 2000 water quality data for Moreno Valley RWRF tertiary treated water.

3. Based on MWD fiscal year 1996/97 through 1999/00 raw water quality data for San Jacinto Tunnel West Portal.

4. Design water quality is based the highest level for each constituent as found in the data for Perris Valley tertiary treated water, Moreno Valley RWRF tertiary treated water, and San Jacinto Tunnel West Portal raw water. For metals and miscellaneous constituents, where the values are indicated to be less than a given value, the given value is conservatively assumed.

   Cooling tower drift is based on a conservatively high 13 cycles of concentration to present worst-case data for the purpose of evaluating health impacts. It is anticipated that the cooling tower will normally operate between 5 and 10 cycles of concentration.

3.4.9.6 Circulating Water

Make-up water for the circulating water system will be supplied by EMWD's reclaimed, recycled water system. This water will be fed directly into a 2.5 million gallon above ground storage tank without pretreatment. The tank will provide approximately 8 hours of operational storage at the maximum flow of 5,136 gpm in the event that there is a disruption in the flow of EMWD recycled water. In addition, the tank will allow water to be supplied to the site at a uniform rate while used at a variable rate. Make-up water will be fed from the storage tanks to the cooling tower basin as required to replace water lost from evaporation, drift, and blowdown. A separate fire water tank will provide 2 hours of fire protection water storage (240,000 gal) at a flow rate of 2,000 gpm. Make-up water to the fire water tank will be from the potable water supply.

A chemical feed system will supply water conditioning chemicals to the circulating water to minimize corrosion and control the formation of mineral scale and biofouling. Sulfuric acid will be fed into the circulating water system in proportion to make-up water flow for alkalinity reduction to control the scaling tendency of the circulating water. The acid feed equipment will consist of a bulk sulfuric acid storage tank and two full-capacity sulfuric acid metering pumps.

To further inhibit scale formation, a polyacrylate solution will be fed into the circulating water system as a sequestering agent in an amount proportional to the circulating water blowdown flow. The inhibitor feed equipment will consist of a chemical solution bulk storage tank and two full-capacity inhibitor metering pumps.

To prevent biofouling in the circulating water system, sodium hypochlorite will be shock fed into the system as a biocide. The hypochlorite feed equipment will consist of a bulk storage tank and two full-capacity hypochlorite metering pumps. Systems will also be provided for the feeding of alternate biocides. A bulk storage tank and two full-capacity metering pumps will be provided for the feeding of either stabilized bromine or sodium bromide. Facilities for feeding a non-oxidizing biocide will include 200 to 400 gallon totes and two full-capacity chemical metering pumps.

3.4.9.7 Make-up Water for the HRSGs and Auxiliary Boiler

Demineralized water will be used for make-up water for the HRSGs and auxiliary boiler and for CTG inlet air fogging and water washes. The demineralized water will be produced by passing recycled water through a microfilter, followed by reverse osmosis, and then through off-site regenerated mixed bed ion exchange demineralizers. The reject stream from the reverse osmosis system will be recycled to the cooling tower. The demineralized water will be stored in two 150,000 gallon demineralized water storage tanks. HRSG and auxiliary boiler make-up water will be drawn from the demineralized water storage tanks. Demineralized water will also be used for CTG inlet air fogging (used to increase turbine output) and for CTG wash water. Additional conditioning of the water in the HRSGs and auxiliary boiler, to minimize corrosion and scale formation, will be provided by chemical feed systems. The systems will feed an oxygen scavenger to the condensate for dissolved oxygen control, a

neutralizing amine to the condensate for corrosion control, and a phosphate solution to the HRSG steam drums for pH and alkalinity control. The design will provide for automatic feed of the oxygen scavenger in proportion to condensate flow and the amine in proportion to condensate flow with a pH bias. The system will include an oxygen scavenger solution feed tank and two full-capacity, chemical feed pumps and an amine solution feed tank and two full-capacity chemical feed pumps.

The phosphate feed system will be designed for operation using the low solids, congruent phosphate method of boiler water treatment. The design will provide for feeding sodium phosphates to the boiler water to react with any hardness present. For congruent phosphate treatment, a dilute solution of a disodium phosphate/trisodium phosphate/hexameta phosphate mixture will be manually prepared in a phosphate solution tank dedicated to each steam drum. The feed of phosphate will be manually initiated based on boiler water phosphate residual and pH. One solution tank and full-capacity phosphate feed pump will be provided for each steam drum with one common spare pump serving each HRSG.

3.4.9.8 Service Water

Service water includes all water uses at the plant except for the circulating water previously discussed, and the demineralized water used in the HRSG and auxiliary boiler (see following section) and potable uses. Potable water, protected by a reduced pressure backflow preventer will be used for service water. Service water will be stored in an above ground steel tank.

3.4.9.9 Potable Water

EMWD will supply potable water that meets regulatory standards for safe drinking water. The potable system will supply water to sinks, toilets, showers, drinking fountains, and emergency eyewash/safety showers. As noted above, make-up water to the fire water tank will be from the potable water supply.

3.4.10 Waste Management

This section describes the waste management processes leading to proper collection, treatment, and disposal of wastes. Wastes include wastewater, solid non-hazardous waste, and hazardous waste. Additional information on waste management can be found in Section 5.13.

3.4.10.1 Wastewater

There are two separate wastewater collection systems. The first system will collect process wastewater from all of the plant equipment, including the HRSGs, cooling tower, and water treatment equipment. The water balance diagrams, Figures 3.4-6 and 3.4-7, show the expected wastewater streams and flow rates for the IEEC. Process wastewater will be recycled and reused, to the extent possible. The leftover wastewater, high in total dissolved solids (TDS), will be discharged to EMWD's existing non-reclaimable wastewater system via a new 12- to 18-inch diameter, 4.7 mile pipeline. The second system will collect sanitary wastewater from sinks, toilets, showers, other sanitary facilities, and backwash wastewater from the

microfiltration system, and discharge it to an existing 33-inch diameter EMWD sewer line located in McLaughlin Road near the southern property boundary.

Circulating Water System Blowdown

Circulating water system blowdown will consist of recycled and raw water along with various process waste streams that have been concentrated typically between 5 and 13 cycles and residues of the chemicals added to the circulating water. These chemicals control scaling and biofouling of the cooling tower and control corrosion of the circulating water piping and condenser. Cooling tower blowdown will be discharged to the existing EMWD non-reclaimable wastewater system.

Plant Drains-Oil/Water Separator

Miscellaneous general plant drains will consist of sample drains, equipment leakage, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and routed to the wastewater collection system. Effluent from the plant wastewater collection system will be recycled to the cooling tower basin. Drains that potentially could contain oil or grease will first be routed through an oil/water separator. Wastewater from combustion turbine water washes will be collected in a holding tank. If cleaning chemicals were not used during the water wash procedure, the wastewater will be discharged to the downstream side of the oil/water separator. Wastewater containing cleaning chemicals will be trucked off site for disposal at an approved wastewater disposal facility.

Power Cycle Make-up Water Treatment Wastes

Wastewater from the power cycle make-up water treatment system will consist of the reject stream from the make-up RO units that will initially reduce the concentration of dissolved solids in the plant make-up water before it is treated in the mixed bed ion exchange vessels and backwash water from the microfiltration system upstream of the RO units. The RO reject stream will contain the constituents of the EMWD recycled water, concentrated approximately five to thirteen times depending on the cycles of concentration, sodium bisulfite or sodium sulfite added to the RO feedwater to eliminate free chlorine that would otherwise damage the RO membranes, and phosphonate to prevent scaling of the membranes. The filter backwash water will contain the suspended solids removed from the water. The microfiltration backwash waste will be discharged to the sanitary sewer. The RO reject stream will be recycled to the cooling tower basin.

HRSG and Auxiliary Boiler Blowdown

HRSG blowdown will consist of boiler water discharged from the HRSG steam drums to control the concentration of dissolved solids and silica within acceptable ranges. Boiler blowdown will be discharged to flash tanks where the steam is vented to atmosphere and the condensate is cooled by mixing it with a small amount of circulating water. The quenched condensate will be discharged to the cooling tower basin, thus reclaiming the majority of the boiler blowdown.

3.4.10.2 Solid Non-Hazardous Waste

The IEEC will produce maintenance and plant wastes typical of power generation operations. Generation plant wastes include oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes including the typical refuse generated by workers. These materials will be collected by the local waste disposal company and disposed at a landfill permitted to receive these wastes (see Section 5.13, Waste Management). Waste collection and disposal will be in accordance with applicable regulatory requirements to minimize health and safety effects.

3.4.10.3 Hazardous Waste

Several methods will be used to properly manage and dispose of hazardous wastes generated by the IEEC. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill. Spent SCR and oxidation catalysts will be recycled by the supplier or disposed of in a Class I landfill. Workers will be trained to handle hazardous wastes generated at the site.

Chemical cleaning wastes will consist of alkaline and acid cleaning solutions used during pre-operational chemical cleaning of the HRSGs, acid cleaning solutions used for chemical cleaning of the HRSGs after the units are put into service, and HRSG fireside wash waters. These wastes, which are subject to high metal concentrations, will be temporarily stored on site in portable tanks, and disposed of off-site by a chemical cleaning contractor in accordance with applicable regulatory requirements. Turbine wash wastewater will be recycled to the cooling tower basin when detergents are not used. Turbine wash wastewater containing detergents will be temporarily stored on-site in a holding tank and then disposed of off-site in accordance with applicable regulatory requirements.

3.4.11 Hazardous Material Management

There will be a variety of chemicals stored and used during construction and operation of the IEEC project. The storage, handling, and use of all chemicals will be conducted in accordance with applicable laws, ordinances, regulations, and standards. Chemicals will be stored in appropriate chemical storage facilities. Table 3.4-6 provides a summary of hazardous chemical use and storage location. Bulk chemicals will be stored in storage tanks, and other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to contain leaks and spills. Berm and drain piping design will allow a full-tank capacity spill without overflowing the berms. For multiple tanks located within the same bermed area, the capacity of the largest single tank will determine the volume of the bermed area and drain piping. Drain piping for volatile chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors. After neutralization, if required, water collected from the chemical storage areas will be directed to the cooling tower basin.

Table 3.4-6 Hazardous Chemical Use and Storage Location – Project Operation

Chemical	Use	Storage Location
Aqueous ammonia (28% NH_3 + 72% H_2O)	Selective catalytic reduction for NO_x emissions control.	Outdoors, in the ammonia unloading/storage area adjacent to the north HRSG
Hydrogen	Combustion turbine and steam turbine generator cooling	Tube trailer adjacent to north combustion turbine
Stabilized bromine (e.g. NALCO Stabrex ST70)	Cooling tower biocide and process water pretreatment	Cooling tower chemical building and water treatment building
Sulfuric acid (H_2SO_4) 93%	Cooling tower pH control, mixed bed demineralizer regeneration (if onsite regeneration is used), pH neutralization	Outdoors near cooling tower and water treatment building
Sodium bromine	Cooling tower biological control and process water pretreatment	Cooling tower chemical building and water treatment building
Polyacrylate	Cooling tower scale inhibitor	Cooling tower chemical building
Sodium hypochlorite (NaOCl)	Cooling tower biological control and process water pretreatment	Cooling tower chemical building and water treatment building
Tri-sodium phosphate, di-sodium phosphate, and sodium hexameta phosphate	Boiler water alkalinity control	Water treatment building
Neutralizing amines (e.g. NALCO 356 or NALCO TRIACT 1800)	Corrosion control of condensate piping	Water treatment building
Oxygen scavenger (e.g. NALCO ELIMIN-OX)	Oxygen scavenger for use in process feedwater to deaerator	Water treatment building
Aluminum sulfate, sodium aluminate, or polyaluminum chloride	Coagulant for plant make-up water	Water treatment building
Ferric chloride or ferric sulfate	Coagulant for plant make-up water	Water treatment building
Coagulant aid polymer (e.g. NALCO NALCOLYTE 8799)	Coagulant for plant make-up water	Water treatment building

Table 3.4-6 Hazardous Chemical Use and Storage Location – Project Operation
(Continued)

Chemical	Use	Storage Location
Phosphonate (e.g. NALCO 7385)	Antiscalant for use in reverse osmosis unit	Water treatment building
Calgon Memclean C	Microfiltration membrane cleaning	Water treatment building
Filter aid – cationic, anionic, or non-ionic type polymer solution (e.g. NALCO NALCLEAR 7763)	Process make-up filter aid	Water treatment building
Sulfur hexafluoride	High voltage circuit breakers	Contained within equipment
Sulfuric acid 29.5%	Batteries	Electrical distribution center battery rooms
Hydrochloric acid	HRSG chemical cleaning; small quantity kept onsite for maintenance	Brought onsite for HRSG cleaning by cleaning contractor; small quantity stored in water treatment building
Ammonium bifluoride	HRSG chemical cleaning	Brought onsite only for HRSG cleaning by cleaning contractor
Citric acid	HRSG chemical cleaning and microfiltration membrane cleaning	Brought onsite only for HRSG cleaning by cleaning contractor and also stored in water treatment building
Sodium carbonate (soda ash)	HRSG chemical cleaning	Brought onsite only for HRSG cleaning by cleaning contractor
Sodium nitrate	HRSG chemical cleaning	Brought onsite only for HRSG cleaning by cleaning contractor
Hydroxyacetic acid	HRSG chemical cleaning; small quantity kept onsite for maintenance	Brought onsite for HRSG cleaning by cleaning contractor; small quantity stored in water treatment building
Formic acid	HRSG chemical cleaning	Brought onsite only for initial HRSG cleaning by cleaning contractor
Sodium hydroxide	HRSG treatment, mixed bed demineralizer regeneration (if onsite regeneration is used), pH neutralization	Water treatment building

Table 3.4-6 Hazardous Chemical Use and Storage Location – Project Operation
(Continued)

Chemical	Use	Storage Location
Sodium bisulfite or sodium sulfite	Dechlorination of reverse osmosis feedwater	Water treatment building
Non – oxidizing biocide (e.g. NALCO 7330)	Cooling tower biological control	Cooling tower chemical building
Antifreeze – ethylene or propylene glycol	Closed loop cooling system corrosion inhibitor	Water treatment building
Sodium nitrite	Closed loop cooling system scale inhibitor and HRSG chemical cleaning	Water treatment building and also brought onsite for HRSG cleaning by cleaning contractor
Various laboratory reagents	Laboratory analysis	Water treatment building/laboratory
Various cleaning chemicals/detergents	Periodic cleaning of combustion turbines and other equipment and plant facilities	Water treatment building/ laboratory/maintenance shop
Carbon dioxide	Fire suppression	Bottle racks adjacent to each combustion turbine and steam turbine
Nitrogen	Blanketing	Trailer adjacent to the north combustion turbine
Lubricating oil	Equipment lubrication	Contained within equipment
Hydraulic oil	High pressure combustion turbine starting system, turbine control valve actuators	Contained within equipment
Mineral insulating oil	Transformers/switchyard	Contained within transformers and switches
Diesel fuel	Fire pump engine/vehicles	Near fire pump / contained within equipment
Natural gas	Fuel for combustion turbines, auxiliary boiler, and emergency generator	Available on demand via pipeline

Safety showers and eyewashes will be provided adjacent to or in the area of all chemical storage and use areas. Hose connections will be provided near the chemical storage and feed areas to flush spills and leaks to the plant wastewater collection system. State-approved personal protective equipment will be used by plant personnel during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored on-site for spill cleanup.

Electric equipment insulating materials will be specified to be free of polychlorinated biphenyls (PCB).

A list of the hazardous materials anticipated to be used at the plant is provided in Table 3.4-7. Each material is identified by type, intended use, and estimated quantity to be stored on-site. Additional information on hazardous material management can be found in Section 5.12, Hazardous Materials Management.

3.4.12 Air Emissions Control and Monitoring

Air emissions from the combustion of natural gas in the CTGs and HRSG's duct burners are controlled by the state-of-the-art systems. Emissions that are controlled include NO_x, CO, volatile organic compounds (VOCs), fine particulate matter (PM_{10}), and sulfur dioxide (SO_2). CEMS will be installed to monitor the stack emissions. All emissions values stated in the following subsections are based on parts per million (ppmvd) corrected to 15 percent oxygen (O_2). Complete information on air quality matters, including startup emissions, is provided in Section 5.2.

3.4.12.1 NO_x Emissions Control

Dry low NO_x (DLN) combustors in the CTGs followed by SCR in the HRSGs will control stack emissions of NO_x to a maximum 2.5 ppmvd (short-term average excluding startups) and 2.0 ppmvd on an annual average basis. The DLN combustors control NO_x emissions to approximately 25 ppmvd at the CTG exhausts by staged combustion and pre-mixing fuel and air immediately prior to combustion. Pre-mixing inhibits NO_x formation by minimizing the flame temperature.

The SCR process uses ammonia as a reagent. Stack emissions of ammonia, referred to as "ammonia slip", will not exceed 10 ppmvd. The SCR system includes a catalyst chamber located within each HRSG, catalyst bed, ammonia storage system, and ammonia injection system. The catalyst chamber contains the catalyst bed and is located in a temperature zone of the HRSG where the catalyst is most effective over the range of loads at which the plant will operate. The ammonia injection grid is located upstream of the catalyst chamber. It is expected that the 16,000-gallons of aqueous ammonia storage tanks will have a total storage capacity of at least 15 days, assuming 16 hours per day at peak output and eight hours per day at base load.

Table 3.4-7 Chemical Inventory – Project Operation

	Chemical Name	CAS[a] Number	Maximum Quantity Onsite	Hazardous Characteristics	RQ[b] (lb)	TPQ[c] (lb)	TQ[d] (lb)	Prop 65[e]
Acutely Hazardous Materials								
Aqueous ammonia 28%	Ammonia	7664-41-7	32,000 gal+-. At 55.5lbs/cf, this corresponds to 237,433 lbs of 28% solution or 66,481 lbs of actual ammonia.	Corrosive Volatile	100	500	10,000/500	No
Hydrogen gas	Hydrogen	1333-74-0	126,000 ft^3 (approximately 665 lbs.)	Extremely flammable, explosive	N/A	N/A	10,000	No
Hazardous Materials								
Stabilized bromine (e.g. NALCO Stabrex ST70)	Bromine, sodium hydroxide mixture	1310-73-2	2,000 gal. (approximately 22,600 lbs.)	CorrosiveOxidizer	35,000	10,000	N/A	No
Sulfuric acid 93%	Sulfuric acid	7664-93-9	16,000 gal. (approximately 239,900 lbs.)	Corrosive	1,000	1,000	N/A	No
Sulfuric acid 29.5%	Sulfuric acid	7664-93-9	1,500 gal. (approximately 15,000 lbs.)	Corrosive	1,000	1,000	N/A	No
Hydrochloric acid <37%	Hydrochloric acid	7647-01-0	Brought onsite for HRSG cleaning by cleaning contractor; small quantity continuously onsite; (approximately 10,000 lbs)	Corrosive	5,000[g]	10,000[g]	15,000[g]	No
Sodium Bromide	Sodium Bromide	7647156	2,000 gal. (approximately 53,360 lbs.)	Irritant				
Polyacrylate	Polyacrylate	Various	3,000 gal.		f	f	f	No
Sodium Hypochlorite NaOCl	Sodium Hypochlorite	7681-52-9	8,000 gal. (approximately 70,630 lbs.)	Corrosive	100	f	f	No
Tri-sodium phosphate, disodium phosphate, and sodium hexameta phosphate	Tri-sodium phosphate, disodium phosphate, and sodium hexameta phosphate	7601-54-9 7558-79-4	800 gals (200-400 gal totes) (approximately 10,800 lbs.)	Toxic	5000	f	f	No
Neutralizing amines Nalco 356, Nalco Triact 1800	Cyclohexylamine, and others	108-91-8 Various	800 gal. (200-400 gal totes) (approximately 6,640 lbs.)	Corrosive	10000	10000	10000	No
Oxygen Scavenner Nalco Elimin-Ox	Carbohydrazide	497-18-7	800 gal. (200-400 gal totes) (approximately 6,880 lbs.)	Non-Hazardous	f	f	f	No
Aluminum sulfate, sodium aluminate, or polyaluminum chloride	Aluminum sulfate	10043-01-3	3,000 gal. (approximately 42,480 lbs.)	Toxic	5000	f	f	No
Ferric chloride	Ferric chloride	7705-08-0	3,000 gal. (approximately 69,970 lbs.)	Corrosive	1000	f	f	No

Table 3.4-7 Chemical Inventory – Project Operation (Continued)

	Chemical Name	CAS[a] Number	Maximum Quantity Onsite	Hazardous Characteristics	RQ[b] (lb)	TPQ[c] (lb)	TQ[d] (lb)	Prop 65[e]
Coagulant aid polymer, Nalco NalcoLyte 8799	Poly-quarternaryamine	20507700000 -5062P	800 gal. (200-400 gal totes) (approximately 7,120 lbs.)	Irritant	f	f	f	No
Phosphonate, Nalco 7385	2-Phosphono-124 Butanetricarboxylic acid (45-50%)	37971-36-1	800 gal. (200-400 gal totes) (approximately 8,640 lbs.)	Irritant	f	f	f	No
Calgon Memclean C			200 gal.					
Filteraid-cationic, anionic, or non-ionic type polymer soln., Nalco NalClear	Hydro-treated light distillate, C10-16 alcohols	64742-47-8 68002-97-1	800 gal. (200-400 gal totes) (approximately 5,400 lbs.)	Irritant	f	f	f	No
Sulfur Hexafluoride	Sulfur Hexafluoride	2551-62-4	200 lbs.	Hazardous	f	f	f	No
Ammonium bifluoride	Ammonium bifluoride	1341-49-7	Brought onsite only for HRSG cleaning by cleaning contractor; 200 lbs	Corrosive	N/A	10,000	N/A	No
Citric acid	Citric acid	77-92-9	Brought onsite for HRSG cleaning by cleaning contractor; small quantity continuously onsite; 100 lbs	Corrosive	N/A	10,000	N/A	No
Sodium carbonate (soda ash)	Sodium Carbonate	497-19-8	500 lbs. (50-100 lb. bags)	Corrosive	f	f	f	No
Sodium nitrate	Sodium Nitrate	7631-99-4	500 lbs. (50-100 lb. Bags)	Corrosive	f	f	f	No
Hydroxyacetic acid	Gyrolic acid	None	1000 lbs. (50-200 lb. Bags)	Corrosive	f	f	f	No
Formic acid	Formic acid	64-18-6	600 lbs. (50-100 lb. Bags)	Corrosive	5000	f	f	No
Sodium hydroxide	Sodium hydroxide	1310-73-2	8,000 gal. (approximately 88,000 lbs.)	Corrosive	1,000	10,000	N/A	No
Sodium bisulfite (40-70%)	Sodium bisulfite (40-70%)	7631-90-5	800 gal. (approximately 6,930 lbs.)	Corrosive	N/A	5,000	10,000	No
Non – Oxidizing Biocide (NALCO 7330)	Isothiazolin / DDNPA	Contains: 26172-55-4 2682-20-4	800 gal. (approximately 6,880 lbs.)	Corrosive	N/A	10,000	N/A	No
Antifreeze	Ethylene Glycol / Propylene Glycol 30-50%	107-21-1 6423-43-4	165 gal. (approximately 1,480 lbs.)	Combustible	5,000	10,000	N/A	No
Sodium Nitrite	Sodium Nitrite	7632-00-0	500 lbs.	Oxidizer	100	10,000	N/A	No
Various laboratory reagents	N/A	N/A	10 gal. (approximately 80 lbs.)	Various	N/A	10,000	N/A	N/A

Table 3.4-7 Chemical Inventory – Project Operation (Continued)

	Chemical Name	CAS[a] Number	Maximum Quantity Onsite	Hazardous Characteristics	RQ[b] (lb)	TPQ[c] (lb)	TQ[d] (lb)	Prop 65[e]
Various cleaning chemicals/detergents	N/A	N/A	100 gal. (approximately 830 lbs.)	Toxic	f	f	f	No
Carbon dioxide, liquid	Carbon dioxide	124-38-9	20,000 lbs.	Contact hazard	N/A	10,000	N/A	No
Nitrogen gas	Nitrogen	7727-37-9	150 lbs. (50 lb. Bottles)	Negligible	N/A	10,000	N/A	No
Lubricating oil	Mixture	N/A	20,000 gal. (approximately 150,270 lbs.)	Combustible	N/A	10,000	N/A	Yes
Hydraulic oil	Mixture	N/A	600 gal. (approximately 4,350 lbs.)	Combustible	N/A	10,000	N/A	Yes
Mineral insulating oil	Mixture	N/A	100,000 gal. (approximately 684,720 lbs.)	Combustible	N/A	10,000	N/A	Yes
Diesel fuel	Mixture	N/A	500 gal. (approximately 3,500 lbs.)	Combustible	N/A	10,000	N/A	Yes
Natural gas	Mixture	N/A	Via pipeline	Flammable	N/A	10,000	N/A	Yes

[a] Chemical Abstract Service.

[b] Reportable Quantity per CERCLA. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[c] Threshold Planning Quantity. If quantities of acutely hazardous materials equal to or greater than TPQ are handled or stored, must register with local Administering Agency. For hazardous materials, the TPQ is 10,000 lb.

[d] Federal and state thresholds for RMP reporting.

[e] Chemicals known to the state of California to cause cancer or reproductive toxicity.

[f] No reporting requirement.

3.4.12.2 CO and VOC Emissions Control

An oxidation catalyst will be provided in the HRSG to limit CO emissions to 6 ppmvd and to ensure that emissions of VOC are controlled to less than 2 ppmvd at 15 percent O_2. These emission levels correspond to current California BACT. This catalytic system will promote the oxidation of CO to carbon dioxide and VOC to carbon dioxide and water vapor without the need for additional reagents such as ammonia.

3.4.12.3 PM_{10} and SO_2 Emissions Control

PM_{10} emissions consist primarily of hydrocarbon particles formed during combustion. PM_{10} emissions are controlled by inlet air filtration and by the use of natural gas fuel, which contains essentially zero particulate matter.

SO_2 emissions are controlled by the use of natural gas fuel, which contains only trace quantities of sulfur.

3.4.12.4 Emissions Monitoring

The CEMS samples, analyzes, and records NO_x, CO, and O_2 concentrations in the stack exhaust. The CEMS generates a log of emissions data for compliance documentation and activates an alarm in the plant control room when stack emissions exceed specified limits.

3.4.13 Fire Protection

The fire protection system will be designed to protect personnel, and limit property loss and plant downtime in the event of a fire. There will be a dedicated fire water storage supply of a minimum of 240,000 gallons in the fire water storage tank. The dedicated water supply is sized in accordance with National Fire Protection Association (NFPA) 850 to provide 2 hours of protection at a design flow-rate of 2,000 gpm (the largest fixed fire supression system demand plus 500 gpm for hose stream demand).

The plant fire protection loop will normally be pressurized by the EMWD potable water supply. In the event of a loss in pressure from EMWD, an electric jockey pump and electric motor driven main fire pump will be provided to increase the water pressure in the plant fire mains to the level required to serve all fire fighting systems. In addition, a diesel engine-driven fire pump will be provided to pressurize the fire loop if the power supply to the main fire pump fails. A fire pump controller will be provided for the back-up fire pump. All three fire pumps will discharge to a dedicated underground fire loop piping system. Both the fire hydrants and the fixed suppression systems will be supplied from the fire water loop. Fixed fire suppression systems will be installed at determined fire risk areas such as the transformers and turbine lube oil equipment. Sprinkler systems will also be installed in the Administration/Maintenance Building and Fire Pump enclosure as required by NFPA and local code requirements. The CTG units will be protected by an FM200 fire protection system. Hand held fire extinguishers of the appropriate size and rating will be located in accordance

with NFPA 10 throughout the facility. The cooling tower will be constructed of fiberglass having a flame spread rating of 25 or less and will therefore not be sprinkled.

Section 5.12, Hazardous Materials Handling, includes additional information for fire and explosion risk, and Section 5.8, Socioeconomics, provides information on local fire protection capability.

3.4.14 Plant Auxiliary Systems

The following plant auxiliary systems support, protect, and control the power plant.

3.4.14.1 Lighting System

The lighting system provides personnel with illumination for operation under normal conditions and for egress under emergency conditions, and includes emergency lighting to perform manual operations during an outage of the normal power source. The system also provides 120-volt convenience outlets for portable lamps and tools.

3.4.14.2 Grounding System

The electrical system is susceptible to ground faults, lightning, and switching surges that result in high voltage that constitute a potential hazard to site personnel and electrical equipment. The station grounding system provides an adequate path to permit the dissipation of current created by these events.

The station grounding grid will be designed for adequate capacity to dissipate heat from ground current under the most severe conditions in areas of high ground fault current concentration. The grid spacing will be such that safe voltage gradients are maintained.

Bare conductors will be installed below grade in a grid pattern. Each junction of the grid will be bonded together by an exothermal welding process or mechanical clamps.

Ground resistivity readings will be used to determine the necessary numbers of ground rods and grid spacing to ensure safe step and touch potentials under severe fault conditions.

Grounding stingers will be brought from the ground grid to connect to building steel and non-energized metallic parts of electrical equipment.

3.4.14.3 Distributed Control System (DCS)

The DCS provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems. The following functions will be provided:

- Controlling the STG, CTGs, HRSGs, and other systems in a coordinated manner
- Controlling the balance-of-plant systems in response to plant demands
- Monitoring of controlled plant equipment and process parameters and delivery of this information to plant operators

- Providing control displays (printed logs, cathode ray tube [CRTs]) for signals generated within the system or received from input/output (I/O)
- Providing consolidated plant process status information through displays presented in a timely and meaningful manner
- Providing alarms for out-of-limit parameters or parameter trends, displaying on alarm CRT(s), and recording on an alarm log printer
- Providing storage and retrieval of historical data

The DCS will be a redundant microprocessor-based system and will consist of the following major components:

- CRT-based operator consoles
- Engineer work stations
- Distributed processing units
- I/O cabinets
- Historical data unit
- Printers
- Data links to the combustion turbine and steam turbine control systems

The DCS will have a functionally distributed architecture comprised of a group of similar redundant processing units linked to a group of operator consoles and the engineer work station by redundant data highways. Each processor will be programmed to perform specific dedicated tasks for control information, data acquisition, annunciation, and historical purposes. By being redundant, no single processor failure can cause or prevent a unit trip.

The DCS will interface with the control systems furnished by the CTG and STG suppliers to provide remote control capabilities, as well as data acquisition, annunciation, and historical storage of turbine and generator operating information.

The system will be designed with sufficient redundancy to preclude a single device failure from significantly affecting overall plant control and operation. This also will allow critical control and safety systems to have redundancy of controls, as well as an uninterruptible power source. As part of the quality control program, daily operator logs will be available for review to determine status of the operating equipment.

3.4.14.4 Cathodic Protection System

The cathodic protection system will be designed to control the electrochemical corrosion of designated metal piping buried in the soil. Depending upon the corrosion potential and the site soils, either passive or impressed current cathodic protection will be provided.

3.4.14.5 Freeze Protection Systems

The freeze protection system will provide heating to protect various outdoor piping, gauges, pressure switches, and other devices from freezing. Power to the self-limiting freeze protection circuits will be controlled by an ambient thermostat.

3.4.14.6 Service Air System

The service air system will supply compressed air to hose connections for general plant use. Service air headers will be routed to hose connections located at various points throughout the facility.

3.4.14.7 Instrument Air System

The instrument air system provides dry air to pneumatic operators and devices. An instrument air header will be routed to locations within the facility equipment areas and within the water treatment facility where pneumatic operators and devices will be located.

3.5 ENERGY CENTER CIVIL/STRUCTURAL FEATURES

The following sections describe civil/structural features of the power plant, as illustrated in the site plan presented in Figure 3.3-1.

3.5.1 CTGs, HRSGs, STG and BOP Equipment

The CTGs, STG, and surface condenser and HRSGs will be located outside. With the exception of the STG, this equipment will be supported at grade elevation on reinforced concrete mat foundations. The STG will be pedestal mounted with a downward exhaust into the surface condenser. The three step-up transformers and two auxiliary transformers are also supported at grade elevation on reinforced concrete mat foundations. Balance-of-plant mechanical and electrical equipment is supported at grade elevation on individual reinforced concrete pads.

3.5.2 Stacks

Each HRSG will be provided with a self-supporting steel stack. The stacks will be 18.5 feet in diameter and 195 feet tall. Each stack will include a damper, a silencer, sampling ports, ladders, side step platforms, and electrical grounding. The two HRSG stacks will be located side-by-side to improve thermal rise of the exhaust stream. Breeching will be provided to connect each stack to its respective HRSG.

3.5.3 Buildings and Enclosures

Buildings and enclosures include the control/administration and maintenance building switchyard building, water treatment building, cooling tower electrical/chemical building, medium-voltage switchgear building, fire pump house, and various other balance-of-plant mechanical and electrical equipment buildings or enclosures. Each facility is single story and pre-engineered. Building and enclosure columns will be supported on reinforced concrete mat

foundations or individual spread footings. Ground floors will consist of reinforced concrete slabs. A minimum of 20 parking spaces will be provided on-site to accommodate all employees and visitor vehicles.

3.5.4 Water Storage Tanks

Each water storage tank will be a vertical, cylindrical, field-erected steel tank supported on a suitable foundation consisting of either a reinforced concrete mat or a reinforced concrete ring wall with an interior bearing layer of compacted sand supporting the tank bottom as required by the final geotechnical report.

3.5.5 Roads and Fencing

The power plant site will be accessed by a new 30-foot wide, approximately 140-foot long road as illustrated in Figure 3.3-1. The new road, plant perimeter road and parking areas, and miscellaneous access drives will be asphalt paved.

Chain link security fencing will be installed around the site boundary and will be also used to enclose the power block, switchyard and other areas requiring controlled access. A controlled access gate will be located at the entrances to the Energy Center.

Antelope Road, currently unimproved, will be upgraded by the Applicant from Ethanac Road to the southern edge of the property. The County is planning to designate Antelope Road as a "secondary highway" which would increase the right-of-way width from 60 feet to 80 feet (R. Prend, Albert A. Webb Associates, personal communication with J. McLucas). Improvements would consist of the following elements, which would make up the half of the "secondary highway" adjacent to the Energy Center:

- 32 feet of asphalt (measured from centerline of road to face of curb)
- concrete curb and gutter
- 6 feet of sidewalk (measured from face of curb)
- 6 feet of landscaping

3.5.6 Sanitary Wastewater System

The sanitary wastewater system collects sanitary wastewater from sinks, toilets, and other sanitary facilities and backwash wastwater from the process make-up microfiltration system and discharges it to an EMWD sewer line located in McLaughlin Road.

3.5.7 Site Drainage

Figure 3.5-1 illustrates the site's existing topography. The grading and drainage plan for the proposed facility is shown in Figure 3.5-2. Off-site stormwater flows will be diverted around the improved facilities using a combination of berms and swales, generally drainage from the northeast to the southwest. On-site storm water runoff will be collected by a combination of catch basins, area drains and a surface drainage system and directed to a sedimentation/

detention basin, located in the southwest corner of the site. Pumps will be used to meter the flow out of the detention pond such that the peak post-construction flow does not exceed the pre-construction value.

Stormwater collected in the curbed areas will be collected in the plant drainage system and routed through an oil/water separator before being conveyed to the wastewater disposal system.

3.5.8 Earthwork

The existing site topography (Figure 3.5-1) will be cut and filled to create a plant grade with an approximate elevation of 1,445 feet. Imported fill is estimated at 8,000 cubic yards.

Earthwork on the power plant site will consist of removal and disposal of vegetation and debris, excavation and compaction of earth to create the plant grade, and excavation for foundations and underground systems. Materials suitable for compaction will be stored in stockpiles at designated locations using proper erosion prevention methods. Materials unsuitable for compaction, such as debris and large rocks, will be disposed of at an acceptable location. Top soil will be stockpiled for re-use in landscaped areas. Any contaminated materials encountered during excavation will be disposed of in accordance with applicable laws, ordinances, regulations, and standards.

Compaction will be performed in uniform layers of specified thickness. Materials in each layer will be properly moistened to facilitate compaction to the specified density. To verify compaction, representative density and moisture content tests will be performed in the field during compaction. Structural fill material supporting foundations, roads, parking areas, etc. will be compacted. Prior to placing fill materials, subgrades will be examined for loose or soft areas and further excavated as necessary. Impermeable surfaces are illustrated in Figure 3.5-3.

3.6 TRANSMISSION FACILITIES

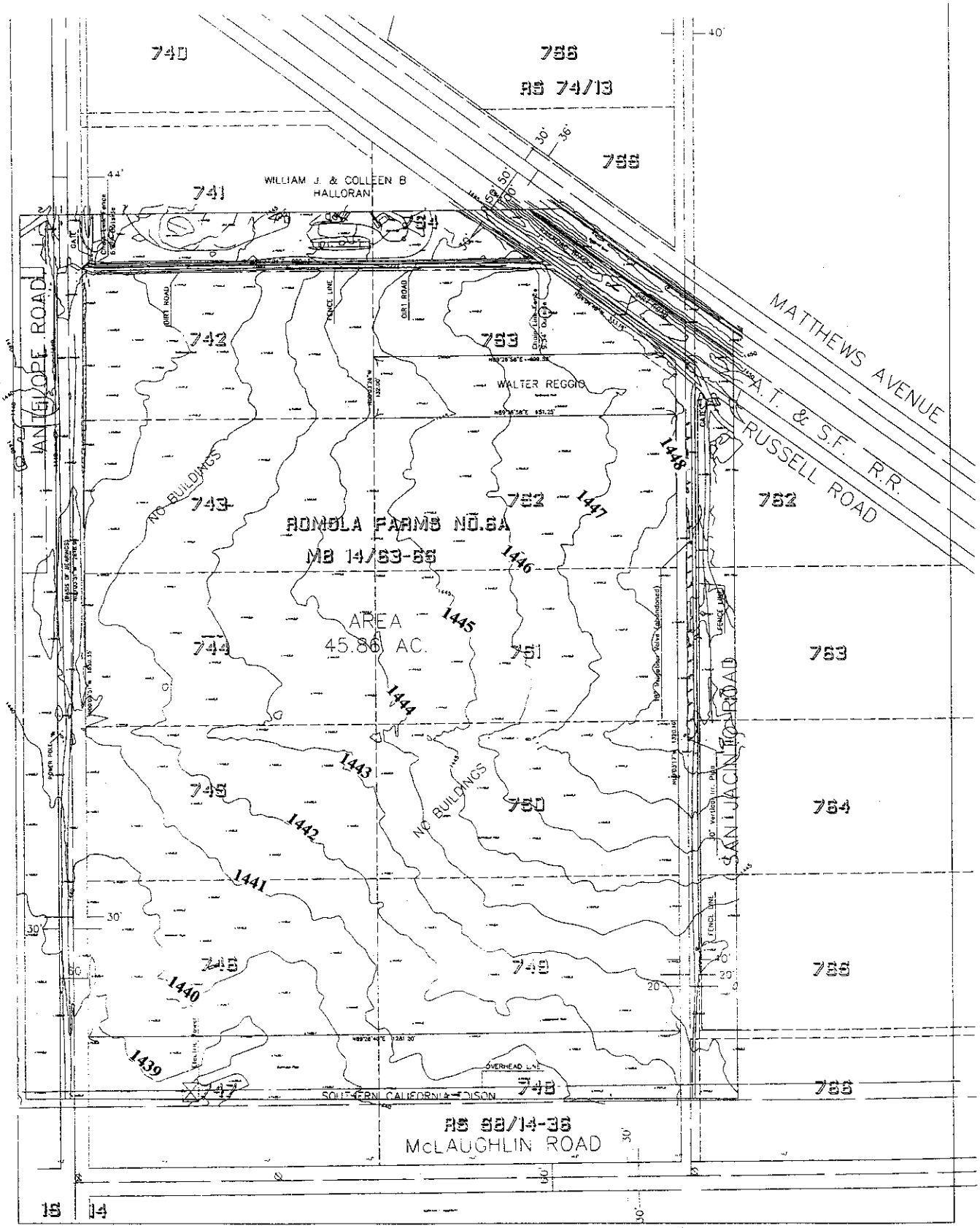
This section describes the project's transmission facilities proposed to interconnect the power plant with the SCE transmission system.

3.6.1 Interconnection to Transmission Grid

The project will be connected to the existing SCE transmission system at the SCE Valley Substation located approximately 0.9 miles east of the project site. Figure 3.6-1 is a diagram of the SCE Valley 500 kV transmission system. The Site Plan, Figure 3.3-1, shows the location of the switchyard in relationship to the plant and existing SCE transmission lines.

Pursuant to IEEC's application for interconnection of the plant, SCE has conducted both the System Impact Study and Facilities Study. Copies of the reports are included in Appendix I. The reports conclude the following:

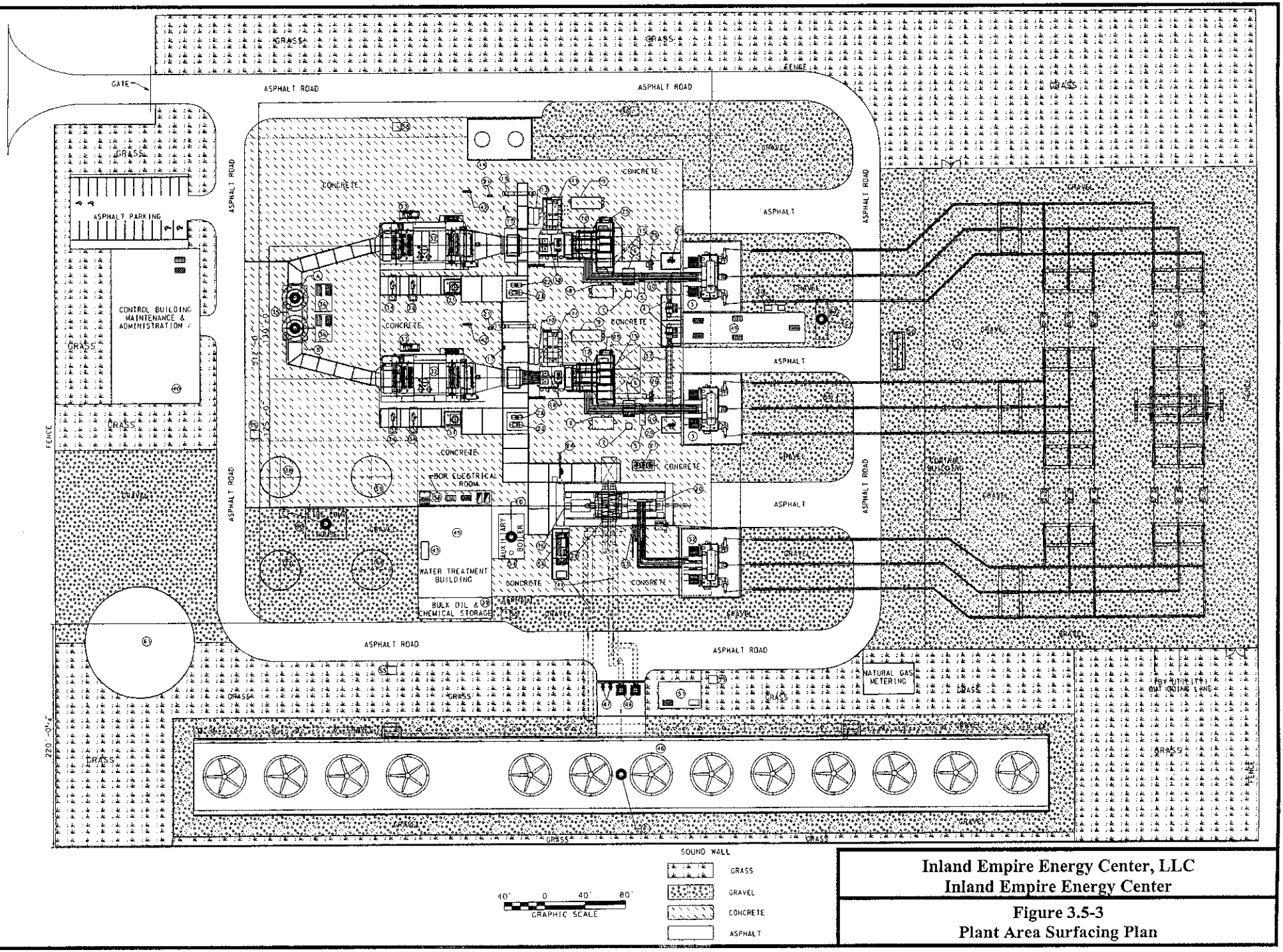
- The load flow analysis identified no loading or voltage drop violation or generation congestion as a result of the IEEC.
- The stability studies indicated that the IEEC has no adverse impact on system stability.



Inland Empire Energy Center
Inland Empire Energy Center, LLC

Figure 3.5-1
Site Topography

Elevation in Feet Above Sea Level



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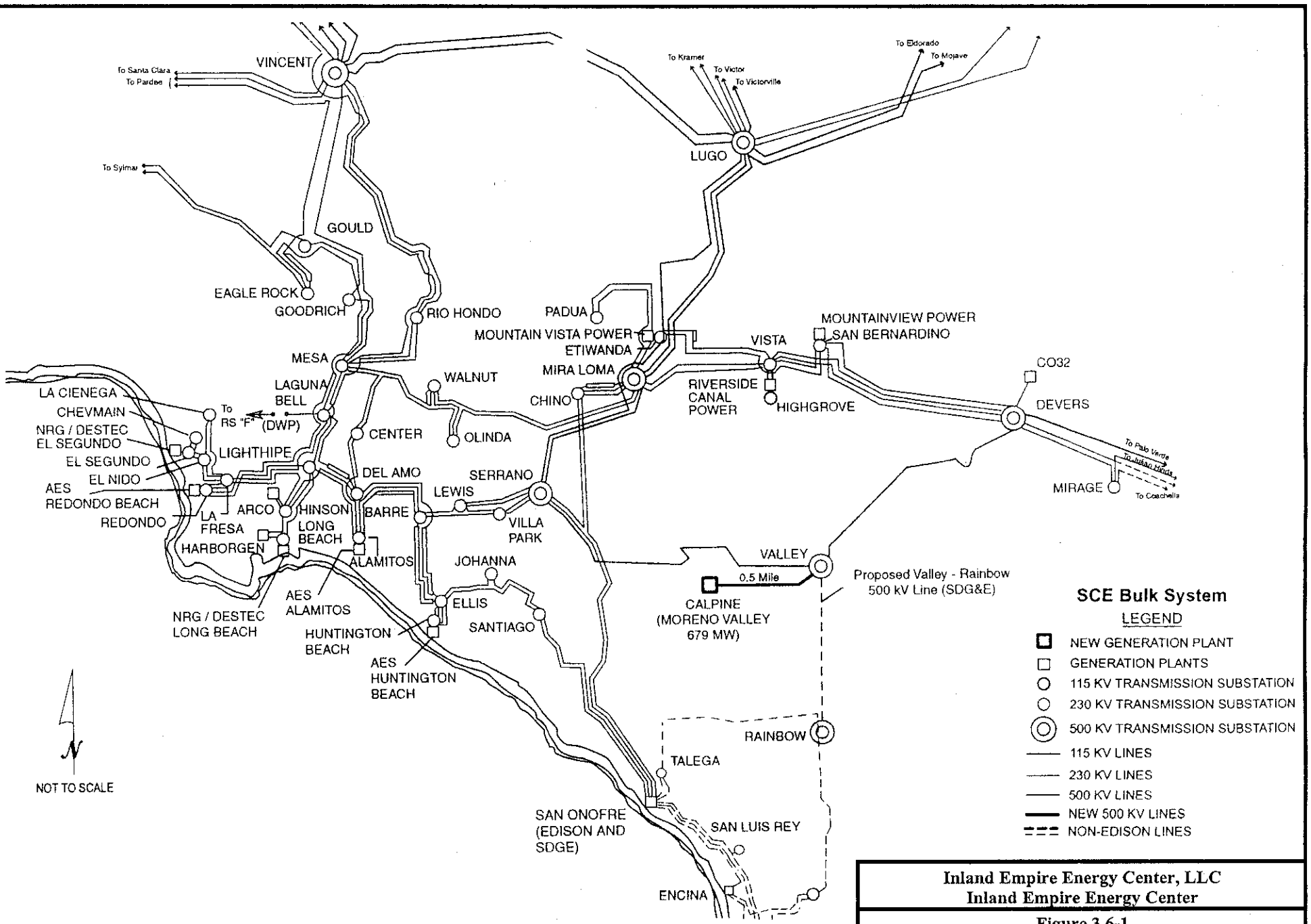
Inland Empire Energy Center

Figure 3.5-3
Plant Area Surfacing Plan



Inland Empire Energy Center, LLC
Inland Empire Energy Center

Figure 3.6-1
Diagram of SCE Transmission System

- The post-transient analysis identified no post-transient voltage deviations criteria violations as a result of the IEEC.
- The three-phase short circuit duty analysis indicated that the IEEC increases the three-phase short-circuit duties at twenty-nine bulk power substations and eighteen Valley 115-kV substations by 0.1 kA or more. The Facilities Study recommends improvements at ten of these locations to support new generation from the IEEC.

3.6.2 Interconnection Design Considerations

3.6.2.1 Structures

Several types of structures are being considered for the project transmission lines (Figure 3.6-2).

The single-circuit towers will be used for the two towers in the north-south section of transmission line leaving the plant site. At the location in the SCE right-of-way where the transmission line turns east, individual steel pole turning towers will be used for each phase. The east-west section of transmission line will be constructed with double-circuit steel lattice towers similar to that shown in Figure 3.6-2. The IEEC line will be installed on one side of the towers and the other side will be reserved for a future SCE line. The lattice structures are characterized by multiple galvanized steel members laced together to form a steel tower. No anchor guys are utilized for the steel lattice structures. The structure heights above grade range from 80 feet to 162 feet depending on tower spacing, and acceptable physical separation of conductors from the underlying roads, railroads and transmission lines, etc.

3.6.2.2 Foundations

Foundations for the transmission line structures consist of single concrete piers reinforced as necessary to withstand design loads. These are constructed by augering a hole of appropriate diameter and depth, placement of a cage of reinforcing steel in the augered hole, and filling the hole with high-strength concrete to the appropriate elevation.

3.7 PROJECT CONSTRUCTION

3.7.1 Power Plant Facilities

Construction of the generating facility from site preparation and grading to commercial operation is expected to take place from summer 2002 to the fall of 2004, a total of 25 months. Major milestones are listed in Table 3.7-1.

Table 3.7-1 Project Schedule Major Milestones

Activity	Date
Begin Construction	Third/Fourth Quarter 2002
Startup and Test	Third Quarter 2004
Commercial Operation	Fourth Quarter 2004

Construction staff by month and trade is shown in Table 3.7-2. The on-site workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The on-site workforce is expected to reach its peak of approximately 490 individuals during the month 11 through month 17 of construction. There will be an average workforce of approximately 250 construction craft people, supervisory, support, and construction management personnel on site during construction.

Construction will generally occur between 7 a.m. and 7 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. During the startup phase of the project, some activities will continue 24 hours per day, 7 days per week.

Construction laydown and parking areas will be north and south on the plant site as illustrated in Figure 3.3-1. Materials and equipment will be delivered by truck and rail.

Table 3.7-3 provides an estimate of the number of average and peak construction traffic during the construction period. Construction access will be via Antelope Road and Ethanac Road to the site. Truck deliveries will normally be on weekdays between 7:00 a.m. and 5:00 p.m.

Table 3.7-3 Average and Peak Construction Traffic

Vehicle Type	Average Daily Round Trips	Peak Daily Round Trips[2]
Construction Workers[1]	166	326
Delivery	10	20
Heavy Trucks	5	20
Total	**181**	**366**

(1) Assumes that 1/3 of the workforce will carpool (1.5 persons per vehicle).

(2) "Peak" refers to scheduled peak construction months of July through October 2003. Peak workforce during those months is expected to be up to 490 persons.

3.7.2 Gas Transmission Pipeline Alternatives

Natural gas will be supplied by one of the two alternative pipelines. Both pipeline alternatives will be installed in permanent 30 to 50-foot-wide rights-of-way; the width of the construction along the pipeline route will be approximately 70 feet. The construction will involve a variety of crews performing the following typical pipeline construction activities: clearing and grading of the construction area, hauling and stringing of the pipe along the route, welding, radiographic inspection and coating of the pipe welds, trenching, lowering of the pipe into the trench, backfill of the trench, hydrostatic testing of the pipeline, tie-in to the existing pipeline, purging the pipeline with natural gas, and clean up and restoration of all construction areas. Special pipeline construction activities may include directional drilling beneath the San Jacinto River and state highways.

Table 3.7-2 Construction Staff by Trade by Month

	YEAR 2002					YEAR 2003											YEAR 2004								
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
CRAFT/TRADE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PROJECT SITE																									
Boilermakers	--	--	--	--	6	11	24	47	45	50	97	106	105	106	94	109	99	52	38	21	6	--	--	--	--
Carpenters	2	4	8	11	14	16	16	20	22	18	32	28	28	28	25	29	22	17	18	16	16	8	9	6	5
Electricians	--	--	7	11	14	22	25	30	26	23	47	56	55	56	49	57	60	56	72	73	62	47	64	30	24
Ironworkers	2	4	10	12	12	14	20	29	29	25	44	47	46	47	42	48	44	28	18	19	16	11	9	3	2
Laborers	8	12	13	12	16	19	23	25	18	16	29	31	31	31	28	32	27	25	30	24	16	7	9	9	7
Pipefitters	--	--	5	9	14	19	31	47	41	37	66	71	70	70	62	72	64	45	30	19	16	4	6	3	2
Painters/insulation workers	--	--	--	--	--	--	--	1	1	1	8	28	28	28	25	29	31	30	38	40	31	21	17	12	10
Bricklayers/masons	--	--	--	1	1	2	3	3	2	2	3	2	2	2	2	2	2	1	2	2	2	1	2	3	2
Millwrights	--	--	--	--	--	--	3	3	7	8	15	17	17	17	15	17	18	16	21	18	16	14	9	12	10
Operating engineers	2	4	4	5	9	8	13	14	12	11	19	21	21	21	19	22	21	19	23	19	19	11	11	9	7
Contractor staff	8	12	12	11	19	22	29	36	30	26	47	50	50	50	44	52	49	50	60	52	43	34	30	30	24
Total site staff	22	36	58	72	105	133	187	255	233	217	407	458	453	456	405	469	437	339	350	303	243	158	166	117	93
PROJECT LINEAR FACILITIES																									
Non-reclaim. waste pipeline	--	--	--	--	--	--	--	--	--	--	--	--	2	17	17	17	2	--	--	--	--	--	--	--	--
Natural gas pipeline [1]	--	--	--	--	--	--	--	--	--	--	2	14	14	14	14	2	--	--	--	--	--	--	--	--	--
Transmission line	--	--	--	--	--	--	--	--	--	--	--	--	2	12	12	2	--	--	--	--	--	--	--	--	--
Total linear facilities staff	--	--	--	--	--	--	--	--	--	--	2	14	18	43	43	21	2	2	14	38	30	28	28	4	--

(1) Workforce projections for Alternative B Moreno Valley Natural Gas Pipeline are shown: this provides a worse-case estimate for the two pipeline alternatives

Alternative A Menifee Road Natural Gas Pipeline. Construction of the 20-inch, 0.9-mile natural gas pipeline will be scheduled to be finished and operational in time to provide test gas to the power generation facility. The construction of the pipeline will take approximately four to six months with an average workforce of ten people. The pipeline work force will consist of laborers, welders, equipment operators, supervisory personnel, and construction management personnel.

Alternative B Moreno Valley Natural Gas Pipeline. Construction of the 14.8-mile natural gas pipeline will be scheduled to be finished and operational in time to provide test gas to the power generation facility. The construction of the pipeline will take approximately 4 to 6 months with an average workforce of approximately 14 people (Table 3.7-2). The pipeline work force will consist of laborers, welders, equipment operators, supervisory personnel, and construction management personnel.

3.7.3 Non-Reclamable Wastewater Pipeline

Wastewater high in total dissolved solids (TDS) will be discharged to EMWD's existing non-reclaimable wastewater system via a new 12- to 18-inch diameter, 4.7-mile pipeline. The pipeline will be constructed within unimproved road right-of-way along McLaughlin Road (2.0 miles) and within pavement on Murrieta Road (2.7 miles). No temporary or permanent access roads will be required and construction disturbance will be approximately 20-feet wide.

3.7.4 Construction Plan

Calpine will engineer, procure and construct the IEEC.

3.7.4.1 Mobilization

The construction team will mobilize as soon as possible after project certification. Site preparation work will include site grading and storm water control. Gravel will be used for temporary roads, laydown, and work areas.

3.7.4.2 Construction Offices, Parking and Laydown Areas

Mobile trailers or similar suitable facilities (for example, modular offices) will be used as construction offices for IEEC and subcontractor personnel. Construction laydown and parking areas will be within the 45.8-acre site area as shown in Figure 3.3-1. Site access will be controlled for personnel and vehicles. A security fence will be installed around the plant site boundary, including the laydown area.

3.7.4.3 Emergency Facilities

Emergency services will be coordinated with the local fire department and hospital. An urgent care facility will be contacted to set up non-emergency physician referrals. First-aid kits will be provided around the site and regularly maintained. All foremen and supervisors will be required to have first-aid training. Fire extinguishers will be located throughout the site at strategic locations at all times during construction.

3.7.4.4 Construction Utilities and Site Services

During construction, temporary utilities will be provided for the construction offices, laydown area, and the project site. Temporary construction power will be utility-furnished power. Area lighting will be provided and strategically located for safety and security.

Construction water will be provided by the EMWD from local supply. Average daily use of construction water is estimated to be about 10,000 gallons, primarily for dust control and concrete curing. The peak water demand is estimated to be 100,000 gallons per day when filling tanks and pipes for hydrostatic testing.

The following site services will be provided by IEEC or subcontractors:

- Environmental Health Safety Training
- Site Security
- Site First Aid
- Construction testing (NDE, Hydro, etc.)
- 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

3.7.4.5 Construction Materials and Equipment

Construction materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the site by truck. Some heavy equipment will be transported by rail to the site.

3.7.5 Construction Disturbance Area

The power plant site is presently agricultural land used for growing wheat, as shown in Figure 3.3-2. Estimated land disturbances for construction and operation of the project, including the power plant, transmission line, and pipeline, are presented in Table 3.7-4.

3.8 ENERGY CENTER OPERATION

The IEEC will be operated by 23 full time personnel, consisting of ten plant operators and six maintenance technicians working on 12-hour rotating shifts, and seven administrative personnel during the standard 8-hour work day. The facility will be operated 7 days a week, 24 hours per day.

Table 3.7-4 Estimated Land Disturbance Areas for Construction and Operation

Project Component	Acres	Notes
Power Generation Facility • Temporary (Construction) • Permanent	 11 35 Total 46	Temporary construction includes laydown, topsoil storage, parking and construction office area. Permanent disturbance is the area within the fence line of the power generation facility, plus the switchyard and detention basins.
Transmission Line • Temporary (Construction) • Permanent	 1.6 0.1 Total 1.7	Transmission line from site switch yard to the SCE Valley Substation; approximately 0.9 miles in length. Requires approximately 5 structures, these structures will have a temporary disturbance averaging about 10,000 sq ft per structures, plus two pull sites at 10,000 sq ft per site (total of (70,000 sq ft). Average permanent disturbance is 400 sq ft per structure.
Alternative A Menifee Road Natural Gas Pipeline • Temporary (Construction) • Permanent	 8.2 0 Total 8.2	Pipeline is 0.8 miles in length. Permanent 30 to 50-foot easment, but surface restored to agricultural or natural habitat. No temporary or permanent access road. Construction disturbance will be 75-feet wide.
Alternative B Moreno Valley Natural Gas Pipeline • Temporary (Construction) • Permanent	 134.5 0 Total 134.5	Pipeline is 14.8 miles in length. Permanent 30 to 50-foot easement, but surface restored to agriculture or natural habitat. No temporary or permanent access road. Construction disturbance will be an average of 75-feet wide.
Non-reclaimable wastewater Pipeline • Temporary • Permanent	 11.3 0 Total 11.3	Pipeline is 4.7 mile in length and constructed within unimproved road right-of-way along McLaughlin Road (2.0 miles) and within pavement on Murrieta Road (2.7 miles). No temporary or permanent access road. Construction disturbance will be 20-feet wide.
Compressor Station • Temporary • Permanent	 4.0 2.6 Total 6.6	Temporary construction includes laydown, topsoil storage, parking, and construction office area. Permanent disturbance includes area within fence and gravel driveway.

The IEEC is expected to have an annual availability in the general range of 92 to 98 percent. It will be possible for plant availability to exceed 98 percent for a given 12-month period. The exact operational profile of the plant, however, cannot be defined since the facility will be operating in and selling electricity to a deregulated electric power sales market.

The California electricity market was deregulated March 31, 1998. Independent power producers such as IEEC are now free to sell their electricity to all users including electric utilities, industrial and commercial firms, and residential users. The IEEC may be able to sell all or part of its generation under contract. Generation available from the IEEC that has not been sold through contracts will be available for sale on the spot market. Operation of the IEEC therefore depends on the quantity of electricity sold through contracts and the ability of IEEC to sell into the competitive spot market.

Because the capacity that will be sold through contract and the prices that will be offered for spot purchases are unknown at this time, the exact mode of operation of the IEEC cannot be described. It is conceivable, however, that the facility could be operated in one or all of the following modes:

3.8.1 Base Load

The facility would be operated at maximum continuous output for as many hours per year as is possible. During high ambient temperature periods when gas turbine output would otherwise decrease and electricity demand in California typically increases, duct firing and/or power augmentation by steam injection into the combustion turbines may be employed to keep plant output at the sum of contractual load and spot market sales.

3.8.2 Load Following

The facility would be operated to meet contractual load and whatever spot sales could be made, but the sum would be less than maximum continuous output at all times of the day. The output of the unit would therefore be adjusted periodically to meet whatever load proved profitable to the facility.

3.8.3 Partial Shutdown

At certain times of any given day and at certain times of any given year, the sum of the contractual load and spot market sales can be expected to drop to a level at which it would be economically favorable to shut down one CTG/HRSG. This mode of operation can be expected to occur during late evening and early morning hours and on weekends when contractual load could decrease or spot market sales would not be economical.

3.8.4 Full Shutdown

This would occur if forced by equipment malfunction, fuel supply interruption, or transmission line disconnect. Full shutdown could also occur when the market price of electricity is less than the IEEC incremental cost of generation. The facility is limited in operation below maximum continuous output (base load) by economics since gas turbine

efficiency decreases sharply as output is decreased. The facility will also experience operational limitations including exceedance of air quality limits at outputs below 50 to 60 percent of CTG output.

In the unlikely event of a situation that causes a longer-term cessation of operations, security of the facilities will be maintained on a 24-hour basis, and the CEC will be notified. Depending on the length of shutdown, a contingency plan for the temporary cessation of operations may be implemented. Such contingency plan will be in conformance with all applicable laws, ordinances, regulations, and standards (LORS) and protection of public health, safety and the environment. The plan, depending on the expected duration of the shutdown, may include the draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. All wastes will be disposed of according to applicable LORS. If the cessation of operations becomes permanent, decommissioning will be undertaken (see Section 3.9, Facility Closure).

3.9 FACILITY CLOSURE

Facility closure can be temporary or permanent. Temporary closure consists of a cessation in operations for a period of time greater than the time required for normal maintenance, including overhauls or replacements of major equipment. Potential causes for temporary closure include economic conditions or repairable damage to the plant from earthquake, fire, storm, or other such events. Permanent closure consists of a cessation in operations with no intent to restart operations. Potential causes for permanent closure include age of the plant, economic conditions, or irreparable damage to the plant. Temporary and permanent facility closures are discussed in the following sections.

3.9.1 Temporary Closure

In the event of a temporary closure, 24-hour security for the facility will be maintained and the California Energy Commission (CEC) will be notified. Actions taken will depend on whether the temporary closure involves a release of hazardous materials.

If there is no release or threatened release of hazardous materials, a contingency plan for the temporary cessation of operations will be implemented. The contingency plan will be conducted to assure public health and safety, protection of the environment, and conformance with all applicable laws, ordinances, regulations, and standards. Appropriate procedures will depend on the anticipated duration of the shutdown. Accordingly, the contingency plan may include the draining of chemicals, water, and other fluids from storage tanks and plant equipment and various other procedures to ensure worker safety and to protect plant equipment. All hazardous and non-hazardous waste materials will be collected and disposed of as described in Section 5.12.

If there is a release or threatened release of hazardous materials, procedures set forth in a Risk Management Plan (RMP) will be implemented. The RMP to be prepared is described in Section 5.12. Procedures include methods to control releases of hazardous materials,

notification of appropriate authorities and the public, training for plant personnel, and other emergency response actions and preparation. Once the release of hazardous materials has been contained and cleaned up, temporary closure will proceed as in the case of a closure where there is no release of hazardous materials.

3.9.2 Permanent Closure

The planned operational life of the facility is 30 years. However, if the facility continues to be economically viable, it could be operated for a longer period of time. Operation beyond 30 years would defer environmental impacts resulting from the construction of replacement facilities. It is also possible that the facility could become economically non-competitive before 30 years have transpired, forcing early decommissioning. Whether the facility is closed at the expiration of 30 years, after more than 30 years, or prior to 30 years due to economic or other reasons, procedures set forth in a decommissioning plan will be implemented. The decommissioning plan to be prepared is described below.

To assure public health and safety, protection of the environment, and conformance with applicable laws, ordinances, regulations, and standards, the decommissioning plan will be submitted to the CEC for review prior to commencement of permanent facility closure measures. Such measures may range from extensive "mothballing" to removal of all equipment and appurtenances, depending on circumstances at the time. However, future conditions that would affect decommissioning decisions are largely unknown at this time. It is therefore appropriate to present decommissioning details to the CEC and other jurisdictional agencies when more information is available and the time for permanent facility closure has drawn closer.

The decommissioning plan will include the following:

- Description of the proposed decommissioning measures for the facility and for all appurtenances constructed as part of the facility.
- Description of the activities necessary to restore the site if the decommissioning plan calls for removal of all equipment and appurtenances.
- Discussion of decommissioning alternatives other than restoration of the site.
- Presentation of the costs associated with the proposed decommissioning measures and the source of funds to pay for the decommissioning.
- Discussion of conformance with applicable laws, ordinances, regulations, and standards and with local and regional plans.

In general, the proposed decommissioning measures will attempt to maximize the recycling of all facility components. Unused chemicals will be sold back to the suppliers or other purchasers. All equipment will be shut down and drained so as assure public health and safety and protection of the environment. All hazardous and non-hazardous waste materials will be collected and disposed of as described in Section 3.4.7. Until decommissioning activities have been completed, 24-hour security for the facility will be maintained.

3.10 ALTERNATIVES

The following sections discuss alternatives to the IEEC as proposed in this AFC. These include the "no project" alternative, power plant site alternatives, transmission interconnection alternatives, natural gas pipeline route alternatives, technology alternatives, water supply alternatives, and wastewater disposal alternatives. These alternatives are discussed in relation to the environmental, public policy, and business issues embodied in the objective of the proposed project. The objective of the IEEC is to utilize the available resources for the production of economical, reliable, and environmentally sound electrical energy, capacity, and ancillary services for California's restructured energy market.

3.10.1 "No Project" Alternative

As discussed in Section 2.2, California is in need of substantial additional generation capacity over the next several years, and the proposed project will serve to fill part of the identified need. The IEEC will provide competitively priced power to the California electricity market to help meet the state's growing demand for electricity and to help replace nuclear and fossil fuel generation resources retired due to age or cost of producing power. The "no project" alternative would not meet these objectives.

The "no project" alternative would result in more energy production from existing power plants than would otherwise occur with the IEEC competing for the opportunity to generate power. Because the IEEC will employ advanced combustion turbine technology and state-of-the-art emissions control systems, existing power plants operating in place of the IEEC would likely consume more fuel and emit more air pollutants per kilowatt-hour generated.

In addition, the "no project" alternative would not provide the economic benefits to the surrounding communities and Riverside County that are expected through the collection of sales taxes, property taxes and school impact fees. As well, the substantial benefits to the local economy derived from construction and operation payroll would not be available under the "no project" alternative (see Section 5.8, Socioeconomics).

As a merchant power plant, the business risk associated with the construction and operation of the IEEC will be borne entirely by the Applicant. No ratepayer or public monies will be placed at risk. The "no project" alternative would not serve to insulate ratepayers or taxpayers from risk, but instead could harm ratepayers by decreasing competition and thereby increasing electricity prices.

In summary, the "no project" alternative would not serve the growing needs of California's residents and businesses for economical, reliable, and environmentally sound power resources.

3.10.2 Power Plant Site Alternatives

One of the primary goals of the IEEC is to locate a highly efficient source of clean and reliable energy near SCE's Valley Substation, a major load center in the rapidly growing Inland Empire region of Southern California.

Other project objectives are:

- Locate efficient generation in industrial zones with local community support
- Siting of new generation at the load centers
- Siting near existing gas and electric infrastructure

Project objectives are discussed in more detail in Section 2.0.

The following criteria were used to identify the optimal site for the IEEC:

- Location in close proximity to the Valley Substation
- Land zoned for industrial or heavy industrial use
- A proposed Energy Center site that would be acceptable to County of Riverside officials
- Location near a sufficient source of cooling water, preferably recycled water
- Location with good transmission access
- Location near ample fuel gas supply
- Parcel large enough to accommodate the facility
- Site control feasible and reasonable
- Project site not within a flood plain
- Potential environmental impacts that were readily mitigatable

3.10.2.1 Proposed IEEC Site

The proposed site is a 45.8 acre parcel in an unincorporated area of Western Riverside County near the town of Romoland. The site has been under IEEC's control for some time. The site is within the MNSP area between Ethanac Road to the north and McLaughlin Road to the south, with Antelope Road forming the western boundary of the site. The site is:

- Less than one mile from the Valley Substation
- Zoned for heavy-manufacturing industrial use within the MNSP
- Preferable to other sites evaluated as per County officials
- Located adjacent to EMWD's reclaimed water supply line
- Located adjacent to SCE's 500kV transmission lines and associated right of way into the Valley substation
- Located roughly within a mile of major gas transmission lines (Menifee Road)
- Not located within the 100 year flood plain
- Large enough to accommodate construction (including laydown) and continued operations of the Energy Center
- Readily mitigatable environmental impacts

3.10.2.2 Alternative Site A: Properties immediately to the East of SCE's Valley Substation

Some 1500 acres immediately to the east of SCE's Valley Substation (surrounding Edison's offices and maintenance facilities) is under agreement with Brookfield Development for a 1500 acre, 4500 residential unit specific plan, Menifee Ranch. At the time of site assessment, the Menifee Ranch Specific Plan had already been submitted to the County of Riverside. The current plan calls for a 36-acre high school site across from the Valley Substation. While there is some question as to whether or not the high school will ultimately be located there, the fallback position for the area is additional residential. Overall the site was evaluated as follows against the selection criteria:

- Location in close proximity to the Valley Substation – YES
- Land zoned for industrial use or heavy industry – **NO**
- Acceptable to county officials – **NO**
- Location near a sufficient source of cooling water –YES
- Location with good transmission access – YES
- Location near ample fuel gas supply – YES
- A parcel that was large enough to accommodate the facility – Unknown
- Site control was feasible and reasonable – **NO**
- Outside the 100 year flood plain – YES
- Potential environmental impacts readily mitigatable – **NO**

This site was eliminated from further consideration because it was not zoned for industrial development and would have been adjacent to planned residences and possibly a school. It did not meet the project objectives of local support and environmental impacts that are readily mitigatable.

3.10.2.3 Alternative Site B: Properties immediately to the South of SCE's Valley Substation

The area immediately to the south of the Valley Substation is primarily zoned as light industrial. Two properties were evaluated within this area, a 30-acre parcel that was already under option and a 23 acre parcel. These evaluations showed that adjacent property owners (all of which were instrumental in drafting the Specific Plan) would be strongly opposed to heavy industrial development within the light industrial zoned areas and the necessary zoning changes. The light industrial areas are envisioned by the local community to act as a buffer zone between the heavy industrial and residential portions of the specific plan. This alternative was eliminated when compared with the IEEC site because of the required zoning change.

Overall the light industrial area immediately to the south was evaluated as follows against the selection criteria:

- Location in close proximity to the Valley Substation – YES
- Land zoned for industrial use or heavy industry – **NO**
- Acceptable to county officials – **NO**
- Location near a sufficient source of cooling water –YES
- Location with good transmission access – YES
- Location near ample fuel gas supply – YES
- A parcel that was large enough to accommodate the facility – YES
- Site control was feasible and reasonable – YES
- Outside the 100 year flood plain – YES
- Potential environmental impacts readily mitigatable – **NO**

3.10.2.4 Alternative Site C: Additional Properties Within the Heavy Industrial Zoned Area of the Menifee North Specific Plan

Additional heavy industrial zoned sites in the area were evaluated. The first is an 18.45-acre site directly to the east of the proposed site on the east side of San Jacinto Road. This property has been under option to another party for some time and is impacted by the 100-year flood plain. It was evaluated as follows:

- Location in close proximity to the Valley Substation – YES
- Land zoned for industrial use or heavy industry – YES
- Acceptable to county officials – YES
- Location near a sufficient source of cooling water –YES
- Location with good transmission access – YES
- Location near ample fuel gas supply – YES
- A parcel that was large enough to accommodate the facility – **NO**
- Site control was feasible and reasonable – **NO**
- Outside the 100 year flood plain – **NO**
- Potential environmental impacts readily mitigatable – Unknown

A second property evaluated is located further to the east of the proposed site at the southwest corner of the railroad and Palomar Road. The site is less than 11 acres (much too small), within the 100-year flood plain and has major access problems.

The remaining heavy industrial zoned properties in the vicinity are located to the west of the proposed site. They consist of a 53-acre parcel and a 34-acre parcel. Neither parcel was

available nor both were considered to have too great of an impact on existing residential areas to the north and south. These alternatives were eliminated as infeasible because of size, site control, and location within the 100-year flood.

Table 3.10-1 delineates a comparison of siting issues for the primary site and the alternative sites.

Table 3.10-1 Comparison of Site Alternatives

Siting Issue	IEEC Site	Alternative Site A	Alternative Site B	Alternative Site C
Location in close proximity to Valley substation	Yes	Yes	Yes	Yes
Zoned for heavy manufacturing, industrial use	Yes	No	No	Yes
Acceptable to county officials	Yes	No	No	Yes
Located near a sufficient source of cooling water	Yes	Yes	Yes	Yes
Location with good transmission access	Yes	Yes	Yes	Yes
Location near ample fuel gas supply	Yes	Yes	Yes	Yes
Parcel large enough to accommodate the facility	Yes	Unknown	Yes	No
Site control was feasible and reasonable	Yes	No	Yes	No
Outside the 100 year flood plain	Yes	Yes	Yes	No
Potential environmental impacts readily mitigatable	Yes	No	No	Unknown

3.10.3 Natural Gas Supply Pipeline Route Alternatives

Natural gas will be supplied by one of two alternative pipelines as follows:

- **Alternative A Menifee Road Natural Gas Pipeline and Compressor Station**

  Alternative A Menifee Road natural gas pipeline is to install a 0.9-mile extension from the Sempra Line on Menifee Road, east of the project site. The pipeline route for Alternative A and the associated compressor station are illustrated in Figure 3.2-2. Delivery of gas from this location would require the construction and operation of a compressor station to maintain gas pressure in the Sempra pipeline south of the project site. Figure 3.10-1 illustrates the compressor station plot plan. The compressor station will occupy approximately 2.6 acres of a parcel that is approximately 6.7 acres in size.

  The Energy Center requires 105 MM scfd of natural gas fuel, which will be provided from the Sempra mainlines 1027, 1028 and 6900. These lines run adjacent to Menifee Road, located approximately 600 feet to the east of the eastern boundary of the 6.7 acre parcel on which the compressor station will be constructed. In addition to providing the Energy Center with fuel at an adequate pressure level, the compressor station will also boost the pressure in the Sempra pipelines that supply the main Sempra system of San Diego County. This additional pressure boost is required during periods of power plant operation when the Sempra pipeline pressure would otherwise be insufficient to properly supply the main Sempra system.

Two electric motor driven 2,500 horsepower reciprocating compressors will provide the required gas compression service. The compressor motors will be powered by variable frequency drives (VFD) which will provide the compressor station with the flow flexibility required of the application. The compressors will be housed in a compressor building 80 feet long by 50 feet wide. The building will be constructed of noise suppression material, which will provide proper noise attenuation to meet required noise limits. The building will be provided with an overhead crane, maintenance lay-down area, gas and fire detection, and a fire suppression system.

The entire compressor station will be constructed in accordance with Department of Transportation (DOT) codes, which will provide the adequate safety features required of a gas compressor station. In addition to the compressor building, the compressor station will include an emergency shutdown (ESD) system and blowdown stack with silencer. All major ESD valves will be located in vaults with topworks not exceeding 3 to 5 feet from grade. All major piping runs with the exception of piping near station vessels, aftercooler, meter runs, and compressor building manifolds will be under ground. The compressor station will be provided with suction and fuel gas to power plant scrubbing, compression aftercooling to a maximum of 105°F, and separate total throughput and fuel gas to power plant metering. A compression bypass/station recycle line that can be utilized for either bypassing fuel to the power plant during periods when compression is not required, or station discharge pressure control during periods of compressor operation will be provided. The station suction line will be 36" diameter, the main pipeline boosting discharge header will be 30" in diameter, and the fuel gas line to the power plant will be 16" in diameter.

The station control system will be designed for complete unmanned operation with a SCADA system provided. The station will have two basic modes of operation:

- Free flow of fuel gas to power plant during periods when no compression is required.
- Compression of fuel gas to power plant and/or pressure boosting of main pipeline.

The control systems, SCADA system, VFD's, main station disconnect, MCC's, auxiliary transformer, and other electrical/control equipment will be located in a non-hazardous, air conditioned building adjacent to the compressor building. The main utility step down transformer will also be located in the non-hazardous area, adjacent to the electrical building.

The inlet line to and discharge line from the compressor station to the main Sempra pipelines will be 36" and 30", respectively; and will be covered to a minimum depth of 6 feet. Lines will be buried in an easement of approximate width of 20 feet, which will run in an east-west direction between the eastern boundary of the compressor station and the Sempra Pipeline easement. At the intersection of the two easements, an easement of approximately 100 feet by 100 feet will be provided for a fenced valve manifold area for the inlet and discharge lines

of the compressor station. Each of the three Sempra lines will valve separately to the compressor station inlet and discharge lines. Main line block valves will also be installed in each of the three Sempra lines, between the tie-ins for the compressor station inlet and discharge lines. All valves will have operators and be installed below grade in vaults, with a maximum of 3 to 5 feet of valve topworks visible above grade.

- **Alternative B Moreno Valley Natural Gas Pipeline**

  Alternative B Moreno Valley natural gas pipeline, a new 14.8 mile, 20-inch pipeline will connect to a main Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station. The pipeline route for Alternative B Moreno Valley natural gas pipeline is illustrated in Figure 3.2-2. Alternative B would not require the construction and operation of a compressor station.

3.10.4 Water Supply Alternatives

Two alternative water sources were considered for IEEC. The sources included:

- Recycled water supplied by EMWD.
- Raw water from the MWD under contract with EMWD.

Alternative Water Supplies

The importation of raw water used to supplement EMWD recycled water supply in order to serve IEEC constitutes an indirect use of inland fresh waters. Accordingly, the Applicant has investigated the use of alternative water sources to potentially reduce the needs for this supply.

Brackish Waters

Although quantities of brackish water are available in the area and such supplies might otherwise be considered a potential source of supplemental water, these sources are being developed for domestic uses through the implementation of a regional desalination program. Insufficient brackish water is available to meet both potential uses and the supply of desalinated water for use by municipal and domestic users has important regional water quality benefits. Therefore this supply was considered to be unavailable to the IEEC.

Recycled Water

The importation of recycled water from other areas was considered infeasible as a means of supplementing existing recycled water supplies. EMWD has a highly developed recycled system and supply sources are managed in a sophisticated manner. As the availability of recycled water increases, additional recycled water would be allocated to IEEC and thereby reduce use of raw imported water.

Dry Cooling

Dry cooling or wet-dry cooling is considered infeasible for this location. The provision of power peaking capacity within the design requires capacity in the steam turbine generator that can only

be made economical if the cooling of the steam generator is sufficient to beneficially utilize these heat loads. Experience at other plants indicated that even ignoring the need and potential to create this peak power supply capability, conversion to dry cooling would increase lifecycle costs by approximately 30 to 50 million dollars. Dry cooling is considered to be economically infeasible and there appears to be no significant impact from the use of wet cooling.

Ocean water desalination is considered infeasible due to the distance to the ocean from the site.

3.10.5 Alternative Transmission Line Routes

Only one transmission line route was considered for the energy center. The SCE Valley Substation is located a short distance (approximately 0.9 mile) east of the IEEC. Two SCE transmission lines, one 500kV and one 161kV, cross the southern portion of the project site and connect directly to the SCE Valley Substation. SCE has indicated the short connection between the project site and the Valley Substation could be accommodated in the existing transmission corridor. Because the existing corridor is available and provides a short and direct route to the substation, no other transmission routes were considered.

3.10.6 Alternative Technologies

The configuration of the IEEC was selected from a wide array of technology alternatives. These include generation technology alternatives, fuel technology alternatives, combustion turbine alternatives, NO_x control alternatives, inlet air cooling alternatives, and cooling technology alternatives as discussed below.

3.10.6.1 Alternative Power Generation Technologies

Selection of the power generation technology focused on those technologies that can utilize natural gas. The following provides a discussion of the suitability of such technologies for application to the IEEC:

3.10.6.1.1 Conventional Boiler and Steam Turbine

This technology burns fuel in the furnace of a conventional boiler to create steam. The steam is used to drive a steam turbine-generator, and the steam is then condensed and returned to the boiler. This is an outdated technology that is able to achieve thermal efficiencies up to approximately 36 percent when utilizing natural gas, although efficiencies are somewhat higher when utilizing oil or coal. Due to this low efficiency, the conventional boiler and steam turbine technology was eliminated from consideration.

3.10.6.1.2 Simple Cycle Combustion Turbine

This technology uses a combustion turbine to drive a generator. Combustion turbines have relatively low capital cost, and aeroderivative units are able to achieve thermal efficiencies up to approximately 38 percent. Because of its quick startup capability and relatively low capital cost, this technology is used primarily in peaking application (less than 1,000 hours per year), where relatively low efficiency is not an overriding concern. Because of its relatively low efficiency, this technology tends to emit more air pollutants per kilowatt-hour generated than

more efficient technologies. Due to less than optimal environmental performance and relatively low efficiency, the simple cycle combustion turbine technology was eliminated from consideration.

3.10.6.1.3 Conventional Combined Cycle

This technology integrates combustion turbines and steam turbines to achieve higher efficiencies. The combustion turbine's hot exhaust is passed through an HRSG to create steam used to drive a steam turbine-generator. This technology is able to achieve thermal efficiencies up to approximately 52 percent, considerably higher than most other alternatives. This high efficiency also results in relatively low air emissions per kilowatt-hour generated. For these reasons, the conventional combined cycle is considered the benchmark against which all other base load and intermediate load technologies are compared. Because of its high efficiency and superior environmental performance, this technology was selected for the IEEC as well as for most other new base load and intermediate load power plants being developed in the United States.

3.10.6.1.4 Kalina Combined Cycle

This technology is similar to the conventional combined cycle, except a mixture of ammonia and water is used in place of pure water in the steam cycle. The Kalina cycle could potentially increase combined cycle thermal efficiencies by several percentage points. However, because this technology is still in the development phase and has not been commercially demonstrated, it was eliminated from consideration.

3.10.6.1.5 Advanced Combustion Turbine Cycles

There are a number of efforts to enhance the thermal efficiency of combustion turbines by injecting steam, intercooling, and staged firing. These include the steam injected gas turbine (STIG), the intercooled steam recuperated gas turbine (ISRGT), the chemically recuperated gas turbine (CRGT), and the humid air turbine (HAT) cycle. The STIG it less efficient than conventional combined cycle technology and is only able to achieve thermal efficiencies up to approximately 40 percent. None of the remaining technologies, ISRGT, CRGT or HAT is commercially available. Consequently, all of these technologies were eliminated from consideration.

3.10.6.2 Alternative Fuel Technologies

Technologies based on fuels other than natural gas were eliminated from consideration because they do not meet the project objective of achieving the environmental and operational advantages. Additional factors rendering alternative fuel technologies unsuitable for the proposed project are as follows:

- No geothermal or hydroelectric resources exist in area.
- Biomass fuels such as wood waste are not locally available in sufficient quantities to make them a practical alternative fuel.

- Solar and wind technologies are generally not dispatchable and are therefore not capable of producing ancillary services other than reactive power.
- Coal and oil technologies emit more air pollutants than technologies utilizing natural gas.

The availability of natural gas, as well as the environmental and operational advantages of natural gas technologies, make natural gas the logical choice for the proposed project.

3.10.6.3 Alternative Combustion Turbine Technologies

The latest generation of commercially demonstrated combustion turbine technology, commonly referred to as "F" technology, was selected for the IEEC. The selection of this class of combustion turbines was based on economies of scale, thermal efficiency, operational flexibility, and proven status of commercial operation.

Currently available, large combustion turbine models can be grouped into three classes: conventional, advanced, and next generation. Conventional combustion turbines operate at firing temperatures in the range of 2000°F to 2100°F and are available in sizes up to about 110 MW. Advanced combustion turbines operate at firing temperatures above 2300°F and are available in sizes up to about 180 MW. Next generation combustion turbines have higher firing temperatures than the advanced turbines and have additional features that provide greater output and higher efficiencies. Next generation turbines represent models that have been announced by the manufacturers as commercially available, with advertised outputs in the range of 230 to 240 MW. Examples of commercially available combustion turbines in each class are provided in Table 3.10-2.

Table 3.10-2 Commercially Available Combustion Turbines

Manufacturer	Conventional	Advanced	Next Generation
ABB	GT 11N2	GT 24	None
GE	7EB	7FB	7H
Siemens	V84.2	V84.3A	None
Westinghouse	501D5A	501F	501G

Advanced combustion turbines offer significant advantages for the proposed project. Their higher firing temperatures offer higher efficiencies than conventional combustion turbines. They offer proven technology with numerous installations and extensive run time in commercial operation. Emission levels are also proven, and guaranteed emission levels have been reduced based on operational experience and design optimization by the manufacturers. In comparison, environmental performance and thermal efficiencies of next generation turbines have not been demonstrated in commercial operation.

The specific advanced combustion turbine model selected for consideration for the IEEC is the GE 7FB. This turbine was selected on the basis of its commercially proven status (based on GE 7FA performance), high thermal efficiencies, and adequate operational flexibility.

3.10.6.4 Alternative NO_x Control Technologies

To minimize NO_x emissions from the IEEC, the CTGs will be equipped with dry low NO_x combustors and the HRSGs will be equipped with post-combustion SCR using aqueous ammonia as the reducing agent.

The following combustion turbine NO_x control alternatives were considered:

- Steam injection (capable of 25 to 42 ppm NO_x)
- Water injection (capable of 25 to 42 ppm NO_x)
- Dry low NO_x combustors (capable of 9 to 25 ppm NO_x)

Dry low NO_x combustors were selected because they provide for lower NO_x emissions and lower demineralized water requirements.

Two post-combustion NO_x control alternatives were considered:

- SCR
- SCONO$_x$™

SCR is a proven technology and is used frequently in combined cycle applications. Ammonia is injected into the exhaust gas upstream of a catalyst. The ammonia reacts with NO_x in the presence of the catalyst to form nitrogen and water.

SCONO$_x$™ is a new technology and has been installed on a 25 MW combined cycle plant since December 1996. SCONO$_x$™ consists of an oxidation catalyst, which oxidizes CO to CO_2 and NO to NO_2. The NO_2 is adsorbed onto the catalyst, and the catalyst is periodically regenerated. Although a potentially promising technology, SCONO$_x$™ has not been commercially demonstrated on a large power plant. There are several technological and commercial issues remaining to be resolved prior to application of this new technology to the class of large combustion turbines selected for the proposed project.

The following reducing agent alternatives were considered for use with the SCR system:

- Anhydrous ammonia
- Aqueous ammonia
- Urea

Anhydrous ammonia is suitable for use but its transportation, handling and storage is typically more of a public concern than the usage of aqueous ammonia. Aqueous ammonia (28 percent ammonia, 72 percent water solution) has been used in many combined cycle facilities and is

proposed for the IEEC. Urea has not been commercially demonstrated for use with SCR and was, therefore, eliminated from consideration. More detail analyses of emissions control technologies are included in Section 5.2 and Appendix K.

3.10.6.5 Alternative Inlet Air Cooling Technologies

Combustion turbine output and efficiency both increase as inlet air temperature decreases. Ambient air temperatures for the proposed project are sufficiently high for a large portion of the year to warrant some form of inlet air cooling. Three available forms of combustion turbine inlet air cooling are evaporative cooling, inlet fogging, and air chilling.

Both evaporative cooling and inlet fogging are capable of cooling to temperatures near the ambient wet-bulb temperature. Air chilling is capable of cooling inlet air to temperatures below the ambient wet-bulb temperature over a wide range of ambient conditions. Air chilling uses mechanical or absorption refrigeration to produce a cold fluid for cooling of the inlet air, and its capital cost greatly exceeds the cost of evaporative cooling. Air chilling systems may be designed to operate continuously or they may be designed to produce ice or cold water during off peak periods.

Based on temperature profiles at the proposed site, inlet fogging was selected for the IEEC to optimize output and efficiency versus capital cost. Inlet fogging offers similar performance to evaporative cooling with lower costs and lower water usage. If warranted by market conditions, the more expensive air chilling alternative may be retrofitted in the future.

3.10.6.6 Alternative Cooling Technologies

There are essentially two cooling technology alternatives that are currently technically feasible for rejecting heat from the steam turbine surface condenser: dry cooling and wet cooling. Dry cooling requires an air-cooled condenser and wet cooling requires a conventional evaporative cooling tower. The technical merits of each were considered and wet cooling was selected based on the following criteria/advantages:

- Electrical load for dry cooling system is higher, therefore, reducing the plant's net electrical output.
- Steam turbine output is lower with dry cooling which results in lower plant efficiency.
- Capital cost for dry cooling is higher.

3.11 APPLICABLE LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

3.11.1 Engineering Geology

Unless specifically stated otherwise, the design of all structures and facilities will be based on the laws, ordinances, codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards

with respect to the project's engineering geology are summarized in sections of Appendix A, "Civil Engineering Design Criteria", and Appendix B, "Structural Engineering Design Criteria".

3.11.2 Civil and Structural Engineering

Unless specifically stated otherwise, the design of all structures and facilities will be based on the laws, ordinances, codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards with respect to the project's engineering design criteria, construction and operation are summarized in Appendix A, "Civil Engineering Design Criteria", and Appendix B, "Structural Engineering Design Criteria".

3.11.3 Mechanical Engineering

Unless specifically stated otherwise, the design of all structures and facilities will be based on the laws, ordinances, codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards with respect to the project's mechanical engineering design criteria, construction, and operation are summarized in Appendix C, "Mechanical Engineering Design Criteria". Applicable sections of Appendix D, "Control Engineering Design Criteria", will also be considered.

3.11.4 Electrical and Control Systems Engineering

Unless specifically stated otherwise, the design of all structures and facilities will be based on the laws, ordinances, codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards with respect to the project's electrical engineering design criteria, construction and operation are summarized in Appendix E, "Electrical Engineering Design Criteria". Applicable sections of Appendix D, "Control Engineering Design Criteria", will also be considered.

3.12 REFERENCES

California Building Code (CBC). 1998. Title 24 (Part 2) of the California Code of Regulations.

Federal Emergency Management Agency (FEMA). 1996. Flood Insurance Rate Map Panel 2085, Riverside County.

Sempra Energy. 2001. Fuel Gas analysis. Fax dated 8/15/00 from Doug Spahr, Sempra Energy (SoCal Gas at the time).

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4.0 SAFETY AND RELIABILITY

4.1 FACILITY SAFETY

This section presents a discussion of facility safety and reliability issues, including a discussion of natural hazards, aviation safety, fire protection services, transmission line safety, and EMF issues. In addition, this section presents a discussion of plant reliability issues such as plant availability, fuel and water supply reliability, project quality control program and procedures, and a delineation of applicable laws, ordinances, regulations, and standards.

The Inland Empire Energy Center (IEEC or Energy Center) will be designed for safe operation. Potential hazards that could affect project facilities include earthquake, flood, and fire. Safe operation includes safety for the Energy Center operating personnel, who will be trained to provide proper response to hazards and to avoid unsafe operating conditions.

4.1.1 Natural Hazards

The principal natural hazard associated with the Energy Center site is potential seismic hazard. The site is located in Seismic Zone 4 (see Section 5.5.1.6, Geologic Hazards). All project structures will be designed in conformance with California Building Code (CBC, 1998) criteria for Seismic Zone 4 to ensure safety for operating personnel and adequate protection against structural and equipment damage. The structural and seismic design criteria for project buildings and equipment is provided in Appendix B.

The Energy Center site topography (see Figure 3.5-1) is relatively flat with an average elevation of approximately 1,445 feet above mean sea level (amsl). The project site is above the 100-year floodplain elevation [Federal Emergency Management Agency (FEMA), 1996]. The site, due to its inland location and distance from surface waters, is outside of any tsunami and sieche runup zones.

4.1.2 On-Site Fire Protection Systems

The Energy Center will be provided with on-site fire protection systems to limit personnel injury, property loss, and plant downtime resulting from a fire. The fire protection systems are described in Section 3.4.13. The facility will have health and safety programs during construction and operation including a Fire Protection and Prevention Plan as outlined in Section 5.14.2. Section 5.8, Socioeconomics, includes additional information on area medical services, and Section 5.14, Worker Safety, includes additional information on safety for workers. Appendices A through G contain the design practices and codes applicable to safety design for the project. Compliance with these requirements will minimize project effects on public and employee safety.

The fire protection systems are designed to protect personnel, and limit property loss and plant downtime from fire or explosion. The project will have the following fire protection systems.

FM 200 Fire Protection System—This system protects the combustion turbine, generator, and accessory equipment compartments from fire. The system will have fire detection sensors in all compartments. Actuating one sensor will provide a high temperature alarm on the combustion turbine control panel. Actuating a second sensor will trip the combustion turbine, turn off ventilation, close ventilation openings, and automatically release the FM 200. The FM 200 will be discharged at a design concentration adequate to extinguish the fire.

Transformer Deluge Spray System—This system provides fire suppression for the generator transformers and auxiliary power transformers in the event of a fire. The deluge systems are fed by the plant underground fire water system.

Steam Turbine Bearing PreAction Water Spray System—This system provides suppression for the steam turbine bearings in the event of fire. The preaction system is fed by the plant underground fire water system.

Steam Turbine Lube Oil Areas Water Spray System—This system provides suppression for the steam turbine area lube oil piping and lube oil storage.

Fire Hydrants/Hose Stations—This system will supplement the plant fire protection system. Water will be supplied from the plant underground fire water/domestic water system.

Fire Extinguishers—The plant administrative/maintenance building, water treatment facility, and other structures will be equipped with portable fire extinguishers as required by the local fire department.

4.1.3 Local Fire Protection Services

In the event of a major fire, the plant personnel will be able to call upon the Riverside County Fire Department for assistance. The nearest fire station, located at 27860 Bradley Road in Sun City is 3.2 miles away. The Hazardous Materials Risk Management Plan (see Section 5.12, Hazardous Materials Handling) for the plant will include all information necessary to permit all fire-fighting and other emergency response agencies to plan and implement safe responses to fires, spills, and other emergencies.

4.1.4 Personnel Safety Programs

The IEEC project will operate in compliance with federal and state occupational safety and health program requirements. Compliance with these programs will minimize project effects on employee safety. These programs are described in Section 5.14, Worker Safety.

4.2 TRANSMISSION LINE SAFETY AND NUISANCE

4.2.1 Aviation Safety

The IEEC will have a 0.9 mile long 500 kV transmission line connecting the site switchyard to the Southern California Edison (SCE) Valley Substation. The transmission interconnection will require approximately 5 new tower structures between the Valley Substation and the IEEC switchyard. The new transmission line structures will be approximately 80 to 162 feet in

height. The 500 kV transmission line constructed for IEEC will be located adjacent to the SCE 500 kV transmission line that crosses the project site and connects to the SCE Valley Substation.

Federal Aviation Administration (FAA) Regulations, Part 77 establishes standards for determining obstructions in navigable airspace and sets forth requirements for notification of proposed construction. These regulations require FAA notification for any construction over 200 feet in height above ground level. Also, notification is required if the obstruction is more than specified heights and falls within any restricted airspace in the approach to airports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For heliports, the restricted space extends 5,000 feet (0.8 nautical mile).

There is only one airport within 20,000 feet (3.3 nautical miles) of the proposed IEEC site, Perris Valley Airport approximately 15,000 feet (2.9 nautical miles) northeast of the site (Figure 4.2-1). The primary runway is over 3,200 feet in length. The height of the transmission towers (125 feet maximum) does not require FAA notification. As a result of their location and height in relation to the Perris Valley airport, the electrical transmission towers will not impact aviation safety as defined in the FAA regulations.

4.2.2 Audible Noise and Radio and Television Interference

When a transmission line is in operation, an electric field is generated in the air surrounding the conductors forming a "corona". Corona results from the partial breakdown of the electrical insulating properties of the air surrounding the conductors. When the intensity of the electric field at the conductor surface exceeds the insulating strength of the surrounding air, a corona discharge occurs at the conductor surface. Corona discharge represents a small dissipation of heat and energy. Some of the energy may dissipate in the form of small local pressure changes that result in audible noise or in the form of a discharge that results in radio or television interference. Audible noise generated by corona discharge can be characterized as a hissing or crackling sound which, under certain conditions, is accompanied by a 120 hertz hum.

The conductors of high voltage transmission lines are designed to be free of corona under ideal conditions. However, slight irregularities or water droplets on the conductor surface accentuate the electric field strength near the conductor surface, making corona discharge and the associated audible noise more likely. The Electric Power Research Institute (EPRI, 1978, 1987) has conducted several studies of these effects. Typical noise levels for transmission lines with wet conductors are presented in Table 4.2-1.

Table 4.2-1 Typical Audible Noise from Corona Discharge

Line Voltage	Audible Noise Level
138 kV	33.5 dbA
240 kV	40.4 dbA
356 kV	51.0 dbA
500 kV	(1)

dbA = decibels measured using the A-weighted scale.

(1) Section 5.9.2.2 presents monitoring data at the base of the existing 500 kV line.

During rainfall, the proposed transmission line will produce corona discharge noise levels roughly equivalent to those found inside a residence at night, and the transmission line noise will be largely masked by the noise of the rain. The maximum noise levels are encountered directly under the transmission line, where levels are estimated to be approximately 40 dbA during rainfall. These levels are well below applicable limits specified in the Noise Ordinance for Riverside County. The nearest residence is approximately 600 feet from the transmission line, so impacts from corona noise discharge will not be significant.

SCE operates two existing transmission lines that cross the southern portion of project site: one 161 kV transmission line and one 500 kV transmission line. The IEEC 500 kV transmission line from the project switchyard to the SCE Valley Substation will be adjacent to the existing SCE 500 kV transmission line. Because of its short length and lack of nearby residences, the IEEC transmission line should not cause any radio or television interference.

4.2.3 Electromagnetic Fields

Whenever electricity is used or transmitted, electric and magnetic fields are created by the electric charges. Electric charges of opposite sign attract each other, while those of the same sign repel each other. These forces of attraction and repulsion - when not moving - create electric fields. The strength of these fields is related to the voltage in the circuit. Once electric charges are in motion they create magnetic fields. The strength of the magnetic field is proportional to the magnitude of the current in the circuit. The strength of the electric and magnetic fields generally fall off rapidly with distance from the source.

The voltage, electric and magnetic field strengths induced by high voltage transmission lines are provided in the EPRI Transmission Line Reference Book - 345 kV and Above, Second Edition (EPRI, 1987). The maximum electric field strength for a 500 kV line would be on the order of 1.32 kilovolts per meter (kV/m) to 1.70 kV/m. These values are the maximum, unperturbed fields calculated at 1 meter above the ground directly under the line and at the edge of the rights-of-way. For a typical 95 foot pole with 800 foot span, the maximum calculated magnetic field strength directly under the line and at the edge of the 60-foot right-of-way is 73 mG and 44 mG, respectively. While California does not have a regulatory limit for magnetic field strength, these values are well below the levels established by those states that do have regulatory limits. States with magnetic field regulations have limits ranging from 150 mG to 250 mG at the edge of the rights-of-way, depending on line voltage. Average

values reported to the California Energy Commission (CEC), for 500 kV transmission lines licensed by the CEC, have been less than 100 mG (CEC 1992).

4.2.4 Induced Current and Voltage

Hazardous shocks could be caused by a high voltage transmission line, if it is not properly constructed. The 500 kV transmission line constructed for this project will be built in conformance with California Public Utilities Commission (CPUC) General Order 95 (GO-95) and California Code of Regulations (CCR), Section 2700 requirements, and therefore hazardous shocks are unlikely to occur as a result of the project operation.

Nuisance shocks can be caused by touching ungrounded metallic objects under or near a transmission line. Assuming a large object remains under the 500 kV transmission line for a lengthy period of time (i.e. parked farm tractor, or other ungrounded platform) and also assuming the maximum value of electric field, the induced short-circuit currents would be negligible. Any permanent metal object, such as a metallic fence built near the transmission line will be grounded.

The 500 kV transmission line from the IEEC switchyard to the SCE Valley Substation will be constructed in accordance with National Electric Safety Code (NESC) requirements, including the provisions for proper grounding of structures. The NESC requirements are intended to minimize the potential for direct or indirect contact with energized lines, therefore, no significant transmission line impacts will occur to the public.

4.2.5 Fire Prevention

Title 14, CCR, Section 1250, Article 4 establishes fire prevention standards for electric utilities. The IEEC will comply with these standards.

4.3 RELIABILITY AND AVAILABILITY

This section discusses plant reliability and availability, equipment redundancy, fuel availability, water availability, and project quality control measures.

4.3.1 Plant Reliability and Availability

Because of IEEC's high predicted efficiency, it is anticipated that the facility will normally be called upon to operate at high average annual capacity factors. The facility will be designed to operate between 25 and 100 percent of baseload to support dispatch service in response to customers' demands for electricity.

The IEEC will be designed for an operating life of 30 years. Reliability and availability projections are based on this operating life. Operation and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of plant components.

The percent of time that the combined cycle power block and the HRSG duct burners are projected to be operated is defined as the "service factor." The service factor considers the

amount of time that a unit is operating and generating power, whether at full or partial load. The projected service factor for the combined cycle power block, which considers projected percent of time of operation, differs from the equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable.

EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected equivalent availability factor for the IEEC is estimated to be approximately 92 to 98 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the "availability of a unit," which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

4.3.2 Equipment Redundancy

Equipment redundancy provides means for avoiding outages and reducing the magnitude of outages. For example, because the plant will include two air compressors of 100% capacity each, an outage of a single air compressor would not result in a plant outage. As another example, because the cooling tower will consist of multiple cells, an outage of one cell would result in a minor partial outage (i.e., minor reduction in available generating capacity) rather than a full outage.

Equipment redundancy also provides for operating flexibility and efficiency. For example, although the turn down capability of individual CTGs is limited to about 50%, the plant will be able to turn down to approximately 25% load by shutting down one redundant CTG/HRSG train. Similarly, because of multiple CTG/HRSG trains, condensate pumps, boiler feed pumps, circulating water pumps, and cooling tower cells, plant efficiency at 50% load will be similar to efficiency at 100% load by selectively shutting down redundant equipment. A summary of major equipment redundancy is presented in Appendix F.

4.3.3 Fuel Availability

Natural gas for the facility will be delivered by one of two alternative pipelines (see Figure 3.2-2). Alternative A Menifee Road natural gas pipeline, a new 0.9 mile, 20-inch pipeline will connect to the Sempra Energy existing gas transmission line that runs along Menifee Road, mile east of the project site. To maintain pressure in the Sempra pipeline south of the IEEC project, Alternative A includes the addition of a compressor station near the corner of Rouse Road and Menifee Road approximately one mile southeast of the project site. Alternative B Moreno Vally natural gas pipeline, a new 14.8 mile, 20-inch pipeline will connect to a main southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.

The IEEC has no backup supply of natural gas and would, therefore, have to be shutdown until the situation was corrected and gas became available through the pipelines again.

4.3.4 Water Availability

The primary source of makeup water for the IEEC will be recycled water from the Eastern Municipal Water District (EMWD). EMWD issued a will-serve letter to the Applicant for the IEEC (see Appendix M). The availability of water to meet the needs of the IEEC is discussed in more detail in Section 5.4, Water Resources. Water requirements amount to approximately 5000 acre-feet per year, as presented in Table 3.4-4. The water will be conveyed to the site via from an EMWD 48-inch recycled water pipeline that is located adjacent to the project site southern boundary along McLaughlin Avenue. EMWD operates five regional water reclamation facilities (RWRF) with 135 miles of distribution pipelines (EMWD, 2000). Recycled water for IEEC will be provided by EMWD from their Moreno Valley and Perris Valley RWRF.

At the Energy Center site, a raw water storage tank with a capacity of 2.1 million gallons will hold water for plant operation. This quantity is sufficient to cover an 8-hour interruption of water supplied to the Energy Center. Another water storage tank will hold 250,000 gallons of water dedicated to the plant's fire protection water system.

4.3.5 Project Quality Control Measures

The Quality Control Program that will be applied to the IEEC is summarized in this section. The objective of the Quality Control Program is to ensure that all systems and components have the appropriate quality measures applied; whether it be during design, procurement, fabrication, construction, or operation. The goal of the Quality Control Program is to achieve the desired levels of safety, reliability, availability, operability, constructibility, and maintainability for the generation of electricity.

Assurance of the required quality for a system is obtained by applying controls to various activities, depending on the activity being performed. For example, the appropriate controls for design work are checking and review, and the appropriate controls for manufacturing and construction are inspection and testing. Appropriate controls will be applied to each of the various activities for the project.

Project Stages

For quality assurance planning purposes, the project activities have been divided into the following nine stages that apply to specific periods of time during the project.

Conceptual Design Criteria—Activities such as definition of requirements and engineering analyses.

Detail Design—Activities such as the preparation of calculations, drawings, and lists needed to describe, illustrate, or define systems, structures, or components.

Procurement Specification Preparation—Activities necessary to compile and document the contractual, technical, and quality provisions for procurement specifications for plant systems, components, or services.

Manufacturer's Control and Surveillance—Activities necessary to ensure that the manufacturers conform to the provisions of the procurement specifications.

Manufacturer Data Review—Activities required to review manufacturers' drawings, data, instructions, procedures, plans, and other documents to ensure coordination of plant systems and components, and conformance to procurement specifications.

Receipt Inspection—Inspection and review of product at the time of delivery to the construction site.

Construction/Installation—Inspection and review of storage, installation, cleaning, and initial testing of systems or components at the Energy Center site.

System/Component Testing—Actual operation of Energy Center components in a system in a controlled manner to ensure that the performance of systems and components conform to specified requirements.

Plant Operation—The actual operation of the Energy Center system.

As the project progresses, the design, procurement, fabrication, erection, and checkout of each Energy Center system will progress through the nine stages defined above.

Quality Control Records

The following quality control records will be maintained for review and reference:

- Project instructions manual
- Design calculations
- Project design manual
- Quality assurance audit reports
- Conformance to construction records drawings
- Procurement specifications (contract issue and change orders)
- Purchase orders and change orders
- Project correspondence

For procured component purchase orders, a list of qualified suppliers and subcontractors will be developed. Before contracts are awarded, the subcontractors' capabilities will be evaluated. The evaluation will consider suppliers' and subcontractors' personnel, production capability, past performance, and quality assurance program.

During construction, field activities are accomplished during the last four stages of the project: receipt inspection, construction/installation, system/component testing, and plant operations. The construction contractor will be contractually responsible for performing the work in accordance with the quality requirements specified by contract.

The subcontractors' quality compliance will be surveyed through inspections, audits, and administration of independent testing contracts.

A plant operation and maintenance program, typical of a project this size, will be implemented by IEEC to control operation and maintenance quality. A specific program for this project will be defined and implemented during initial plant startup.

4.4 APPLICABLE LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Design, construction, and operation of the IEEC including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to facility safety, transmission line safety and nuisance, and reliability and availability. The applicable LORS are discussed in the following sections.

4.4.1 Power Plant Reliability

The following LORS are applicable to the proposed IEEC in the context of power plant reliability and availability, which are addressed in Section 4.3.

4.4.1.1 Industry Codes and Standards

Currently, there are no industry codes or standards that govern power plant reliability; however, there are trade organizations and associations that are generally recognized as authorities and leaders in the field of power plant availability and reliability. Definitions used by these organizations have become generally accepted as a common means of communicating and the data published have been found to be useful. The organizations are:

- EPRI. Copies of reports can be obtained from the Research Reports Center:

  3412 Hillview Avenue
  Palo Alto, California 94304-1395
  (650) 855-2000

- North American Electric Reliability Council (NERC):

  Princeton Forrestal Village
  116-390 Village Blvd.
  Princeton, New Jersey 08540
  (609) 452-8060

4.4.1.2 IEEC Compliance with Power Plant Reliability LORS

As described in Section 4.3, the IEEC will be designed for reliable operations for an expected project life of 30 years. To create and maintain reliable operations, the IEEC will include a maintenance program, equipment redundancy, dependable fuel source, and water supplied by EMWD.

4.4.2 Transmission Line Safety and Nuisance

4.4.2.1 Federal Authorities and Administering Agencies

49 USC § 1348; 14 CFR Part 77. The proposed facility must submit a "Notice of Proposed Construction or Alteration" (NCPA), FAA Form 7460-1H, if it affects the navigable airspace in the region. Criteria have been established to determine if the transmission line needs to be marked. This requirement is not applicable because the transmission line is approximately three miles from the nearest landing strip and neither the HRSG stacks nor the transmission structures exceed 200 feet in height.

The administering agency for the above authority is the FAA.

47 USC § 15.25. This authority requires mitigation for any device that causes communications interference.

The administering agency for the above authority is the FAA.

4.4.2.2 State Authorities and Administering Agencies

California Public Resources Code §25000 et seq., Warren-Alquist Act, §25520 Subdivision (g). Requires a detailed description of the transmission line, including all right-of-ways.

The administering agency for the above authority is the CEC.

General Order 52(GO-52) CPUC. Requires the prevention or mitigation of any inductive interference causes by the transmission lines.

The administering agency for the above authority is the California Public Utilities Commission (CPUC).

General Order 95 (GO-95) CPUC. Establishes rules and guidelines for transmission line construction.

The administering agency for the above authority is the CPUC and CEC.

4.4.2.3 Industry Codes and Standards

Radio and Television Interference (RI/TVI) Criteria. Criteria established to determine if any mitigation is necessary.

The administering agency for the above authority is the CEC.

4.4.2.4 IEEC Compliance with Transmission Line Safety and Nuisance LORS

IEEC's compliance with aviation safety, audible noise, and communication interference and hazards are fully described in Section 4.2 and Appendices A and B. As described in those sections, IEEC will comply with all transmission line safety and nuisance LORS.

4.5 REFERENCES

California Building Code (CBC). 1998. Title 24 (Part 2) of the California Code of Regulations.

California Energy Commission (CEC). 1992. High Voltage Transmission Lines, Summary of Health Effects Studies. July 1992.

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5.0 ENVIRONMENTAL INFORMATION

5.1 INTRODUCTION

This section presents a description of the affected environmental and potential environmental impacts that are associated with the Inland Empire Energy Center (IEEC), along with measures to mitigate or avoid identified significant adverse impacts. Supporting information to determine compliance with applicable laws, ordinances, regulations, and standards is included within the discussion and further detailed in Section 6.0, Laws, Ordinances, Regulations, and Standards (LORS).

Environmental information is presented in the following sections:

5.2 Air Quality

5.3 Biological Resources

5.4 Water Resources

5.5 Geologic Resources and Hazards

5.6 Agriculture and Soils

5.7 Land Use

5.8 Socioeconomics

5.9 Noise

5.10 Visual Resources

5.11 Traffic and Transportation

5.12 Hazardous Materials Handling

5.13 Waste Management

5.14 Worker Health and Safety

5.15 Public Health

5.16 Cultural Resources

5.17 Paleontological Resources

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5.2 AIR QUALITY

This section describes existing air quality conditions, maximum potential impacts from the project and proposed mitigation measures.

This section also presents the methodology and results of the air quality analyses performed to assess potential impacts associated with air emissions from the construction and operation of the project. Analysis of public health impacts from emissions of noncriteria pollutants are addressed in Section 5.15 (Public Health).

Section 5.2.1 is a summary of the air quality impacts. More detailed sections follow. Existing air quality conditions are described in Section 5.2.2. Applicable regulations and environmental impacts are discussed in Section 5.2.3. The methodology used in the quantitative air quality analysis and the resulting potential impacts are also presented in Section 5.2.3. Consistency with laws, ordinances, regulations, and standards (LORS) is discussed in Section 5.2.6. The expected impacts from the abandonment/closure of the plant are discussed in Section 5.2.3.3. Measures that mitigate the potential impacts to air quality are discussed in Section 5.2.4. Involved agency and agency contacts and permits required are reviewed in Sections 5.2.6 and 5.2.7, respectively. References cited in this chapter are listed in Section 5.2.9.

5.2.1 Summary of Air Quality Impacts

Inland Empire Energy Center, LLC (IEEC) is proposing to install two new Class F gas turbines operating in combined cycle configuration. Incidental new equipment will include an auxiliary boiler, emergency generator, emergency fire pump, and a cooling tower. The new combustion turbines produce very low levels of air pollutant emissions, and their emissions of oxides of nitrogen and carbon monoxide emissions will be controlled to even lower levels using selective catalytic reduction and oxidation catalyst technology.

Before the new turbines can be installed, IEEC must receive regulatory approval from two agencies that will review the air quality impacts of the proposed project: the South Coast Air Quality Management District (District) and the California Energy Commission (CEC). Each agency has its own set of standards for review, but the goals of the agencies are the same:

- To ensure that the operation of the new turbines will not cause or contribute to the violation of any health-based ambient air quality standards; and
- To ensure that the emissions of potentially toxic pollutants from the turbines will not cause any health hazards.

The air quality section of the AFC addresses these goals in detail and refers the reader to specific appendices that contain the detailed calculations that support the analysis presented.

5.2.1.1 Existing Air Quality

The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and fine particulate matter (PM_{10}). Areas with air pollution levels in excess of these

standards are considered "nonattainment areas" subject to planning and pollution control requirements that are more stringent than standard requirements applied in clean air areas.

In addition, the California Air Resources Board (CARB) has established standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Both state and national air quality standards consist of two parts: an allowable concentration and an averaging time over which the pollutant concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to specific environmental surfaces. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance) or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants there is more than one air quality standard, reflecting both their short-term and long-term effects. The California standards are generally set at concentrations much lower than the federal standards and in some cases have shorter averaging periods. Air quality in the District is in attainment with the federal and state standards for SO_2 and NO_2. Ozone levels in the District are in excess of the state and federal standards and as a result the District is considered "nonattainment" for ozone. In addition, the District is considered "nonattainment" for both the federal and state PM_{10} and CO standards.

Four (4) ambient air monitoring stations were used to characterize air quality at the project site. These stations were used because of their proximity to the project site and because they record area-wide ambient conditions rather than the localized impacts of any particular facility. Ambient concentrations of ozone and PM_{10} are monitored at the Perris monitoring station. NO_2 is monitored at the Lake Elsinore monitoring station. SO_2 is monitored at the Riverside Rubidoux Street monitoring station. CO is monitored at the Riverside Magnolia Street monitoring station. Table 5.2-1 summarizes the ambient concentrations of air pollutants measured near the project site between 1997 and 2000 and compares them with the federal and state ambient air quality standards.

Sections 5.2.2.3 through 5.2.2.4 present a comprehensive assessment of existing air quality in the project region.

5.2.1.2 Facility Operation

IEEC expects that each new turbine will operate up to 8,760 hours per year. Included in the 8,760 hours per year of operation are up to 400 hours of startup and shutdown. Each turbine and heat recovery steam generator (HRSG) is equipped with duct burners that add heat to the steam generator. This allows each steam generator to generate more steam for the steam turbine, so that when demand for electricity is high, each turbine/HRSG can produce more electricity. IEEC anticipates that the duct burners may operate up to 16 hours each day and up to 5,100 hours each year. Section 5.2.4.2 presents data in the facility operations.

Table 5.2-1 Maximum Background Concentrations, 1997-2000 (μg/m³)

Pollutant	Average Time	Maximum Monitored Concentrations	Air Quality Standard	
			State	Federal
Ozone[1]	1 hour	0.164	0.09	0.12
NO_2	1-Hour	211	470	n/a
	Annual	36	n/a	100
CO	1-Hour	12,650	23,000	40,000
	8-Hour	6,302	10,000	10,000
SO_2	1-Hour	105	650	n/a
	24-hour	92	105	365
	Annual	5	n/a	80
PM_{10}	24-Hour	139	50	150
	AGM[2]	44	30	n/a
	AAM[3]	50	n/a	50

[1] Ozone concentration expressed in parts per million.

[2] Annual geometric mean.

[3] Annual arithmetic mean.

5.2.1.3 Air Pollutant Emissions from the New Project

Air pollutant emissions from the new turbines/HRSGs, auxiliary boiler, emergency engines, and cooling tower are calculated using proposed emissions limits during each of the operating modes described above: startup/shutdown, base load (without duct burning), and with duct burning. The proposed emissions limits will become permit conditions, as will the limits on hours of operation in the various modes. Emissions, fuel use, and generation will be monitored continuously for each turbine to ensure that the turbines/HRSGs are always in compliance with their permit limits. Table 5.2-2 shows the highest allowable hourly, daily, and annual emissions from the new equipment.

Table 5.2-2 Emissions from New Equipment

	NO_x	SO_2	CO	VOC	PM_{10}
Maximum Hourly Emissions, lb/hr	109.6	3.4	942.5	25.4	41.3
Maximum Daily Emissions, lb/day	1,946.4	81.6	12,009.6	494.4	991.2
Maximum Annual Emissions, tpy	195.9	12.1	583.9	46.4	149.6

Section 5.2.3 presents data on the expected facility emissions for both the construction and operational phases.

5.2.1.4 Best Available Control Technology

The project is required to use best available control technology to control its emissions. IEEC has reviewed permit requirements approved by the EPA, CARB, and the CEC staff for similar types of facilities, and believes that the following emissions limits reflect the best available controls:

NO_x: 2.5 parts per million by volume, dry (ppmvd), corrected to 15% O_2, 1-hour average
2.0 ppmvd, corrected to 15% O_2, annual average

SO_2: Use of natural gas fuel

CO: 6 ppmvd, corrected to 15% O_2

VOC: 2.0 ppmvd, corrected to 15% O_2

PM_{10}: 11 pounds per hour without duct firing; 15.97 pounds per hour with duct firing

NH_3: 10 ppmvd @ 15% O_2

A detailed discussion of control technologies is presented in Section 5.2.3.2.5 of the AFC.

5.2.1.5 Emissions Mitigation Measures

IEEC is required to provide offsets in the form of emission reduction credits (ERC) for CO, VOC, and PM_{10} for any increase in emissions that will result from the operation of the new turbines. IEEC will purchase ERCs from several ERC owners in the District. In addition, the project will opt-in to the RECLAIM program and obtain RECLAIM trading credits (RTC) for NO_x and SO_2 emissions. Offsets (ERCs) are discussed in detail in Section 5.2.4 of the AFC.

5.2.1.6 Project Impacts on Air Quality

Federal and District regulations and CEC requirements necessitate an analysis of the project on ambient air quality to ensure that the project will not cause or contribute to the violation of any state or federal ambient air quality standards and increments. Air quality impacts are evaluated using EPA-approved computer models that use worst-case emission rates, exhaust stack parameters (including stack heights and exhaust flow rates), and local meteorology to simulate the dispersion of emissions and to determine the maximum ground-level impacts. These models account for the effects of nearby buildings and local terrain. The modeling analysis for the project is based on one year of District-approved weather data collected at the nearby Riverside monitoring station[1] to ensure that impacts are evaluated under the most extreme conditions.

For the turbines, the analysis in this AFC also models impacts during startup when emission rates may be high for short periods of time, during times in the early morning when mixing heights are very low (inversion breakup fumigation). EPA-approved models are designed to be conservative, so the modeling results typically overestimate the actual concentrations that would be measured.

[1] The monitoring station is located approximately 32 km from the project site.

Maximum modeled impacts from the new turbines/HRSGs, auxiliary boiler, emergency engines, and cooling tower were generally found to occur within approximately 3 km of the plant. Modeling results are summarized in Table 5.2-3.

Table 5.2-3 Summary of Modeling Results

Pollutant	Averaging Time	ISCST3	Fumigation	Startup
NO_x	1-hour	244.3	4.4	87.1
	Annual	0.9	--	--
SO_2	1-hour	30.1	0.4	3.0
	3-hour	2.7	0.3	2.6
	24-hour	0.7	--	--
	Annual	0.1	--	--
CO	1-hour	325.7	6.5	792.8
	8-hour	306.9	4.5	--
PM_{10}	24-hour	2.48[a]	--	--
	Annual	0.50[a]	--	--

Notes:

[a] Impacts include all sources and are based on ISCST3 modeling results.

The highest modeled impacts under any of these conditions were added to the highest background concentration measured at nearby air quality monitoring stations during the past four years to demonstrate that the combination of the new project with existing background pollutant concentrations will not cause any standards to be exceeded. This is shown in Table 5.2-4. The ambient air quality analysis and the data used to represent background concentrations are discussed in detail in Section 5.2.3.2.2 of the AFC.

Table 5.2-4 Modeled Maximum Project Impacts

Pollutant	Averaging Time	Maximum Project Impact ($\mu g/m^3$)	Background Concentrations ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour[1]	244.3	211	455	470	--
	Annual[2]	0.9	36	37	--	100
SO_2	1-hour	30.1	105	135	650	--
	24-hour	0.7	92	93	109	365
	Annual	0.1	5	5	--	80
CO	1-hour	325.7	12,650	12,976	23,000	40,000
	8-hour	306.9	6,302	6,609	10,000	10,000
PM_{10}[3]	24-hour	2.5	139	141.5	50	150
	AGM[4]	0.5	44	44.5	30	--
	AAM[4]	0.5	50	50.5	--	50

[1] Modeled using ISC OLM and 1981 Perris hourly ozone data. Worst-case on-hour NO_2 impacts are dominated by the emergency generator, which will be operated for testing purposes less than one hour per week. Worst-case hourly average NO_2 impacts during other periods will be only 40.2 $\mu g/m^3$.

[2] Modeled annual NO_x corrected to NO_2 using ARM default value of 0.75.

[3] Impacts include all sources and are based on ISCST3 modeling results.

[4] AGM: Annual Geometric Mean; AAM: Annual Arithmetic Mean.

5.2.1.7 Emissions of Toxics Air Pollutants

The modeling analysis indicates that the proposed operation will not pose a health hazard from potentially toxic substances, as summarized below.

SCAQMD Rule 1401, Toxics New Source Review, and CEC licensing procedures require an assessment of the potential impacts of the project on public health and a demonstration that the emissions of potentially toxic substances from the project will not pose a health hazard to the most sensitive members of the community. This demonstration was made using a screening health risk assessment. In a screening health risk assessment, the short-term (acute), long-term (chronic), and carcinogenic impacts of exposures to potentially toxic substances are compared with generally accepted risk criteria to characterize the project exposure impacts. The screening health risk assessment is carried out in three steps:

- Estimate emissions of toxic, or noncriteria pollutants, from each source;
- Use dispersion modeling to calculate the ground-level concentration of each pollutant; and
- Use scientifically derived cancer unit risk factors and acute and chronic reference exposure levels (levels below which no harmful effects are observed) to evaluate carcinogenic risk and chronic and acute noncancer health hazards.

A screening health risk assessment was performed for the new equipment (new turbines/HRSGs, auxiliary boiler, emergency engines, cooling tower). Toxic emissions were calculated using CARB- and EPA-approved emission factors and emissions measurements. The dispersion modeling used the same EPA-approved models and meteorological data that were used in modeling criteria pollutant impacts.

The results of the screening health risk assessment are compared with the limits of District Rule 1401 in Table 5.2-5.

The screening health risk assessment is discussed in detail in Section 5.15 (Public Health) of the AFC.

Table 5.2-5 Health Risk Assessment Results

	New Equipment	Significance Threshold
Cancer Risk to Maximally Exposed Individual (w/o TBACT)	0.28 in one million	1 in one million
Cancer Risk to Maximally Exposed Individual (w/ TBACT)	0.28 in one million	10 in one million
Acute Noncancer Hazard Index	0.1275	1
Chronic Noncancer Hazard Index	0.048	1

5.2.2 Affected Environment

5.2.2.1 Geography and Topography

The proposed IEEC project is located near Romoland, a small community in the Perris Valley of Riverside County, about 35 km southeast of Riverside, California (see Figure 3.2-1). Romoland is about two miles north-northeast of Sun City, which itself sits within a triangle whose vertices are formed by Lakes Elsinore and Perris, and the small city of Hemet. The project site lies south of the Burlington Northern and Santa Fe (BNSF) rail line, just southeast of Romoland, where State Highway 74 jogs eastward from Romoland towards the community of Homeland. The southern boundary of the project site is McLaughlin Road. Interstate Highway 215 runs in a north-south direction about one mile west of the site. The universal transverse mercator (UTM) coordinates of the site are 3733.1 kilometers northing, 484.4 kilometers easting (NAD 27, Zone 11), at 33 degrees 44.3 minutes North latitude and 117 degrees 10 minutes West longitude. The nominal site elevation is 1,444 feet above mean sea level.

The project site is situated on flat terrain. North-northwest of the site, the Perris Valley extends about 12 miles to the former March Air Force Base, now March Air Reserve Base. In all other directions, ranges of hills rise at various distances from the project site. Beginning just three miles to the northeast of the site, the Lakeview Mountains achieve a maximum elevation of about 2,600 feet. Three miles east of the project site, the Double Buttes reach 2,575 feet, and about two miles south of the site the hills just east of Sun City reach 2,140 feet. About three miles southwest of the site, hills reach 2,250 feet, and eight miles west of the site Steele Peak reaches about 2,530 feet.

The nearest residential area lies within 200 yards of the project site's north boundary, and numerous other residential areas lie within a three-mile radius of the site.

5.2.2.2 Climate and Meteorology

The overall climate at the project site is dominated by the semipermanent Pacific High pressure system over the eastern Pacific Ocean. The Pacific High is centered between the 140°W and 150°W meridians, and oscillates in a north-south direction seasonally. Its position governs California's weather. In the summer, the high moves to its northernmost position, which results in a strong subsidence inversion and clear skies inland; along the coast, the weather is dominated by coastal stratus and fog caused by the cooler and more homogeneous ocean surface temperature. Almost no precipitation occurs during summer months, because migrating storm systems are blocked by the Pacific High.

In the fall, the Pacific High weakens and shifts southwestward toward Hawaii, allowing storms originating in the Gulf of Alaska to reach California. The average annual rainfall at the project site is approximately 12 inches; at Lake Elsinore, about ten miles southwest of the project site, the annual precipitation is 12.5 inches, of which approximately 85% falls between November and March. Between storms, skies are fair, winds are light, and temperatures are moderate. (*Climates of the States – California*, U.S. Department of Commerce, Weather Bureau, 1959)

Wind and mixing height are two key meteorological parameters that govern the potential for air pollution problems. The predominant winds in California are shown in Figures 5.2-1 through 5.2-4 (The Uses of Meteorological Data in Large-Scale Air Pollution Surveys, Stanford Research Institute, 1958). As the figures indicate, winds in California are generally light and easterly in the winter, but strong and westerly in the spring, summer, and fall.

Wind patterns for the project site are presented in Figure 5.2-5, which is a wind rose for the Riverside meteorological station. (Quarterly wind roses are presented in Appendix K.1) It can be seen that at this site, about 50% of all winds come from west through northwest. Calm conditions prevail about 12% of the time.

Inland areas, where the marine influence is weak or nonexistent, often experience strong ground-based inversions, which inhibit mixing and can result in high pollutant concentrations. Smith, et al (1984), reported that at San Bernardino (the site closest to the project for which data are available) 50th percentile morning mixing heights for the period 1979-1980 were 70-90 meters (approximately 230-295 feet) in fall and winter, 255 meters (approximately 835 feet) in spring, and 150 meters (approximately 490 feet) in summer. Such low mixing heights trap pollutants. The 50th percentile afternoon mixing heights, however, were unlimited in all seasons, providing generally favorable conditions for dispersion of pollutants.

5.2.2.3 Existing Air Quality and Overview of Standards and Health Effects

In general, the Federal Clean Air Act requires that national ambient air quality standards (NAAQS) be exceeded no more than once each year. The U.S. Environmental Protection Agency (EPA) has set standards for ozone, NO_2, CO, SO_2, PM_{10}, 2.5-micron particulate matter ($PM_{2.5}$), and airborne lead. Except as described below for the proposed *new* ozone and $PM_{2.5}$ standards, an area where NAAQS are exceeded more than three times in three years can be considered a nonattainment area subject to planning and pollution control requirements that are more stringent than standard requirements.

State of California ambient air quality standards are goals set by the CARB to protect public health and welfare. Standards have been set for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases. CARB carries out control program oversight activities, while local air pollution control districts have primary responsibility for air quality planning and enforcement.
Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (eight hours, 24 hours, or one year). For some pollutants there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 5.2-6 presents the state and national ambient air quality standards for selected pollutants.

Figure 5.2-1 January Predominant Mean Circulation of the Surface Winds

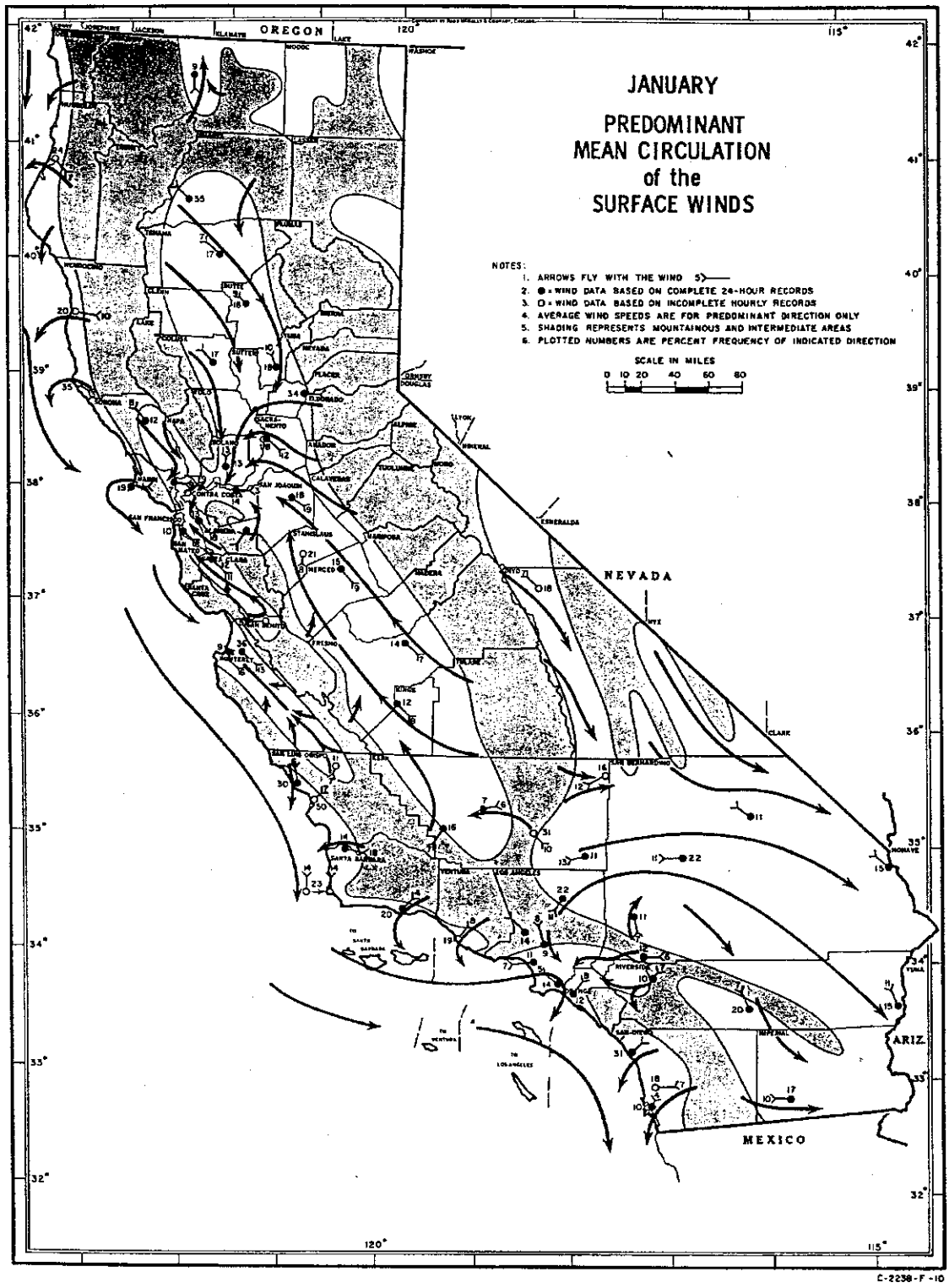


Figure 5.2-2 April Predominant Mean Circulation of the Surface Winds

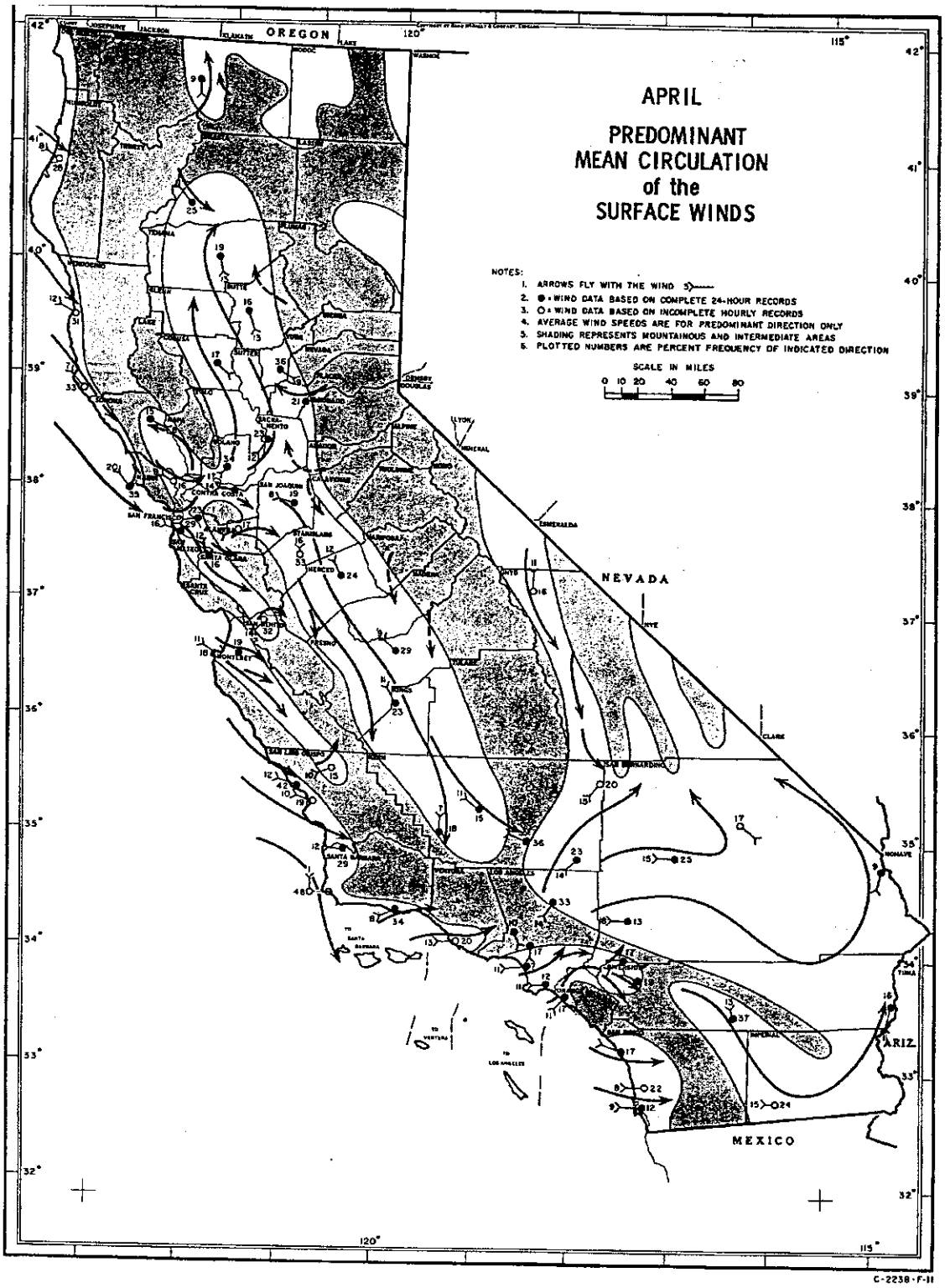


Figure 5.2-3 July Predominant Mean Circulation of the Surface Winds

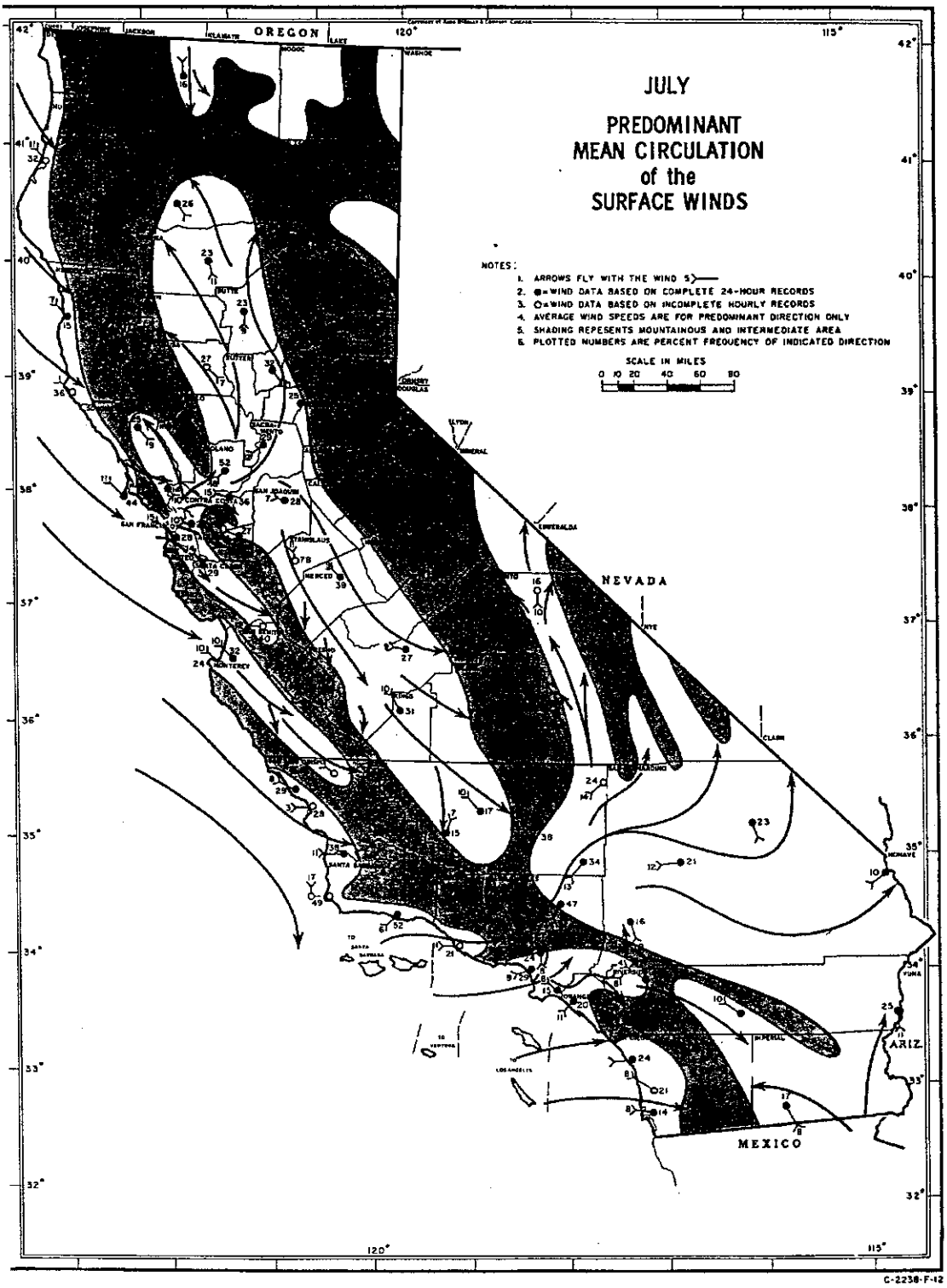


Figure 5.2-4 October Predominant Mean Circulation of the Surface Winds

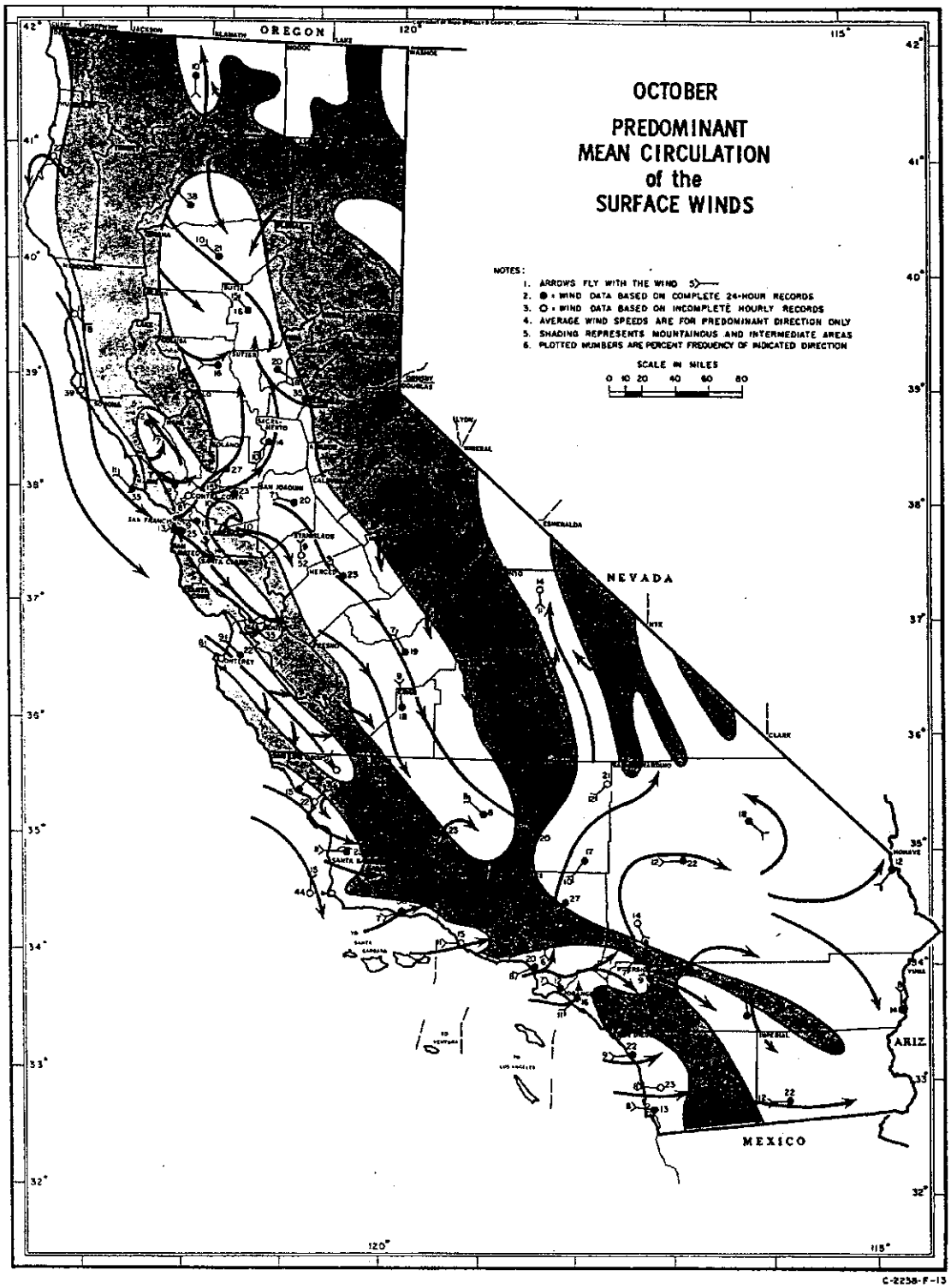


Figure 5.2-5 Wind Rose for Riverside Monitoring Station 1981

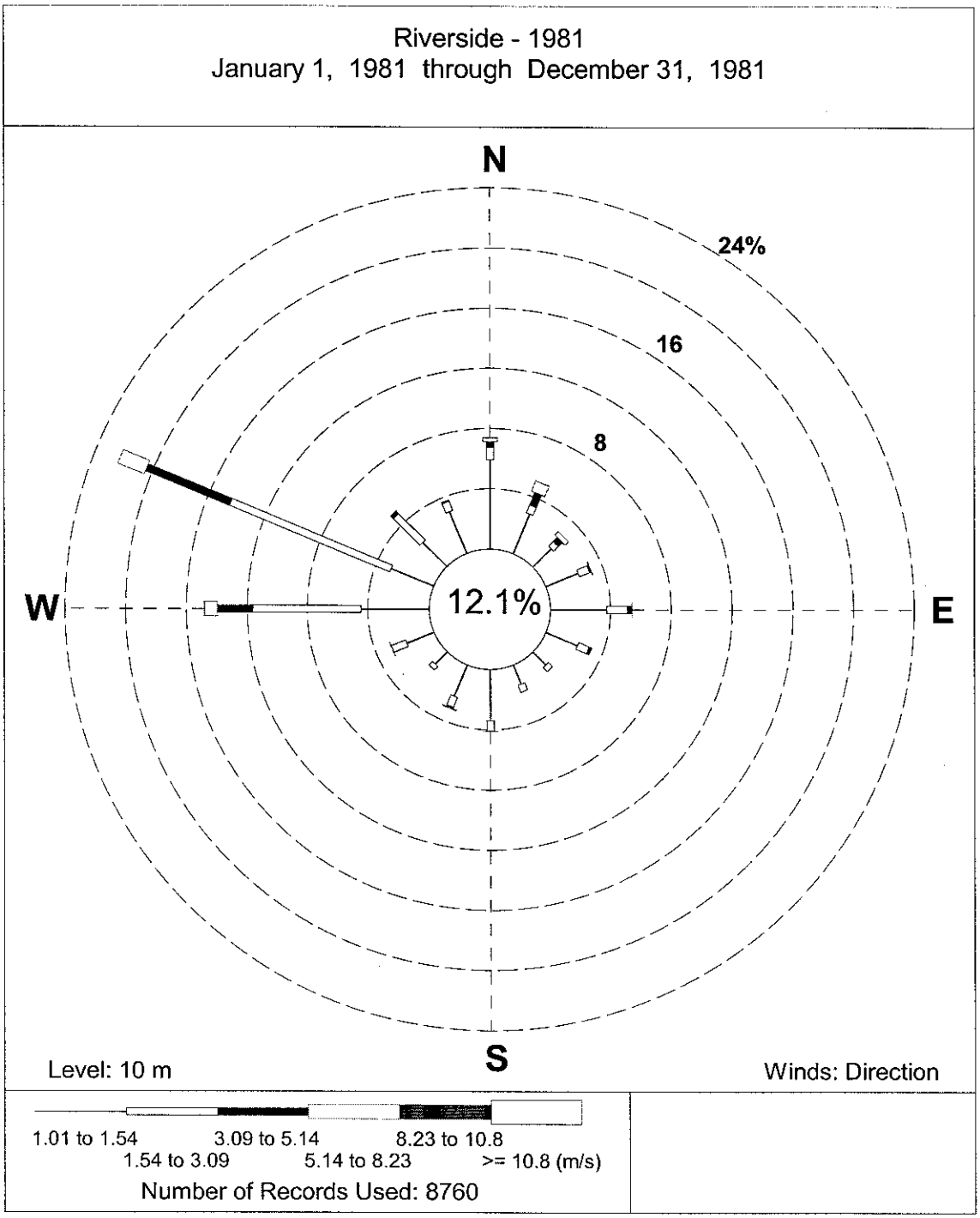


Table 5.2-6 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm	0.12 ppm
	8 hours	-	0.08 ppm (3-year average of annual 4th-highest daily maximum)
Carbon Monoxide	8 hours	9 ppm	9 ppm
	1 hour	20 ppm	35 ppm
Nitrogen Dioxide	Annual Average	-	0.053 ppm
	1 hour	0.25 ppm	-
Sulfur Dioxide	Annual Average	-	0.03 ppm
	24 hours	0.04 ppm	0.14 ppm
	3 hours	-	0.5 ppm
	1 hour	0.25 ppm	-
Suspended Particulate Matter (10 Micron)	Annual Geometric Mean	30 μ/m^3	-
	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual Arithmetic Mean	-	50 $\mu g/m^3$
Suspended Particulate Matter (2.5 Micron)	Annual Arithmetic Mean	-	15 $\mu g/m^3$ (3-year average)
	24 hours	-	65 $\mu g/m^3$ (3-year average of 98th percentiles)
Particulate Sulfates	24 hours	25 $\mu g/m^3$	-
Lead	30 days	1.5 $\mu g/m^3$	-
	Calendar Quarter	-	1.5 $\mu g/m^3$

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

In July 1997, EPA issued a new NAAQS for ozone, which became effective on September 16, 1997. For ozone, the previous one-hour standard of 0.12 ppm was replaced by an eight-hour average standard at a level of 0.08 ppm. Compliance with this standard was to be based on the three-year average of the annual fourth-highest daily maximum eight-hour average concentration measured at each monitor within an area.

In July 1997, EPA revised the 10-micron particulate matter NAAQS and issued a new NAAQS for 2.5 micron particulate matter. The NAAQS for particulates was revised in several respects. First, compliance with the current 24-hour PM_{10} standard was now to be based on the 99th percentile of 24-hour concentrations at each monitor within an area. Two new $PM_{2.5}$ standards were added: a standard of 15 $\mu g/m^3$, based on the three-year average of annual arithmetic means from single or

multiple monitors (as available); and a standard of 65 $\mu g/m^3$, based on the three-year average of the 98th percentile of 24-hour average concentrations at each monitor within an area.

5.2.2.4 Criteria Pollutants and Air Quality Trends

All ambient air quality data are as provided by CARB. Ambient concentrations of ozone and PM_{10} are recorded at a monitoring station in Perris, about four to five miles northwest of the project site. Nitrogen dioxide has been recorded since 1994 at Lake Elsinore, about ten miles southwest of the project site. Ambient levels of airborne lead (through 1997) and carbon monoxide are from a monitoring station on Magnolia Street in Riverside, about 20 miles northwest of the project site (lead monitoring ceased after 1997). Particulate sulfates, sulfur dioxide, and fine particulates ($PM_{2.5}$) are recorded at a monitoring station on Rubidoux Avenue in Riverside, approximately 32 km north-northwest of the project site. All these stations are operated by the South Coast Air Quality Management District (SCAQMD).

The locations of the monitoring stations relative to the proposed project are such that emissions measurements recorded at the monitoring stations are believed to represent area-wide ambient conditions rather than the localized impacts of any particular facility.

5.2.2.4.1 Ozone

Ozone is an end product of complex reactions between volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of intense ultraviolet radiation. VOC and NO_x emissions from millions of vehicles and stationary sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight result in high ozone concentrations. For purposes of state and federal air quality planning, the South Coast Air Basin is a nonattainment area for ozone.

Maximum ozone concentrations at the Perris station are usually recorded during the summer months. Table 5.2-7 shows the annual maximum hourly ozone levels recorded at the Perris monitoring station during the period 1991-2000, as well as the number of days when the state and federal standards were exceeded. It can be seen that throughout the 1990s maximum hourly ozone levels exceeded both state and federal ambient standards many times per year on average.

Table 5.2-7 Ozone Levels in Perris, 1991-2000 (ppm)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highest 1-Hour Average	.200	.210	.200	.184	.202	.180	.079	.149	.112	.164
Number of Days Exceeding:										
State Standard (0.09 ppm, 1-hour)	128	147	137	125	107	95	0	38	10	65
Federal Standard (0.12 ppm, 1-hour)	71	83	73	59	36	31	0	8	0	15

Source: California Air Quality Data, Annual Summary, California Air Resources Board

The long-term trends of maximum one-hour ozone readings and violations of the state standard are shown in Figures 5.2-6 and 5.2-7 for the Perris station. The figures show that maximum hourly ozone concentrations have decreased significantly in percent years, to levels at or below the federal standard, but remain about one-third higher than the state standard.

Figure 5.2-6 Maximum Hourly Ozone Levels, Perris, 1991-2000

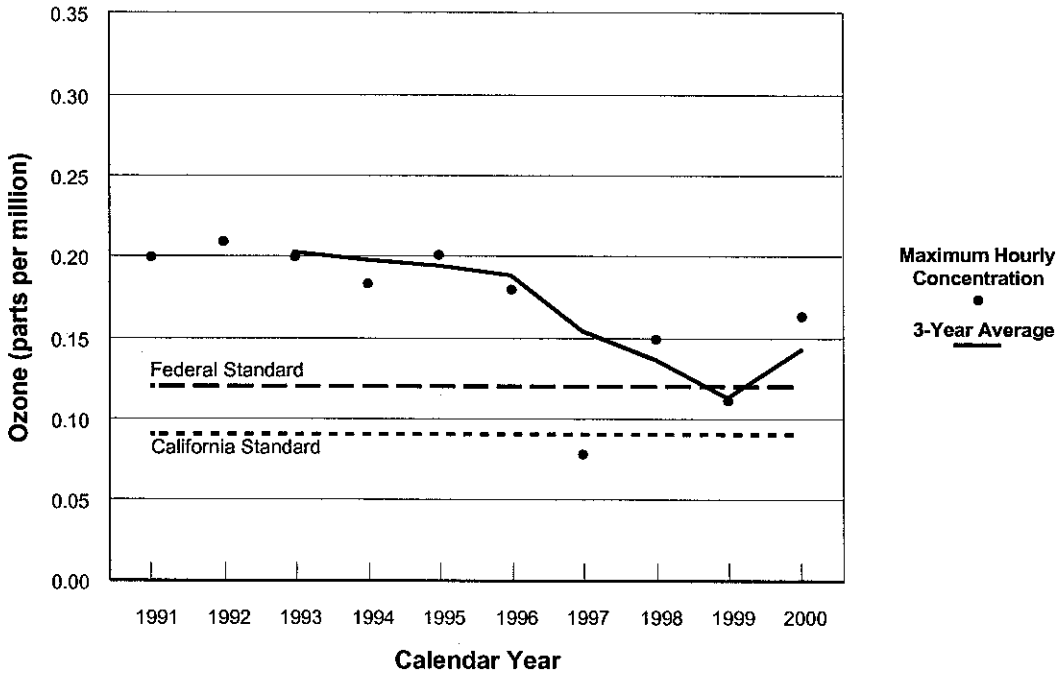
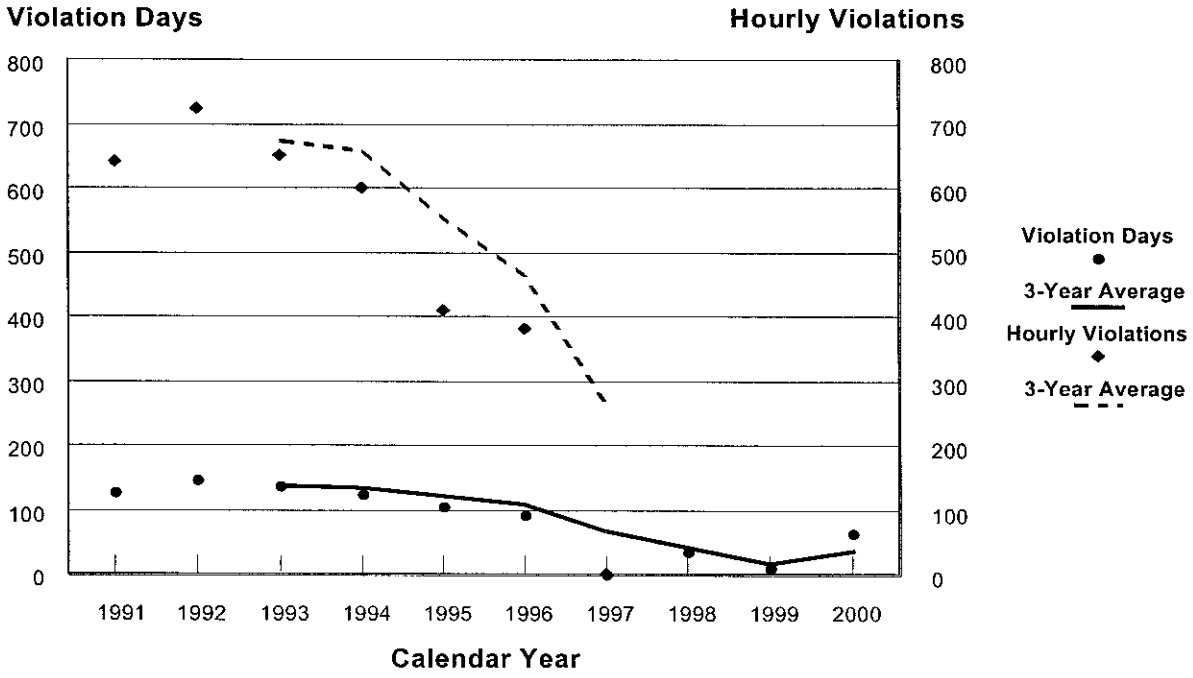


Figure 5.2-7 Violations of the California 1-Hour Ozone Standard (0.09 ppm), Perris, 1991-2000



5.2.2.4.2 Nitrogen Dioxide

NO_2 is formed primarily from reactions in the atmosphere between nitric oxide (NO) and oxygen or ozone. NO is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes, under certain conditions. For purposes of state and federal air quality planning, the South Coast Air Basin is in attainment for NO_2.

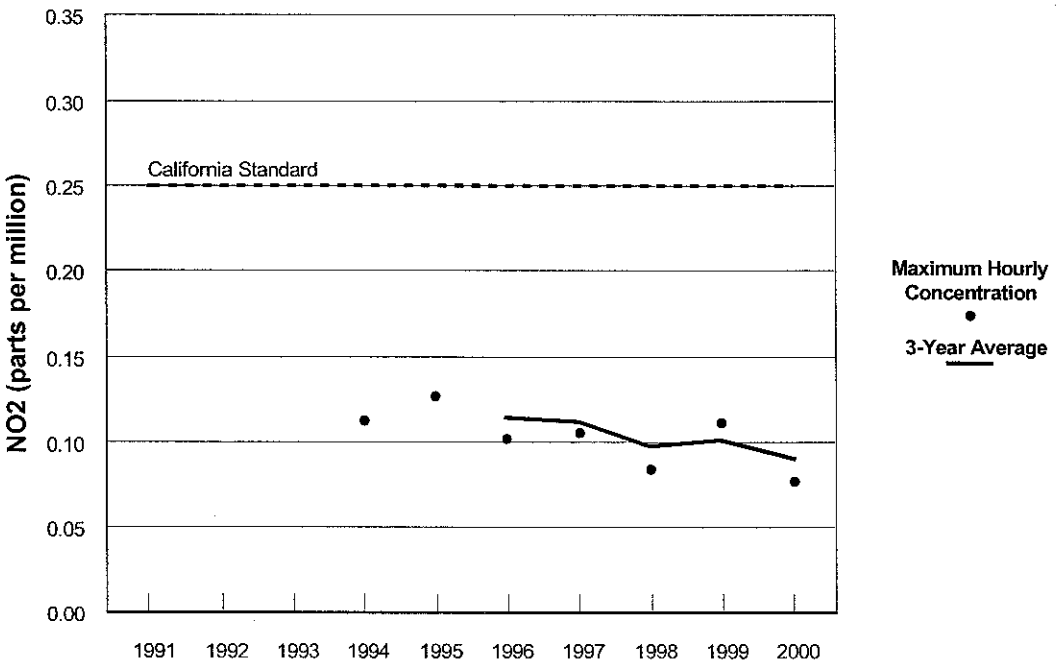
Table 5.2-8 shows the maximum one-hour average NO_2 concentrations recorded in Lake Elsinore each year from 1994 through 2000, as well as the annual average level for each of those years. During this period, there has been no violation of either the state one-hour standard or the NAAQS of 0.053 ppm, annual average. Figure 5.2-8 shows the trend of maximum one-hour NO_2 concentrations at Lake Elsinore from 1994 through 2000. These levels appear to have stabilized at about 40% of the state standard of 0.25 ppm.

Table 5.2-8 Nitrogen Dioxide Levels in Lake Elsinore, 1994-2000 (ppm)

	1994	1995	1996	1997	1998	1999	2000
Highest 1-Hour Average	0.113	0.127	0.102	0.106	0.084	0.112	0.077
Annual Average (NAAQS = 0.053 ppm)	0.020	0.020	0.017	0.015	0.017	0.019	0.015
Number of Days Exceeding:							
State Standard (0.25 ppm, 1-hour)	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Figure 5.2-8 Maximum Hourly NO_2 Levels, Lake Elsinore, 1994-2000



5.2.2.4.3 Carbon Monoxide

CO is a product of incomplete combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors to high ambient levels of CO. Industrial sources typically contribute less than 10% of ambient CO levels. Peak CO levels typically occur during winter months, due to a combination of higher emission rates and stagnant weather conditions. For purposes of air quality planning, the portion of Riverside County lying within the South Coast Air Basin is classified as being in attainment of the state ambient CO standards, but in nonattainment of the national standards.

Table 5.2-9 shows the California and federal air quality standards for CO, and the maximum one-hour and eight-hour average levels recorded in Riverside (Magnolia St. monitoring station) during the period 1991-2000.

Table 5.2-9 Carbon Monoxide Levels in Riverside (Magnolia St.), 1991-2000 (ppm)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highest 8-hour average	6.88	6.13	6.25	7.25	6.31	5.31	5.48	4.57	4.10	4.23
Highest 1-hour average	14	11	8	11	9	9	11	--	--	--
Number of days exceeding:										
State Standard (9 ppm, 8-hr)	0	0	0	0	0	0	0	0	0	0
State Standard (20 ppm, 1-hr)	0	0	0	0	0	0	0	0	0	0
Federal Standard (9 ppm, 8-hr)	0	0	0	0	0	0	0	0	0	0
Federal Standard (35 ppm, 1-hr)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Trends of maximum eight-hour and one-hour average CO levels are shown in Figures 5.2-9 and 5.2-10, respectively, which show that maximum ambient CO levels at Riverside (Magnolia St.) have been below the state standards for many years, and continue to gradually decline.

Figure 5.2-9 Maximum 8-Hour Average CO Levels, Riverside-Magnolia, 1991-2000

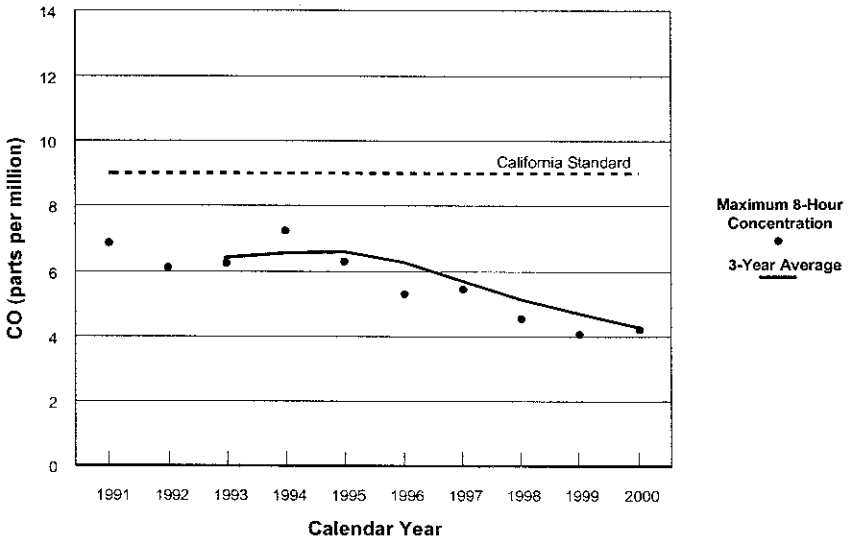
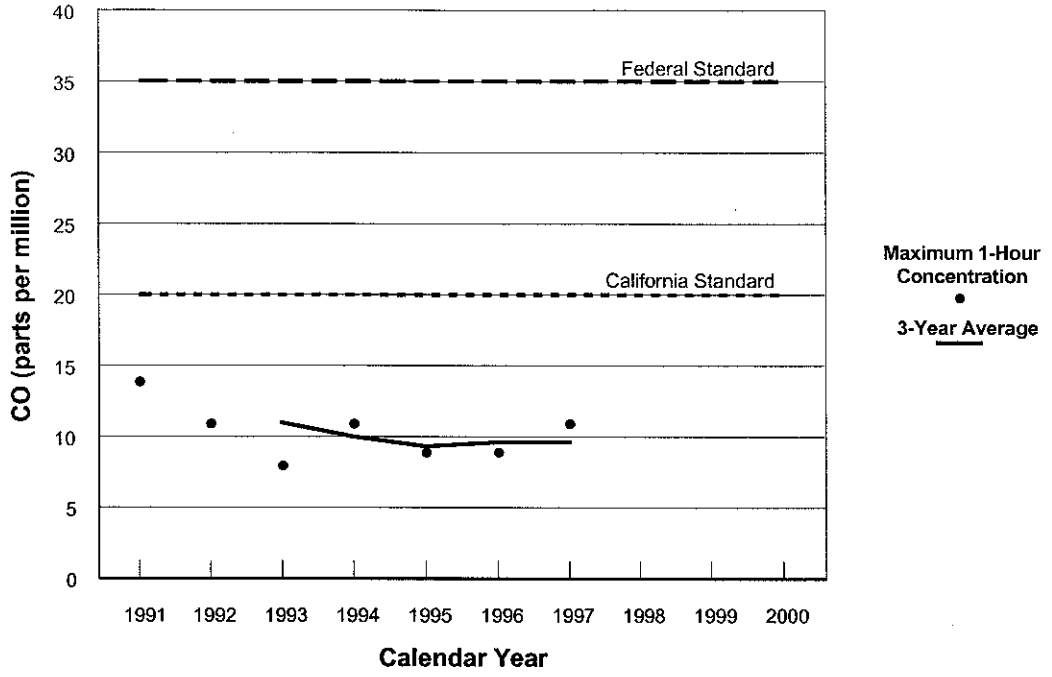


Figure 5.2-10 Maximum 1-Hour Average CO Levels, Riverside-Magnolia, 1991-1997



5.2.2.4.4 Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains negligible sulfur, while fuel oils contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The South Coast Air Basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

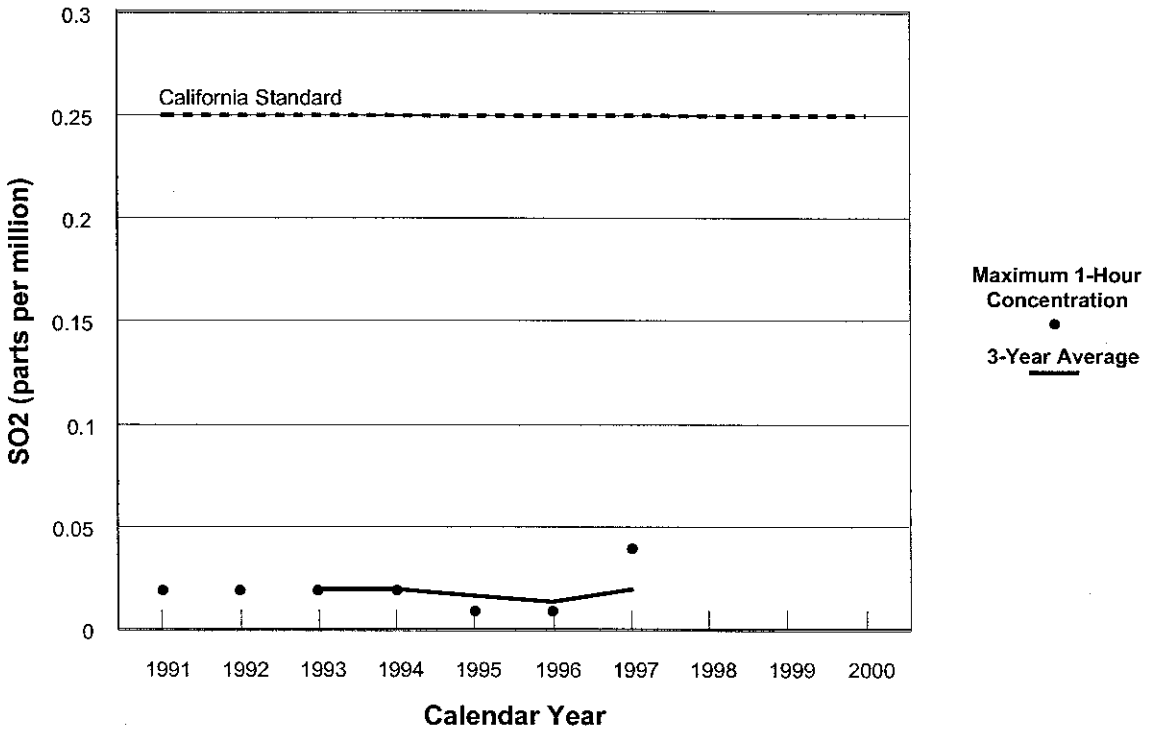
Table 5.2-10 presents the state air quality standard for SO_2 and the maximum levels recorded in Riverside (Rubidoux Ave.) from 1991 through 2000. The federal annual average standard is 0.03 ppm; during the period shown, the annual average SO_2 levels at Riverside have been well under the federal standard. The state 24-hour average standard is 0.04 ppm, which has not been exceeded in Riverside for many years. Figure 5.2-11 shows that for several years, maximum one-hour SO_2 levels typically have been one-tenth of the state standard (0.25 ppm) or lower.

Table 5.2-10 Sulfur Dioxide Levels in Riverside (Rubidoux Ave.), 1991-2000 (ppm)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highest 1-Hour Average	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03	0.03	0.11
Highest 24-Hour Average	0.009	0.006	0.013	0.005	0.005	0.005	0.005	0.009	0.012	0.035
Annual Average, All Hours	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001
Number of Days Exceeding:										
State Standard (0.25 ppm, 1-hr)	0	0	0	0	0	0	0	0	0	0
State Standard (0.04 ppm, 24-hours)	0	0	0	0	0	0	0	0	0	0
Federal Standard (0.5ppm, 3-hour)	0	0	0	0	0	0	0	0	0	0
Federal Standard (0.14ppm, 24-hours)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Figure 5.2-11 Maximum 1-Hour SO_2 Levels, Riverside-Rubidoux, 1991-1997



5.2.2.4.5 Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. Elevated levels can also be due to natural causes, such as sea spray. The South Coast Air Basin is in attainment of the state standard for sulfates. There is no federal standard for sulfates.

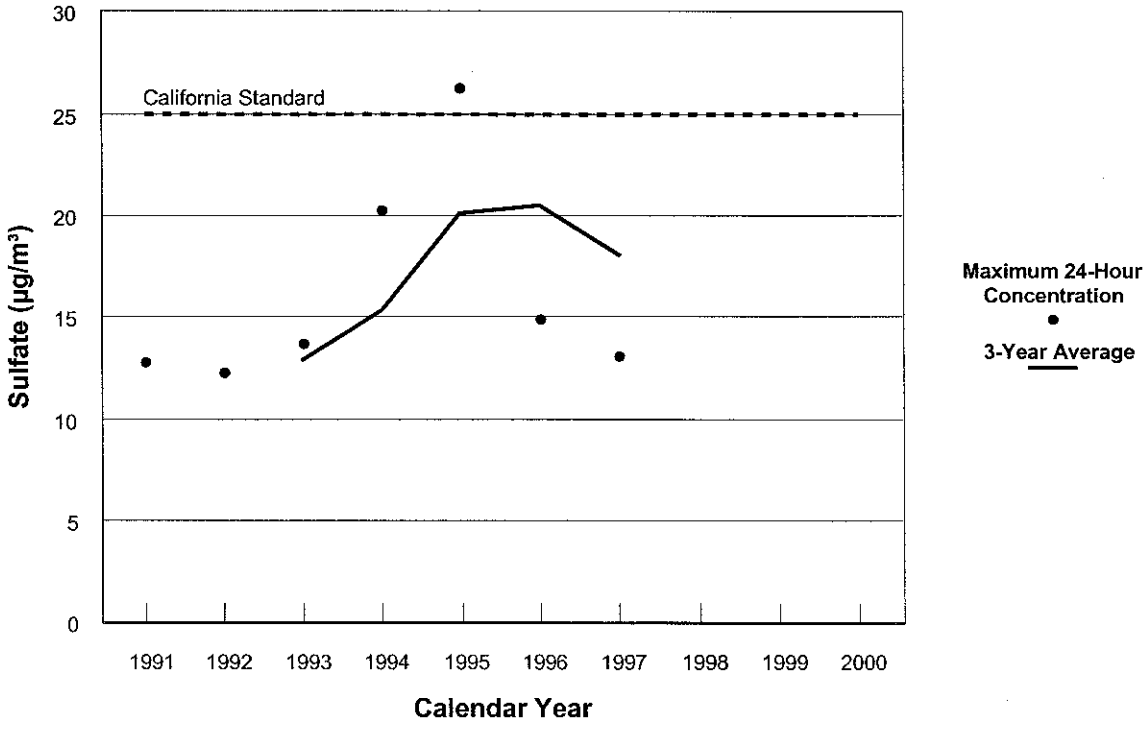
Table 5.2-11 shows the California air quality standard for particulate sulfate and the maximum 24-hour average concentrations recorded in Riverside (Rubidoux Ave.) from 1990 through 1997. The trend of maximum 24-hour average sulfates over this period is plotted in Figure 5.2-12. Over the period shown, maximum levels have been erratic from year to year, but in general are below the state standard.

Table 5.2-11 Particulate Sulfate Levels in Riverside (Rubidoux Ave.), 1990-1997 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997
Maximum 24-hour Average	12.9	12.8	12.3	13.7	20.3	26.3	14.9	13.1
Number of Days Exceeding:								
State Standard (25 $\mu g/m^3$, 24-hour)	0	0	0	0	0	1	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Figure 5.2-12 Maximum 24-Hour Sulfate Levels, Riverside-Rubidoux, 1991-1997



5.2.2.4.6 Fine Particulates (PM_{10} and $PM_{2.5}$)

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and nitrogen oxides. In 1984, the CARB adopted standards for fine particulates (PM_{10}), and phased out the total suspended particulate (TSP) standards that had previously been in effect. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulates related to human health. In 1987, EPA also replaced national TSP standards with PM_{10} standards. For air quality planning purposes, the South Coast Air Basin is considered to be in nonattainment of both federal and state PM_{10} standards currently in effect.

Table 5.2-12 shows the federal and state air quality standards for PM_{10}, maximum levels recorded at the monitoring station in Perris during 1991-2000, and geometric and arithmetic annual averages for the same period. (The geometric mean is the *n*th root of the product of *n* observations. The arithmetic annual average is simply the mean of all observations.) Maximum 24-hour PM_{10} levels at Perris generally exceed the state standard many times each year, although the less stringent 24-hour federal standard has not been exceeded since 1990. Annual average PM_{10} levels at Perris exceed the state standard regularly, but the federal standard is usually attained.

The trend of maximum 24-hour average PM_{10} levels in Perris is plotted in Figure 5.2-13.

Within the Riverside County portion of the South Coast Air Basin, $PM_{2.5}$ data are available only from the Riverside – Rubidoux Avenue monitoring station. Table 5.2-13 presents the maximum 24-hour average concentration and annual arithmetic mean reported by CARB for 1990 through 1997, and the three-year average levels of those readings (on which compliance with EPA's proposed ambient standards will be based). The data from the Rubidoux Avenue monitor indicate that 98th percentile 24-hour average $PM_{2.5}$ concentration levels are in a general decline, as shown in Figure 5.2-14. The 3-year average of annual arithmetic means has also declined, but it, too, remains significantly higher than the proposed NAAQS for this measurement (15 $\mu g/m^3$). As discussed earlier, the new $PM_{2.5}$ standard will not be in effect until the lawsuit filed against EPA is settled.

Table 5.2-12 PM_{10} Levels in Perris, 1991-2000 ($\mu g/m^3$)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Highest 24-Hour Average	113	115	131	112	145	87	139	98	112	87
Annual Geometric Mean (State Standard = 30 $\mu g/m^3$)	43.0	38.4	41.1	38.9	36.9	35.2	38.5	33.3	44.0	34.9
Annual Arithmetic Mean (Federal Standard = 50 $\mu g/m^3$)	48.8	44.4	50.3	44.8	47.4	39.9	44.4	35.2	50.0	38.9
Number of Days Exceeding:[1]										
State Standard (50 $\mu g/m^3$, 24-hour)	26	24	27	26	23	20	19	14	30	10
Federal Standard (150 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0	0	0	0
Maximum Expected Violation Days:[2]										
State Standard (50 $\mu g/m^3$, 24-hour)	156	144	162	153	129	120	114	84	180	60
Federal Standard (150 $\mu g/m^3$, 24-hour)	0	0	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Notes:

[1] Based on readings every six days.

[2] Based on multiplying exceedance readings by a factor of six due to readings taken only once per six days. The actual number of violation days is expected to be less, since some of the days' readings not taken will be within the standards.

Figure 5.2-13 Maximum 24-Hour PM_{10} Levels, Perris, 1991-2000

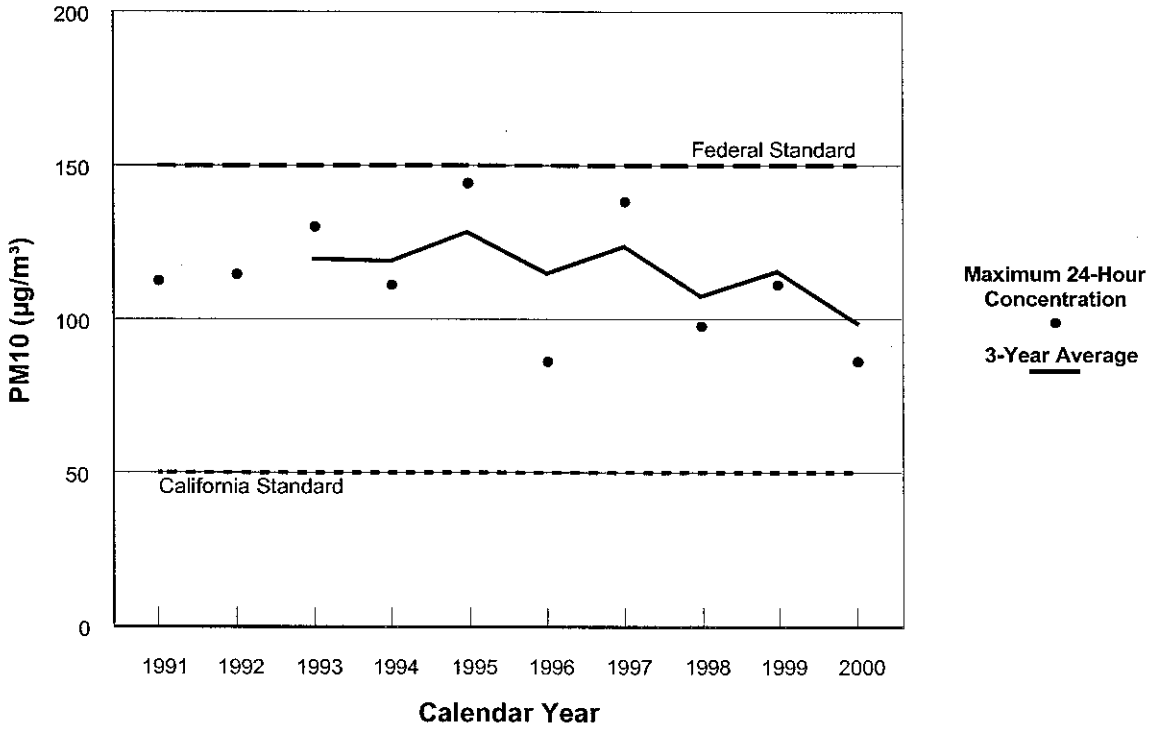
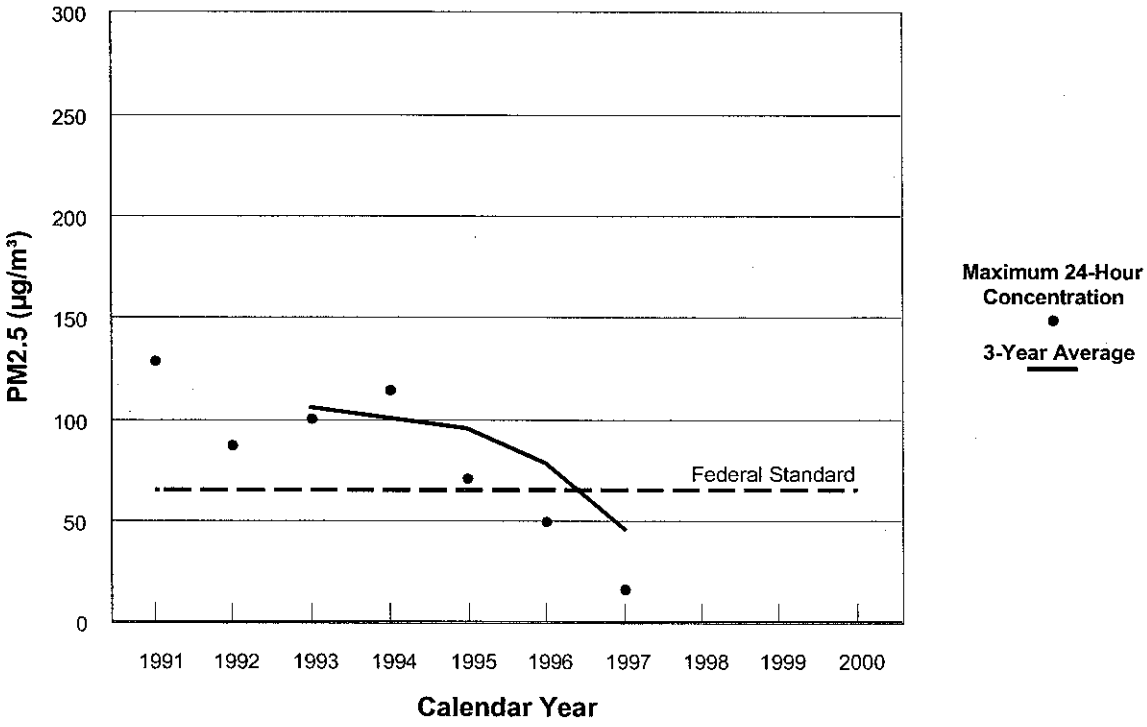


Table 5.2-13 $PM_{2.5}$ Levels in Riverside (Rubidoux Avenue), 1990-1997 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997
Highest 24-Hour Average	143	129	88	101	115	71	50	17
98th Percentile 24-Hour Average Concentration	120.8	122.1	70.0	86.0	112.0	71.0	50.0	17.0
Three-Year Average – 98th Percentile of 24-Hour Average Concentrations (Federal Standard = 65$\mu g/m^3$)	--	--	104	92	89	90	78	46
Annual Arithmetic Mean	31.9	42.4	32.2	31.1	32.8	21.7	25.9	--
Three-Year Average of Annual Arithmetic Mean (Federal Standard = 15$\mu g/m^3$)	--	--	35.5	35.2	32.0	28.5	26.8	--

Figure 5.2-14 Maximum 24-Hour $PM_{2.5}$ Levels, Riverside-Rubidoux, 1991-1997



5.2.2.4.7 Airborne Lead

Lead in the air results from the combustion of fuels that contain lead. Until 25 years ago, motor gasolines contained relatively large amounts of lead compounds used as octane-rating improvers, with the result that ambient lead levels were relatively high. Beginning with the 1975 model year, however, new automobiles began to be equipped with exhaust catalysts, which were poisoned by the exhaust products of leaded gasoline. Thus, unleaded gasoline became the required fuel for an increasing fraction of new vehicles, and the phase-out of leaded gasoline began. As a result, ambient lead levels decreased dramatically, and for several years, the South Coast Air Basin has been in attainment of state and federal airborne lead standards for air quality planning purposes.

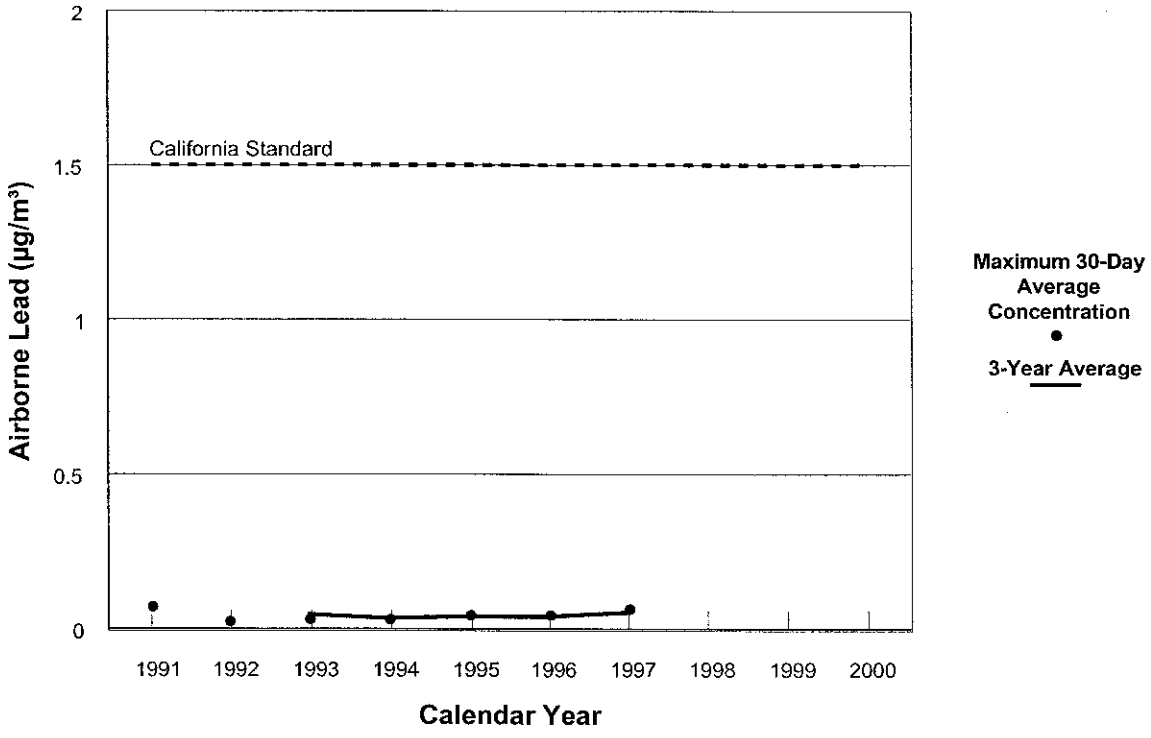
Table 5.2-14 lists the state air quality standard for airborne lead and the levels recorded in Riverside (Magnolia St.) between 1990 and 1997. Maximum monthly levels are well below the state standard. The trend of airborne lead levels from 1990 through 1997 is plotted in Figure 5.2-15, which shows a decline in concentrations. The NAAQS for lead is numerically the same as the state standard (1.5 $\mu g/m^3$), but because the averaging period is quarterly, not monthly, the NAAQS is less stringent.

Table 5.2-14 Airborne Lead Levels in Riverside (Magnolia St.), 1990-1997 ($\mu g/m^3$)

	1990	1991	1992	1993	1994	1995	1996	1997
Highest Monthly Average	0.08	0.08	0.03	0.04	0.04	0.05	0.05	0.07
State Standard (1.5 $\mu g/m^3$, monthly)	0	0	0	0	0	0	0	0
Federal Standard (1.5$\mu g/m^3$, Quarterly)	0	0	0	0	0	0	0	0

Source: California Air Quality Data, Annual Summary, California Air Resources Board

Figure 5.2-15 Maximum 30-Day Average Lead Levels, Riverside-Magnolia, 1991-1997



5.2.3 Environmental Impacts

The facility is subject to SCAQMD Rule 201, Regulation XIII, and Regulation XX, which contain the District's New Source Review (NSR) permitting requirements.

The District NSR regulation (Regulation 13 and RECLAIM Rule 2005) requires that BACT be used, emission offsets be provided, and an air quality impact analysis be performed. Ambient air quality impact analyses have been conducted to satisfy District and EPA requirements, as well as CEC requirements, for criteria pollutants (NO_2, CO, PM_{10}, and SO_2), noncriteria pollutants (as listed in Section 5.15), and construction and demolition impacts. The applicability of the District regulatory requirements and facility compliance with these requirements is based on facility emission levels and ambient air quality impact analyses.

Maximum pollutant emission rates and ambient impacts of the project have been evaluated to determine compliance with District and federal regulations. The new emissions sources include two new gas turbines, two new HRSGs equipped with duct burners, and an auxiliary boiler. Incidental equipment will include a new diesel fire pump, a new natural gas-fired emergency generator, and a cooling tower. Actual operation of the gas turbines/HRSGs ranges between 60% and 100% of maximum rated output. Emission control systems will be fully operational during all modes of operation except startup and shutdown. Maximum annual emissions are based on operation of the facility at maximum firing rates and include the expected maximum number of startups that may occur in a year. Each gas turbine startup will result in transient emission rates until steady-state operation for the gas turbine and emission control systems is achieved.

The criteria pollutant ambient impact analysis uses pollutant-specific maximum hourly, daily, and annual emission rates from the facility. This allows calculation of maximum ambient impacts for each pollutant and averaging period. The following sections describe the emission sources that have been evaluated for the facility, the analyses of ambient impacts, and the evaluation of facility compliance with the applicable air quality regulations.

Significance Criteria

Air Quality. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

d) Expose sensitive receptors to substantial pollutant concentrations?

e) Create objectionable odors affecting a substantial number of people?

5.2.3.1 Construction Phase Impacts

Analysis of the potential ambient impacts from air pollutants emitted during the construction of the new equipment includes an assessment of emissions from vehicle and equipment exhaust and the fugitive dust generated from material handling. A detailed analysis of the emissions and ambient impacts is included in Appendix K.2. With the exception of the maximum modeled 1-hour NO_2 concentration and 24-hour and annual PM_{10} concentrations, the results of the analysis indicate that the maximum construction and demolition impacts will be below the state and federal standards for all the criteria pollutants emitted. The best available emission control techniques will be used.

5.2.3.2 Operational Impacts

5.2.3.2.1 Emissions from the New Equipment

As discussed in Section 3, the new equipment consists of two GE Model 7251FB combustion gas turbines, each rated at 180 megawatts (MW) (nominal); and two HRSG equipped with duct burners rated at 697 MMBtu/hr (HHV). Incidental equipment will include a 370 hp Diesel fire pump engine, a 1,000 kW natural gas-fired emergency generator, a 129 MMBtu/hr natural gas-fired auxiliary boiler, and a 14-cell mechanical-draft evaporative cooling tower. Natural gas will be the only fuel used at the facility, with the exception of Diesel fuel used by the Diesel fire pump engine. Typical specifications for natural gas fuel are shown in Table 5.2-15.

Table 5.2-15 Typical Natural Gas Analysis, IEEC Project

Parameter	Value
Carbon Dioxide	1.07%
Nitrogen	0.84%
Methane	96.01%
Ethane	1.69%
Propane	0.24%
Butane	0.08%
Pentane	0.03%
Hexane and higher	0.04%
Sulfur Content	Less than 0.25 gr/100 scf
High Heating Value (HHV)	1,010 Btu/ft3 22,804 Btu/lb

Fuel combustion results in the formation of NO_x, SO_x, unburned hydrocarbons (VOC), PM_{10}, and CO. The gas turbines will be equipped with dry low NO_x combustors that act to minimize the formation of NO_x and CO. Similarly, the duct burners will be equipped with a low-NO_x burner design that minimizes NO_x formation. To further reduce gas turbine and duct burner NO_x, selective catalytic reduction (SCR) control systems will be provided. Ammonia (NH_3) will be used in the SCR system; therefore, unreacted NH_3 emissions have also been analyzed. In addition,

to further reduce CO emissions, the gas turbines will be equipped with oxidation catalysts. Because natural gas is a clean-burning fuel, there will be minimal formation of combustion PM_{10} and SO_x.

Criteria Pollutant Emissions. The gas turbine and duct burner emission rates have been estimated from vendor data, facility design criteria, and established emission calculation procedures. Emission rates for the combustion gas turbines with duct burners operating at low and high ambient air temperatures are shown in Tables 5.2-16 and 5.2-17.

Table 5.2-16 Emissions from Gas Turbines With Duct Burners (97°F and 31% relative humidity)[1]

Pollutant	ppmvd @ 15% O_2	lb/MMBtu	lbs/hr (per gas turbine)
NOx (1hr avg.)[2]	2.5	0.0091	21.74
NOx (annual avg.)[2]	2.0	0.0072	17.36
SO_x[4]	0.14	0.0007	1.69
CO (1hr avg.)[2]	6.0	0.0132	31.75
VOC[2]	2.0	0.0025	6.06
PM_{10}[2, 3]	0.003 gr/dscf	0.0067	15.97

Basis: [1] Emission rates shown reflect the highest value at any operating load.

[2] IEEC project design criteria.

[3] 100 percent of particulate matter emissions assumed to be emitted as PM_{10}; PM_{10} emissions include both front and back half.

[4] Based on expected maximum fuel sulfur content of 0.25 gr/100 scf fuel.

Table 5.2-17 Emissions from Combustion Gas Turbines With Duct Burners (36°F and 66% relative humidity) [a]

Pollutant	ppmvd @ 15% O_2	lb/MMBtu	lbs/hr (per gas turbine)
NO_x (1hr avg.)[b]	2.50	0.0090	22.71
NO_x (annual avg.)[b]	2.0	0.0072	18.18
SO_x[d]	0.14	0.0007	1.77
CO (1hr avg.)[b]	6.0	0.0132	33.23
VOC[b]	2.0	0.0025	6.34
PM_{10}[b,c]	0.003 gr/dscf	0.0064	15.97

Basis: [a] Emission rates shown reflect the highest value at any operating load.

[b] IEEC project design criteria.

[c] 100 percent of particulate matter emissions assumed to be emitted as PM_{10}; PM_{10} emissions include both front and back half.

[d] Based on expected maximum fuel sulfur content of 0.25 gr/100 scf fuel.

Maximum emission rates expected to occur during a startup or shutdown are shown in Table 5.2-18. PM_{10} and SO_x emissions have not been included in this table because emissions of these pollutants will be lower during a startup period than during baseload facility operation.

The maximum firing rates of the gas turbines and duct burners for daily and annual fuel consumption rates and operating restrictions are used to calculate maximum potential hourly, daily, and annual emissions for each pollutant. The maximum heat input rates (fuel consumption rates) for the combined cycle operation are shown in Tables 5.2-19 and 5.2-20. These are based on a maximum of 8,760 operating hours per year, per turbine, with each turbine operating at 100 percent load with ambient conditions of 97°F and 31% relative humidity and 36°F and 66% relative humidity.

Table 5.2-18 Expected Facility Startup and Shutdown Emission Rates (per gas turbine)[a] IEEC Project

	NO_x	CO	VOC
Startup or Shutdown, lbs/hour	80	902	16
Startup, lbs/start[b]	240	2,706	48

[a] Estimated based on vendor data and source test data. See Appendix K.3, Tables K.3-3 and K.3-4.

[b] Based on maximum of 3 hours per cold start.

Table 5.2-19 Maximum Combined Cycle Operation Heat Input Rates (HHV) (97°F and 31% Relative Humidity)

Period	Total Fuel Use, Two Gas Turbines/Duct Burners		Gas Turbines, each	Duct Burners, each	
Per Hour	4,798	MMBtu/hr	1,702	697	MMBtu/hr
Per Day	115,152	MMBtu/day	40,848	16,728	MMBtu/day
Per Year	42,030,480	MMBtu/yr	14,909,520	6,105,720	MMBtu/yr

Table 5.2-20 Maximum Combined Cycle Operation Heat Input Rates (HHV) (36°F and 66% Relative Humidity)

Period	Total Fuel Use, Two Gas Turbines/Duct Burners		Gas Turbines, each	Duct Burners, each	
Per Hour	5,021	MMBtu/hr	1,813	697	MMBtu/hr
Per Day	120,504	MMBtu/day	43,512	16,728	MMBtu/day
Per Year	43,983,960	MMBtu/yr	15,881,880	6,105,720	MMBtu/yr

Analysis of maximum emissions from the new equipment was based on the emission rates during typical operations shown in Tables 5.2-16 and 5.2-17, the expected startup emission rates shown in Table 5.2-18, and the ambient conditions that result in the highest emission rates. Maximum emissions for each period were determined by evaluating the following operating cases for hourly, daily, and annual operations.

Maximum Hourly Emissions:

- One gas turbine in startup mode
- One gas turbine at full load

Maximum Daily Emissions:

- Gas turbines in startup mode
  - CTG1: hot start – 1 hour, cold start – 3 hours, operation with duct firing – 16 hours, operation without duct firing – 4 hours
  - CTG2: hot start – 1 hour, cold start – 3 hours, operation with duct firing – 16 hours, operation without duct firing – 4 hours
- Auxiliary boiler operates 8 hours per day (not concurrent with CTGs operating for 24 hours)
- Emergency generator engine operates for 30 minutes

Maximum Annual Emissions:

- Each gas turbine has 400 hours of startups and shutdowns per year
- Each gas turbine operates at full load for the remaining 8,360 hours
- Each duct burner operates 5,100 hours per year
- Emergency generator engine operates 200 hours per year
- Emergency fire pump operates 50 hours per year
- Auxiliary boiler operates 3,000 hours per year

The maximum annual, daily, and hourly emissions for the new equipment are shown in Table 5.2-21. Annual emissions of CO and NO_x are based on expected emission rates that are lower than the short-term maxima shown in Tables 5.2-16 and 5.2-17. Detailed emission calculations appear in Appendix K.3, Tables K.3-1 and K.3-2.

Noncriteria Pollutant Emissions. Noncriteria pollutants are substances that have been identified as pollutants that may cause adverse human health effects. Nine of these pollutants are regulated under the federal NSR program: lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds. In addition to these nine substances, EPA has listed 189 compounds as potential hazardous air pollutants (Clean Air Act Sec.112(b)(1)); many of these are also regulated under the California Air Toxics "Hot Spots" Act. District Rule 1401 also lists compounds that are potential toxic air contaminants. Noncriteria pollutant emissions from the gas turbines, auxiliary boiler, emergency engines, and cooling tower are discussed in the Public Health Section (Section 5.15).

Table 5.2-21 Emissions from New Equipment (Gas Turbines/HRSGs, Auxiliary Boiler, Emergency Engines, and Cooling Tower)[a]

	NO_X	SO_X	CO	VOC	PM_{10}
Maximum Hourly Emissions (lbs/hr)					
Gas Turbines and Duct Burners[b]	102.7	3.5	935.2	22.3	31.9
Auxiliary Boiler	1.4	0.1	4.9	0.6	2.7
Fire Pump[c]	0.0	0.1	0.0	0.0	0.0
Emergency Generator	4.9	0.0	6.5	4.9	0.5
Cooling Tower	--	--	--	--	3.3
Total =	**109.0**	**3.7**	**946.6**	**27.8**	**38.4**
Maximum Daily Emissions (lbs/day)					
Gas Turbines and Duct Burners[b]	1,495.3	81.0	8,339.3	350.3	726.8
Auxiliary Boiler	11.2	0.7	39.2	4.8	21.6
Fire Pump	0.0	0.1	0.0	0.0	0.0
Emergency Generator	4.9	0.0	6.5	4.9	0.5
Cooling Tower	--	--	--	--	79.6
Total =	**1,511.2**	**81.8**	**8,385.0**	**359.9**	**828.5**
Maximum Annual Emissions (tpy)					
Gas Turbines and Duct Burners[b]	166.7	13.9	590.8	46.6	123.7
Auxiliary Boiler	2.1	0.1	7.4	0.9	4.1
Fire Pump	0.1	0.0	0.1	0.0	0.0
Emergency Generator	0.5	0.0	0.6	0.5	0.1
Cooling Tower	--	--	--	--	14.5
Total =	**169.4**	**14.0**	**598.9**	**48.1**	**142.4**

[a] See Appendix K.3, Tables K.3-1 and K.3-2 for calculations.

[b] Includes startup emissions.

[c] Emergency engines will not be tested when a gas turbine is in startup mode.

5.2.3.2.2 Air Quality Impact Analysis

Air Quality Modeling Methodology. An assessment of impacts on ambient air quality of the proposed facility has been conducted using EPA-approved air quality dispersion models. These models are based on fundamental mathematical descriptions of atmospheric processes in which a pollutant source can be related to a receptor area. The modeling analysis was performed pursuant to a modeling protocol approved by the SCAQMD (see Appendix K.4).

The impact analysis was used to determine the worst-case ground-level impacts of the project. The results were compared with established ambient air quality standards and significance levels. If the standards are not violated and significance levels are not exceeded under worst-case conditions, then no exceedances are expected under any conditions. In accordance with the air quality impact analysis guidelines (EPA, 1998; CARB, 1989), the ground-level impact analysis includes the following worst-case dispersion conditions:

- Impacts in simple terrain
- Impaction of plume on elevated terrain
- Aerodynamic downwash due to nearby building(s)
- Impacts from fumigation conditions

Simple terrain impacts were assessed for meteorological conditions that would cause the power plant plume to loop, cone, or fan out. Looping plumes occur when the atmosphere is very unstable, such as on a bright sunny afternoon when vigorous convective mixing of the air can transport the entire plume to ground level near the source. Coning plumes occur throughout the day when the atmosphere is neutral or slightly unstable. Fanning plumes are most common at night when the atmosphere is stable and vertical motions are suppressed.

Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground-level concentrations, especially under stable atmospheric conditions. High ground-level pollutant concentrations can also be caused by building downwash. Building downwash occurs when a building is in close proximity to the emission stack and results in plume wake around the building. The stack plume is drawn downward to the ground by the lower pressure region that exists in the turbulent wake on the lee side of an adjacent building.

Fumigation conditions occur when a stable layer of air lies a short distance above the release point of the plume and an unstable air layer lies below. The low mixing height that results from this condition allows little diffusion of the stack plume before it is carried downwind to the ground. Although fumigation conditions rarely last as long as an hour, relatively high ground-level concentrations may be reached during that period. Fumigation tends to occur under clear skies and light winds, and is more prevalent in the summer.

The basic model equation used in this analysis assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution about the centerline of the plume (see Figure 5.2-17). Concentrations of an emitted substance at any location downwind of a point source such as a stack can be determined from the following equation:

$$C(x,y,z,H) = \left(\frac{Q}{2\pi\sigma_y\sigma_z u}\right) * \left(e^{-1/2(y/\sigma_y)^2}\right) * \left[\left\{e^{-1/2(z-H/\sigma_z)^2}\right\} + \left\{e^{-1/2(z+H/\sigma_z)^2}\right\}\right]$$

where

C = the concentration in the air of the substance or pollutant in question

Q = the pollutant emission rate

σ_y,σ_z = the horizontal and vertical dispersion coefficients, respectively, at downwind distance x

u = the wind speed at the height of the plume center

x,y,z = the variables that define the 3-dimensional Cartesian coordinate system used; the downwind, crosswind, and vertical distances from the base of the stack (see Figure 5.2-16)

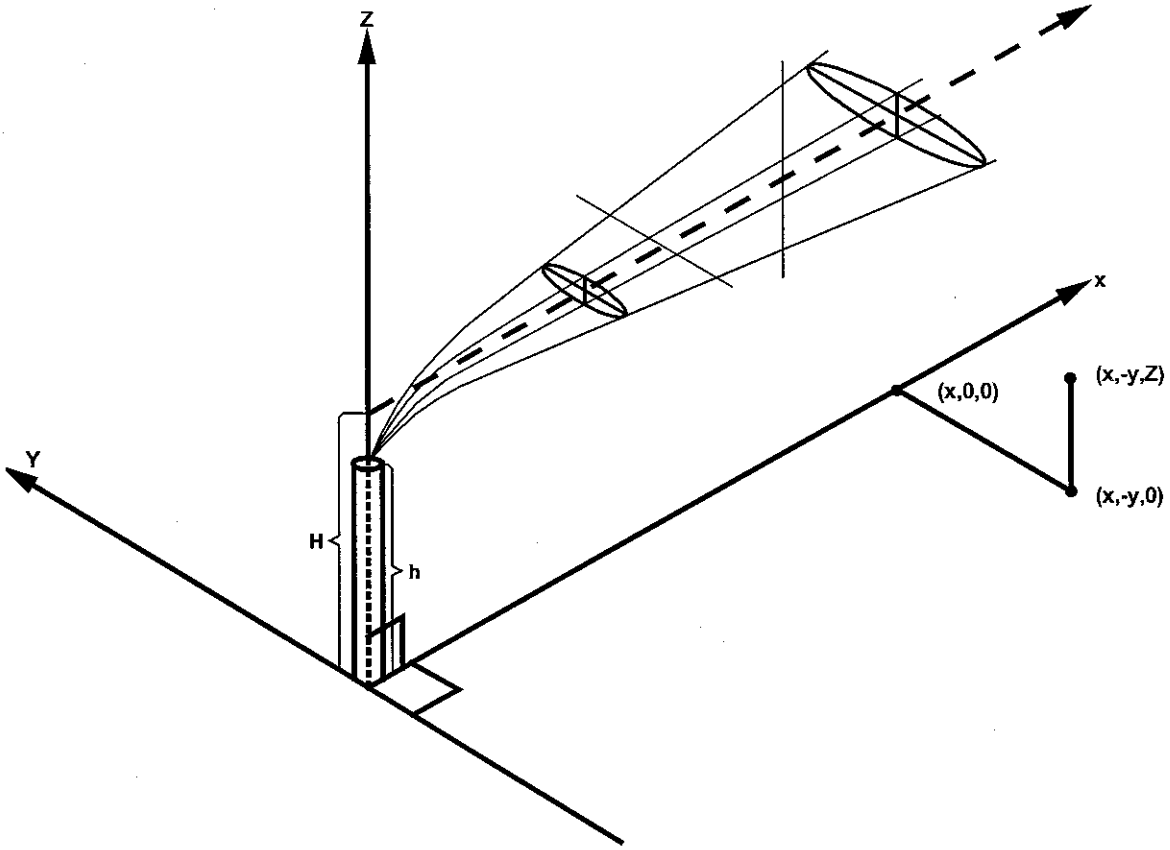
H = the height of the plume above the stack base (the sum of the height of the stack and the vertical distance that the plume rises due to the momentum and/or buoyancy of the plume)

The Gaussian dispersion models approved by EPA for regulatory use are generally conservative (i.e., the models tend to over-predict actual impacts). The EPA models were used to determine if ambient air quality standards may be exceeded, and whether a more accurate and sophisticated modeling procedure would be warranted to make the impact determination. The following sections describe the following.

- Screening procedures
- Refined air quality impact analysis
- Existing ambient pollutant concentrations and preconstruction monitoring
- Results of the ambient air quality modeling analyses
- PSD increment consumption

With the exception of 24-hour and annual PM_{10} impacts in complex terrain to the southeast of the project site (where CTSCREEN was used), the screening and refined air quality impact analyses were performed using the latest version of the Industrial Source Complex, Short-Term Model ISCST3 (Version 00101). ISCST3 is a versatile Gaussian dispersion model capable of assessing impacts from a variety of separate sources in regions of simple, intermediate, and complex terrain. The model can account for settling and dry deposition of particulate; area, line, and volume sources; plume rise as a function of downwind distance; separation of point sources; and elevated receptors. The model is capable of estimating concentrations for a wide range of averaging times (from one hour to one year). Impacts in simple terrain under downwash conditions, particularly areas close to the stack where building downwash may occur, were also estimated using the ISCST3 model.

Figure 5.2-16 Coordinate System Showing Gaussian Distributions



Coordinate system showing Gaussian distributions in the horizontal and vertical.

Inputs required by the ISCST3 model include the following:

- Model options
- Meteorological data
- Source data
- Receptor data

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options include use of site-specific vertical profiles of wind speed and temperature; consideration of stack and building wake effects; and time-dependent exponential decay of pollutants. The model supplies recommended default options for the user. Except where explicitly stated, such as for building downwash (described in more detail below), default values were used. A number of these default values are required for EPA and local District approval of model results. The EPA regulatory default options used include stacktip downwash effects and buoyancy-induced dispersion for heated effluent.

The performance of ISCST3 is improved by the use of actual meteorological data. The EPA criteria for determining whether the meteorological data are representative are the proximity of the meteorological monitoring site to the area under consideration; the complexity of the terrain; the exposure of the meteorological monitoring site; and the period of time during which the data are collected. The meteorological data set determined to be representative for use for the proposed Project consists of data collected by the SCAQMD at the Riverside monitoring station in 1981. These data meet the EPA criteria (U.S. EPA, On-Site Meteorological Program Guidance for Regulatory Model Applications, August 1995) for representativeness, as follows:

- Proximity: The data were collected within 20 miles of the project site, and thus meet the criteria for proximity.
- Complexity of Terrain and Exposure of Meteorological Monitoring Site: The terrain surrounding the meteorological station is the same as the terrain surrounding the project—fairly flat. There are no terrain features that would cause the meteorological data to be affected differently than the project site, so the exposures of the station and the project are identical.
- Period of Data Collection: The 1981 data set comprises a complete year of data.

The required emission source data inputs to ISCST3 include source locations, source elevations, stack heights, stack diameters, stack exit temperatures and velocities, and emission rates. The source locations are specified for a Cartesian (x,y) coordinate system where x and y are distances East and North in meters, respectively. The stack height that can be used in the model is limited by federal Good Engineering Practice (GEP) stack height restrictions, discussed in more detail below. In addition, ISCST3 requires nearby building dimension data to calculate the impacts of building downwash.

For the purposes of modeling, a stack height beyond what is required by GEP is not allowed (40 CFR 52.21 (h)). However, this requirement does not place a limit on the actual constructed height of a stack. GEP as used in modeling analyses is the maximum height allowed to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction assures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP. The EPA guidance (EPA, 1985) for determining GEP stack height is as follows:

$$H_g = H + 1.5L$$

where

H_g = GEP stack height, measured from the ground-level elevation at the base of the stack

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack

L = lesser dimension, height or projected width, of nearby structure(s)

In using this equation, the guidance document indicates that both the height and width of the structure are determined from the frontal area of the structure, projected onto a plane perpendicular to the direction of the wind.

For regulatory applications, a building is considered sufficiently close to a stack to cause wake effects when the distance between the stack and the nearest part of the building is less than or equal to five times the lesser of the height or the projected width of the building. The building dimensions were analyzed using software specifically designed for this purpose (program BEE-BPIP (Building Profile Input Program) to derive 36 wind-direction-specific building heights and building widths for use in downwash calculations. The building dimensions used in the GEP analysis are shown in Appendix K.5, Table K.5-5. This analysis results in a GEP stack height of 213 feet for the new gas turbines. The proposed gas turbine stack height of 195 feet does not exceed GEP stack heights.

As discussed above, the EPA approved CTSCREEN model (version number 94111) was used to analyze 24-hour and annual average PM_{10} impacts in the complex terrain located to the southeast of the project site. The CTSCREEN model, which is the screening mode of CTDMPLUS, is a refined point-source Gaussian air quality model for use in all stability conditions for complex terrain applications. As a result of the model accounting for the dimensional nature of the plume and terrain interaction, the model requires digitized terrain of the nearby topography. The digitization of terrain was accomplished by the terrain preprocessors, FITCON and HCRIT. The wind direction used in CTSCREEN is based on the source-terrain geometry, resulting in computation of the highest impacts likely to occur. Other meteorological variables are chosen from possible combinations of a set of predetermined values. CTSCREEN provides maximum concentration estimates that are similar to, but on the conservative side of, those that would be calculated from the CTDMPLUS model, which employs on-site meteorological data.

CTSCREEN is appropriate for the following applications:

- Elevated point sources
- Terrain elevations above stack base elevation
- Rural or urban areas
- One hour to annual averaging time periods

The terrain data required by the CTSCREEN model were created by digitizing terrain contours at periodic intervals. A sufficient number of points were selected to define the basic shape of each contour. All digitized points were input to the preprocessor programs FITCON and HCRIT, and a terrain file was generated for use in the CTSCREEN model.

Screening Procedures

To ensure the impacts analyzed were for maximum emission levels and worst-case dispersion conditions, a screening procedure was used to determine the inputs to the impact modeling. The screening procedure analyzed the gas turbine operating conditions that would result in the maximum impacts, on a pollutant-specific basis. The operating conditions examined in this

screening analysis, along with their exhaust and emission characteristics, are shown in Appendix K.5, Table K.5-1. These operating conditions represent a range of gas turbine loads (100% and 60%) at maximum and minimum anticipated operating temperatures (97°F/31% RH and 36°F/66% RH).

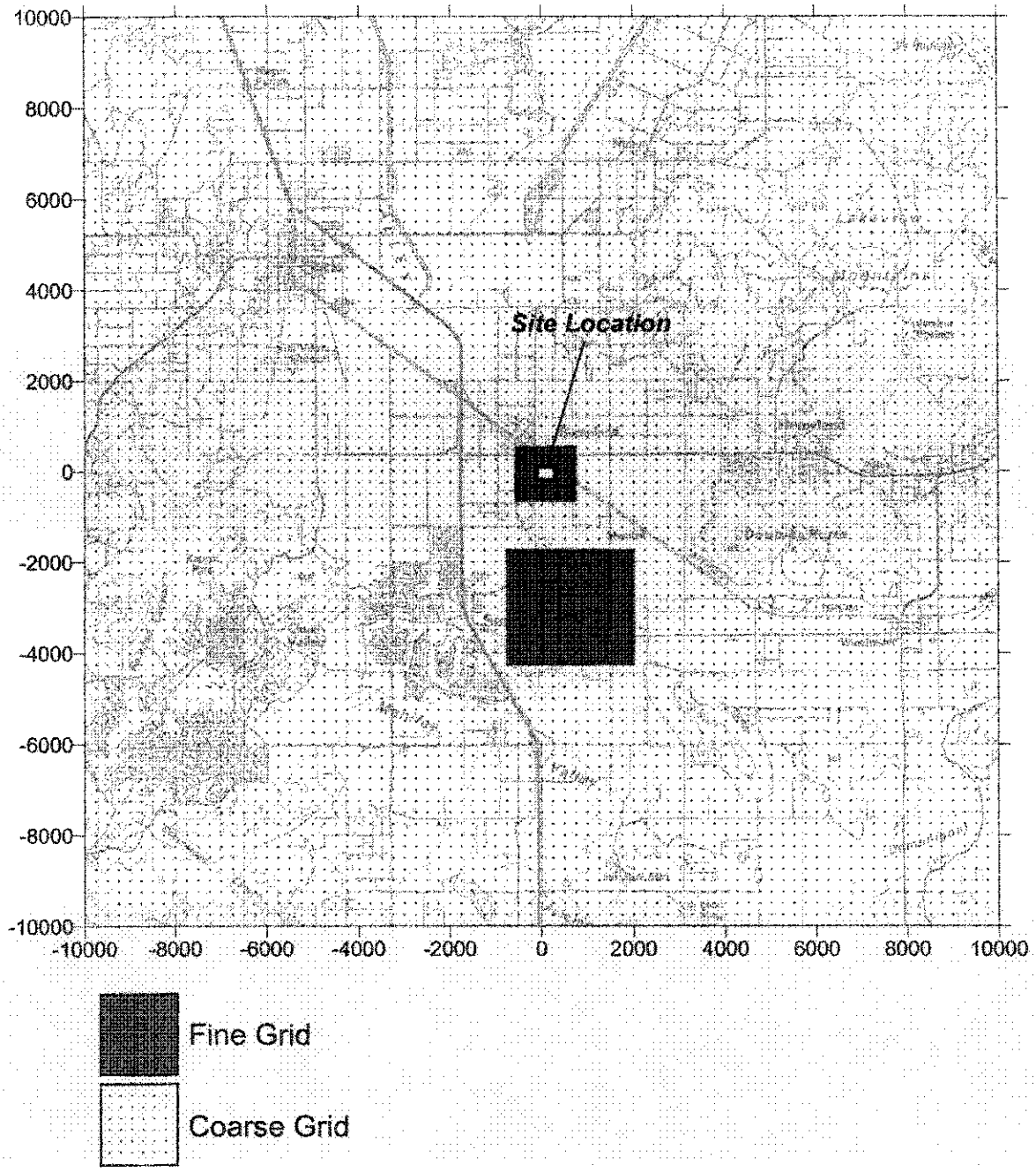
The operating conditions were screened for worst-case ambient impact using EPA's ISCST3 model and the meteorological data described above. The results of the screening procedure are presented in Appendix K.5, Table K.5-2, and are summarized in Table 5.2-22. The stack parameters for the turbine operating condition that produced the maximum modeled screening level impact for each pollutant and averaging period were then used in the refined modeling analysis to evaluate the modeled impacts of the entire project for that pollutant and averaging period.

Table 5.2-22 Results of Screening Procedure: New Gas Turbines/ HRSGs Operating Conditions Producing Maximum Modeled Ambient Impacts IEEC Project

Pollutant	Average Period	Gas Turbine Load (percent)	Ambient Temperature (°F)
NO_x	1-hour	100	36
	Annual	100	36
SO_2	1-hour	100	36
	3-hour	100	36
	24-hour	100	36
	Annual	100	36
CO	1-hour	100	36
	8-hour	100	36
TSP/PM_{10}	24-hour	100	36
	Annual	100	36

The screening analysis included both simple and complex terrain. Terrain features were taken from USGS digital elevation model (DEM). For the screening and refined analysis, a coarse Cartesian grid of receptors spaced at 180 meters. The coarse grid extended to approximately 10 kilometers in all directions around the facility to ensure that maximum turbine impacts were identified. A refined grid of receptors spaced at 30 meters was used in areas where the coarse grid analysis indicated modeled maxima would be located. Receptors were also placed at 25 meters along the facility fenceline. A map showing the layout of the modeling grid is presented in Figure 5.2-17.

Figure 5.2-17 Receptor Grid



The receptor locations used in the CTSCREEN modeling analysis were in areas where the ISCST3 modeling showed maximum 24-hour PM_{10} impacts. In addition to the coarse and fine grid receptors used for the ISCST3 modeling, receptors generated by the CTSCREEN RECGEN preprocessor program were used for the CTSCREEN modeling. The CTSCREEN receptors used for the modeling analysis of the Proposed project are shown in Figure 5.2-17. However, since these receptors are within the darkly colored fine grid shown in Figure 5.2-17 to the south of the project site, they cannot be distinguished from the other fine grid receptors.

Refined Air Quality Impact Analysis

The modeling input assumptions for each pollutant and averaging period are shown in Appendix K.5, Table K.5-3. As discussed above, the gas turbine stack parameters used in modeling the impacts for each pollutant and averaging period reflected the worst-case gas turbine operating condition for that pollutant and averaging period identified in the screening analysis.

For the evaluation of ambient impacts under the District NSR regulations, the new gas turbines/HRSG duct burners and auxiliary boiler were modeled. For the District PSD regulations, the impacts for the new combustion units (i.e., the gas turbines, HRSG duct burners, auxiliary boiler, and emergency engines) were modeled. For the evaluation of ambient impacts under CEQA, future operation of the new combustion units and cooling tower were modeled (i.e., facility-wide emissions).

Specialized Modeling Analyses

- **Fumigation Modeling**: Fumigation occurs when a stable layer of air lies a short distance above the release point of a plume and unstable air lies below. Under these conditions, an exhaust plume may be drawn to the ground with little diffusion, causing high ground-level pollutant concentrations. Although fumigation conditions rarely last as long as one hour, relatively high ground-level concentrations may be reached during that time.

  The SCREEN3 model (version 96043) was used to evaluate maximum ground-level concentrations for short-term averaging periods (less than 24-hours). EPA guidance (1992) was followed in evaluating fumigation impacts. Emission rates and stack parameters for the refined modeling analysis were used in the fumigation analysis. Since SCREEN3 is a single source model, a single gas turbine was modeled and the impacts were multiplied by two to determine total impacts for the gas turbines under fumigation conditions.

  Calculations of inversion breakup fumigation impacts are shown in Appendix K.5, Table K.5-4.

- **Turbine Startup**: Facility impacts were also modeled during the startup of one gas turbine, with the remaining gas turbine operating at full-load to evaluate short-term impacts under startup conditions. Emission rates during startup were based on an engineering analysis of available data, which included source test data from startups of the GE gas turbine at the Crockett Cogeneration Project. A summary of the data evaluated in developing these emission rates is shown in Appendix K.3, Tables K.3-3 and K.3-4.

Gas turbine exhaust parameters for the minimum operating load point (60%) were used to characterize turbine exhaust during startup. Startup impacts were evaluated for both the one- and three-hour averaging periods using ISCST3. Emission rates and stack parameters used in the startup modeling analysis for the one gas turbine in the startup mode are shown in Table 5.2-23. The emission rates for the remaining gas turbine operating at full-load are shown in Table 5.2-17.

Table 5.2-23 Emission Rates and Stack Parameters Used in Modeling Analysis for Gas Turbine Startup Emissions Impacts

Parameter	Units	Value
Gas turbine stack temperature	Degrees, K	338.56
Gas turbine exhaust velocity	Meters per second	11.76
One-hour average impacts		
NO_x emission rate	Grams per second	10.08
CO emission rate	Grams per second	113.75
Three-hour average impacts		
NO_x emission rate	--	--
CO emission rate	--	--

- **Gas Turbine Commissioning:** Two high emissions scenarios are possible during commissioning. The first would be the period of time prior to SCR system installation when the combustor is being tuned. Under this scenario, NO_x emissions would be high because the NO_x emissions control system would not be functioning and because the combustor would not be tuned for optimum performance. CO emissions would also be high because combustor performance would not be optimized and the CO catalyst would not be installed.

  The second high emissions scenario would occur when the combustor has been tuned but the SCR and CO catalyst installations are not complete, and other parts of the gas turbine operating system are being checked out. This is likely to occur under transient conditions, characterized by 60 percent load operation.

Results of the Ambient Air Quality Modeling Analyses. Maximum facility impacts for the two scenarios modeled (the gas turbines alone and the gas turbines, auxiliary boiler, emergency engines, and cooling tower) are summarized in Table 5.2-24. The highest modeled impacts for the combustion turbines and HRSGs under normal operating conditions were found to occur within 3 kilometers of the facility boundary; maximum project impacts, including the auxiliary equipment, were generally found near the project boundary. Maximum modeled impacts during startups occurred within 3 kilometers of the facility. The location of maximum modeled impacts under fumigation conditions is predicted to occur within 17 kilometers of the facility boundary.

Table 5.2-24 Summary of Results from Refined Modeling Analyses Maximum Impacts (μg/m³)

		Refined Modeling		Fumigation[b]	Startup[c]
		Gas Turbines Only	Entire Facility[a]		
NO_2	1-hour	38.2	244.3	4.4	87.1
	Annual	0.9[e]	0.9[e]	--	--
SO_2	1-hour	3.0	30.1	0.4	2.9
	3-hour	2.6	2.7	0.3	2.6
	24-hour	0.6	0.7	--	--
	Annual	0.1	0.1	--	--
CO	1-hour	55.9	325.7	6.5	793
	8-hour	304.0	306.9	4.5	--
PM_{10}	24-hour	2.48[d]	2.48[d]	--	--
	Annual	0.5[d]	0.5[d]	--	--

[a] Gas Turbines/HRSG duct burners, auxiliary boiler, emergency engines, and cooling tower.

[b] Gas Turbines/HRSG Duct Burners.

[c] Gas Turbines/HRSG Duct Burners.

[d] Based on CTSCREEN modeling results.

[e] ARM corrected using EPA correction factor of 0.75.

Impacts During Gas Turbine Commissioning

As discussed above, there are two potential scenarios during gas turbine commissioning activities under which NO_2 and CO impacts could be higher than under other operating conditions already evaluated.

Scenario 1: Under this scenario, NO_x emissions can be conservatively estimated to be twice the guaranteed gas turbine-out level of 25 ppmvd @ 15 percent O_2, or 50 ppm. If operation under this condition were to continue for one hour, maximum hourly NO_x emissions at full load would be (50 ppm / 2.5 ppm) * 16.4 lbs/hr = 328 lbs/hr.

CO emissions would also be high because combustor performance would not be optimized. However, CO emissions during gas turbine commissioning are not expected to be higher than those from gas turbines without CO catalysts during startup periods (i.e., approximately 902 lbs/hr).

Scenario 2: Under these lower load conditions, NO_x emissions could be as high as 100 ppm @ 15 percent O_2. Based on the transient nature of the loads, the average operating load would be expected to be equivalent to 60 percent of the baseload level. Worst-case hourly NO_x emissions under this scenario would be (100 ppm/2.5 ppm) * 11.8 lbs/hr = 472 lbs/hr.

Since the combustors would be tuned but the installation of the CO catalysts would not be completed, CO emissions under this scenario would be expected to be equal to the guaranteed gas turbine-out CO level of approximately 10 ppm @ 15 percent O_2. If operation under this condition

were to continue for one hour, maximum hourly CO emissions at 60 percent load would be (10 ppm/6 ppm) * 17.3 lbs/hr = 29 lbs/hr.

The results of the gas turbine screening analysis can be used to evaluate modeled NO_x and CO impacts of a single turbine at the above emission rates. The screening analysis showed that the highest one-hour NO_x/CO unit impact is 3.42 $\mu g/m^3$ per g/s. Using the 472 lbs/hr (59.5 g/s) NO_x and the 902 lbs/hr (113.8 g/s) CO emission rates derived above yields a maximum one-hour NO_x impact under either scenario of 203 $\mu g/m^3$ and a maximum one-hour CO impact under either scenario of 389 $\mu g/m^3$. Using the background NO_2 and CO concentrations of 211 and 12,650 $\mu g/m^3$, respectively, the total NO_2 impact will not exceed 414 $\mu g/m^3$ and the total CO impact will not exceed 13,039 $\mu g/m^3$. These impacts are below the state one-hour NO_2 and CO standards of 470 and 23,000 $\mu g/m^3$, respectively. Gas turbine commissioning will continue for a relatively short time, so air quality impacts are expected to be minor. In addition, modeling results are very conservative in that they tend to overestimate impacts. Therefore, it is unlikely that any violation of the one-hour NO_2 or CO standards will actually occur.

Ambient Air Quality Impacts

To determine the maximum ground-level impacts on ambient air quality for comparison to the applicable standards, modeled worst-case impacts were added to maximum observed background concentrations.

For background ambient pollutant concentrations for those pollutants that do not exceed the PSD monitoring exemption levels, EPA guidelines (Section 2.4, EPA, 1987) state that the existing monitoring data must be representative of the proposed facility impact area. CARB monitors ambient NO_2, CO, SO_2, and PM_{10} concentrations at monitoring stations located in the project area. The Perris monitoring station is located approximately 4.5 miles northwest of the project site. The Lake Elsinore monitoring station is located approximately 10 miles southwest of the site. The Magnolia Street and Rubidoux Avenue monitoring stations in Riverside are located approximately 20 miles to the northwest of the project site. These monitoring stations are located in areas that are very similar to the project site in terms of terrain and level of development. Consequently, concentrations monitored at these locations are expected to be similar to the project site. Table 5.2-25 presents the maximum concentrations of NO_x, SO_2, CO, and PM_{10} recorded for 1997 through 2000 from the monitoring stations in the project area.

Maximum ground-level impacts due to operation of the facility are shown together with the ambient air quality standards in Table 5.2-26. Despite the conservative (overpredictive) assumptions used throughout the analysis, the results indicate that the addition of the new gas turbines will not cause or contribute to violations of any state or federal air quality standards, with the exception of the State of California PM_{10} standards. For this pollutant, existing concentrations already exceed the state standards; however, as discussed further below, the proposed project will result in an impact that is below PSD significance levels. In addition, offsets will be provided for the net increase in PM_{10} emissions from the project; this is also discussed further below.

Table 5.2-25 Maximum Background Concentrations, 1997-2000 ($\mu g/m^3$)

Pollutant	Averaging Time	1997	1998	1999	2000
Perris Monitoring Station					
PM_{10}	24-Hour	139	98	112	87
	Annual (AAM)[a]	44.4	35.2	50.0	38.9
	Annual (AGM)[b]	38.5	33.3	44.0	34.9
Lake Elsinore Monitoring Station					
NO_2	1-Hour	199.3	157.9	210.6	144.8
	Annual	28.2	31.9	35.7	28.2
Riverside – Rubidoux Monitoring Station					
SO_2	1-Hour	104.8	80.6	88.4	278.2
	24-hour	13.1	23.6	31.4	91.7
	Annual	2.6	2.6	5.2	2.6
Riverside – Magnolia Monitoring Station					
CO	1-Hour	12,650	8,000	9,250	11,000
	8-Hour	6,302	5,255	4,715	4,865

[a] Annual Arithmetic Mean

[b] Annual Geometric Mean

Table 5.2-26 Modeled Maximum Project Impacts, IEEC Project

Pollutant	Averaging Time	Maximum Project Impact[a] ($\mu g/m^3$)	Background Concentrations ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	231.0[d]	211	442	470	--
	Annual	1.1	36	37	--	100
SO_2	1-hour	30.1	278	308	650	--
	24-hour	0.7	92	93	109	365
	Annual	0.1	5	5	--	80
CO	1-hour	792.8	12,650	13,443	23,000	40,000
	8-hour	423.9	6,302	6,726	10,000	10,000
PM_{10}	24-hour	9.9[f]	139	149	50	150
	Annual[b]	1.1[f]	44	45.4	30	--
	Annual[c]	1.1[f]	50	51.1	--	50

[a] Entire facility including gas turbines/HRSGs, auxiliary boiler, emergency engines, cooling tower.

[b] Annual Geometric Mean (State).

[c] Annual Arithmetic Mean (Federal).

[d] Modeled using ISC OLM and 1981 Perris ozone data.

[e] ARM corrected using EPA correction factor of 0.75..

[f] Includes all sources; modeled using ISCST3.

PSD Requirements

Applicability of PSD Requirements

As discussed in AFC Section 5.2.3, the PSD program requirements apply on a pollutant-specific basis to the following:

- A new major facility that will emit 25 tpy or more, if it is one of the 28 PSD source categories in the Federal Clean Air Act, or a new facility that will emit 40 tpy or more; or
- A major modification to an existing major facility that will result in net emissions increases in excess of the PSD significant emission thresholds.

The proposed project is a new source with emissions over 25 tons/yr, and it is one of the 28 PSD source categories. Therefore, the new project is classified as a new major source. To determine whether the project will trigger a PSD review, it is necessary to compare the net emission changes associated with the project to the PSD significant emission levels. The net emission changes summarized in Table 5.2-27 show that the proposed project will have a significant net emissions increase for NO_x. Consequently, the project is subject to PSD review for this pollutant. Since the net emission increase for SO_x is below the PSD significance level, the project does not trigger the PSD requirements for SO_x. As shown in Table 5.2-27, because the project area is classified as a federal nonattainment area for CO, PM_{10}, and ozone, the PSD regulations do not apply to these pollutants.

Table 5.2-27 Comparison of NET Emissions Increase with PSD Significant Emissions Levels, IEEC Project (Tons/Year)

	NO_x	SO_x	CO	VOC	PM_{10}
New Equipment Emissions[a]	166.7	13.9	N/A[b]	N/A[b]	N/A[b]
PSD Significance Levels[c]	25	25	N/A[b]	N/A[b]	N/A[b]
PSD Review Required?	Yes	No	N/A[b]	N/A[b]	N/A[b]

[a] Emissions from gas turbines/HRSGs, auxiliary boiler, and emergency engines.

[b] Because the project area is classified as a federal nonattainment area for these pollutants, PSD does not apply for these pollutants.

[c] Based on SCAQMD Rule 1702 as amended 1/6/89. Although this rule was revised in August 1999 so that the significance levels in the rule match the values shown in the federal PSD regulation, the significance levels shown in the above table are from the 1/6/89 version of Rule 1702. This version of Rule 1702 must be used until the EPA re-delegates the PSD program to the SCAQMD based on the revised rule.

Impacts in Class I Areas

PSD regulations limit the degradation of air quality in areas designated Class I by imposing more stringent limits on air quality impacts from new sources and modifications. As discussed above, the project triggers PSD review for NO_x. Consequently, an analysis of the project's impacts on Class I areas located within 100 km of the project site was performed. The following are the areas designated Class I by EPA within 100 km of the project:

- Aqua Tibia Wilderness Area
- Cucamonga Wilderness Area
- San Jacinto Wilderness Area
- San Gabriel Wilderness Area
- San Gorgonio Wilderness Area
- Joshua Tree National Park

For each Class I area, receptors were placed along the boundary of the area nearest the project to evaluate the maximum modeled impacts of the project on the area.

The results of the modeling analysis are compared with the Class I increments in Table 5.2-28. These results show that the modeled impacts of the project (combustion equipment only) in the nearby Class I areas are far below the PSD Class I increments and will not significantly degrade air quality.

NSR/RECLAIM Requirements

Applicability of NSR/RECLAIM Requirements

Because the installation of the new gas turbines/HRSGs and auxiliary boiler is considered the installation of a new facility, compliance with NSR/RECLAIM requirements must be demonstrated. For the purposes of determining compliance with the requirements of the NSR and RECLAIM programs, the emissions from new equipment must not cause a significant increase in ambient nonattainment pollutant concentrations.

Assessment of Significance for NSR/RECLAIM

The maximum modeled CO, PM_{10}, SO_2, and NO_2 impacts due to the gas turbines/HRSGs and auxiliary boiler only (including startup impacts) are compared with the NSR/RECLAIM significance levels in Table 5.2-29. This comparison shows that ambient impacts for these pollutants from the project are not significant for NSR/RECLAIM. As shown on this table, because the project area is classified as an attainment area for NO_2, the project is not required to show compliance with the NSR/RECLAIM significance level for this pollutant.

5.2.3.2.3 Health Risk Assessment

A health risk assessment (HRA) was conducted to determine the expected impact of potentially toxic compound emissions. A detailed discussion of the HRA performed for the Proposed project is included in the Public Health Section (Section 5.15). Emission factors used in calculating emissions of potentially toxic compounds and the emission rates used in modeling ambient impacts for use in the screening health risk assessment, as well as the output from the CARB's HRA model, are included in Appendix K.9.

Table 5.2-28 Project Impacts in Class I Area, IEEC Project

Pollutant	Averaging Period	Maximum Impact in Class I Area[a] ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
Aqua Tibia Wilderness Area			
NO_2	Annual	0.05	2.5
SO_2	Annual	0.005	2
	24 hours	0.04	5
	3 hours	0.2	25
PM_{10}	Annual	0.05	5
	24 hours	0.4	10
Cucamonga Wilderness Area			
NO_2	Annual	0.0006	2.5
SO_2	Annual	0.00005	2
	24 hours	0.002	5
	3 hours	0.009	25
PM_{10}	Annual	0.0008	5
	24 hours	0.02	10
San Jacinto Wilderness Area			
NO_2	Annual	0.02	2.5
SO_2	Annual	0.002	2
	24 hours	0.02	5
	3 hours	0.1	25
PM_{10}	Annual	0.02	5
	24 hours	0.2	10
San Gabriel Wilderness Area			
NO_2	Annual	0.006	2.5
SO_2	Annual	0.0005	2
	24 hours	0.01	5
	3 hours	0.05	25
PM_{10}	Annual	0.006	5
	24 hours	0.09	10
San Gorgonio Wilderness Area			
NO_2	Annual	0.002	2.5
SO_2	Annual	0.0001	2
	24 hours	0.004	5
	3 hours	0.02	25
PM_{10}	Annual	0.002	5
	24 hours	0.05	10
Joshua Tree National Park			
NO_2	Annual	0.02	2.5
SO_2	Annual	0.001	2
	24 hours	0.01	5
	3 hours	0.09	25
PM_{10}	Annual	0.01	5
	24 hours	0.14	10

[a] Impacts associated with gas turbines/HRSGs, auxiliary boiler, and emergency engines.

Table 5.2-29 Maximum Modeled Impacts and NSR/RECLAIM Significance Thresholds, IEEC Project (Gas Turbines/HRSGs and Auxiliary Boiler Only)

Pollutant	Averaging Time	Maximum Modeled Impacts ($\mu g/m^3$)	NSR/RECLAIM Significance Threshold ($\mu g/m^3$)	Significant Under NSR/RECLAIM?
CO	1-Hour	793	1,100	No
(NSR Pollutant)	8-Hour	419	500	No
PM_{10}	24-Hour	2.48[a]	2.5	No
(NSR Pollutant)	Annual	0.50[a]	1.0	No
SO_2 (RECLAIM Pollutant)	1-Hour	30.1	n.a.	n.a.
	8-Hour		n.a.	n.a.
	Annual		n.a.	n.a.
NO_2	1-Hour	n.a.	n.a.	n.a.
(RECLAIM Pollutant)	Annual	n.a.	n.a.	n.a.

[a] Modeled using CTSCREEN.

n.a. – not applicable

Potential cancer risk at the nearest residence due to exposure to diesel exhaust particulate from the emergency equipment was also assessed. Based on a maximum annual impact of 0.00043 $\mu g/m^3$ from the fire pump, the cancer risk is 0.13 in one million, well below the 1 in one million level considered to be significant. As the annual average diesel exhaust particulate concentration from the emergency generator is lower, 0.00031 $\mu g/m^3$, the cancer risk from that unit would also be lower.

As shown in Section 5.15, the HRA results indicate that noncriteria pollutant impacts from the project will be well below Rule 1401 significance thresholds. The results also indicate that no sensitive receptors will be adversely affected.

5.2.3.2.4 Visibility Screening Analysis

Two types of analyses were performed to evaluate potential visibility impacts on nearby Class I areas: (1) a regional haze analysis to determine the change in extinction in the Class I areas; and (2) a coherent plume impact analysis. Details of these analyses are presented in Appendix K.6. As recommended in the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report (December 2000), regional haze analyses were performed for the following three nearby Class I areas that are located further than 50 km from the project site:

- Cucamonga Wilderness Area
- San Gabriel Wilderness Area
- Joshua Tree National Park

For the San Gorgonio, San Jacinto and Aqua Tibia Wilderness Areas, which are located approximately 46 km, 42 km and 35 km, respectively, from the project site, a coherent plume impact analysis was performed.

Regional Haze Analysis. The CALPUFF model was used in screening mode to evaluate potential visibility impacts (haze) of the proposed project on the three Class I areas discussed above. The modeling followed guidance provided by the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report, by Mike McCorison of the U.S. Forest Service (USFS) and John Notar with the National Park Service (NPS) (Federal Land Managers [FLMs]).

The CALPUFF model requires hourly, single station meteorological data as input, both surface and upper air. Based on the guidance contained in the IWAQM Phase 2 Summary Report, the CALPUFF model in the screening mode requires five years of single station meteorology. Five years of surface data from Daggett/San Bernardino International Airport (1986-1990) were used in combination with representative upper air data interpolated from seasonal morning and afternoon mixing height data (Holzworth 1974).

As recommended by the IWAQM Phase 2 Report, the PCRAMMET meteorological preprocessor was used to process the surface, precipitation, and upper air data. PCRAMMET was run with wet deposition options as required in the Phase 2 Report. As such, the following domain averaged variables were used based on values expected in the modeling region:

- Minimum Obukhov length = 2 meters
- Anemometer height = 6.1 meters
- Roughness length = 0.26 meters
- Noon time albedo = 6
- Bowen ratio = 0.0
- Fraction of net radiation absorbed by ground = 0.150

CALPUFF also requires domain-averaged background ozone (O_3) and ammonia (NH_3) concentrations for the Mesopuff II chemistry algorithm. For O_3, a domain-averaged value of 34.57 ppb was used, based on background ozone data collected in the project region. For NH_3, a domain-average value of 3 ppb was selected based on guidance in the IWAQM Phase 2 Report for arid regions.

To assess visibility impacts at each Class I area, the background visual range and relative humidity correction factor (f(RH)) was based on guidance found in the Final Flag Report (December 2000).

Model Options

Based on the standard ISCST3 model defaults and IWAQM recommended values, the following model default options were used for the CALPUFF modeling:

- Number of X grid cells = 35
- Number of Y grid cells = 55
- Number of vertical layers = 9

- Grid spacing = 10 km
- Cell face heights = 0, 20, 50, 100, 250, 500, 750, 1000, 3000, 5000
- Minimum mixing height = 50 meters
- Maximum mixing height = 5000 meters (based on observational data)
- Minimum wind speed allowed for non-calm conditions = 0.5 m/s
- Vertical distribution used in the near field = gaussian
- Terrain adjustment method = partial plume path adjustment
- No puff splitting allowed
- Chemical mechanism = Mesopuff II scheme
- Wet and dry removal modeled
- Dispersion coefficients = PG dispersion coefficients
- PG sigma-y and z not adjusted for roughness
- Partial plume penetration of elevated inversion allowed
- Lateral turbulence not used

Receptor Grid

A polar grid was generated that contained receptors at each one-degree of arclength and surrounded the project site in all directions. The distance of the polar grid or rings was based on the minimum distance and maximum distance to each of the four Class I areas. In addition, rings were placed within each Class I area. Therefore, each Class I area has three rings with 1,800 receptors. The receptor elevations were determined from topographic maps for the project area. The maximum concentration found at any one receptor within a Class I was used to represent impacts at the Class I area.

Emissions

As stated earlier, the combustion sources at the proposed project will utilize advanced NO_x control technology and natural gas fuel to achieve very low emission rates. Emissions from the project include NO_x, SO_2, and PM_{10}, all of which have the potential to interfere with visibility. Emissions used in the modeling analysis of visibility impacts are the same as those used for the criteria pollutant modeling analysis. The parameters modeled for the visibility impacts assume that the particulate nitrate (NO_3-) is in the form of ammonium nitrate (NH_4NO_3) and that particulate sulfate (SO_4-) is in the form of ammonium sulfate ($(NH_4)2SO_4$). The visibility calculation is based on the ambient concentrations of NH_4NO_3, $(NH_4)2SO_4$, and PM_{10}, along with a representative relative humidity adjustment factor.

Impacts

The maximum 24-hour visibility impact was generated by taking the maximum 24-hour average modeled concentration at each receptor, regardless of the season in which it occurred, and

assigning it to represent the visibility impact at the Class I areas. To calculate extinction coefficients, the following general equation was used:

$$b_{ext} = b_{SN} * f(RH) + b_{dry}$$

where:

b_{ext} = particle scattering coefficient

b_{SN} = $3[((NH_4)2SO_4) + (NH_4NO_3)]$

b_{dry} = b_{Coarse}

The quantities in brackets are the masses expressed in $\mu g/m^3$ and can be further broken down into the following equations:

bNO_3 = $3[1.29(NO_3)f(RH)]$
bSO_4 = $3[1.375(SO_4)f(RH)]$
b_{Coarse} = $0.6[PM_{10}]$

Using the above equations to calculate the extinction coefficients and correcting for f(RH), Table 5.2-30 summarizes the maximum extinction coefficients and the total extinction. As shown in Table 5.2-30, during operation of the proposed project, potential visibility impacts to the nearby Class I areas will be less than the 5-percent level of acceptable change.

Table 5.2-30 Maximum Predicted 24-Hour Change in Extinction

Class I Area	Model-Predicted Light Extinction	Background Extinction	Percent Change in Extinction
Cucamonga Wilderness	0.538	15.940	3.4%
Joshua Tree National Park	0.491	15.880	3.1%
San Gabriel Wilderness	0.478	15.940	3.0%

Coherent Plume Impact Analysis. Potential coherent plume visibility impacts from the proposed project were evaluated for the San Jacinto and Aqua Tibia Wilderness Areas. Because of the use of natural gas, the only emissions of concern for the coherent plume analysis are NO_x and PM_{10}.

Level-1 Analysis

For the three Class I areas, a Level-1 visual plume impact analysis was performed using the VISCREEN model as recommended by the 1988 EPA Visibility Workbook (Revised 1992). A Level-1 visual analysis requires the use of screening-level meteorology, rather than the use of on-site meteorology. This includes the use of F stability and a one-meter-per-second wind that carries the plume towards a hypothetical observer located in the Class I area. The results of the Level-1 analysis showed that significance levels would be exceeded for all three areas. Consequently, a Level-2 plume impact analysis was performed for each of the three Class I areas.

Level-2 Analysis

For the Level-2 plume impact analysis, the actual meteorological and topographical data for the project site are used rather than screening-level data. A series of meteorological data joint frequency distributions were prepared based on time of day, stability, wind speed, and wind direction using the Riverside meteorological data set. The results of the Level-2 plume impact analysis are shown in Appendix K.6. As shown in this Appendix, the potential coherent plume visibility impacts of the IEEC project on the Agua Tibia, San Jacinto and San Gorgonio Wilderness Areas will be less than the significance thresholds. A copy of the Level-2 meteorological data set joint frequency distributions and a copy of the VISCREEN modeling output file are included as Appendix K.6.

5.2.3.2.5 Consistency with Regulatory Requirements

Consistency with Federal Requirements. As discussed in Section 5.2.3, the District has been delegated authority by EPA to implement and enforce most of the federal requirements that are applicable to the facility, including the new source performance standards and PSD permitting program. Compliance with the District regulations ensures compliance and consistency with the corresponding federal requirements as well. The facility will also be required to comply with the federal acid rain requirements (Title IV). Since the District has received delegation for implementing Title IV through its Title V permit program, IEEC will apply to the District for a Title V permit that will include the necessary requirements for compliance with the Title IV acid rain provisions for the new equipment.

PSD Requirements

As discussed in AFC Section 5.2.3, the PSD program requirements apply on a pollutant-specific basis to the following:

- a new major facility that will emit 25 tpy or more, if it is one of the 28 PSD source categories in the Federal Clean Air Act, or a new facility that will emit 40 tpy or more; or
- a major modification to an existing major facility that will result in net emissions increases in excess of the significant emissions levels shown in Table 5.2-27.

The proposed project is a new major facility. Therefore, it is subject to the PSD regulations. The emissions levels summarized in Table 5.2-27 showed that the proposed project will have a significant net emissions increase in NO_x emissions and is subject to PSD review for this pollutant.

As discussed above, the proposed project will have a significant net emissions increase in NO_x emissions and therefore BACT must be used for these pollutants. The discussion of BACT for these pollutants is provided below in Section 5.2.3.2.5.

Rule 1703 requires that the modeling be conducted with appropriate meteorological and topographic data necessary to estimate impacts. The IEEC project modeling analyses used U.S. Geological Service topographic data for the surrounding area and weather data gathered at the Riverside monitoring station.

Rule 1703 also requires a demonstration that emission increases subject to the PSD program will not interfere with the attainment or maintenance of any national ambient air quality standards for each applicable pollutant. As shown in Table 5.2-26, the proposed project will not cause or contribute to an exceedance of any federal ambient air quality standard. The modeling analysis is discussed in detail in Section 5.2.3.2.2.

For an application that triggers PSD modeling requirements, Rule 1703 requires that ambient monitoring data be gathered for one year preceding the submittal of a complete application, or a District-approved representative time period. However, if the air quality impacts of the facility do not exceed the specified *de minimis* levels on a pollutant-specific basis, the facility is exempted from the preconstruction monitoring requirement. The air quality impacts of the project's NO_x emissions are below the applicable *de minimis* levels, as shown in Table 5.2-31, and therefore the exemption applies to the proposed project. Consequently, the CARB- and District-operated ambient monitoring stations in the project area were used to determine existing ambient concentrations.

Table 5.2-31 Comparison of Total Facility Emissions with SCAQMD Significance Levels (lbs/day)

	NO_x	SO_x	CO	VOC	PM_{10}
New Equipment Emissions[a]	1,495	81	8,339	350	727
SCAQMD Significance Levels	55	150	550	55	150
Significant according to SCAQMD levels?	Yes	No	Yes	Yes	Yes

[a] Includes emissions from gas turbines, HRSGs, auxiliary boiler, emergency engines, cooling tower.

Rule 1703 requires the applicant to provide an analysis of the impairment to visibility, soils, and vegetation that would occur as a result of the proposed project. These analyses are provided in Sections 5.2.4.2.4 and 5.6 of the AFC, respectively.

Rule 1703 requires applicants to demonstrate that emissions from a new or modified facility will not cause or contribute to the exceedance of any NAAQS or any applicable Class I PSD increment. Impacts on visibility must also be evaluated. The necessary analysis of impacts on the nearby Class I areas is included in Sections 5.2.4.2.2 and 5.2.4.2.4.

National Emission Standards for Hazardous Air Pollutants

EPA is in the process of establishing a NESHAP for gas turbines. This regulation will apply to new or modified major sources of HAPs (as listed in Section 112 of the Clean Air Act). Because the HAP emissions for the project are below the major source thresholds of 10 tpy for a single HAP and 25 tpy for any combination of HAPs, the project is exempt from the NESHAP for gas turbines. Consequently, this regulation does not apply to the project and will not be addressed further. Please note that while Section 5.15 shows ammonia emissions greater than 25 tpy for the project, ammonia is not a HAP as defined by Section 112 of the Clean Air Act.

New Source Performance Standards

For the HRSG units, Regulation IX (New Source Performance Standards), Subpart Da imposes a limit on the emissions of NO_x, SO_x, and PM_{10}; requires source testing of stack emissions; and requires emissions monitoring, and data collection and recordkeeping. All of the BACT limits imposed on the facility will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT will be more stringent than the requirements in this rule. The IEEC project will comply with the NSPS Subpart Da regulation.

For the gas turbines, Regulation IX (New Source Performance Standards), Subpart GG requires monitoring of fuel; imposes limits on the emissions of NO_x and SO_x; and requires source testing of stack emissions, process monitoring, and data collection and recordkeeping. All of the BACT limits imposed on the facility will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT will be more stringent than the requirements in this rule. The IEEC project will comply with the NSPS Subpart GG regulation.

Title IV and V Requirements

Regulation XXX (Title V permit program) applies to facilities that have the potential to emit more than 10 tons per year for VOC or NO_x, 50 tons per year for CO, 70 tons per year for PM_{10}, or 100 tpy for CO. As a new major source under this rule, a permit application will be submitted to the District for a Title V permit for the plant. The acid rain requirements of Regulation XXXI (Title IV program) are also applicable to the facility. As a new acid rain facility, IEEC may be required to provide sufficient allowances for every ton of SO_x emitted during a calendar year. If required, IEEC will obtain any necessary allowances on the current open trade market. The power plant is also required to install and operate continuous monitoring systems on the new units (monitoring of operating parameters such as fuel use and fuel constituents is an allowable alternative to using exhaust CEM systems). The IEEC project will comply with the applicable requirements of the Title IV and V regulations.

CAM Requirements

Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. However, the CAM rule does not apply to the project since the facility will be issued a Title V permit requiring the installation and operation of continuous emissions monitoring systems.

Consistency with State Requirements. State law establishes local air pollution control districts and air quality management districts with the principal responsibility for regulating emissions from stationary sources. As discussed in Section 5.2.3, the facility is under the local jurisdiction of the District, and compliance with District regulations will ensure compliance with state air quality requirements.

Consistency with Local Requirements: SCAQMD. The SCAQMD has been delegated responsibility for implementing local, state, and federal air quality regulations including the NSR

and RECLAIM permitting programs in the project area. The facility is subject to SCAQMD regulations that apply to new sources of emissions, to the prohibitory regulations that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from toxic air pollutants.

Under the regulations that govern new sources of emissions, IEEC is required to secure a preconstruction permit from the District, as well as demonstrate continued compliance with regulatory limits when the facility becomes operational. The NSR/RECLAIM preconstruction review includes demonstrating that the facility will use BACT, providing any necessary emission offsets, demonstrating that emissions will not interfere with the attainment or maintenance of the applicable AAQS and will not exceed District significance levels, and demonstrating that the emissions will not impair visibility in nearby Class I areas. The following sections include the evaluation of facility compliance with the applicable SCAQMD NSR/RECLAIM requirements.

BACT

SCAQMD Regulations XIII and XX require the gas turbines/HRSGs, auxiliary boiler, and emergency engines to be equipped with BACT for an emissions increase of NO_x, VOC, SO_x, CO, and PM_{10} (criteria pollutants) and for NH_3. The calculation of facility emissions was discussed in Section 5.2.4.2.1.

BACT for the applicable pollutants was determined by reviewing the SCAQMD BACT Guidelines Manual, the Bay Area AQMD BACT Guidelines Manual, the most recent Compilation of California BACT Determinations, CAPCOA (2nd Ed., November 1993), EPA's BACT/LAER Clearinghouse, and CARB's Guidance for Power Plant Siting and Best Available Control Technology. A summary of the review is provided in Appendix K.7. For the gas turbines, auxiliary boiler, and emergency engines, the District considers BACT to be the most stringent level of demonstrated emission control that is feasible. The gas turbines, auxiliary boiler, and emergency engines associated with the IEEC project will use the BACT measures discussed below at the facility.

As a BACT measure, the applicant will limit the fuels burned by the gas turbines, duct burners, auxiliary boiler, and emergency generator engine to natural gas, a clean burning fuel. Liquid fuels will only be used by the emergency Diesel fire pump engine. Burning of liquid fuels in the gas turbine combustors and duct burners would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. Hence, this measure acts to minimize the formation of all criteria air pollutants.

For the gas turbines, BACT for NO_x emissions will be the use of low-NO_x-emitting equipment and add-on controls. For the IEEC project, the applicant has selected gas turbines equipped with dry low-NO_x combustors. The gas turbine dry low-NO_x combustors will generate approximately 25 ppmvd NO_x, corrected to 15% O_2. In addition, the gas turbines will be equipped with SCR systems to further reduce NO_x emissions to 2.5 ppmvd NO_x, corrected to 15% O_2 (on a one-hour average basis) and 2.0 ppmvd corrected to 15% O_2 (on an annual basis). The 2.5 ppmvd NO_x level has been accepted by the SCAQMD, BAAQMD, and U.S. EPA Region IX as meeting the

BACT requirements for NO_x from gas turbines, and is consistent with the SCAQMD BACT guideline for larger gas turbines and CARB's adopted BACT guidelines for power plants. The SCAQMD BACT Guideline determinations for NO_x from gas turbines are shown in Appendix K.7.

For the emergency generator engine, NO_x emissions will be limited to the SCAQMD BACT level of 1.5 grams per brake horsepower per hour (g/bhp-hr). The emergency Diesel fire pump engine will be limited to NO_x emissions of 5.89 g/bhp-hr, which is below the SCAQMD BACT level of 6.9 g/bhp-hr.

For the auxiliary boiler, NO_x emissions will be limited to the SCAQMD BACT level of 9 ppmvd, corrected to 3% O_2 with the use of an SCR system.

For the gas turbines, BACT for CO emissions will be achieved by use of gas turbines equipped with dry, low-NO_x combustors and the use of oxidation catalysts. Dry, low-NO_x combustors emit low levels of combustion CO while still maintaining low NO_x formation. With this technology, the gas turbines will meet a CO limit of 6 ppmvd, corrected to 15% O_2 (short-term average). The BAAQMD has revised the BACT determination for gas turbines from 6 ppm to 10 ppm CO, corrected to 15% O_2. The SCAQMD BACT guidelines indicate that BACT from large gas turbines (> 3 MW) is an exhaust concentration not to exceed 10 ppmvd CO, corrected to 15% O_2. CO emissions from the IEEC project gas turbines are consistent with this BACT requirement. A review of recent BACT determinations for CO from gas turbines is provided in Appendix K.7.

The CARB BACT guidelines for gas turbines suggest a CO level of 6 ppmvd at 15% O_2 (3-hr average), based principally on the use of oxidation catalyst technology, for CO nonattainment areas. In attainment areas, such as the project area for the state standard, CARB has given districts the discretion to set the BACT level for CO. The BACT level for CO in attainment areas is generally considered to be 10 ppm. The applicant's proposed 6 ppm level (short-term average) with the use of oxidation catalyst technology is consistent with this requirement.

Based on the SCAQMD BACT guidelines, BACT for the emergency generator engine and fire pump engine for CO will be limiting CO emissions to 2.0 g/bhp-hr and 3.6 g/bhp-hr, respectively.

For the auxiliary boiler, CO emissions will be limited to the SCAQMD BACT level of 50 ppmvd, corrected to 3% O_2.

For the gas turbines, BACT for VOC emissions will be achieved by use of dry low-NO_x combustors. As in the case of CO emission formation, dry low-NO_x combustors use air-to-fuel ratios that result in low combustion VOC while still maintaining low NO_x levels. BACT for VOC emissions from combustion devices has historically been the use of best combustion practices since the majority of the VOC emissions are low molecular weight compounds that are not susceptible to control by the oxidation catalysts. With the use of the dry low-NO_x combustors, VOC emissions leaving the gas turbine/HRSG stacks will not exceed 2.0 ppmvd at 15% O_2 (1-hr average). This level of emissions is consistent with the CARB's BACT requirements for VOC.

For the emergency generator engine, BACT for VOC will be limiting VOC emissions to 1.5 g/bhp-hr, which meets the SCAQMD BACT guideline level of 1.5 g/bhp-hr. The fire pump engine will be limited to VOC emissions of 1.0 g/bhp-hr, which meets the SCAQMD BACT level of 1.0 g/bhp-hr.

BACT for VOC emissions for the auxiliary boiler will be achieved by good combustion practices. The VOC emissions will be limited to 10 ppm at 3% O_2. The SCAQMD BACT guidelines indicate that BACT for boilers is good combustion practices.

For the gas turbines, emergency generator engine, and auxiliary boiler BACT for PM_{10} is best combustion practices and the use of gaseous fuels. Use of clean burning natural gas fuel will result in minimal particulate emissions. SO_x emissions will also be kept at a minimum by firing natural gas.

For the emergency fire pump engine, BACT for PM_{10} will be limiting emissions to 0.25 g/bhp-hr, which is lower than the SCAQMD level of 0.4 g/bhp-hr. The use of low sulfur content Diesel fuel will minimize SO_x emissions.

For the gas turbines/HRSGs, BACT for NH_3 will be limiting ammonia slip to 10 ppmvd @ 15% O_2. For the auxiliary boiler, BACT for NH_3 will be limiting ammonia slip to 10 ppmvd @ 3% O_2. This level of emissions is consistent with the SCAQMD BACT requirements for boilers.

Offset Requirements

In addition to the BACT requirements, District Regulation XIII requires IEEC to provide ERCs for all net facility emission increases for CO, VOC, and PM_{10}. In addition, District Regulation XX requires IEEC to provide RECLAIM trading credits (RTCs) for all net facility increases for NO_x and SO_2. The calculation of required ERCs and RTCs is shown in Table 5.2-32.

Table 5.2-32 Summary of ERC/RTC Requirements, IEEC Project

Unit	NO_x (lbs/yr)	CO (lbs/day)	SO_x (lbs/yr)	VOC (lbs/day)	PM_{10} (lbs/day)
Offset type	RTC	ERC	RTC	ERC	ERC
Net Increase from Gas Turbines/HRSGs and Auxiliary Boiler	330,403	689	27,466	279	710
Offset Ratio	1.0:1	1.2:1	1.0:1	1.2:1	1.2:1
Offsets Required	330,403	826	27,466	335	852

As shown in Table 5.2-32, Regulation XIII requires offsets to be provided at an offset ratio of 1.2:1 for PM_{10}, VOC, and CO. In addition, the RECLAIM Regulation (Regulation XX) requires that a facility hold sufficient NO_x and SO_x RTCs during the first 12 months of operation to offset the maximum annual potential to emit for the new or modified equipment based on an offset ratio of 1.0:1. The amount of NO_x and SO_x RTCs required for the project is based on expected annual average NO_x and SO_x emissions for the gas turbines and duct burners. Worst case, full time

operation of the gas turbines and duct burners is expected to result in higher monthly and annual emissions than lesser operation of the turbines and operation of the auxiliary boiler. Consequently, the above ERC/RTC calculations assume no additional emissions associated with operation of the auxiliary boiler. CO, VOC, and PM_{10} emission offsets are based on expected 30-day average emissions for the gas turbines, duct burners, and auxiliary boiler. Detailed emission offset calculations are included in Appendix K.3, Tables K.3-8 and K.3-9. A separate confidential ERC/RTC status document will be filed with the CEC staff concurrently with the AFC. The confidential ERC/RTC status document will provide details regarding IEEC's acquisition of the necessary ERCs and RTCs for the project (see Appendix K-10).

Modeling Analysis

Regulation XIII also requires project denial if PM_{10}, or CO air quality modeling results indicate emissions will interfere with the attainment or maintenance of the applicable AAQS or will exceed District significance levels. The RECLAIM regulations include a similar requirement for NO_x emission increases. The modeling analyses presented in Section 5.2.4.2.2 show that facility emissions will not interfere with the attainment or maintenance of the applicable air quality standards and will not result in impacts greater than the District significance levels.

Visibility Analysis

For major facilities, such as the IEEC project, Regulation XIII requires projects with net emission increases greater than 15 tpy of PM_{10} to perform visibility analyses to determine impacts on nearby Class I areas. Regulation XX (RECLAIM) includes a similar requirement for NO_x net emission increases greater than 40 tpy. The visibility analyses presented in Section 5.2.4.2.4 show that the facility emissions will not cause a significant visibility impact on nearby Class I areas.

General Prohibitory Rules

The general prohibitory rules of the District applicable to the facility and the determination of compliance follow.

Rule 53A (Specific Contaminants). Emissions from the new gas turbines, HRSGs, and auxiliary boiler will be well below the SO_x and particulate limits of this rule due to the use of natural gas.

Rule 401 (Visible Emissions). Any visible emissions from the project will not be darker than No.1 when compared to a Ringlemann Chart for any period(s) aggregating three minutes in any hour. Because the facility will burn clean fuels, the opacity standard of not greater than 20% for a period or periods aggregating three minutes will not be exceeded.

Rule 402 (Public Nuisance). The facility will emit insignificant quantities of odorous or visible substances; therefore, the facility will comply with this regulation.

Rule 403 (Fugitive Dust). Since best available control measures will be used during the construction of the project, fugitive dust emissions will be below the limits of this rule. During the operation of the facility, there will be minimal fugitive dust emissions, and the facility will comply with the regulation.

Rule 409 (Combustion Contaminants). Because the gas turbines/HRSGs and auxiliary boiler will use only natural gas, the plant emission units rates will be well below the particulate matter limits of the rule.

Rule 431.1 (Sulfur Content of Gaseous Fuels). The natural gas used by the facility will have a sulfur content below the limit of this rule.

Rule 431.2 (Sulfur Content of Liquid Fuels). Because the emergency Diesel fire pump engine will use CARB low-sulfur Diesel fuel, the fuel will meet the sulfur content requirements of this rule.

Rule 475 (Electric Power Generating Equipment). Emissions from the new gas turbines and HRSGs will be well below the particulate limits of this rule due to the use of natural gas.

Air Toxic Rules

Rule 1401 (New Source Review of Toxic Air Contaminants). This regulation establishes allowable risks for new or modified sources of TAC emissions. Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. As shown in Section 5.15, the proposed project will not cause toxic air pollutant impacts greater than the Rule 1401 significance levels. HRA model output files are included in Appendix K.9.

5.2.3.2.6 Assessment of Significance for CEQA

One commonly used measure of the significance of project ambient impacts is the PSD significance levels. The maximum modeled impacts from the gas turbines/HRSGs, auxiliary boiler, emergency engines, and cooling tower are compared with these significance levels in Table 5.2-33. This comparison shows that the significance levels for air quality impacts are not exceeded for NO_2 and PM_{10}, and impacts remain well below the allowable increments. Consequently, based on this criterion, the impacts for the project could be considered significant.

Table 5.2-33 Comparison of Maximum Modeled Impacts from ISCST3 and PSD Significance Thresholds and Class II Increments IEEC Project (Gas Turbines/HRSGs, Auxiliary Boiler, Emergency Engines, and Cooling Tower)

Pollutant	Averaging Time	Maximum Modeled Impacts from ISCST3, $\mu g/m^3$	Federal PSD Significance Threshold, $\mu g/m^3$	Federal PSD Class II Increment, $\mu g/m^3$	Significant Under Federal PSD?
NO_2	Annual	0.9	1.0	25	No
SO_2	3-Hour	2.7	25	512	No
	24-Hour	0.7	5	91	No
	Annual	0.1	1.0	20	No
PM_{10}	24-Hour	2.48[a]	5	30	No
	Annual	0.50[a]	1.0	17	No
CO	1-Hour	793	2,000	-	No
	8-Hour	310	500	-	No

Notes:

[a] Based on CTSCREEN modeling results.

A second common means for determining whether a project's impacts are considered significant under CEQA is by comparing project emission levels with District-established emissions-based significance levels. The SCAQMD's CEQA Air Quality Handbook includes emission-based significance levels. In Table 5.2-31, the expected net emission changes for the project are compared with these SCAQMD significance levels. This comparison shows that the SCAQMD emissions-based significance levels are exceeded by the project for NO_x, CO, VOC, and PM_{10}. Consequently, based on this criterion, the impacts for the project would be considered significant for these pollutants. As discussed in Section 5.2.3.2.5 and shown in Table 5.2-32, mitigation will be provided for all emissions increases from the new equipment in the form of offsets, as required under District regulations. Table 5.2-31 also shows that the SCAQMD emissions-based significance levels are not exceeded by the project for SO_x. Consequently, the impacts for the project would not be considered significant for this pollutant.

5.2.3.3 Abandonment/Closure

The abandonment/closure phase of the project may include demolition of structures, removal of pavement, and landscaping activities. The maximum air quality impacts associated with these activities are expected to be similar to the construction impacts discussed in Section 5.2.4.1.

5.2.4 Mitigation Measures

As described in detail in this section, mitigation will be provided for all emissions increases from the project in the form of offsets (ERCs and RTCs) and the installation of BACT, as required under District regulations. Appendix K.8 includes a protocol for cumulative air quality impacts analysis. If the cumulative air quality impacts analysis showed that the project would result in significant cumulative impacts, additional mitigation would be provided. Mitigation would be provided through the acquisition of additional offsets from the District emissions bank or creation of offsets pursuant to District approved protocols.

5.2.5 Cumulative Impacts

To ensure that potential cumulative impacts of the project and other nearby projects are adequately considered, a cumulative impacts analysis will be conducted in accordance with the protocol included as Appendix K.8.

5.2.6 Applicable Laws, Ordinances, Regulations, & Standards (LORS)

Applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) that govern air quality and air pollution are discussed in this section. Applicable LORS are summarized in Table 5.2-40 at the end of this regulatory setting. The table also identifies the specific sections in the AFC that demonstrate compliance with the indicated LORS.

5.2.6.1 Federal LORS

The federal Environmental Protection Agency (EPA) implements and enforces the requirements of many of the federal environmental laws. EPA Region IX, in San Francisco, administers federal EPA programs in California.

The Federal Clean Air Act, as most recently amended in 1990, provides EPA with the legal authority to regulate air pollution from stationary sources such as the IEEC project. EPA has promulgated the following stationary source regulatory programs to implement the requirements of the Clean Air Act:

- Standards of Performance for New Stationary Sources (NSPS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Prevention of Significant Deterioration (PSD)
- New Source Review (NSR)
- Title IV: Acid Deposition Control
- Title V: Operating Permits
- CAM Rule
- Toxic Release Inventory Program (TRI)

National Standards of Performance for New Stationary Sources

Authority: Clean Air Act §111, 42 USC §7411; 40 CFR Part 60, Subparts Da and GG

Purpose: Establishes standards of performance to limit the emission of criteria pollutants (air pollutants for which EPA has established national ambient air quality standards (NAAQS)) from new or modified facilities in specific source categories. The applicability of these regulations depends on the equipment size; process rate; and/or the date of construction, modification, or reconstruction of the affected facility. The Standards of Performance for Electric Utility Steam Generating Units (Subpart Da) are applicable to the HRSG. The Standards of Performance for Stationary Gas Turbines (Subpart GG)—which limit NO_x and SO_2 emissions from subject equipment—are applicable to the gas turbines. The proposed BACT emissions limits for NO_x and SO_2 are well below the Subpart GG and Da requirements. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

National Emission Standards for Hazardous Air Pollutants

Authority: Clean Air Act §112, 42 USC §7412; 40 CFR Part 63

Purpose: Establishes national emission standards to limit hazardous air pollutant (or HAP, which are air pollutants identified by EPA as causing or contributing to the adverse health effects of air pollution but for which NAAQS have not been established) emissions from existing major sources of HAP emissions in specific source categories. The NESHAPs program also requires the application of maximum achievable control technology (MACT) to any new or reconstructed major source of HAP emissions to minimize those emissions. EPA is in the process of developing a NESHAP for gas turbines. The proposed NESHAP for gas turbines is expected to be completed in the near future. While there is some uncertainty as to whether the gas turbine NESHAP will be

applicable to the project, an analysis of the potential impacts of this regulation on the project is included in Section 5.15.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Prevention of Significant Deterioration Program

Authority: Clean Air Act §160-169A, 42 USC §7470-7491; 40 CFR Parts 51 and 52

Purpose: Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to prevent significant deterioration of ambient air quality. PSD applies only to pollutants for which ambient concentrations do not exceed the corresponding NAAQS (i.e., attainment pollutants). The PSD program allows new sources of air pollution to be constructed, or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., national parks and wilderness areas). These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

New Source Review

Authority: Clean Air Act §171-193, 42 USC §7501 et seq.; 40 CFR Parts 51 and 52

Purpose: Requires preconstruction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of ambient air quality standards. NSR applies to pollutants for which ambient concentrations exceed the corresponding NAAQS (i.e., nonattainment pollutants). These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title IV - Acid Rain Program

Authority: Clean Air Act §401, 42 USC §7651 et seq.; 40 CFR Part 72

Purpose: Requires the monitoring and reduction of emissions of acidic compounds and their precursors. The principal source of these compounds is the combustion of fossil fuels. Therefore, Title IV established national standards to limit SO_x and NO_x emissions from electrical power generating facilities. These standards are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

Title V - Operating Permits Program

Authority: Clean Air Act § 501 (Title V), 42 USC §7661; 40 CFR Part 70

Purpose: Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. Title V applies to major facilities, acid rain facilities, subject solid waste incinerator facilities, and any facility listed

by EPA as requiring a Title V permit. These requirements are implemented at the local level with federal oversight.

Administering Agency: SCAQMD, with EPA Region IX oversight.

CAM Rule

Authority: Clean Air Act § 501 (Title V), 42 USC §7414; 40 CFR Part 64

Purpose: Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. If an emissions control system is not working properly, the Compliance Assurance Monitoring (CAM) rule also requires a facility to take action to correct the control system malfunction. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. However, emission control systems governed by Title V operating permits requiring continuous compliance determination methods are exempt from the CAM rule. Since the project will be issued a Title V permit requiring the installation and operation of continuous emissions monitoring systems, the project will qualify for this exemption from the requirements of the CAM rule. Consequently, the CAM rule will not be further addressed.

Administering Agency: SCAQMD, with EPA Region IX oversight.

TRI Program

Authority: Emergency Planning and Community Right-to-Know Act § 313

Purpose: Under the Emergency Planning and Community Right-to-Know Act (EPCRA), certain facilities and establishments must report toxic releases to the environment if they:

- Manufacture more than 25,000 pounds of a listed chemical per year;
- Process more than 25,000 pounds of a listed chemical per year; or
- Otherwise use more than 10,000 pounds of a listed chemical per year.

This program is commonly referred to as the Toxic Chemical Release Inventory (TRI). As applied to electric utilities, only those facilities in Standard Industrial Classification (SIC) Codes 4911, 4931, and 4939 that combust coal and/or oil for the purpose of generating electricity for distribution in commerce must report under this regulation. The IEEC project falls under SIC Code 4911, which covers establishments engaged in the generation, transmission, and/or distribution of electric energy for sale. However, the IEEC project will not combust coal and/or oil for the purpose of generating electricity for distribution in commerce. Accordingly, this program does not apply to the IEEC project. Therefore, the TRI program will not be further addressed.

Administering Agency: EPA Region IX.

5.2.6.2 State LORS

The CARB was created in 1968 by the Mulford-Carrell Air Resources Act, through the merger of two other state agencies. CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's ambient air quality standards (AAQS); to review the operations of the local air pollution control districts (APCDs); and to review and coordinate preparation of the State Implementation Plan (SIP) for achievement of the NAAQS.

State Implementation Plan

Authority: Health & Safety Code (H&SC) §39500 et seq.

Purpose: Required by the Federal Clean Air Act, the State Implementation Plan (SIP) must demonstrate the means by which all areas of the state will attain NAAQS within the federally mandated deadlines. CARB reviews and coordinates preparation of the SIP. Local APCDs must adopt new rules (and/or revise existing rules) and demonstrate that the resulting emission reductions, in conjunction with reductions in mobile source emissions, will result in the attainment of NAAQS. The relevant SCAQMD Rules and Regulations that also have been incorporated into the SIP are discussed under local LORS, Section 5.2.3.3 below.

Administering Agency: SCAQMD, with CARB and EPA Region IX oversight.

California Clean Air Act

Authority: H&SC §40910 - 40930

Purpose: Established in 1989, the California Clean Air Act requires local APCDs to attain and maintain both national and state AAQS at the "earliest practicable date." Local APCDs must prepare air quality plans demonstrating the means by which AAQS will be attained. The SCAQMD Air Quality Plan is discussed with the local LORS.

Administering Agency: SCAQMD, with CARB oversight.

Toxic Air Contaminant Program

Authority: H&SC §39650 - 39675

Purpose: Established in 1983, the Toxic Air Contaminant Identification and Control Act creates a two-step process to identify toxic air contaminants (TACs) and control their emissions. CARB identifies and prioritizes the pollutants to be considered for identification as TACs. CARB assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects. Both agencies collaborate in the preparation of a risk assessment report that concludes whether a substance poses a significant health risk and should be identified as a TAC. In 1993, the Legislature amended the program to identify the 189 federal hazardous air pollutants as TACs. CARB reviews the emission sources of an identified TAC and develops, if necessary, air toxics control measures

(ATCMs) to reduce the emissions. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with CARB oversight.

Air Toxic "Hot Spots" Act

Authority: CA Health & Safety Code §44300-44384; 17 CCR §93300-93347

Purpose: Established in 1987, the Air Toxics "Hot Spots" Information and Assessment Act supplements the TAC program, by requiring the development of a statewide inventory of TAC emissions from stationary sources. The program requires affected facilities to prepare (1) an emissions inventory plan that identifies relevant TACs and sources of TAC emissions; (2) an emissions inventory report quantifying TAC emissions; and (3) a health risk assessment, if necessary, to characterize the health risks to the exposed public. Facilities whose TAC emissions are deemed to pose a significant health risk must issue notices to the exposed population. In 1992, the Legislature amended the program to further require facilities whose TAC emissions are deemed to pose a significant health risk to implement risk management plans to reduce the associated health risks. This program is implemented at the local level with state oversight.

Administering Agency: SCAQMD, with CARB oversight.

CEC and CARB Memorandum of Understanding

Authority: CA Pub. Res. Code § 25523(a) and (d)(2); 20 CCR §1752, 1752.5, 2300-2309, and Div. 2, Chap. 5, Art. 1, Appendix B, Part (k)

Purpose: Establishes requirements in the CEC's decision-making process on an application for certification that assures protection of environmental quality. Establishes coordination on air quality issues between the CEC and local air districts.

Administering Agency: California Energy Commission.

Public Nuisance

Authority: CA Health & Safety Code § 41700

Purpose: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or which endanger the comfort, repose, health, or safety of the public, or that damage business or property.

Administering Agency: SCAQMD, with CARB oversight.

5.2.6.3 Local LORS

When the state's air pollution statutes were reorganized in the mid-1960s, local APCDs were required to be established in each county of the state. There are three different types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over non-vehicular sources as well as transportation and other

regional planning responsibilities, have been established by the Legislature for several regions in California, including the SCAQMD. AQMDs have principal responsibility for developing plans for meeting the state and federal AAQS; for developing control measures for nonvehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; for implementing permit programs established for the construction, modification, and operation of sources of air pollution; for enforcing air pollution statutes and regulations governing nonvehicular sources; and for developing employer-based trip reduction programs.

South Coast Air Quality Management District Air Quality Plan

Authority: H&SC §40914

Purpose: The SCAQMD plan defines the proposed strategies, including stationary source control measures and new source review rules, whose implementation will attain the state AAQS. The air quality plans also demonstrate a five percent annual reduction in emissions of nonattainment pollutants in the SCAQMD. The relevant stationary source control measures and new source review requirements are discussed with SCAQMD Rules and Regulations.

Administering Agency: SCAQMD, with CARB oversight.

SCAQMD Rule 201 - Permit to Construct

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 201 (Permit to Construct) establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits. Rule 201 specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain a Permit to Construct from the SCAQMD.

Administering Agency: SCAQMD, with EPA Region IX and CARB oversight.

SCAQMD Preconstruction Review for Criteria Pollutants

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

SCAQMD has three separate preconstruction review programs for new or modified sources of criteria pollutant emissions:

- Regulation XIII (New Source Review) combines the federal and state NSR requirements into a single rule. Regulation XIII establishes pre-construction requirements for new or modified facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. For RECLAIM facilities, this rule only applies to those nonattainment pollutants, or their precursors, not regulated under the RECLAIM program. Since the IEEC project will be a new RECLAIM facility for NO_x, nonattainment pollutant provisions for NO_x are addressed under Rule 2005, and not under Regulation XIII.
- Regulation XVII (Prevention of Significant Deterioration) implements the PSD requirements of the Federal Clean Air Act for attainment pollutants (i.e., NO_2 and SO_2). Regulation XVII establishes pre-construction review requirements for new or modified

facilities to ensure that operation of such facilities does not significantly deteriorate air quality in attainment areas while maintaining a margin for future growth. The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing major stationary source. SCAQMD classifies fossil fuel-fired steam electric plants with heat input ratings exceeding 250 MMBtu/hr that emit or have the potential to emit 25 tpy (tpy) or more of NO_x or SO_x as major stationary sources. NO_x or SO_x emissions from a modified major source are subject to PSD if the net emission increases for each pollutant exceeds 25 and 40 tpy, respectfully. Since the net emissions increase associated with the installation of the new equipment is below 40 tpy for SO_x, however, the project will only trigger the PSD requirements for NO_x. While the SCAQMD recently revised Regulation XVII, because the EPA has not yet re-delegated the PSD program to the District based on the revised rule, the older version of Regulation XVII is used in this document.

- Rule 2005 (New Source Review for RECLAIM) integrates the new source review requirements of the federal and California Clean Air Acts with the SCAQMD's RECLAIM program. Rule 2005 establishes pre-construction requirements for new or modified RECLAIM facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. RECLAIM is a market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_x and SO_x using methods that include add-on emission controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions. The project will be subject to the NO_x new source review requirements of Rule 2005. However, the proposed new equipment will not be subject to the SO_x new source review requirements of Rule 2005 because the RECLAIM program does not include SO_x emissions from natural gas combustion equipment for applicability purposes. Due to a lack of SO_x emission reduction credits available from the District emission reduction bank, the project is planning on voluntarily entering the SO_x RECLAIM program. Consequently, the requirements of the SO_x RECLAIM program will be included in this analysis.

A facility can be subject to more than one of these preconstruction review programs depending on the type of criteria pollutants and criteria pollutant precursors they will emit. The relevant criteria pollutants and precursors are summarized in Table 5.2-34. A criteria pollutant (e.g., NO_x, SO_x) can be subject to both nonattainment (i.e., new source review) and attainment (i.e., PSD) preconstruction review programs if it is an attainment pollutant while another secondary pollutant (e.g., ozone for NO_x) is a nonattainment pollutant. A new or modified facility can be subject to the elements of all three programs as shown in Table 5.2-35.

Table 5.2-34 Criteria Pollutant Precursors

Criteria Pollutant	Precursor
Ozone	VOC, NO_x
NO_2	NO_x
SO_2	SO_x
Sulfate	SO_x
PM_{10}	VOC, NO_x, SOx

Table 5.2-35 IEEC Preconstruction Review Elements for Criteria Pollutants

Element	Regulation XIII New Source Review	Rule 2005 New Source Review for RECLAIM	Regulation XVII Prevention of Significant Deterioration
Preconstruction Air Quality Monitoring	-	-	NO_2, SO_2
Best Available Control Technology (BACT)	CO, PM_{10}, VOC, NH_3	NO_x, SO_x	NO_x, SO_x
Emission Offsets	CO, PM_{10}, VOC	NO_x, SO_x	-
Air Quality Impact Analysis	CO, PM_{10}, VOC	NO_x, SO_x	NO_x, SO_x
Protection of Class I Areas	CO, PM_{10}	NO_x, SO_x	NO_x, SO_x
Visibility, Soils, and Vegetation Impact Analysis	PM_{10}	NO_x, SO_x	NO_x, SO_x

Preconstruction Air Quality Monitoring

The SCAQMD may, at its discretion, require preconstruction ambient air quality monitoring. Preconstruction monitoring data must be gathered over a one-year period to characterize local ambient air quality. SCAQMD may approve a shorter monitoring period of maximum anticipated ambient concentration.

Best Available Control Technology (BACT)

BACT must be applied to any new or modified source resulting in an increase in criteria pollutant, ozone depleting compound, or ammonia emissions. The SCAQMD defines BACT as the following unless the limitations are demonstrated to be unachievable:

- Most stringent emission limitation achieved in practice by a control device or technique for that category or class of source;
- Any control device or technique determined to be technologically feasible and cost-effective; or
- Most stringent emission limitation on a comparable emission source contained in any approved SIP (i.e., cannot be less stringent than the emission control required by any applicable federal, state, or District laws, rules, or regulations).

Emission Offsets

For a new or modified facility located in SCAQMD Zone 2 (as is the IEEC project), sufficient ERCs must be provided to offset the increase in CO, PM_{10}, SO_x, and VOC emissions at a 1.2:1 offset ratio.

For a new or modified facility located in SCAQMD Zone 2 (as is the IEEC project), sufficient RECLAIM Trading Credits (RTCs) must be provided to offset the annual increase in NO_x and SO_x emissions for the first year of operation at a 1:1 offset ratio.

Air Quality Impact Analysis

An air quality dispersion analysis must be conducted, using a mass emissions-based screening analysis contained in the rule, or an approved dispersion model, to evaluate impacts of increased criteria pollutant emissions from any new or modified facility on ambient air quality. Project emissions must not cause a significant increase in ambient nonattainment pollutant concentrations as defined by the levels shown in Table 5.2-36. As shown in Table 5.2-36, since the project area is classified as an attainment area for NO_2, there are no SCAQMD significance thresholds for this pollutant.

Table 5.2-36 SCAQMD Significance Thresholds for Ambient Nonattainment Pollutants Concentrations

Pollutant	Averaging Period	Most Stringent Ambient Air Quality Standard	SCAQMD Significant Increase
NO_2[b]	1-Hour	500 ug/m^3	--
	Annual	100 ug/m^3	--
CO	1-Hour	23,000 ug/m^3	1,100 ug/m^3
	8-Hour	10,000 ug/m^3	500 ug/m^3
PM_{10}	24-Hour	50 ug/m^3	2.5 ug/m^3
	Annual	30 ug/m^3	1 ug/m^3
Sulfate[c]	Annual	30 ug/m^3	--
	24-Hour	25 ug/m^3	--

[a] Including nonattainment pollutant precursors.

[b] Precursor to nonattainment pollutants ozone and PM_{10}.

[c] Precursor to nonattainment pollutant PM_{10}.

An air quality dispersion analysis must also be conducted, using an approved dispersion model, to evaluate impacts on ambient air quality of significant PSD increases of NO_x and SO_x emissions from any new or modified major stationary source. Project emissions must not cause an exceedance of any federal or state AAQS and the increase in ambient air concentrations must not exceed the allowable increments shown in Table 5.2-37.

Table 5.2-37 PSD Class II Increments

Pollutant	Averaging Period	Allowable Increment ($\mu g/m^3$)
NO_2	Annual	25
SO_2	3-Hour	512
	24 -Hour	91
	Annual	20

Protection of Class I Areas

A modeling analysis must be conducted to assess the impacts of project emissions on visibility in nearby Class I areas if the increase in NO_x and PM_{10} emissions exceeds 25 tpy or 15 tpy, respectively. The increase in ambient air quality concentrations for the PSD attainment pollutants (i.e., NO_x and SO_x) within the nearest Class I area must also be characterized if there is a significant emission increase associated with the new or modified major source.

Visibility, Soils, and Vegetation Impacts

Impairment to visibility, soils, and vegetation resulting from project NO_x or SO_x emissions as well as project associated commercial, residential, industrial, and other growth must be analyzed. Cumulative impacts to local ambient air quality must also be analyzed.

Administering Agency: SCAQMD with EPA Region IX and CARB oversight.

SCAQMD Rule 1401 - New Source Review of Toxic Air Contaminants

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Rule 1401 (New Source Review of Toxic Air Contaminants) establishes allowable risks for new or modified sources of TAC emissions. Rule 1401 specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. While Rule 1401 does not specifically require the application of best available control technology for toxics (T-BACT) to any new or modified source that emits carcinogenic TACs, the rule relaxes the MICR risk threshold when T-BACT is applied. The health risks resulting from project emissions, as demonstrated with a risk assessment, must not exceed the risk thresholds shown in Table 5.2-38.

Table 5.2-38 Health Risk Thresholds

Risk Criteria	Risk Threshold
MICR (w/o T-BACT)	1×10^{-6}
MICR (w/ T-BACT)	10×10^{-6}
Cancer Burden	0.5
Chronic HI	1
Acute HI	1

Administering Agency: SCAQMD.

SCAQMD Regulation XXX - Federal Operating Permit

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXX (Title V Permits) provides for the issuance of federal operating permits that contain all federally enforceable requirements for stationary sources as mandated by Title V of the Clean Air Act. Regulation XXX requires major facilities and acid rain facilities undergoing modifications to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the Clean Air Act. An owner or operator of a facility subject to Title V shall not construct, modify, or operate equipment without first obtaining a permit revision that allows such construction, modification, or operation. An application must be submitted to the District that presents all information necessary to evaluate the subject facility and determine the applicability of all regulatory requirements.

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Regulation XXXI - Acid Rain Permit

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation XXXI (Title IV – Acid Rain Permit Program) provides for the issuance of acid rain permits in accordance with Title IV of the Clean Air Act. Regulation XXXI requires a facility subject to Title to hold emissions allowances for SO_x, and to monitor SO_x, NO_x, and CO_2 emissions and exhaust gas flow rates (monitoring of operating parameters such as fuel use and fuel constituents is an allowable alternative to exhaust CEM systems). An acid rain facility, such as the IEEC project, must also obtain an acid rain permit as mandated by Title IV of the Clean Air Act. A permit application must be submitted to the SCAQMD at least 24 months before operation of the new units commence. The application must identify all relevant sources at the facility, a compliance plan for each unit, applicable standards, and estimated commencement date of operation.

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Regulation IX- Standards of Performance for New Stationary Sources

Authority: H&SC §40000 et seq., H&SC §40400 et seq.

Purpose and Requirements: Regulation IX (Standards of Performance for New Stationary Sources) incorporates, by reference, the provisions of Part 60, Chapter I, Title 40 of the Code of Federal Regulations. Regulation IX requires compliance with federal Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units and Stationary Gas Turbines.

Subpart Da (Standards of Performance for Electric Utility Steam Generating Units) applies to steam generating units with a heat input at peak load greater than 250 MMBtu/hr at the higher heating value.

Subpart GG (Standards of Performance for Stationary Gas Turbines) applies to gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (Gj/hr), or

10.15 MMBtu/hr, at the higher heating value. The NSPS limits the sulfur content of fuel to 0.8 percent. The NSPS also limits NO_x emissions as determined by the following equation:

$$STD = \frac{0.0150\ (14.4)}{Y} + F$$

where: STD = allowable NO_x emissions (percent by volume at 15% O_2 on a dry basis)

Y = manufacturer's rated heat rate at peak load (kilojoules per watt hour)

F = NO_x emission allowance for fuel-bound nitrogen (assumed to be zero for natural gas)

Administering Agency: SCAQMD, with EPA Region IX oversight.

SCAQMD Prohibitory Rules

Authority: H&SC §40000 et seq., H&SC §40400 et seq., indicated SCAQMD Rules

Purpose and Requirements: Relevant local prohibitory rules of the SCAQMD include the following:

- Rule 401 - Visible Emissions: Establishes limits for visible emissions from stationary sources. Rule 401 prohibits visible emissions as dark or darker than Ringelmann No. 1 for periods greater than three minutes in any hour.
- Rule 402 - Nuisance: Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.
- Rule 403 - Fugitive Dust: Establishes requirements to reduce the amount of PM entrained in the ambient air as a result of man-made fugitive dust sources. Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and prohibits visible dust emissions beyond the property line; a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility (as measured by upwind and downwind concentrations); and track-out of bulk material onto public, paved roadways.
- Rule 407 - Liquid and Gaseous Air Contaminants: Establishes limits for CO and SO_x emissions from stationary sources. Rule 407 prohibits CO and SO_x emissions in excess of 2,000 ppm and 500 ppm, respectively, from any source. Stationary internal combustion reciprocating engines are exempt from this rule. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SO_x limit. Since the facility will comply with Rule 431.1, the SO_x provisions of Rule 407 will not be further addressed.
- Rule 409 - Combustion Contaminants: Establishes limits for particulate emissions from fuel combustion sources. Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12% CO_2 at standard conditions. The provisions of this rule do not apply to stationary internal combustion reciprocating engines.
- Rule 431.1 - Sulfur Content of Gaseous Fuels: Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.1 limits the sulfur content of natural gas to 16 ppmv.

- Rule 431.2 - Sulfur Content of Liquid Fuels: Establishes limits for the sulfur content of liquid fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.2 limits the sulfur content of Diesel fuel to 0.05 percent by weight.

- Rule 474 - Fuel Burning Equipment - Oxides of Nitrogen: Establishes limits for emissions of NO_x from stationary combustion sources. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 474. Since the IEEC project is also a NO_x RECLAIM facility, Rule 474 is not applicable to the project and will not be addressed further.

- Rule 475 - Electric Power Generating Equipment: Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions in excess of 11 lbs/hr (per emission unit) or 0.01 grains per dry standard cubic foot (gr/dscf) @ 3% O_2. These provisions do not apply to replacement equipment if such equipment reduces NO_x emissions by at least 50% provided that PM emissions do not exceed 0.05 gr/scf.

- Rule 476 - Steam Generating Equipment: Establishes limits for emissions of NO_x and combustion contaminants (i.e., PM) from subject equipment. However, NO_x RECLAIM facilities are exempt from the NO_x provisions of Rule 476. Furthermore, the PM provisions of Rule 476 are superceded by those of Rule 475. Therefore, Rule 476 is not applicable to the IEEC project and will not be further addressed.

- Rule 53A - Specific Contaminants: Establishes limits for emissions of sulfur compounds (i.e., SO_x) and combustion contaminants (i.e., PM) from stationary sources. Rule 53A prohibits SO_x and PM emissions in excess of 500 ppm and 0.1 gr/dscf @ 12% CO_2, respectively.

- Rule 1110.2 - Emissions from Stationary Internal Combustion Engines: Establishes limits for emissions of NO_x, VOC, and CO from the stationary internal combustion reciprocating engines. However, emergency standby engines that operate less than 200 hours per year are exempt from this regulation. Since the fire pump and emergency generator engines will be limited to operating less than 200 hours per year, they will be exempt from this regulation. Therefore, Rule 1110.2 is not applicable to the IEEC project and will not be addressed further.

- Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines: Establishes limits for emissions of NO_x from the stationary gas turbines. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the IEEC project and will not be addressed further.

- Rule 1135 - Emissions of Oxides of Nitrogen from Electric Power Generating Systems: Establishes limits for emissions of NO_x from the electricity generating systems. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1135. Therefore, Rule 1135 is not applicable to the IEEC project and will not be addressed further.

- Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters: Establishes limits for emissions of NO_x and CO from industrial, institutional, and commercial steam generating units. However, boilers used to generate electricity are exempt from the regulation. Therefore, Rule 1146 is not applicable to the IEEC project and will not be addressed further.

Administering Agency: SCAQMD, with EPA Region IX and CARB oversight.

5.2.7 Involved Agencies and Agency Contacts

Each level of government has adopted specific regulations that limit emissions from electrical power generation facilities and are applicable to this project. The agencies with air quality permitting authority for this project are shown in Table 5.2-39. The authority, purpose, and administering agency for each of these are discussed in more detail below.

Table 5.2-39 Air Quality Agencies

Agency	Contact	Authority
U.S. EPA Region IX	Gerardo Rios, Chief Permits Office U.S. EPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 744-1254	Oversight of permit issuance, enforcement
California Air Resources Board (CARB)	Michael Tollstrup, Chief Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026	Regulatory oversight
South Coast Air Quality Management District (SCAQMD)	John Yee Sr. Air Quality Engineer South Coast Air Quality Management District 21865 E. Copley Dr. Diamond Bar, CA 91765-4182 (909) 396-2000	Permit issuance, enforcement

5.2.8 Permits Required

Table 5.2-40 summarizes the air quality permits required for the proposed project. As shown by the information in this table, the proposed project will trigger the requirements of the Title IV, Title V, NSPS, NSR, and RECLAIM programs. The requirements of each of these regulatory programs will be included in a single Title V permit issued by the SCAQMD.

Table 5.2-40 Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
Federal				
Clean Air Act (CAA) §160-169A and implementing regulations, Title 42 United States Code (USC) §7470-7491 (42 USC §7470-7491), Title 40 Code of Federal Regulations (CFR) Parts 51 & 52 (40 CFR Parts 51 & 52). (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
CAA §171-193, 42 USC §7501 et seq., 40 CFR Parts 51 & 52 (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
CAA §401 (Title IV), 42 USC §7651 et seq., 40 CFR parts 51 & 52 (Acid Rain Program)	Requires reductions in NOx and SOx emissions.	SCAQMD, with EPA Region IX oversight	Issues Acid Rain permit after review of application.	Permit to be obtained prior to commencement of operation.
CAA §501 (Title V), 42 USC §7414, 40 CFR Part 64 (CAM Rule)	Establishes on-site monitoring requirements for emission control systems.	SCAQMD, with EPA Region IX oversight	Exempt from CAM requirements.	Title V permit to be obtained prior to commencement of construction.
CAA §501 (Title V), 42 USC §7661, 40 CFR Part 70 (Federal Operating Permits Program)	Establishes comprehensive operating permit program for major stationary sources.	SCAQMD, with EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.
CAA §112, 42 USC §7412, 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants)	Establishes national emission standards to limit HAPs from existing major sources of HAP emissions.	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
CAA §111, 42 USC §7411, 40 CFR Part 60 (New Source Performance Standards – NSPS)	Establishes national standards of performance for new stationary sources.	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions addressing emissions, CEMs, operation, etc.	Agency approval to be obtained before start of construction.

Table 5.2-40 Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality (Continued)

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
EPCRA §313 (TRI Program)	Requires subject facilities to report toxic releases to the environment.	EPA Region IX	Because the electric generating equipment will be fired by natural gas, the project is exempt from this regulation.	Not Applicable
State				
California Health & Safety Code 17 (H&SC) §44300-44384; California Code of Regulations (CCR) §93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments, notification, and plans to reduce risks.	SCAQMD, with CARB oversight	After project review, issues PTC with conditions limiting emissions.	Screening HRA submitted as part of AFC, CEC approval of AFC
California Public Resources Code §25523(a); 20 CCR §'s1752, 1752.5, 2300-2309, and Division 2, Chapter 5, Article 1, Appendix B, Part(k) (CEC & CARB Memorandum of Understanding)	Requires that CEC's decision on PTC include requirements to assure protection of environmental quality; AFC required to address air quality protection, including mitigation.	CEC	After project review, issues Final Determination of Compliance (FDOC) with conditions limiting emissions.	CEC approval of AFC, i.e., FDOC, to be obtained prior to CEC approval.
H&SC §41700 (Public Nuisance)	Prohibits emissions in quantities that adversely affect public health, other businesses, or property.	SCAQMD, with CARB oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
Local				
SCAQMD Regulation XIII, H&SC §40910-40930 (Review of New or Modified Sources)	NSR: Requires that preconstruction review be conducted for all proposed new or modified sources of air pollution, including BACT, emissions offsets, and air quality impact analysis. NSR applies to pollutants for which ambient concentration levels are higher than state or federal AAQS.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions. Note – since the IEEC project is a new RECLAIM facility for NOx, NSR addressed under Regulation XX.	Agency approval to be obtained before start of construction.
SCAQMD Air Quality Plan & H&SC §41914	Defines proposed strategies including stationary source control measures and new source review rules.	SCAQMD, with CARB oversight	Addressed in SCAQMD Rules and Regulations.	Not applicable

Table 5.2-40 Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality (Continued)

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Regulation XVII, H&SC §39500 et seq. (Prevention of Significant Deterioration Program)	Requires PSD review and facility permitting for construction of new or modified major stationary sources of air pollution. PSD review applies to pollutants for which ambient concentrations are lower than NAAQS.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions addressing emissions, operations, CEMs, etc.	Agency approval to be obtained before start of construction.
SCAQMD Regulation IX, Part 60, Chapter I, Title 40, Subparts Da and GG, H&SC §40000 et seq. (Standards of Performance for New Stationary Sources)	By reference, incorporates the provisions of 40 CFR Part 60, Subparts Da and GG compliance with Federal Standards of Performance for Electric Utility Steam Generating Units (Subpart Da) Stationary Gas Turbines (Subpart GG)	SCAQMD, with EPA Region IX oversight	After project review, issues PTC with conditions addressing emissions, operations, CEMs, etc.	Agency approval to be obtained before start of construction.
SCAQMD Regulation XX Rule 2005 (New Source Review for RECLAIM)	RECLAIM requires that preconstruction review be conducted for all proposed new or modified sources of air pollution at subject RECLAIM NOx and SOx facilities, including BACT, RECLAIM trading credits, and air quality impact analysis.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions addressing emissions, RTC acquisition and use, CEMs, monitoring and reporting.	Agency approval to be obtained before start of construction.
SCAQMD Regulation XXX, H&SC §40000 et seq., §40400 et seq. (Federal Operating Permits)	Implements operating permits requirements of CAA Title V.	SCAQMD, with CARB and EPA Region IX oversight	Issues Title V permit after review of application.	Permit to be obtained prior to commencement of construction.
SCAQMD Regulation XXXI, H&SC §40000 et seq., §40400 et seq. (Acid Deposition Control)	Implements acid rain regulations of CAA Title IV.	SCAQMD, with CARB and EPA Region IX oversight	Issues Title IV permit after review of application.	Permit to be obtained prior to commencement of operation. The permit application must be submitted to the SCAQMD at least 24 months prior to commencement of operation.
SCAQMD Rule 53.A, H&SC §40000 et seq., and H&SC §40400 et seq. (Specific Contaminants)	Limits SOx and PM emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 201, H&SC §40000 et seq., and H&SC §40400 et seq. (Permit to Construct)	Defines procedures for review of new and modified sources of air pollution.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.

Table 5.2-40 Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality (Continued)

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Rule 401, H&SC §40000 et seq., §40400 et seq. (Visible Emissions)	Limits visible emissions to no darker than Ringelmann No. 1 for periods greater than 3 minutes in any hour.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before commencement of construction.
SCAQMD Rule 402, H&SC §40000 et seq., §40400 et seq. (Public Nuisance)	Prohibits emissions in quantities that cause injury, detriment, or annoyance to the public; or that damages businesses or property.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 403, H&SC §40000 et seq., §40400 et seq. (Fugitive Dust)	Limits fugitive dust emissions from man-made fugitive dust sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 407, H&SC §40000 et seq., §40400 et seq. (Liquid and Gaseous Air Contaminants)	Limits CO and SOx emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered as part of Rule 431.1.	Not Applicable
SCAQMD Rule 409, H&SC §40000 et seq., §40400 et seq. (Combustion Contaminants)	Limits PM emissions from fuel combustion.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 474, H&SC §40000 et seq., §40400 et seq. (Fuel Burning Equipment – Oxides of Nitrogen)	Limits NOx emissions from stationary sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered under Regulation XX.	Not Applicable
SCAQMD Rule 475, H&SC §40000 et seq., §40400 et seq. (Electric Power Generating Equipment)	Limits PM emissions from stationary sources.	SCAQMD, with EPA Region IX and CARB oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 476, H&SC §40000 et seq., §40400 et seq. (Steam Generating Equipment)	Limits NOx and combustion contaminants from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	Covered as part of Rule 475 and Regulation XX	Not Applicable
SCAQMD Rule 431.1, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Gaseous Fuels)	Limits the sulfur content of natural gas to reduce SOx emissions from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 431.2, H&SC §40000 et seq., §40400 et seq. (Sulfur Content of Liquid Fuels)	Limits the sulfur content of Diesel fuel to reduce SOx emissions from stationary combustion sources.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

Table 5.2-40 Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality (Continued)

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Rule 1110.2, H&SC §40000 et seq., §40400 et seq. (Emissions from Stationary Internal Combustion Engines)	Limits emissions of NOx, VOC, and CO from stationary internal combustion engines. Engines are exempt from this rule if each unit is operated less than 200 hours per year.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt as each engine will be operated less than 200 hours per year.	Not Applicable
SCAQMD Rule 1134, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)	Limits NOx from stationary gas turbines.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX.	Not Applicable
SCAQMD Rule 1135, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Electric Power Generating Systems)	Limits NOx from electric power generating systems.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as facility is regulated under Regulation XX.	Not Applicable
SCAQMD Rule 1146, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)	Limits NOx and CO from industrial, institutional, and commercial steam generating units.	SCAQMD, with CARB and EPA Region IX oversight	Project exempt from regulation as boilers are used to generate electricity.	Not Applicable
SCAQMD Rule 1401, H&SC §39650-39675 (New Source Review of Toxic Air Contaminants)	Establishes allowable risks for new or modified sources of toxic air contaminants and for control of emissions.	SCAQMD, with CARB and EPA Region IX oversight	After project review, issues PTC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

5.2.9 References

CARB. 1958. Reference Document for California Statewide Modeling Guideline. April 1989.

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EPA. May 1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007.

EPA. October 1992. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised, EPA-454/R-92-019.

EPA. July 1, 1998. Guideline on Air Quality Models, 40 CFR, Part 51, Appendix W.

SCAQMD. April 1993. CEQA Air Quality Handbook.

SCAQMD. June 12, 1998. AQMD Best Available Control Technology (BACT) Guideline.

Smith, T.B., W.D. Sanders, and D.M. Takeuchi. August 1984. Application of Climatological Analysis to Minimize Air Pollution Impacts in California, Final Report on CARB Agreement A2-119-32.

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Appendix J – Biological Resources

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J-2: Biological Resource Surveyor/Qualifications and Resumes
J-3: California Natural Diversity Data Base (CNDDB) Printouts
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5.3 BIOLOGICAL RESOURCES

Biological resources potentially affected by the project include vegetation, wildlife, and other resources designated by Federal and state regulatory agencies. Through agency consultations, project planning, project design and appropriate mitigation measures the Inland Empire Energy Center (IEEC or Energy Center) will conform to all applicable regulations for protection of biological resources and reduce the level of impacts to less than significant. Project facilities are located in Riverside County as illustrated in Figure 3.2-1. The biological resource evaluation for the Energy Center includes the following project features:

- The Energy Center site, approximately 45.8-acres
- Two natural gas pipeline alternatives:
  - Alternative A Menifee Road natural gas pipeline, approximately 0.9 mile in length. This alternative gas pipeline route also includes a compressor station on a 2.6 acre site within a 6.6 acre parcel.
  - Alternative B Moreno Valley natural gas pipeline, approximately 14.8 miles in length will connect to a main southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.
- A non-reclaimable wastewater pipeline approximately 4.7 miles in length
- A transmission line, approximately 0.9 mile in length.

The study area refers to a one mile radius around the Energy Center site, and 1,000 feet on each side of the linear facilities. Laws, ordinances, regulations, and standards (LORS) applicable for protection of Biological Resources are provided in Section 5.3.8.

5.3.1 Regional Biological Resources

The project lies within southern California's Moreno Valley, and the western Riverside County Multiple Species Habitat Conservation Planing Unit [Riverside County Habitat Conservation Agency (RCHCA), 2001] in Riverside County (Figure 5.3-1). The study area historically contained diverse habitats of value to wildlife, but now consists almost entirely of agricultural lands, annual grasslands, and residential, urban and exotic habitats. The dominant habitats of the study area were historically seasonal and permanent wetlands, coastal sage scrub, alkali playa, and native annual forbe lands (O'Farrell 2001, University of California Riverside 2001). Today, the landscape is dominated by agriculture and consists primarily of wheat, alfalfa, and safflower. Natural vegetation is found primarily within the San Jacinto Wildlife Area and along perennial watercourses, and uncultivated fields. Borders of watercourses and ditches often have narrow strips of wetland vegetation or riparian zones. The RCHCA has recently undertaken the protection and enhancement of the area's regional biological resources by preparing and implementing the MSHCP. Regional biological resources are illustrated on Figure 5.3-1 and described below.

Stephens' Kangaroo Rat Habitat Conservation Plan

The Stephens' kangaroo rat (SKR) Habitat Conservation Plan (HCP) is a 30-year plan designed to acquire and permanently set-aside, maintain, manage and fund conservation, preservation, restoration and enhancement of the SKR and its habitat Additionally, the HCP and the creation of a designated Fee Area establishes a regional mechanism in western Riverside County through which otherwise lawful activities resulting in the incidental take of SKR meet Federal Endangered Species Act and California State Endangered Species Act requirements without the need to secure individual permits and agreements from the US Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). All of the Energy Center project features (Energy Center site; Alternative A Menifee Road and Alternative B Moreno Valley natural gas pipelines, compressor station, transmission line, and non-reclaimable wastewater pipeline) are included in the SKR HCP Fee Area. Incidental take resulting from lawful activities within the designated Fee Boundary Area will be quantified and approved by the Riverside County Habitat Conservation Agency and compensation fees will be used to acquire and preserve SKR critical habitat.

The HCP establishes Core Reserve Areas for SKR. Activities resulting in the incidental take of SKR inside the Core Reserve Area require the proponent to secure individual permits and agreements from the USFWS and the CDFG. The proposed Alternative A Moreno Valley natural gas pipeline crosses the San Jacinto Core Reserve Area. Within the Core Reserve Area, the natural gas pipeline is aligned in the road, road shoulder, or in adjacent agricultural lands.

Western Riverside County Multiple Species Habitat Conservation Plan (WRMSHCP)

In 1992, the California Natural Communities Conservation Planning Act was passed to implement a collaborative conservation planning effort between the public, businesses and government to address future region wide conservation needs. The WRMSHCP is an element of the Riverside County Integrated Project (University of California, Riverside, 2001). The MSHCP is designed to conserve open space, nature preserves and wildlife areas. It is designed to protect over 150 species and conserve over 500,000 acres in western Riverside County. Currently, MSHCP is in the plan development stage where environmental studies are being conducted. The approval process of areas in the County will start in 2002. The MSHCP will set aside habitat acreage today, and enable western Riverside County to efficiently plan for future utilities, houses, schools and parks, while simultaneously protecting the natural environment. The MSHCP will streamline the regulatory review related to endangered species impacts, return local control to the County, and conserve resources for future generations (University of California, Riverside, 2001).

5.3.2 Biological Investigations and Survey Methods

5.3.2.1 Project Background

The proposed location of the Energy Center site is an agricultural field currently used for wheat production. The following important resources and documents with specific biological information on the site and surrounding area were used in the preparation of this analysis:

RCHCA. 1996a. Habitat Conservation Plan for the SKR in Western Riverside County, Vol.1 and 2.

RCHCA. 1996b. Final Joint Environmental Impact Statement and Environmental Impact Report, Authorization for Incidental Take and Implementation of a Long Term Habitat Conservation Plan for the SKR in Western Riverside County, California. February 1996. State Clearinghouse No. 95081007

RCHCA. 1998 Environmental Assessment / Negative Declaration and Initial Study, Minor Adjustment of the Riverside County Habitat Conservation Agency Long-Term Stephens' Kangaroo Rat Habitat Conservation Plan.

USFWS. 1999b. Section 7 Consultation for the Metropolitan Water District of Southern California's Inland Feeder Project in Western San Bernardino and Riverside Counties. USFWS, Carlsbad Field Office. (File No. 1-6-99-F-18)

USFWS. 2000b. Intra-Service Formal Section 7 Consultation / Conference on the Issuance of a Section 10(a)(1)(B) Permit to Four Public Agencies and Nine Private Entities for the Assessment District 161 Sub-regional Habitat Conservation Plan, Western Riverside County. USFWS, Carlsbad Field Office. (File No. 1-6-01-F-725.2)

USFWS. 2000c. Amendment to Formal Section 7 Consultation for the Metropolitan Water District of Southern California's Inland Feeder Project in Western San Bernardino and Riverside Counties. USFWS, Carlsbad Field Office. (File No. 1-6-99-F-18-R1)

In addition to the available information for the project site and surrounding area, project specific biological surveys have been conducted for the Energy Center project as outlined in the Protocol for Biological Surveys (Appendix J-1), and summarized below.

5.3.2.2 Protocol for Site Surveys

Threatened and endangered species and sensitive habitat surveys were conducted for all project areas and proposed linear corridors. Threatened and endangered plant species that could be in the project area were identified by review of the California Natural Diversity Database (CNDDB) maintained by the CDFG and consultation with the USFWS and CDFG (see Appendix J). Site field investigations were conducted for threatened and endangered plant and wildlife species from April through June 2001. Field investigations were conducted by Foster Wheeler Environmental Corporation (FWENC) biologists or subcontract biological specialists.

5.3.2.3 Natural Communities

Natural communities of the project site and surrounding area within one mile of the site were identified using aerial photographs and mapped at a scale of 1:24,000. Public roads and open areas were driven and walked, where possible, to ground-truth and verify natural communities. Where access was not possible on private lands or within fenced areas, observations were made from the nearest vantage points to document and verify natural community information from the aerial photographs.

Natural communities along linear facility routes were mapped at a scale of 1:24,000 to a minimum distance of 1,000 feet on each side of the outer edge of the route corridor. Similar to the project site, aerial photography, followed by ground-truthing by driving or walking the route, was used to determine the natural communities.

5.3.2.4 Sensitive and Special-Status Species Surveys

Sensitive and special-status species surveys were conducted by pedestrian (biologist) surveys on parallel transects spaced at 50-foot intervals to provide coverage of the entire site and 500-foot wide linear feature corridors. Surveys were conducted in all areas where potential habitat exists for sensitive and special status species. This included canals, ditches and agricultural fields. Areas that support sensitive species or their habitats were recorded on 1:6,000 scale maps for impact evaluation (see Appendix J-6).

Floristic surveys were conducted in May, and June 2001 by FWENC botanists throughout the entire study area. Plants were identified to a taxonomic level sufficient to determine if the species observed were classified as an invasive non-native, or sensitive plant species.

5.3.2.5 Wetlands Delineation Methodology

Wetlands within the study area boundary were delineated according to guidelines established by the Army Corps of Engineers (ACOE) Wetlands Delineation Manual (ACOE, 1987). The manual focuses on three criteria for identifying wetlands: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. Extensive soil sampling to identify hydric soils, analysis of vegetation to identify wetland species and their wetland status, and an evaluation of the site's hydrology and drainage patterns were conducted to accurately identify wetlands.

In most cases, all three criteria must be present for an area to be classified as a wetland. However, in disturbed areas, it is necessary for only one or two of the criteria to be present. These areas are not always easy to determine and require careful study and professional judgement in determining their status as wetland or upland (i.e., non-wetland).

Development of infrastructure in the area (Metropolitan Water District Inland Feeder, power lines, underground cable lines, natural gas pipelines, and other utilities), agricultural activities, and land management practices have produced topographic lows, furrows, road side ditches, and ridges throughout the study area. The ridges did not support any of the three criteria, while the topographic lows, furrows, and road side ditches sometimes contained all three wetland criteria. When examined by FWENC Biologists Lenny Malo and Robert Anderson, it was

determined that the disturbed upland areas would not be classified as federal jurisdictional wetlands (ACOE 1987).

Hydrophytic vegetation is vegetation growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. The wetland manual (ACOE, 1987) assigns wetland plant species to four categories based on frequency of occurrence in wetlands. These categories are described as: (1) obligate wetland plants (OBL) that occur in wetlands 99 percent of the time; (2) facultative wetland plants (FACW) that usually occur in wetlands (67-99 percent of the time); (3) facultative wetland plants (FAC) that are equally likely to occur in wetlands or uplands; and (4) facultative upland plants (FACU) that usually occur in uplands (67-99 percent of the time). If more than 50 percent of the existing vegetation is rated as OBL, FACW, or FAC, the area is considered to have wetland vegetation.

5.3.2.6 Special-Status Species

Special-status species are those species with regulatory protection under the Federal Endangered Species Act, the California Endangered Species Act, the Migratory Bird Treaty Act, and other local policies or ordinances protecting biological resources. To identify special-status species in the project vicinity, FWENC queried the CNDDB Rarefind database for the Perris, Romoland, Lakeview, Sunnymead, and El Casco USGS 7.5-minute topographic quadrangles for the project. Available information was reviewed from resource management plans and other documents containing information on biological resources in the project study area. These documents were reviewed to determine the locations and types of biological resources that could exist in the project study area. Additionally, private local species experts and resource specialists from the CDFG and USFWS were contacted to gather file information on biological resources in the project study area, including maps and database information (Paulek 2001, Helm 2001, Moen 2001, Wegscheider 2001, Kidd 2001, Konecny 2001, York 2001, Cleary-Rose 2001, Kramer 2001, O ' Farrell 2001, Moore 2001, Rodriguez 2001).

The USFWS office in Carlsbad, CA was contacted in April 2001 for a list of Threatened, Endangered, and other Special Status Species potentially present in the project study area. Carlsbad responded on May 25, 2001 with a species list. The CDFG Eastern Sierra, Inland Desert Region 6 office was contacted in April 2001 for a list of Threatened, Endangered, and other Special Status Species potentially present in the project study area. The Eastern Sierra, Inland Desert Region 6 office responded May 15, 2001 with a species list.

The species lists and literature review were augmented and refined by site assessment activities, and informal consultation with USFWS, CDFG, and through discussions with plant and wildlife specialists with knowledge of the project study area. Table 5.3-1 is a list of special-status plant species known to occur within one mile of the project study area, or specifically identified by USFWS or the CDFG as potentially likely to occur within the study area. Table 5.3-2 is a list of special-status animal species known to occur within one mile of the project study area, or specifically identified by USFWS or the CDFG as potentially likely to occur within the study area.

Plants

The twelve plant species listed in Table 5.3-1 are known from Riverside County and are likely to occur within the project vicinity. These species include Wright's Trichocoronis *(Trichocoronis wrightii var. wrightii),* Thread-Leaved Bordaea (*Bordiaea filifolia*), Coulter's Goldfields (*Lasthenia glabrata coulteri),* Spreading Navarretia (*Navarretia fossalis),* South Coast Saltscale (*Atriplex Pacifica),* Smooth Tarplant *(Hemizonia pungens var. laevis),* San Jacinto Valley Crownscale *(Atriplex coronata var. notatior),* Parry's Spineflower *(Chorizanthe parryi var. parryi),* Parish's Brittlescale *(Atriplex parishii),* Prostrate navarretia (*Navarretia prostrata*), Slender-Horned Spineflower *(Dodecahema leptoceras)*, and California orcutt grass *(Orcuttia californica)*. The State, Federal, and California Native Plant Society (CNPS) status, habitat preference, flowering times and rarity are listed in Table 5.3-1 for each of these twelve species (CNDDB 2001, Skinner and Pavlik, 1994).

Animals

A search of the CNDDB, and consultations with USFWS, CDFG, and local resource specialists yielded a list of threatened, endangered, and other special status species, which could potentially occur in the project study area. Table 5.3-2 summarizes the habitat preferences, range and disturbance, and status of each of those species and the presence of habitat for the species to be located on the project site or linear facilities.

5.3.3 Affected Environment

This section provides an overall description of the affected environment for the following resources:

- Natural Communities
- Vegetation and Special-Status Plant Species
- Wetlands
- Wildlife and Special-Status Animal Species

5.3.3.1 Natural Communities

Natural communities observed in the project area are illustrated in Figure 5.3-2A, 2B, and 2C. The descriptions of the natural communities of the project area were derived from the MSHCP (University of California, Riverside 2001; Holland 1986; and Beauchamp 1986) and summarized below:

- Coastal Sage Scrub – Coastal Sage Scrub is composed of relatively low-growing, dry-season deciduous, and succulent plants. Characteristic plants of this community include California sagebrush (*Artemisia californica*), various species of sage (*Salvia* sp.), and California buckwheat (*Eriogonum fasciculatum*).

Table 5.3-1 Rare, Threatened, Endangered, and Sensitive Plant Species That May Occur in the Project Vicinity

Scientific Name	Common Name	Habitat Preference	Flowering Period	Federal	State	CNPS	Habitat Present
Atriplex coronata var. notatior	San Jacinto Valley Crownscale	Occurs in the Playas, chenopod scrub, valley and foothill grassland, and vernal pools of alkaline soil	April to August	--	E	1B	Yes
Atriplex pacifica	South Coast Saltscale	Occurs in the Playas, coastal bluff scrub and coastal scrub	March to October	SC	--	1B	Yes
Atriplex parishii	Parish's Brittlescale	Vernal Pools, chenopod scrub, alkali meadows, and Playas. Usually occurs on drying alkali flats with fine soils.	June to October	SC	--	1B	Yes
Bordiaea filifolia	Thread-Leaved Bordaea	Cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools; often surrounded by shrubland habitats. Clay soils.	March to June	E	T	1B	Yes
Chorizanthe parryi var. parryi	Parry's Spineflower	Chaparral and coastal scrub in sandy openings. Dry slopes and flats; sometimes at interface of two vegetative types, such as chaparral and oak woodland.	April to June	--	--	3	Yes
Dodecahema leptoceras	Slender-Horned Spineflower	Chaparral and Coastal Scrub (alluvial fan sage scrub)	April to June	E	E	1B	Yes
Hemizonia pungens var. laevis	Smooth Tarplant	Known to occur in Chenopod scrub, meadows, Playas, Riparian woodland, Valley and foothill grassland. Alkali meadow, alkali scrub; and in disturbed places.	April to September	--	SC	1B	Yes
Lasthenia glabrata coulteri	Coulter's Goldfields	Occurs in coastal salt marshes and swamps Playas, valley and foothill grassland, and vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands.	February to June	--	SC	1B	Yes
Navarretia fossalis	Spreading Navarretia	Vernal Pools, Chenopod Scrub, and in marshes and swamps of assorted shallow freshwater	April to June	--	E	1B	Yes
Navarretia prostrata	Prostrate navarretia	Known to occur in Alkali floodplains and vernal pools	Spring	--	--	--	Yes

Table 5.3-1 Rare, Threatened, Endangered, and Sensitive Plant Species That May Occur in the Project Vicinity (Continued)

Scientific Name	Common Name	Habitat Preference	Flowering Period	Federal	State	CNPS	Habitat Present
Orcuttia californica	California orcutt grass	Known to occur in vernal pools	April to June	E	CE	1B	Yes
Trichocoronis wrightii var. wrightii	Wright's Trichocoronis	Known to occur in vernal pools of alkaline soil, Meadows, marshes and swamps and riparian forests	May to September	--	--	2	Yes

Munz, 1973; Reed, 1988; CDFG, 2001; Bramlet, 1993.

Listing Status
Federal
- E - Endangered
- SC – Species of Concern

State
- E- Endangered
- R-Rare

California Native Plant Society (CNPS) Status
- 1B- Rare or endangered in California
- 2 – Rare, threatened or endangered in California, but common elsewhere

R-E-D Code (CNPS)
R (Rarity)
- 1 – Rare, but found in sufficient number and distributed widely enough that the potential for extinction or extirpation is low at this time
- 2 – Occurrence confined to several populations or to one extended population
- 3 – Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported

E (Endangerment)
- 1 – Not endangered
- 2 – Endangered in a portion of its range
- 3 – Endangerment throughout its range

D (Distribution)
- 1 – More or less widespread outside California
- 2 – Rare outside California
- 3 – Endemic to California

Table 5.3-2 Threatened, Endangered or other Special Status Wildlife Species That May Occur in the Project Vicinity

Scientific Name / Common Name	Habitat Preference	Range / Distribution	Listing Status		Habitat Present
			Federal	State	
Invertebrates					
Branchinecta lynchi / Vernal pool fairy shrimp	Occur in small to large vernal pools. These can be very shallow, short-lived and grassy to very large, deep and turbid.	Have been found from Riverside County to southern Oregon, but in Riverside County it is only known from cysts (eggs). Vernal Pool Fairy Shrimp occurrences are generally concentrated along the eastern margin of the Central Valley and in Solano, Contra Costa and Monterey Counties.	T	--	Yes
Euphydryas editha quino / Quino checkerspot butterfly	Generally associated with *Plantago erecta* of varying densities, sage scrub, and open chaparral, grasslands, vernal pools, open or sparsely vegetated areas, hilltop ridgelines, rocky outcrops, trails, and dirt roads (USFWS 2000a).	The coastal ranges of San Diego, Orange, and Riverside counties in California.	E	--	No
Birds					
Haliaeetus leucocephalus / Bald eagle	Utilizes large trees and cliffs near water (Small 1994).	This species is found throughout California (Small 1994).	T	SE	No
Aquila chrysaetos / Golden eagle	Rolling foothill or coast-range terrain, where open grassland turns to scattered oaks, sycamores, or large digger pines. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open area.	It is more common in southern California than in north Regions. Golden eagles are sparsely distributed throughout most of California, occupying primarily mountain and desert habitats.	--	SC	No
Polioptila californica / Coastal California gnatcatcher	Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied. Coastal sage scrub is composed of relatively low-growing, dry-season deciduous, and succulent plants. Characteristic plants of this community include California sagebrush (*Artemisia californica*), various species of sage (*Salvia sp.*), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), and Opuntia spp. (Holland 1986). Gnatcatchers also use chaparral, grassland, and riparian habitats where they occur adjacent to sage scrub (Bontrager 1991).	Historically, Gnatcatchers occurred from southern Ventura County southward though Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties, and into Baja California, Mexico (Atwood 1990). The Gnatcatcher was considered locally common in the mid-1940, but by the 1960's this species had declined substantially in the United States. Currently, it occurs on coastal slopes of southern California, ranging from southern Ventura southward through Palos Verdes Peninsula in Los Angeles County through Orange, Riverside, San Bernardino and San Diego Counties into Baja California, Mexico (Atwood 1991).	T	SC	Yes

Table 5.3-2 Threatened, Endangered or other Special Status Wildlife Species That May Occur in the Project Vicinity (Continued)

Scientific Name / Common Name	Habitat Preference	Range / Distribution	Listing Status		Habitat Present
			Federal	State	
Empidonax traillii extimus / Southwestern willow flycatcher	Utilizes densely vegetated riparian habitat with streamside associations of cottonwoods and willows (CDFG 2001). Breeding season is considered to be April 1 to September 15.	Coastal southern California in the Los Angeles basin, the San Bernardino / Riverside area, and San Diego County.	E	--	No
Vireo bellii pusillus / Least Bell's vireo	Utilizes riparian thickets either near water or dry portions of river bottoms; nests along margins of bushes and forages low to the ground. May also be found associated with mesquite and arrow weed in desert canyons (USFWS 1999). Breeding season is considered to be March 15 to September 15.	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara counties.	E	SE	No
Speotyto cunicularia / Burrowing owl	Burrowing owls are year-round residents in the Central Valley. Burrowing owls are associated with open habitats, including low-growing grasslands and agricultural fields. Sites with low, sparse vegetation are preferred nesting areas and, in the study area, include berms along roadsides, irrigation canals, irrigation pumps, and levees. Burrowing owls typically forage for favored prey items, such as insects, small rodents, and reptiles, in open grasslands, agricultural fields, and ruderal habitats (Jones & Stokes 1994).	Throughout California.	--	SC	Yes
Mammals					
Dipodomys stephensi / Stephens' kangaroo rat	Found almost exclusively in open annual and perennial grasslands or sparse shrublands with cover of less than 50% during the summer, but also occur in coastal scrub and sagebrush with sparse canopy cover (UCR, 2001). Stephens' Kangaroo Rat prefer buckwheat, chamise, brome grass and filaree but are known to avoid very dense stands of grasses and are more likely to inhabit areas where the annual forbes disarticulate in the summer and leave more open areas (UCR, 2001). It constructs burrow systems in firm soil that is neither too hard nor sandy and is known to occupy disturbed areas.	Has a relatively small geographic range (about 1,108 square miles) and is restricted to Riverside County and northern-central San Diego County.	E	ST	Yes

Table 5.3-2 Threatened, Endangered or other Special Status Wildlife Species That May Occur in the Project Vicinity (Continued)

Scientific Name / Common Name	Habitat Preference	Range / Distribution	Listing Status		Habitat Present
			Federal	State	
Dipodomys merriami parvus / San Bernardino kangaroo rat	Found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub (McKernan 1997 as cited in USFWS 1998). Soil texture is a primary factor in this subspecies' occurrence. Sandy loam substrates allow for the digging of simple, shallow burrows (McKernan 1997 as cited by USFWS 1998).	Through southeastern California in San Bernardino County to the Menifee Valley in Riverside County (Lidicker 1960; Hall 1981).	E	SC	No
Reptiles and Amphibians					
Scaphiopus hammondi / Western spadefoot toad	Occurs primarily in grassland habitats, but can be found in valley-foothill woodlands. Vernal pools are essential for breeding and egg laying. Feeding habits of western Spadefoot toad is to wait for insects and other invertebrates on surface of ponds (Stebbins 1985).	This near endemic to California ranges from the vicinity of Redding, Shasta County, southward into northwestern Baja California, Mexico (Stebbins 1985).	SC	SC	No
Cnemidophorus hyperythrus / Orange throated whiptail	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food-termites (Bostic 1966).	The current range includes southwestern California and Baja California. In California, orange-throated Whiptail ranges from the southern edges of Orange and San Bernardino Counties southward to the Mexican border. They are located on the coastal slope of the Peninsular Ranges, and extend from near sea level to 1040 m (Jennings and Hayes, 1994).	SC	SC	Yes
Bufo microscaphus californicus / Arroyo southwestern toad	Inhabits sandy arroyos and river bottoms with open riparian vegetation in inland valleys and foothills; burrows in upland habits during inactive season within 1 km of riparian areas (USFWS 1998d). Breeding season varies dependent on weather, but is typically January through July.	Along the coast and foothills from San Luis Obispo County to San Diego county and inland to the Whitewater River in Riverside County in California.	E	SC	Yes

Listing Status

Federal
- E – Endangered
- T – Threatened
- C – Candidate
- SC – Species of Concern
- PT – Proposed Threatened

State
- E – Endangered
- T – Threatened

California Dept. of Fish and Game
- SC – Species of Concern

- Urban / Exotic / Residential - Urban / exotic / residential community areas are characterized by paved and dirt roads, urban and rural development, ornamental trees and landscaping with a strong non-native component. This type is most common within the proposed construction corridors of the projects linear facilitates. The urban / exotic / residential community is also associated with weedy species including, black mustard (*Brassica nigra),* Italian rye grass (*Lolium multiflorum*), perennial ryegrass (*Lolium perenne*), and alkali mallow (*Malvella leprosa.*
- Agriculture - Agricultural lands are composed of wheat, alfalfa, and safflower. The agricultural lands are completely altered from their natural state. Crops are being commercially grown. Commercial agriculture activities have significantly altered the soil and vegetation by mixing the surface soil layer for cultivation.
- Riparian / permanent wetland - Riparian / permanent wetland communities are closely associated with each other and occur where open water or mesic soil conditions occur. These communities include canyons, foothills, and valleys of intermittent, ephemeral, or perennial streams. Permanent wetlands are riverine in nature with trees, shrubs, and persistent emergent vegetation. The species generally associated with the riparian / permanent wetland vegetation type include cattail (*Typha sp*), bulrush (*Scirpus sp*), and black willow (*Salix gooddingii*). Mostly winter deciduous trees that require water near the soil surface occur in this community including; Willow (Salix ssp.), and Cottonwood (Populous fremontii). The trees form dense woodlands in moist canyons and drainage bottoms, and the habitats are linear and narrow.
- Annual grassland - The annual grassland community is composed of native and nonnative low growing vegetation. This community is typically associated with disturbance, and common species include; ranchers fireweed (*Amsinckia menziesii*), wild oats (*Avena sp.*), foxtail chess (*Bromus madritensis* ssp *rubens*), ripgut grass (*Bromus diandrus*), and barley (*Hordeum* sp).
- Seasonal Wetland - Seasonal wetlands are communities composed of hydrophytic vegetation, hydric soils, and the presence of a hydrologic regime. The soil substrates of seasonal wetlands are periodically deficient in oxygen as a result of excessive water content. Seasonal wetlands exhibit varying levels of disturbance due to grazing, mowing, and other human-caused disturbance. Seasonal wetlands in the proposed construction right-of-way have sparse vegetation and limited species diversity as a result of disturbance. Other seasonal wetlands identified within and adjacent to the study area are vegetated ditches that bisect the study area. Common seasonal wetland plants include; heliotrope (*Heliotropium curassavicum*), bush seepweed (*Suaeda moquinii*), wooly marbles (*Psilocarphus brevissimus*), rabbit-foot grass (*Polypogon monspeliensis*), pickleweed (*Salicornia* sp), and curly dock (*Rumex crispus*).
- Alkali Playa – The alkali playa community is characterized as a flat area consisting of low growing salt and alkali tolerant species. Periodically this area is covered by surface water, or inundated with ground water that slowly filtrates into the ground water system or evaporates into the atmosphere. Common alkali playa vegetation includes; bush seepweed (*Suaeda moquinii*), alkali weed (*Cressa truxillensis*), saltbush (*Atriplex polycarpa*), Australian saltbush (*Atriplex semibaccata*), San Jacinto Valley crownscale (*Atriplex coronata* var. *notator*), and smooth tarplant (*Hemizonia pungens* ssp *laevis*).

5.3.3.2 Vegetation and Special-Status Plant Species

Natural communities for project components are identified in Figure 5.3-2A, 2B, and 2C (scale 1:24,000). Appendix J-6 provides maps of biological resources at a scale of 1 inch to 500 feet (scale of 1:6000). Table 5.3-3 provides a list of plant species observed in the project study area.

Table 5.3-4 provides a summary of the vegetation types crossed by linear features, including the natural gas pipeline the pipeline route.

Energy Center Site

The 45.8-acre Energy Center site is used for agricultural production and is characterized as disturbed upland agricultural croplands currently consisting of wheat. The only native species present at the Energy Center site was western ragweed (*Ambrosia psilostachya*), a weedy species. No special-status plant species were observed at the Energy Center site.

Alternative A Menifee Road Natural Gas Pipeline and Associated Compressor Station

The proposed Alternative A Menifee Road natural gas pipeline route supports upland agricultural cropland with ruderal right-of-ways in a predominantly urban/exotic/residential vegetation community with a strong non-native component. This alignment is associated with agricultural production (wheat) and weedy species including, black mustard (*Brassica nigra),* Italian rye grass (*Lolium multiflorum*), perennial ryegrass (*Lolium perenne*), and alkali mallow (*Malvella leprosa)* (Figure 5.3-2A, 2B, and 2C).

The 6.6-acre compressor station site is used for agricultural production and is characterized as disturbed upland agricultural croplands currently consisting of wheat. The only native species present at the compressor station site was western ragweed (*Ambrosia psilostachya*), a weedy species.

No special-status plant species were observed on the Alternative A Menifee Road natural gas pipeline route or on the compressor station site.

Alternative B Moreno Valley Natural Gas Pipeline

The proposed Alternative B Moreno Valley natural gas pipeline route supports upland agricultural cropland with ruderal right-of-ways, annual grasslands, coastal sage scrub, alkali playa, riparian woodland, and a variety of seasonal and perennial wetlands (Figures 5.3-2A, 2B, and 2C). Natural vegetation is found primarily along perennial watercourses, and within the San Jacinto Wildlife Area. Borders of watercourses and ditches often have narrow strips of wetland vegetation or riparian zones.

The proposed natural gas pipeline construction corridor is dominated by upland agricultural areas (crops such as alfalfa, wheat, and safflower), and annual grasslands. Native tree species and ruderal vegetation are found in the construction corridor and dispersed adjacent to plowed fields. The dominant tree species are cottonwoods, and willows, with introduced species such as common olive, and *Eucalyptus sp.* found at lower densities. The trees within the natural gas pipeline construction corridor include common olive, and *Eucalyptus sp.* that have been

Table 5.3-3 Plant Species Observed in the Project Study Area

SCIENTIFIC NAME	COMMON NAME
Amaranthus sp.	Pigweed
Ambrosia psilostachya	Ragweed
Amsinckia menziesii	ranchers fireweed
Anthemis cotula	mayweed
Artemisia californica	California sagebrush
Artemisia dracunculus	Tarragon
Arundo donax	giant cane
Atriplex polycarpa	Saltbush
Atriplex semibaccata	Australian saltbush
Atriplex coronata var. *notator*	San Jacinto Valley crownscale
Avena sp.	wild oats
Baccharis salicifolia	mule fat
Bassia hyssopifolia	Bassia
Brassica nigra	black mustard
Bromus madritensis ssp *rubens*	foxtail chess (red brome)
Bromus diandrus	ripgut grass
Carex sp	Sedge
Carduus pycnocephalus	Italian thistle
Centaurea melitensis	Tocalote
Chamaesyce sp	prostrate spurge
Chenopodium sp	Goosefoot
Chorispora tenella	blue mustard
Cirsium vulgare	bull thistle
Convolvulus arvensis	bindweed
Conyza canadensis	Horseweed
Conyza bonariensis	Horseweed
Cotula coronopifolia	brass-buttons
Cressa truxillensis	alkali weed
Croton californicus	California croton
Cynodon dactylon	bermuda grass
Datura wrightii	thorn-apple
Dichelostemma capitatum	Blue dicks
Dudleya lanceolata	Dudleya
Eleocharis sp	Spikerush
Encelia farinosa	Brittlebush
Eremocarpus setigerus	turkey mullein
Erodium botrys	storksbill, filaree
Erodium cicutarium	storksbill, filaree
Erodium moschatum	storksbill, filaree
Eriogonum fasciculatum	California buckwheat
Eucalyptus sp	Gum tree
Euthamia occidentalis	western goldenrod
Frankenia salina	alkali heath
Heliotropium curassavicum	Heliotrope
Helianthus annuus	Sunflower
Hemizonia pungens	common tarplant
Heteroyheca grandiflora	telegraph weed

Table 5.3-3 Plant Species Observed in the Project Study Area (Continued)

SCIENTIFIC NAME	COMMON NAME
Hordeum sp	Barley
Isocoma menziesii	Goldenbush
Lactuca serriola	prickly lettuce
Lemma sp.	Duckweed
Leptichloa uninerva	Mexican sprangletop
Lolium multiflorum	Italian rye grass
Lolium perenne	perennial ryegrass
Lotus scoparius	California broom
Lupinus sp.	Lupine
Malva neglecta	common mallow
Malvella leprosa	alkali mallow
Marrubium vulgare	Horehound
Medicago polymorpha	California burclover
Melilotus sp	sweetclover
Mimulus aurantiacus	Monkeyflower
Nicotiana glauca	tree tobacco
Olea europaea	Olive
Phalaris sp	canary grass
Phacelia sp	Phacelia
Poa annua	blue grass
Polygonum arenastrum	common knotweed
Polypogon monspeliensis	annual beard grass (rabbit-foot grass)
Populus fremontii var. fremontii	Fremont cottonwood
Psilocarphus brevissimus	wooly marbles
Robinia pseudoacacia	black locust
Rumex crispus	curly dock
Salicornia sp	Pickleweed
Salix gooddingii	Gooding's willow
Salix lasiolepsis	arroyo willow
Salsola tragus	Russian thistle
Sambucus mexicana	blue elderberry
Salvia columbariae	Chia
Schismus sp	Mediterranean grass
Scirpus sp.	Tule
Sonchus asper	prickly sow thistle
Sonchus oleraceus	common sow thistle
Sorghum halepense	Johnsongrass
Suaeda moquinii	bush seepweed
Taeniatherum caput-medusae	medusa head
Tamarix ramosissima	salt cedar
Tribulus terrestris	puncture vine
Typha latifolia	Cattail
Xanthium strumarium	common cocklebur

Source: Field studies during May and June 2001.

Table 5.3-4 Vegetation Crossed by Project Linear Features (acres)

Vegetation Type	Alternative A Menifee Road Natural Gas Pipeline & Compressor Station [1]	Alternative B Moreno Valley Natural Gas Pipeline [1,2,3]	Non-Reclaimable Wastewater Pipeline [4]	Transmission Line [5]
Coastal Sage Scrub	0	0	0	0
Urban / Exotic / Residential	4.6	47.1	7.0	0.7
Agriculture	3.6	78.4	4.21	0.5
Annual grassland	0	4.4	0	0
Riparian / Permanent wetland	0	0.5	0	0
Alkali Playa	0	4.1	0	0
Seasonal Wetland	0	0	0.1	0.4
Total	**8.2**	**134.5**	**11.3**	**1.6**

Notes:
(1) Construction corridor width = 30 to 100 feet, depending on location, with an average of 75 feet.
(2) Additionally, 32.1 acres is within existing road or road shoulder
(3) All riparian / permanent wetland habitat will be avoided with directional drilling or boring techniques
(4) Construction corridor width outside of the road = 20 feet
(5) Five structures averaging 10,000 square feet each, and two pull sites averaging 10,000 square feet each

planted along Davis Road. A number of cottonwoods and large willows are within the construction corridor, however they will be avoided because they are associated with wetland and riparian zones that will be bored to avoid impacts. Dominant annual grassland and ruderal species include brome (*Bromus sp.*), alkali-mallow (*Malva leprosa*), filaree (*Erodium sp.*), oats (*Avena sp.*), and black mustard (*brassica nigra*).

The Alternative B Moreno Valley natural gas pipeline is located within the current and historic ranges of several listed and special status plant species. North and south of the entrance to the San Jacinto Wildlife Area along the east side of Davis Road special status plant species were identified. Populations of Smooth Tarplant, and Coulter's Goldfields were observed, however these were outside of the construction corridor in an area that would be completely avoided during the construction of the proposed natural gas pipeline. No other sensitive plant populations were identified along the Alternative B Moreno Valley natural gas pipeline study area.

Electrical Transmission Line

Table 5.3-4 provides a summary of the vegetation types crossed by the transmission line route. Several moderately degraded seasonal wetland and drainage features with defined bed and bank lie along this route. Similar to the Energy Center site, this linear alignment is degraded. The annual grasslands and seasonal wetlands show signs of disturbance from agricultural activities and access road construction and maintenance.

The transmission line (Figure 5.3-2A) traverses railroad tracks, disturbed annual grassland, fallow fields, and agricultural lands. Annual grasses and ruderal species typical of the area dominate the proposed linear alignment. Species include oats (*Avena sp.*), brome (*Bromus* sp.), black mustard (*Brassica nigra*), sunflower (*Helianthus annuus*), horseweed (*Conyza sp.*), rabbit-foot grass (*Polypogon monspeliensis*), and filarees (*Erodium* sp.). Several *Eucalyptus sp.* are found on the southern side of the electrical transmission line. The drainage features with defined bed and bank are approximately 3 feet wide, and were dry at the time of the survey. Eucalyptus dominates the upland borders of these features.

No special-status plant species were observed along the transmission line route.

Non-Reclaimable Wastewater Pipeline

Table 5.3-4 provides a summary of the vegetation types crossed by the non-reclaimable wastewater pipeline route. Several moderately degraded drainage features with defined bed and bank lie along this route. Similar to the Energy Center site and the electrical transmission line, this linear alignment is degraded, and the annual grasslands habitat show signs of disturbance from agricultural activities, and road construction and maintenance.

The non-reclaimable wastewater pipeline (Figure 5.3-2A) traverses highways, disturbed annual grassland, fallow fields, agricultural lands, and paved roads adjacent to rural residential areas. Annual grasses and ruderal species typical of the area dominate the proposed pipeline alignment outside of the rural residential areas where the pipeline is in pavement. Species include oats (*Avena sp.*), brome (*Bromus sp.*), black mustard (*Brassica nigra*), sunflower (*Helianthus annuus*), horseweed (*Conyza sp.*), rabbit-foot grass (*Polypogon monspeliensis*), mayweed (*Anthyemis cotula*) and filarees (*Erodium sp.*). The drainage features with defined bed and bank are approximately 3 feet wide, and were dry at the time of the survey. Limited private property access precluded a complete survey, but limited wetland and woody vegetation could be seen from vantagepoints along the alignment.

No special-status plant species were observed along the wastewater pipeline route.

5.3.3.3 Wetlands

Drainage features were identified in the field by the presence of defined bed and bank and an observed high water mark. Locations of delineated wetlands and features with a defined bed and bank with the presence of an observed high water mark in the project study area are illustrated in Figure 5.3-2A, B, and C. A summary of jurisdictional wetlands is provided in Table 5.3-5 and Table 5.3-6 presents a listing of all wetland plant species observed at the energy Center site and linear features.

Energy Center Site

The 45.8-acre Energy Center site has no jurisdictional wetlands, and no defined bed and bank features (Table 5.3-5).

Table 5.3-5 Jurisdictional Wetlands on the Energy Center Site and Linear Features (in acres)

	Alkali/Playa	Seasonal Wetlands	Permanent Wetlands	Defined Bed and Bank Features	Total [5] Acres
Energy Center Site	0	0	0	0	0
Alternative A Menifee Road Natural Gas Pipeline[1]	0	0	0	0	0
Compressor Station	0	0	0	0	0
Alternative B Moreno Valley Natural Gas Pipeline[1,2]	4.1	0	0.5	0.1	4.7
Transmission Line[4]	0	0.4	0	0.1	0.5
Wastewater Pipeline[3]	0	0.1	0	0.1	0.2
Total	**4.1**	**0.5**	**0.5**	**0.3**	**5.4**

Notes:

(1) Construction corridor width = 30 to 100 feet, depending on location, with an average of 75 feet.

(2) All riparian / permanent wetland habitat will be avoided with directional drilling or boring techniques.

(3) Construction corridor width outside of the road = 20 feet.

(4) Five structures averaging 10,000 square feet each, and two pull sites averaging 10,000 square feet each.

(5) All area calculations rounded up to the nearest 0.1 acre.

Table 5.3-6 Wetland Plant Species Observed on the Project Site, or Along Linear Facilities

Scientific Name	Common Name	Indicator Status *	Project Site	Pipeline Corridors
Amaranthus sp.	pigweed	FACU	X	X
Ambrosia psilostachya	western ragweed	FAC		X
Anthemis cotula	mayweed	FACU	X	X
Arundo donax	Giant reed	FACW		X
Atriplex coronata var. *notator*	San Jacinto Valley crownscale	FACW		X
Atriplex semibaccata	Australian saltbush	FAC		X
Avena sp.	wild oats	Not Listed		X
Baccharis salicifolia	mulefat	FACW-		X
Bassia hyssopifolia	bassia	FAC		X
Carex sp.	sedge	FACW	X	X
Chenopodium sp.	goosefoot	FAC	X	X
Cirsium vulgare	bullthistle	FACU		X
Convolvulus arvensis	bindweed			X
Conyza canadensis	horseweed	FAC	X	X
Cotula coronopifolia	brassbuttons	FACW+		X
Cressa truxillensis	alkali weed	FACW		X
Cynodon dactylon	Bermuda grass	FAC	X	X

Table 5.3-6 Wetland Plant Species Observed on the Project Site, and Along Linear Facilities (Continued)

Scientific Name	Common Name	Indicator Status *	Project Site	Pipeline Corridors
Eleocharis sp.	spikerush	OBL		X
Euthamia occidentalis	western goldenrod	OBL		X
Frankenia salina	alkali heath	FACW+		X
Helianthus annuus	sunflower	FAC-	X	X
Heliotropium curassavicum	heliotrope	OBL		X
Hemizonia pungens ssp *laevis*	smooth tarplant	FAC		X
Hordeum sp.	barley	FACU	X	X
Isocoma menziesii	goldenbush	FACW		X
Lactuca serriola	prickly lettuce	FAC	X	X
Lasthenia glabrata ssp *coulteri*	Coulter goldfields	OBL		X
Lemma sp.	duckweed	OBL		X
Leptichloa uninerva	Mexican sprangletop	FACW		X
Lolium multiflorum	Italian ryegrass	Not listed	X	X
Lolium perenne	perennial ryegrass	FAC	X	X
Malvella leprosa	alkali mallow	FAC	X	X
Marrubium vulgare	horehound	FAC		X
Melilotus indica	sourclover	FAC		X
Mimulus guttatus	monkeyflower	OBL		X
Nicotiana glauca	tree tobacco	FAC		X
Phalaris minor	little seed canary grass	Not Listed		X
Poa annua	annual blue grass	FACW-		X
Polygonum arenastrum	common knotweed	FAC	X	X
Polypogon monspeliensis	rabbit-foot grass	FACW+	X	X
Populus fremontii var. *fremontii*	cottonwood	FACW		X
Psilocarphus brevissimus	wooly marbles	OBL		X
Robinia pseudoacacia	black locust	FAC		X
Rumex crispus	curly dock	FACW-	X	X
Salicornia sp.	pickleweed	OBL		X
Salix gooddingii	Gooding's willow	OBL		X
Salix lasiolepsis	Arroyo willow	FACW		X
Salsola tragus	Russian thistle	FACU	X	X
Sambucus mexicana	blue elderberry	FAC		X
Scirpus sp.	tule	OBL		X
Sonchus asper	prickly sow thistle	FAC		X
Sorghum halepense	Johnson grass	FACU		X
Suaeda moquinii	bush seepweed	FAC+		X
Tamarix ramosissima	salt cedar	FAC		X
Typha latifolia	broad-leaved cattail	OBL		X
Xanthium strumarium	common cocklebur	FAC+	X	X

*Indicator Status from (Reed, 1988).

OBL – Obligate Wetland; FAC – Facultative; FACW – Facultative Wetland; FACU – Facultative Upland; UPL – Obligate Upland

Alternative A Menifee Road Natural Gas Pipeline and Associated Compressor Station

The Alternative A Menifee Road natural gas pipeline route contains no jurisdictional wetlands, and no defined bed and bank features (Table 5.3-5). The 6.6-acre compressor station parcel contains no jurisdictional wetlands, and no defined bed and bank features (Table 5.3-5).

Alternative B Moreno Valley Natural Gas Pipeline

Wetland types delineated within the Alternative B Moreno Valley natural gas pipeline corridor included drainage features and complexes, stream and canal crossings, persistent emergent wetlands, and riparian areas. Wetland and water crossings for the Alternative B Moreno Valley natural gas pipeline construction corridor are summarized in Table 5.3-7. Wetlands were delineated in the field and mapped on aerial photographs at a scale of one-inch equals 500 feet (Appendix J-6).

Table 5.3-7 Linear Facilities Construction Corridor Wetland Areas

Linear Feature	Wetland Description	Within the CC (acres) [1]
Alternative B Moreno Valley Natural Gas Pipeline[2,3,4], (west side of Davis Road, between Ramona Expressway and Marvin Road.)	Seasonal wetland, alkali playa	4.1 acres
Non-Reclaimable Wastewater Pipeline[5]:		
• Both sides of McLaughlin Road	Seasonal wetland, natural and agricultural drainage	0.1 acres
Transmission Line[6]:		
• North side of McLaughlin Road west of Palomar Road	Seasonal wetland, natural and agricultural drainage	0.3 acres
• North side of McLaughlin Road east of Palomar Road	Seasonal wetland	0.1 acres

(1) CC – construction corridor; acres rounded to nearest 0.1 acre
(2) Construction corridor width = 30 to 100 feet, depending on location, with an average of 75 feet.
(3) Additionally, 32.1 acres is within existing road or road shoulder
(4) All riparian / permanent wetland habitat will be avoided with directional drilling or boring techniques
(5) Construction corridor width outside of the road = 20 feet
(6) Five strucutres averaging 10,000 square feet each, and two pull sites averaging 10,000 square feet each

A total of 4.7 acres of jurisdictional wetlands are present along the Alternative B Moreno Valley natural gas pipeline route (Table 5.3-5). Wetland types observed within the Alternative B Moreno Valley natural gas pipeline construction corridor include permanent wetlands and seasonal alkali playa wetlands. Seasonal wetlands occur where an impervious layer of soil, such as hardpan or claypan, or Domino-Traverse-Willows soil associations lies beneath a shallow topographic depression. These depressions fill with rainwater and runoff from adjacent areas during the winter and may remain inundated until spring. They may also fill and dry intermittently. In both cases, the soil remains saturated too long to allow most grassland species to establish themselves successfully. Conversely, the soil becomes too dry during the summer to support species typical of emergent wetlands. Hence, seasonal wetlands

are characterized by a unique assemblage of plant species, the great majority of which are California natives. Within each wetland, different species are distributed according the duration of inundation that they are able to tolerate. Water is supplied to these wetlands via direct precipitation, overland runoff from adjacent upland, and subsurface inflow from adjacent areas.

The Alternative B Moreno Valley natural gas pipeline route supports persistent wetland vegetation (see Table 5.3-6) adjacent to the tributaries of the San Jacinto River (at MP 9.6 and MP 10.9). Duckweed, cattails, bulrush, mule fat, cottonwoods and willows dominate the open water, and associated boundaries of these permanent wetlands. Riparian habitat is found along the San Jacinto River, and is dominated by Fremont cottonwood, and willow along the north tributary, and by cattails, bulrush and mule fat along the south tributary. The artificial canal and drainage features from MP 3.5 to MP 14.6 supports Bermuda grass, nutsedge, bush seepweed, and canary grass.

Despite the degraded condition of the seasonal wetlands found from MP 3.5 to MP 14.6, characteristic seasonal wetland species were found. Species such as wooly marbles, Italian and perennial ryegrass, Bermuda grass, nutsedge, bush seepweed, pickleweed, and canary grass were observed at various stages and locations in the drying seasonal wetlands. As the seasonal wetlands dry further, ruderal species such as smooth tarplant, rabbit-foot grass, curly dock and common cocklebur become evident.

Drainage features with defined bed and bank include vegetated ditches along roads and in agricultural fields. Most drainage features in the project area are narrow (2-25 feet wide on average), linear, artificially created, semi-permanent channels that are regularly maintained. Small irrigation ditches that are not persistently inundated were also delineated. A total of 0.1 acres (Table 5.3-5) of CDFG code 1603 jurisdictional features are present along the Alternative B Moreno Valley natural gas pipeline route.

Transmission Line and Non-Reclaimable Wastewater Pipeline

A total of 0.4 acres of jurisdictional seasonal wetlands are present along the transmission line route, and 0.1 acres of jurisdictional wetlands are present along the non-reclaimable wastewater pipeline (Table 5.3-5). Wetland types observed included only seasonal wetlands. Within each wetland, different species are distributed according the duration of inundation that they are able to tolerate. Water is supplied to these wetlands via direct precipitation, overland runoff from adjacent upland, and subsurface inflow from adjacent areas. Wetland vegetation is found in the drainages and roadside ditches associated with the agricultural fields found along the proposed linear facilities. Streams, drainages, and canal crossings include natural stream channel banks, and canal banks dominated by wetland vegetation. Most of the streams and canals in the project area support some wetland vegetation along a portion (usually the lower one-third or more) of their banks. These streams and canals are jurisdictional under the CDFG code 1603. A total of 0.1 acres of CDFG code 1603 jurisdictional features with defined bed and bank (see Table 5.3-5) are present along the

transmission line route, and 0.1 acres of jurisdictional bed and bank features are present along the non-reclaimable wastewater pipeline (Table 5.3-5).

5.3.3.4 Wildlife and Special-Status Animal Species

Habitats within the linear facility corridors are largely agricultural lands comprised of wheat, alfalfa, and safflower (see Figure 5.3-2A, 2B, and 2C and Appendix J-6). Because these habitats are highly disturbed by annual disking, planting, and periodic irrigation they tend to have low wildlife value. Trees and shrubs have been removed from most of the agricultural lands and emergent or temporal wetlands are generally plowed or drained.

The entire study area is potential foraging habitat for raptors (white-tailed kite, red-tailed hawk, American kestrel, turkey vulture, and burrowing owl) that have been observed in the farm fields in the vicinity of the Alternative B Moreno Valley natural gas pipeline alignment.

The entire study area was assessed for bald eagle and golden eagle nesting and roosting sites. The study area contains some suitable foraging habitat for eagles within approximately 0.5 mile, but no appropriate nesting or roosting sites (natural or artificial / man made that could lure eagles to nest) are located in the project study area.

The entire study area was assessed for southwestern willow flycatcher and least Bell's vireo habitat by biologist John Konecny in May 2001. Mr. Konecny holds Federal Permit TE-837308-1 to conduct surveys for the southwestern willow flycatcher and least Bell's vireo. Vegetation composition, and habitat patch size in the study area were not adequate to support nesting southwestern willow flycatchers, or least Bell's vireo.

The entire study area was assessed for the quino checkerspot butterfly habitat by biologist Jeff Kidd in May of 2001. Mr. Kidd holds Federal Permit TE-022230-0 to conduct surveys for the quino checkerspot butterfly. The study area is outside of USFWS designated survey areas, and lacks larval host plants. Additionally, no extant quino checkerspot populations are known within 8 to 10 miles of the study area.

An arroyo southwestern toad site assessment was conducted throughout the entire study area in May, and June 2001 by FWENC Herpetologist Dennis Strong and biologist Jeff Kidd. Mr. Kidd holds Federal Permit TE-787376 to handle, relocate and survey for arroyo southwestern toads. The site assessment consisted of day and evening visits to the study area to evaluate potential habitat and listening for toad vocalizations. Known populations of arroyo southwestern toads were monitored to verify that surveys were being conducted during the appropriate period. On April 14, 2001 arroyo southwestern toads were heard calling and seen at Casper's Regional Park approximately 50 miles to the southwest of the study area. It was determined that the study area lacks appropriate microhabitat for the arroyo southwestern toad. The study area lacks 4th through 6th order tributaries with lateral erosion, and shallow gravely pools with an adjacent sandy terrace. Habitat within the study area consists of mud river bottoms with stagnate water (agricultural run off) with a large clay component.

Additionally, FWENC Herpetologist Dennis Strong conducted a western spadefoot toad site assessment in April 2001. FWENC determined that the San Jacinto Wildlife Area included potential marginal habitat for western spadefoot toads. Focused surveys for western spadefoot toads were conducted in April, May, and June 2001. The surveys consisted of day and evening visits to the study area to evaluate habitat and species presence/absence. To verify that surveys were being conducted duriing the appropriate periods, western spadefoot toads were observed and heard on 29 and 30 May 2001 approximately 20 miles northwest of the study area near the foothills of the San Bernardino National Forest. No western spadefoot toads were observed within or adjacent to the study area. All potential toad habit will be completely avoided via drilling or boring construction techniques, and no habitat modification will occur from the proposed linear facilities.

The Energy Center site and linear facilities are within the historic range of the SKR and San Bernardino kangaroo rat, both federally endangered species. Michael J. O'Farrell conducted a SKR and San Bernardino kangaroo rat site assessment and focused survey during June, 2001, throughout the entire study area. Mr. O'Farrel has Federal Permit TE-744707-3 to conduct surveys for Stephens' and San Bernardino kangaroo rats. On 4 June 2001 Julie York at the Carlsbad USFWS Field Office was notified of the Applicant's intent to survey. No San Bernardino kangaroo rat habitat or sign was identified within the study area during the field surveys. SKR habitat and sign were observed on a portion of Alternative B Moreno Valley natural gas pipeline as described below.

Wildlife species that have been observed in the project study area are listed in Table 5.3-8.

Energy Center Site

The proposed Energy Center site comprises 45.8 acres of disturbed upland agricultural habitat (Figure 5.3-2A, 2B, and 2C). The disturbed agricultural habitat is characterized by annual disking, planting, and harvesting so it tends to have low wildlife value. No shrubs or riparian woodland occur at the Energy Center site and there are no large trees that are suitable for raptor nesting on or adjacent to the site. No threatened, endangered, or special status plant species or their microhabitats were observed at the Energy Center site during the May and June 2001 surveys. Land uses adjacent to the site includes industrial, agricultural, and low-density rural residential uses that provide marginal wildlife habitat.

The following species were observed at the Energy Center site and are common to agricultural habitats in southern California: garter snake, California ground squirrel, California cottontail, western meadowlark, brown headed cowbird, European starling, song sparrow, and American crow. These species occupy the sites either because they are highly adaptable or use the site temporarily for foraging. There are no unique or sensitive habitats on the site.

The lack of trees or shrubs on the Energy Center site, and the lack of topographic relief limit the value of the agricultural habitat for most species because they are vulnerable to predation. The burrowing owl, which prefers foraging areas in agricultural habitats, was not observed foraging on the Energy Center site, and no potential burrows were observed.

Table 5.3-8 Wildlife Species Observed in the Project Study Area

AMPHIBIANS AND REPTILES		
Western Toad	Common Garter Snake	Pacific Rattlesnake
Pacific Treefrog	Granite Spiny Lizard	Western Fence Lizard
Bullfrog	Western Whiptail	
BIRDS		
Greater Roadrunner	American Kestrel	American Crow
Common Raven	Prairie Falcon	Mocking Bird
Rock Wren	Turkey Vulture	Black-Necked Stilt
Great Egret	California Quail	Ash-Throated Flycatcher
White Pelican	Bluegrosbeak	Yellow-Breasted Chat
Wrentit	Great Blue Heron	House Finch
Black Crowned Night Heron	Killdeer	Loggerhead Shrike
Bushtit	Mourning Dove	European Starling
House Wren	Barn Owl	California Towhee
Bewick's Wren	Burrowing Owl	Song Sparrow
Turkey Vulture	Anna's Hummingbird	Red-Winged Blackbird
White Tailed-Kite	Western Kingbird	Western Meadowlark
Mallard	Northern Flicker	House Sparrow
Red-Tailed Hawk	Black Phoebe	American Goldfinch
Brown Headed Cowbird	House Finch	
MAMMALS		
California Ground Squirrel	Cottontail	Raccoon
Black-Tailed Jackrabbit	Mule Deer	Striped Skunk
Coyote		
INVERTEBRATES		
Henny's Checkerspot Butterfly	Leanira Checkerspot Butterfly	Painted Lady Butterfly
Virginia Lady Butterfly	Cabbage White Butterfly	Western Tailed Blue Butterfly
Acmon Blue Butterfly	Western Pygmy Blue Butterfly	Mourning Cloak Butterfly
Orange Sulfur Butterfly	Blister Beetle	Short Horned Grasshopper
Darkling Ground Beetle	Honey Bees	

The proposed Energy Center site could provide foraging area for raptors, but the habitat has very low productivity for small mammals. The Energy Center site is within the historic range of the SKR, a federally endangered species, however the site is not occupied by SKR. The site is also within the Habitat Conservation Plan for the SKR in Western Riverside. The Energy Center site is part of a Fee Area, which establishes a regional mechanism in western Riverside County through which otherwise lawful activities resulting in the incidental take of SKR meet Federal Endangered Species Act and California State Endangered Species Act requirements without the need to secure individual permits and agreements from the USFWS and the CDFG (RCHCA 1998).

Alternative A Menifee Road Natural Gas Pipeline and Associated Compressor Station

The proposed 0.9-mile Alternative A Menifee Road natural gas pipeline route supports upland agricultural cropland with ruderal right-of-ways in a predominantly urban/exotic/residential vegetation community with a strong non-native component. These habitats have low value for

wildlife. Several *Eucalyptus sp.* are found on the southern side of the electrical transmission line. These large trees may provide nesting and roosting areas for raptors, although none were seen during the surveys.

The 6.6-acre compressor station site has been heavily disturbed by agricultural use, mainly for growing wheat and alfalfa. There are no trees or shrubs on the site, and the lack of topographic relief limits the value of the agricultural habitats for most species. The burrowing owl, which prefers foraging areas in agricultural habitats, was not observed foraging on the compressor station site, and no potential burrows were observed. Land uses adjacent to the site include agricultural cropland, and low density rural residential uses that provide marginal wildlife habitat.

Alternative B Moreno Valley Natural Gas Pipeline

Large trees are a significant habitat feature where present, because raptors need large trees in the vicinity of foraging areas for nesting and roosting. There are some suitable trees along the southern portion of the Alternative B Moreno Valley natural gas pipeline corridor near MP 4.5 and had apparent active or inactive red-tailed hawk nests (see Appendix J-6).

The pipeline route and surrounding area was assessed for bald eagle and golden eagle nesting and roosting sites. The only known inland pair of bald eagles is approximately 20 miles from the study area. The study area contains some suitable foraging habitat for eagles within approximately 0.5 mile, but no appropriate nesting or roosting sites (natural or artificial / man made that could lure eagles to nest) are located in the project study area. Additionally, golden eagles utilize rock outcrops to breed. FWENC biologists determined that none of the rock outcrops located within approximately 0.5 miles of the study area were large enough to support a nesting pair of golden eagles.

A portion of the Alternative B Moreno Valley natural gas pipeline from MP 11 to MP 14 is adjacent to coastal California gnatcatcher habitat within the San Jacinto Wildlife Area. The riversidean sage scrub in the wildlife area is low quality habitat. In May of 2001 Chris Moen, and Julie York at USFWS were notified of FWENC's intent to conduct focused surveys. Focused surveys for the coastal California gnatcatcher were conducted in the study area by biologist Jeff Kidd. Mr. Kidd holds Federal Permit TE-787376 to conduct surveys for coastal California gnatcatcher. The surveys were conducted following the current protocol of the USFWS, *Coastal California Gnatcatcher (Polioptila californica californica) 1997 Presence/Absence Survey Protocol.* The surveys included 6-visit surveys to the study area at approximately weekly intervals. Six visits were required for areas not yet enrolled within a Natural Community Conservation Planning Program (NCCP). Surveys were completed in all areas of coastal sage scrub vegetation, including all sub-associations. No coastal California gnatcatchers were observed within the study area, or on adjacent lands. Outside of the San Jacinto Wildlife area, no other potential gnatcatcher habitat was identified within the Alternative B Moreno Valley natural gas pipeline corridor. All coastal sage scrub vegetation, including all sub-associations will be completely avoided, and no habitat modification will occur from the pipeline installation.

A burrowing owl, burrow and census survey was conducted in May 2001 by qualified FWENC biologists Robert Anderson, and Lenny Malo. The nesting season for burrowing owl is April 15 to July 15. The study area was slowly and methodically walked to determine the presence of burrows natural and artificial. One occupied burrow was observed during the burrow survey northwest of the intersection of Marvin Road and Davis Road along the proposed Alternative B Moreno Valley natural gas pipeline. During the census survey it was determined that a male and female pair occupied the burrow.

The Alternative B Moreno Valley natural gas pipeline contains seasonal wetland habitat that could potentially be occupied by vernal pool fairy shrimp. The habitat occurs in a scattered pattern within and adjacent to the San Jacinto Area. This habitat has been mapped by FWENC biologists on areas with Domino-Travers-Willows soil association. Seasonal wetland habitat will be dry season sampled for the presence of vernal pool branchiopods. The Carlsbad USFWS Field Office (York 2001) has accepted the survey schedule and protocol. Dry season sampling for fairy shrimp was initiated in July 2001 by biologist Frank J. Wegscheider with the California State University Fullerton Department of Biology. Mr. Wegscheider holds Federal Permit TE038716-0 to conduct surveys for listed vernal pool branchiopods. The results of this survey will be available in late August of 2001.

An approximate 5-mile portion of the Alternative B Moreno Valley natural gas pipeline is within the Core Reserve Area, and is currently occupied by SKR (at an approximate population density of 10 SKR per hectare) (O'Farrell 2001). Because the pipeline will be within the road right-of-way, this Core Reserve Area habitat will be completely avoided during construction, and no modification of habit will occur as a result of construction. The approximate 5 mile portion of the Alternative B Moreno Valley natural gas pipeline within the Core Reserve Area that is currently occupied by SKR will require a formal Section 7 consultation with the USFWS.

Electrical Transmission Line & Non-Reclaimable Wastewater Pipeline

The electrical transmission line and non-reclaimable wastewater pipeline contain seasonal wetland habitat that could potentially be occupied by vernal pool fairy shrimp. The habitat occurs in a scattered pattern along the northeastern portion of the electrical transmission line, and the northwestern portion of the wastewater line. This habitat was mapped by FWENC biologists on soils of the Domino-Travers-Willows association. Dry season sampling for fairy shrimp was initiated in early July 2001. The results of this survey will be available in late August, 2001.

5.3.4 Environmental Impacts

This section summarizes the direct and indirect effects of construction, operation, and maintenance activities on biological resources potentially affected by the proposed project.

Impacts to biological resources may result from:

- Habitat loss/disturbance
- Direct impacts to special status species
- Project operation

Appendix G of CEQA addresses the significance criteria with respect to biological resources (Public Resources Code Sections 21000et seq.). An impact would be considered significant if it would:

- Have a substantial adverse effect, on any federal or state listed species identified as a endangered, threatened, or candidate.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local ordinances protecting biological resources.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

5.3.4.1 Habitat Loss/Disturbance

Construction of the Energy Center could result in the temporary and permanent loss of habitats including annual grassland, wetlands, and agricultural areas. A summary of the potential project temporary and permanent impacts to these habitats are provided in Table 5.3-9.

Energy Center Site

Construction at the proposed Energy Center site would result in the permanent loss of approximately 35 acres of agricultural habitat (Table 3.7-4). An additional 11 acres would be temporarily impacted by construction staging and parking areas. Elimination of 35 acres of agricultural habitat would displace the wildlife that use the habitat including species such as garter snake, California ground squirrel, California cottontail, western meadowlark, brown headed cowbird, European starling, song sparrow, and American crow. All of these species are common, and the affect of removing 35 acres of agricultural habitat is not considered significant.

Agricultural habitat at the project site may provide foraging habitat for raptors. Adequate foraging habitat for these species is available locally, and the habitat value of the project site is

relatively low because the site is highly disturbed by annual disking, planting, and harvesting. The project is not expected to have a significant impact on these species.

Alternative A Menifee Road Natural Gas Pipeline and Compressor Station

The proposed Alternative A Menifee Road natural gas pipeline route supports upland agricultural cropland with ruderal right-of-ways in a predominantly urban/exotic/residential vegetation community with a strong non-native component. The primary impact on upland habitat types during construction and routine maintenance of the proposed 0.9-mile pipeline line includes temporary alteration and loss of vegetative cover. Following construction of the pipeline the surface would be restored to agricultural use or as habitat. There would be temporary impacts to 3.6 acres of agricultural habitat and 4.6 acres of urban/exotic/residential vegetation habitat as summarized in Table 5.3-9.

Alternative A Menifee Road natural gas pipeline will not cross any jurisdictional wetland features.

No potential or active raptor roost/nest sites will be removed for construction of the Alternative A Menifee Road natural gas pipeline route. No ground disturbing activities will occur within the drip line of any potential or active raptor roost/nest sites.

The proposed compressor station site construction would result in the permanent loss of approximately 2.6 acres of agricultural habitat, and an additional 4 acres would be temporarily impacted by construction.

Alternative B Moreno Valley Natural Gas Pipeline

Vegetation and Wildlife Habitat. The primary impact on upland habitat types during construction and routine maintenance of the proposed Alternative B Moreno Valley natural gas pipeline includes temporary alteration and loss of vegetative cover. With an average width of 75 feet for the Alternative B Moreno Valley natural gas pipeline construction corridor, the maximum estimated impacts to agricultural, residential/urban/exotic, annual grassland, wetland, riparian, alkali playa, and sage scrub habitat for the pipeline construction right-of-ways are presented in Table 5.3-9.

No potential or active raptor roost/nest sites will be removed for construction of the Alternative B Moreno Valley natural gas pipeline route. No ground disturbing activities will occur within the drip line of any potential or active raptor roost/nest sites.

Wetlands. Table 5.3-7 presents a listing of all wetland crossings that could occur as a result of the proposed Alternative B Moreno Valley natural gas pipeline construction. In most cases, the natural gas pipeline construction right-of-way would be confined to 30 to 100 feet (average of approximately 75 feet) on one side of the adjacent road, or within the road itself. The total maximum amount of wetland impact is calculated as a worst case.

Table 5.3-9 Summary of Habitat Loss/Disturbance Impacts Summary (in acres)

Project Component	Annual Grasslands		Agricultural		Residential / Urban / Exotic		Riparian / Permanent Wetland		Coastal Sage Scrub		Seasonal Wetlands & Alkali Playa	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Energy Center Site	0	0	35	11	0	0	0	0	0	0	0	0
Alternative A Menifee Road Natural Gas Pipeline[1]	0	0	0	3.6	0	4.6	0	0	0	0	0	0
Compressor Station	0	0	2.6	4.0	0	0	0	0	0	0	0	0
Alternative B Moreno Valley Natural Gas Pipeline[1]	0	4.4	0	78.4	0	47.1	0	0	0	0	0	4.1
Electrical Transmission Line[1]	0	0	0	0.5	0	0.7	0	0	0	0	0	0.4
Non-Reclaimable Wastewater Pipeline[1]	0	0	0	7.0	0	4.2	0	0	0	0	0	0.1
Total with Alternative A	0	0	37.6	26.1	0	9.5	0	0	0	0	0	0.5
Total with Alternative B	0	4.4	35	96.9	0	52	0	0	0	0	0	4.6

(1) The pipeline right-of-way will be returned to pre-construction conditions following construction.
(2) Riparian/permanent wetland will be avoided by directional drilling.

The Alternative B Moreno Valley natural gas pipeline construction corridor (approximately 75 feet wide) would impact a maximum of 4.1 acres of alkali playa/wetland. Impacts to riparian/permanent wetlands noted in Table 5.3-5 will be avoided by directional drilling at the following locations:

- Davis Road at crossing of Old San Jacinto River (MP 10.8)
- Davis Road at crossing of San Jacinto River (MP 9.6)

When the mitigation measures described in Section 5.3.5, below, are implemented, impacts to wetlands within the construction corridor right-of-way would not be considered significant.

The primary impact on wetlands during construction and routine maintenance of the proposed Alternative B Moreno Valley natural gas pipeline includes the temporary alteration and loss of vegetative cover in some isolated marginal seasonal wetlands. This is a result of construction, vegetation clearing, grading, trenching, equipment staging, pipe assembly and placement, and backfilling. In wetland ditches with herbaceous vegetation, these impacts would be temporary.

Electrical Transmission Line and Wastewater Pipeline

Vegetation and Wildlife Habitat. The primary impact on upland habitat types during construction and routine maintenance of the proposed electrical transmission line, and non-reclaimable wastewater pipeline includes temporary alteration and loss of vegetative cover. Considering the entire electrical transmission line (0.9 miles), and non-reclaimable wastewater pipeline (4.7 miles) construction corridors, the maximum estimated impacts to agricultural, residential/urban/exotic, annual grassland, and wetland habitat for the linear facilities construction right-of-way are presented in Table 5.3-9.

The most significant habitat types affected include upland agricultural croplands and a small portion of marginal, highly disturbed seasonal wetlands. The minimal direct permanent impacts result from aligning the proposed pipeline inside previously disturbed roads and within highly disturbed agricultural areas and disturbed annual grasslands. These areas are annually disked or planted. Impacts to upland agricultural croplands, annual grasslands, and a small portion of marginal, highly disturbed seasonal wetlands habitat would not constitute a significant impact to vegetation or wildlife resources.

Wetlands

Table 5.3-7 presents a listing of all wetland crossings that could occur as a result of the proposed construction of the electrical transmission line, and wastewater pipeline. In most cases, the linear facility construction right-of-way would be confined to one side of the adjacent road, or within the road itself. The total maximum amount of wetland impact is calculated as a worst case.

The electrical transmission line and wastewater pipeline corridors would impact a maximum of 0.8 seasonal wetland acres. Implementation of the mitigation measures outlined in

Section 5.3.5, below, will reduce impacts to wetlands within the linear facility construction corridor right-of-way to a level of insignificance.

The primary impact on wetlands during construction and routine maintenance of the proposed linear facilities includes the temporary alteration and loss of vegetative cover in some isolated marginal seasonal wetlands. This is a result of construction, vegetation clearing, grading, trenching, equipment staging, pipe assembly and placement, and backfilling. In wetland ditches with herbaceous vegetation, these impacts would be temporary.

5.3.4.2 Direct Impacts to Special Status Species

All habitats for sensitive plant species, and known sensitive plant locations will be avoided with the proposed construction. Special-status animal species known to occur in the project area that may be impacted by the project include SKR, burrowing owl, and vernal pool fairy shrimp. A summary of potential project temporary and permanent impacts to habitats for these species is provided in Table 5.3-10.

Table 5.3-10 Impacts to Special Status Species Habitat

Project Component	Special Status Species Affected	Permanent Habitat Loss (acres)	Temporary Habitat Loss (acres)
Project Site	SKR (Fee Area)	35	11
	Burrowing owl	0	0
	Vernal pool fairy shrimp	0	0
Alternative A	SKR (Fee Area)	0	8.2
Menifee Road Natural	SKR (Core Area)	0	0
Gas Pipeline	Burrowing owl	0	0
	Vernal pool fairy shrimp	0	0
Compressor Station	SKR (Fee Area)	2.6	4.0
	Burrowing owl	0	0
	Vernal pool fairy shrimp	0	0
Alternative B	SKR (Fee Area)	0	89
Moreno Valley	SKR (Core Area)	0	45.5
Natural Gas Pipeline	Burrowing owl	0	6.5[(1)]
	Vernal pool fairy shrimp	0	4.1
Electrical	SKR (Fee Area)	0.1	1.6
Transmission Line	Burrowing owl	0	0
	Vernal pool fairy shrimp	0	0.43
Non-Reclaimable	SKR (Fee Area)	0	11.3
Wastewater Pipeline	Burrowing owl	0	0
	Vernal pool fairy shrimp	0	0.1

(1) Assumed foraging habitat for one active burrow (California Burrowing Owl Consortium. 1993) near the intersection of Davis and Marvin roads

Energy Center Site

The Energy Center site site is within an area of historic SKR habitat, but 2001 focused surveys showed no evidence of SKR occupation.

There are no owl burrows on, or adjacent to the site. Additionally, there are no wetlands on the site (Figure 5.3-2A, 2B, and 2C). Approximately 35 acres of SKR historic unoccupied habitat will be permanently impacted, and 11 acres of temporary disturbance will occur as a result of construction at the Energy Center site. Construction and operation of the Energy Center will not directly impact known occupied SKR habitat. Compensation for impacts within the Habitat Conservation Plan for the SKR in Western Riverside will be mitigated as part of a Fee Area.

Alternative A Menifee Road Natrual Gas Pipeline and Associated Compressor Station

Construction of the Alternative A Menifee Road natural gas pipeline may cause impacts to approximately 8.2 acres of unoccupied historic SKR habitat. Impacts within the HCP for the SKR will be mitigated as part of a Fee Area.

The Alternative A Menifee Road natural gas pipeline contains no owl burrows, and no potential vernal pool fairy shrimp habitat.

For the compressor station site, approximately 2.6 acres of SKR historic unoccupied habitat will be permanently impacted, and 4.0 acres of temporary disturbance will occur as a result of construction. Impacts within the HCP for the SKR will be mitigated as part of a Fee Area.

Alternative B Moreno Valley Natural Gas Pipeline

Construction of the Alternative B Moreno Valley natural gas pipeline could cause impacts to the SKR. The SKR inhabits adjacent lands adjacent to the Alternative B Moreno Valley natural gas pipeline construction corridor. All construction along Davis Road for the Alternative B Moreno Valley natural gas pipeline will involve the implementation of mitigation measures that will avoid or minimize impacts to SKR. Impacts within the approximate 5-mile (approximately 45.5 acres) portion of the Alternative B Moreno Valley natural gas pipeline within the Core Reserve Area will require a formal Section 7 consultation with the USFWS. Impacts to 89 acres of unoccupied SKR habitat within the HCP will be mitigated as part of a Fee Area. Impacts within the HCP for the SKR will be mitigated as part of a Fee Area.

The active owl burrow adjacent to Marvin Road along the Alternative B Moreno Valley natural gas pipeline route will be avoided during the breeding season using standard mitigation measures described in the 1995 CDFG Staff Report on Burrowing Owl Mitigation.

The Alternative B Moreno Valley natural gas pipeline construction could directly impact approximately 4.1 acres of potential vernal pool fairy shrimp. If it is determined that this habitat is occupied, the Applicant will provide funds to purchase vernal pool habitat from a USFWS approved mitigation bank.

Electrical Transmission Line, and Non-Reclaimable Wastewater Pipeline

Construction of the electrical transmission line, and non-reclaimable wastewater pipeline could potentially cause impacts to approximately 13 acres of unoccupied historic SKR habitat. Impacts within the HCP for the SKR will be mitigated as part of a Fee Area.

No active owl burrows exist within or adjacent to these proposed linear facilities. Additionally, the electrical transmission line, and non-reclaimable wastewater pipeline construction could directly impact approximately 0.5 acres of potential vernal pool fairy shrimp habitat. If it is determined that this habitat is occupied, the Applicant will provide funds to purchase vernal pool habitat from a USFWS approved mitigation bank.

Impacts From Project Operation

Operation of the project would cause an increase in noise that may cause disturbance of wildlife using areas nearby the Energy Center, or compressor station sites. Project operations would increase localized traffic, which would result in additional incidental road kills, however the facility will only require 22 employees for operation and traffic impacts would not be significant. The transmission line would increase collision and electrocution hazard for raptors. All of these impacts are expected to be insignificant.

5.3.4.3 Indirect Impacts

Project Emissions

Project emissions could impact nearby vegetation. Maximum modeled NO_2 and SO_2 impacts from normal plant operations, as well as estimates of total sulfur and nitrogen deposition from these modeled concentrations, were compared against U.S. Forest Service (USFS, 1992) significant impact thresholds for vegetation and ecosystems for Class I Wilderness Areas. Table 5.3-11 summarizes the maximum modeled impacts versus the USFS significance criteria. All impacts are below USFS significance criteria.

Deposition rates were estimated by assuming that all of the nitrogen and sulfur in the modeled NO_2 and SO_2 gases is converted to elemental sulfur and nitrogen in the particulate phase and is deposited on the ground. However, because this would not normally occur, this assumption is extremely conservative. The deposition rate was calculated by multiplying the modeled airborne concentration by a deposition velocity of 0.02 m/s. This deposition velocity is consistent with California Air Pollution Control Officers Association (CAPCOA) guidelines for estimating deposition rates (CAPCOA, 1993).

Adverse effects of project emissions on wildlife are not expected. The NAAQS and CAAQS are established to protect the health of people who are the most susceptible to air pollutants. Because impacts from the project's air emissions have been demonstrated to be below significance levels, no adverse impacts to wildlife are expected.

Table 5.3-11 Maximum Modeled Soil and Vegetation Impacts of the Proposed Project

Pollutant	USFS Significance Level	Maximum Project Impact	
SO_2 Annual	8 ppbv	0.0384 ppbv (0.1 $\mu g/m^3$)	
SO_2 Hourly	40 ppbv	11.51 ppbv (30.1 $\mu g/m^3$)	
NO_2 Annual	15 ppbv	0.478 ppbv (0.9 $\mu g/m^3$)	
Class I Areas			Kg/ha-yr
Total Sulfur Deposition	5 Kg/ha-yr	San Gabriel	0.00000
		Cucamonga	0.00001
		San Gorgonio	0.00004
		San Jacinto	0.00019
		Agua Tibia	0.00056
		Joshua Tree	0.00013
Total Nitrogen Deposition	3 Kg/ha-yr	San Gabriel	0.00000
		Cucamonga	0.00055
		San Gorgonio	0.00224
		San Jacinto	0.01312
		Agua Tibia	0.03713
		Joshua Tree	0.00862

Notes:
kg/ha-yr = kilograms per hectare per year
$\mu g/m^3$ = micrograms per cubic meter
ppbv = parts per billion, by volume
USFS = U.S. Forest Service

Cooling Tower Drift

The project includes a 14-cell mechanical draft-cooling tower located near the center of the Energy Center site. Cooling tower drift could cause deposition of salts that may impact nearby vegetation. Eastern Municipal Water District (EMWD) will supply reclaimed water for the cooling towers. An analysis of this water is presented in Table 3.4-11. Based on the water balance provided in Table 3.4-10, the concentration of dissolved materials in the cooling tower drift is expected to be approximately 13 times higher than in the water supplied. The following dissolved solids would be present in the drift, listed in order of decreasing concentration: sodium, sulfate, chloride, silica, bicarbonate, calcium, potassium, borate, magnesium, boron, and iron. Other dissolved solids would be present in the circulating water, but are projected to be in concentrations of one part per million or less. The annual cooling tower drift deposition modeled using the ISCST3 model projected a deposition rate of 0.002 g/m^2/year at the maximum impact location.

Literature was reviewed to determine whether circulating water components might cause adverse effects to vegetation when applied as drift. Pahwa and Shipley (1979) exposed vegetation (corn, tobacco, and soybeans) to varying salt deposition rates to simulate drift from cooling towers that use saltwater (20-25 parts per thousand) circulation. These agricultural

varieties of plants were selected for large leaf area, rapid growth, and high yield, and they are considered to be more sensitive than most non-cultivated natural vegetation to cooling tower drift. Salt stress symptoms on the most sensitive crop plant (soybeans) were barely perceptible at a deposition rate of 2.98 g/m^2/year (Pawha and Shipley 1979). Using an assumption that 100 percent of the airborne particulates from the cooling tower emissions are salts in the cooling tower drift, the calculated deposition rate of 0.002 g/m^2/year is several orders of magnitude less than the deposition rate that was shown to cause barely perceptible vegetation stress from salt mist. As a result, the deposition of salts to vegetation found in the vicinity of the Energy Center is not expected to cause a detectable reduction in growth or significant visible damage.

5.3.5 Mitigation Measures

This section provides a description of the mitigation measures for the following resources:

- Vegetation and Special-Status Plant Species
- Wetlands
- Wildlife and Special-Status Animal Species

Biological impacts have been minimized to the extent practicable by siting facilities away from sensitive habitats, within disturbed agricultural fields, adjacent to existing roads, and directional drilling to avoid western spadefoot toad habitat. The Energy Center, and compressor station sites will be located in an existing agricultural area. The linear facilities have been sited within, and adjacent to, existing roadways, thereby eliminating the need for new access roads.

In addition to the mitigation measures incorporated into the project design, the Applicant proposes the following mitigation measures to reduce potential impacts to biological resources to a level of insignificance.

Designated Biologist

The Applicant will designate a project biologist to manage all biological resource conditions of certification.

Employee Environmental Awareness Program

The Applicant will develop and institute an Employee Environmental Awareness Program to inform construction and operations workers about biological resources associated with the project.

Stevens' Kangaroo Rat (SKR)

The Applicant will provide funds for impacts to historic SKR habitat in a Fee Area in accordance with the requirements of the HCP for the SKR (Energy Center site; Alternative A Menifee Road natural gas pipeline MP 0-0.9 and associated compressor station site;

Alternative B Moreno Valley natural gas pipeline MP 0-14.0; transmission line MP 0-0.9; and non-reclaimable wastewater line MP 0-4.7).

For proposed construction of the Alternative A Menifee Road natural gas pipeline within the study area in the Core Reserve Area (San Jacinto Wildlife Area) all construction along Davis Road will involve the implementation of mitigation measures that will avoid, and minimize impacts to SKR (MP 9-14). Impacts within the approximate 5-mile portion of the natural gas pipeline within the Core Reserve Area will require a formal Section 7 consultation with the USFWS. If the Alternative B Moreno Valley natural gas pipeline is selected, the Applicant will develop and implement a SKR Mitigation and Monitoring Plan. The Plan will include:

- Restricting all construction activities within the Core Reserve Area to previously disturbed roadways and agricultural fields.
- Reducing the construction right-of-way to 30 to 70 feet within the Core Reserve Area.
- The establishment of exclusion fencing around the construction corridor within the Core Reserve Area to prevent SKR from entering the construction right-of-way. The presence of a full time SKR USFWS permitted biologist to trap, and relocate any SKR that penetrate the exclusion fencing during construction.
- The establishments of escape ramps inside open trenches within the Core Reserve Area.
- Morning and Evening clearance searches of the open trenches, and pipe, equipment etc. around the construction right-of-way with the Core Reserve Area for SKR by a USFWS permitted biologist.

Wetland/Vernal Pool-Fairy Shrimp

The Applicant will provide funds to purchase vernal pool habitat from a USFWS approved mitigation bank for project impacts associated with the Alternative B Moreno Valley natural gas pipeline MP 3-14; transmission line MP 0-0.7; and non-reclaimable wastewater line MP0 2.2.

Burrowing Owl

The Applicant will develop and implement a Burrowing Owl Mitigation and Monitoring Plan associated with the project related impacts from the Alternative B Moreno Valley natural gas pipeline, if that alternative is selected. The Plan will include:

- Construction of two artificial burrows associated with 13 acres of continuous foraging habitat for every active burrow disturbed during the nesting season within 250 feet of construction. In accordance with CDFG standards the installation of one-way doors at least 48 hours prior to construction at all active burrows that exist within the construction area so that the burrows are not occupied during construction (CA Burrowing Owl Consortium, 1993).
- Protection of existing burrows during construction and operation to the maximum extent feasible.

5.3.6 Cumulative Impacts

Construction and operation of the Energy Center will result in a minor incremental impact to biological resources with an insignificant contribution to the cumulative impacts resulting from continuing development in western Riverside County. The project will occupy approximately 37.7 acres of disturbed agricultural land that provides foraging habitat to several common wildlife species. The project incorporates mitigation measures such as the purchase of compensation land in approved mitigation banks and the protection of wetlands to the maximum extent feasible that will help to reduce the incremental impact of the project. The total acres set-aside in compensation banks for species protection is greater than the total acres lost or disturbed by development of the project. Overall, the project will not have a cumulative impact to biological resources.

5.3.7 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction, and operation of the project including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to biological resources.

The following LORS are applicable or potentially applicable to the proposed Energy Center in the context of biological resources.

5.3.7.1 Federal Authorities and Administering Agencies

Endangered Species Act of 1973; 16 USC § 1531 *et seq.*; 50 CFR Parts 17.1 *et seq.* The ESA includes provisions for the protection and management of Federally listed threatened or endangered plants and animals and their designated critical habitats. Section 10(1)(A) of the ESA requires a permit to "take" threatened or endangered species during lawful project activities The administering agency for the above authority for terrestrial and avian species is the USFWS and the National Marine Fisheries Service (NMFS).

Fish and Wildlife Coordination Act (Section 7); 16 USC 742 *et seq.*, 16 USC 1531 *et seq.*, 50 CFR 17. This authority requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on Federal jurisdiction over some aspect of the project. The administering agency here for the above authority is the USFWS.

Section 404 of Clean Water Act of 1977; 33 USC § 1251 *et seq*; 33 CFR, Parts 320 and 323. Section 404 of the Clean Water Act gives the U.S. Army Corps of Engineers authority to regulate discharges of dredged or fill material into the waters of the United States, including wetlands. The administering agency for the above authority is the U.S. Army Corps of Engineers.

Migratory Bird Treaty Act; 16 USC §§ 703 - 711; 50 CFR Subchapter B. The Act includes provisions for protection of migratory birds, including basic prohibitions against any

taking not authorized by Federal regulation. The administering agency for the above authority is the USFWS.

5.3.7.2 State Authorities and Administering Agencies

California Endangered Species Act of 1984; California Fish & Game Code §§ 2050 – 2098 Title 14 CCR § 15000 *et seq*. The Act includes provisions for the protection and management of plant and animal species listed as endangered or threatened, or designated as candidates for such listing. The Act includes a consultation requirement "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species ... or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR § 670.2. Animals of California declared to be endangered or threatened are listed at 14 CCR § 670.5. 14 CCR § 15000 *et seq*. describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site. The administering agency for the above authority is the CDFG.

Title 14, CCR, Section 670.5. Lists animals of California declared to be threatened or endangered.

Native Plant Protection Act of 1977; California Fish and Game Code § 1900 *et seq*. The code lists state-designated rare and endangered plants and provides specific protection measures for identified populations. The administering agency for the above authority is the CDFG.

California Fish & Game Code § 3511, 4700, 5050, and 5515. The code prohibits the taking and possessing of birds, mammals, reptiles and amphibians, and fishes listed as "fully protected". The administering agency for the above authority is the CDFG.

California Fish & Game Code § 1603. The code specifies CDFG review procedures for any proposal to "substantially change the bed, channel, or bank of any river, stream, or bed designated by the CDFG." The administering agency for the above authority is the CDFG.

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2. Subchapter 5. Article 1. Appendix B. Part (i). These code and regulation sections require the CEC to include in its decision provisions that will assure protection of environmental quality. In the context of biological resources, a proposed project is generally considered to have a significant effect on the environment if it will substantially affect a rare or endangered species (20 CCR § 15380). The administering agency for the above authority is the CEC (with comment by the CDFG).

5.3.7.3 Local Authorities and Administering Agencies

Riverside County Comprehensive General Plan – Environmental Hazards and Resources Element. The Environmental Hazards and Resources Element of the Comprehensive General Plan contains the following Land Use Standards relative to Wildlife and Vegetation:

- Detailed biological reports, including inventories, impact assessment and mitigation shall be prepared and submitted.
- Disruption of sensitive vegetation shall be kept to a minimum, and adequate measures to protect vegetative species shall be taken.
- Where possible, landscaping shall be accomplished through the use of vegetation native to the project site.
- Adequate provision shall be made for the retention of existing trees and other flora, and where necessary, immediate planting shall be planned and implemented.

The Energy Center is in compliance with these standards: inventoriies, impact assessment and mitigation measures have been conducted and considered. The project implements landscaping plans and mitigation measures to protect existing vegetation and wildlife.

Riverside County Ordinance No. 663.10, Stephens' Kangaroo Rat Mitigation Fee Ordinance. The ordinance establishes a Plan Fee Assessment Area and sets mitigation fees for development permits in areas covered by the Stephens' Kangaroo Rat Habitat Conservation Plan. The Energy Center will comply with this ordinance by paying a mitigation fee based on the gross acres of the parcels proposed for development.

IEEC Compliance with Biological LORS

The Energy Center includes mitigation for lost habitat and any impacts to listed species. In addition, the Applicant will consult with state and Federal agencies and obtain all necessary permits and approvals. Therefore, the Energy Center will comply with all LORS regarding biological impacts.

5.3.8 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to biological resources for project are provided in Table 5.3-12.

Table 5.3-12 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
U.S. Fish and Wildlife Service 2730 Loker Avenue West Carlsbad, CA 92008	Chris Moen, Julie York, Karin Cleary-Rose, and Nancy Gilbert (760) 431-9440	Section 7 consultation regarding threatened or endangered species (applies to SKR Core reserve Area on Alternative B pipeline route)
U.S. Army Corps of Engineers, 911 Wilshire Blvd Los Angeles, CA 90017	Staff (213) 452-3419	Clean Water Act Section 404, Nationwide 12 permit, Utility Line Discharge
California Department of Fish and Game 4775 Bird Farm Road Chino Hills, CA 91709	Yvonne Moore, Tom Paulek, and Kate Kramer (909) 606-2413	Section 1603 Streambed Alteration Agreement, and consultation regarding threatened or endangered species

5.3.9 Permits Required and Permit Schedule

State and Federal permits required for anticipated biological resource impacts are summarized below in Table 5.3-13. The listed agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 5.3-13 Key Permits and Licenses Required for the IEEC

Authority	Permit	Purpose
Corps of Engineers	Clean Water Act Section 404, Nationwide 12 permit, Utility Line Discharge	Application after AFC filing. Construct near waters of the United States and adjacent wetlands (for linear facilities only). Approximately 4 month review.
US Fish and Wildlife Service	Biological Opinion/ Incidental Take Permit	Informal consultation begun, Protocol submitted, formal consultation concurrent with Section 404 permit. Mitigate potential loss of endangered species habitat. Approximately 135 days.
California Department of Fish and Game	Section 1603 Streambed Alteration Agreement, and Consistency Determination	Application after AFC filing. Permit construction in or near streambed or riparian zone, Consistency Determination with Biological Opinion. Approximately 3 months.

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5.4 WATER RESOURCES

Water resources potentially affected by construction and operation of the proposed Inland Empire Energy Center (IEEC or Energy Center) project include groundwater, surface water, water quality, and water uses. The project site is located within the Menifee Valley portion of the San Jacinto River watershed as illustrated in Figure 5.4-1. The San Jacinto River watershed encompasses an area of 753 square miles.

5.4.1 Affected Environment

5.4.1.1 Climate and Precipitation

Climate in the project area is semiarid. Average climatological data are provided in Section 5.2.2.2 (Air Quality).

Precipitation occurs principally as rainfall during the winter months from November through April. Annual rainfall data compiled by Eastern Municipal Water District (EMWD) for six gages in the project region are summarized in Table 5.4-1 (HydroScience, 2000). Periods of record compiled for individual gages range from 60 to 90 years spanning a maximum period from 1910 through 1999. Long-term average rainfalls range from 10.85 inches at Moreno Valley to 12.96 inches at San Jacinto.

Table 5.4-1 Rainfall Summary for San Jacinto Watershed

Location	Period of Record	Minimum	Maximum	Average
Hemet	1910 – 1999	4.22	26.60	12.22
Lakeview	1910 – 1999	4.28	25.95	12.04
Moreno Valley	1926 – 1999	3.51	23.68	10.85
San Jacinto	1910 – 1999	4.98	28.63	12.96
Winchester	1940 – 1999	4.00	31.09	11.15

Source: HydroScience, 2000

5.4.1.2 Surface Water

No perennial surface water sources exist on the project site or within one mile of the Energy Center site. As illustrated in Figure 3.5-1 (Section 3.0 Facility Description and Location), the site is gently sloping and a topographic high situated near the northeastern part of the site causes drainage to trend to the southwest. Elevations range from 1,448 feet at the north boundary of the site to 1,439 feet at the south boundary.

The project region is drained by three ephemeral water courses:

- **Perris Valley Drain.** The Perris Valley Drain includes both natural and man-made reaches (lined and unlined) and extends from the north end of Pigeon Pass Valley south to its confluence with the San Jacinto River.

- **San Jacinto River.** The San Jacinto River traverses the watershed in a northeast to southwest direction and drains to the Railroad Canyon Reservoir.
- **Salt Creek.** Salt Creek drains the southern portion of the San Jacinto River watershed and joins the San Jacinto River at the Railroad Canyon Reservoir.

5.4.1.3 Floodplains

The Federal Emergency Management Agency (FEMA) has issued flood insurance rate maps for the project area (FEMA, 1996). This map has also been updated (Hildebrant, 2001). A reproduction of the updated FEMA map showing the floodplain zones is provided in Figure 5.4-2.

5.4.1.4 Groundwater

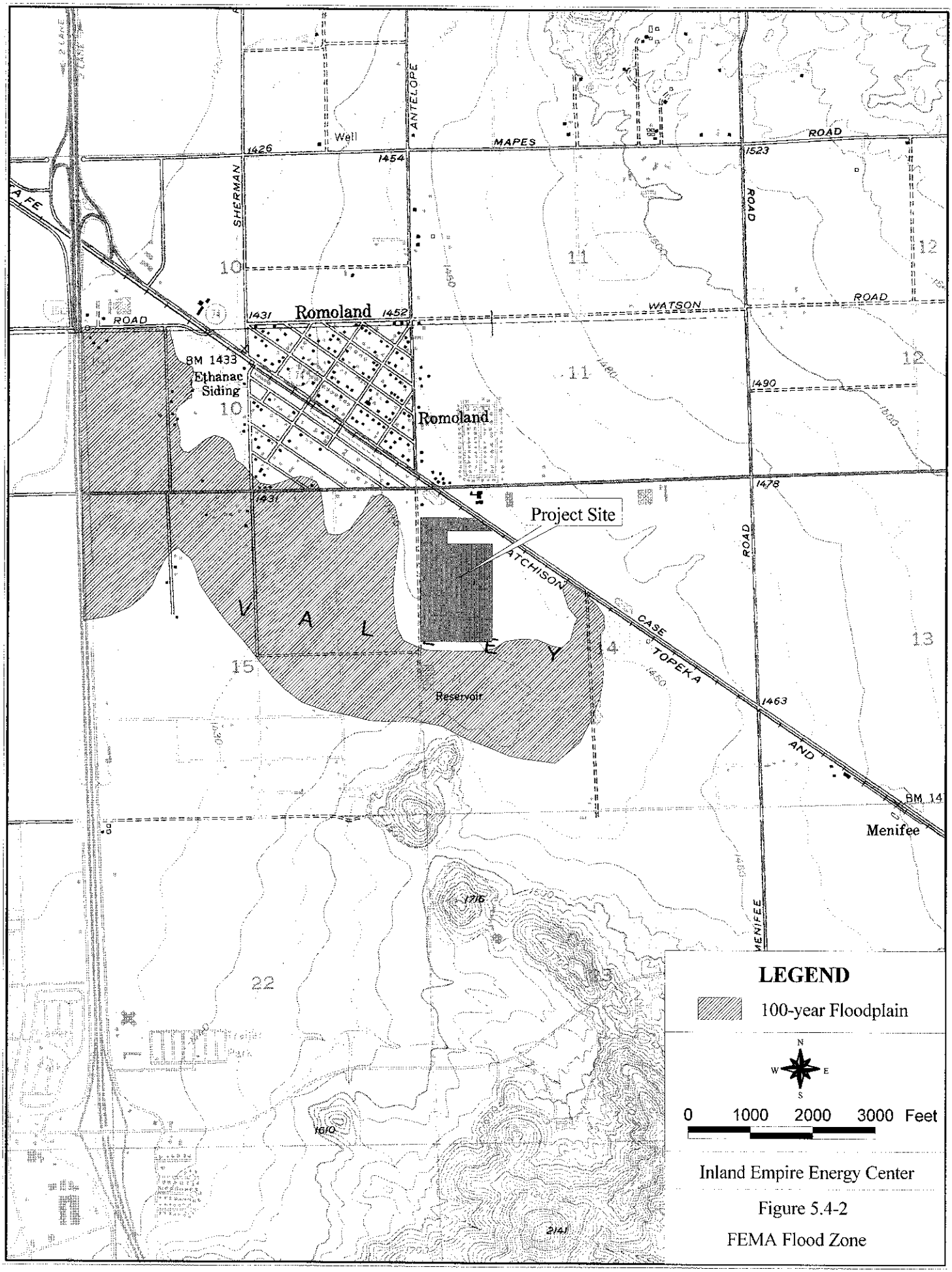
This section describes groundwater conditions within the project area and in the immediate vicinity of the project site. Groundwater in the area has been an important source of supply since the late 1800s. Water is produced currently for municipal, agricultural, industrial and domestic purposes. Groundwater use for agricultural purposes is slowly yielding to municipal uses as overlying land use changes from rural to urban. Water quality varies by area and depth, and ranges from fresh to saline. Fresh groundwater suitable for direct potable use is found only in specific areas and sometimes only within specific water-bearing zones of a particular area. Current and historic groundwater production clusters in specific areas where overlying land use and available water quality are compatible.

Groundwater conditions in the project area are known from (1) basic data collected over the past 100 years, (2) groundwater and water resources evaluations completed by local, state and federal organizations, (3) contamination studies, (4) groundwater remediation activities, and (5) groundwater modeling. A regional groundwater flow and water quality model is currently being developed by EMWD. The modeled area covers the entire San Jacinto Groundwater Basin. For management purposes, the basin is divided into western and eastern portions. The project area is in the western portion designated as the West San Jacinto Groundwater Basin.

5.4.1.4.1 Regional Groundwater Conditions

Groundwater resources within the West San Jacinto Groundwater Basin (WSJGB) are managed by EMWD, cooperating agencies, and other major water producers in accordance with an AB3030 Groundwater Management Plan (Wildermuth, 1994). EMWD publishes annual reports documenting data collected for the AB3030 monitoring program and the status of basin water resources.

The WSJGB includes approximately 104,500 acres divided into nine subbasins. Subbasin boundaries are designated in accordance with areas defined by the Santa Ana Regional Water Quality Control Board (1995) (see Figure 5.4-3). With the exception of the boundary between the Lakeview and San Jacinto Lower Pressure subbasins (along the Casa Loma Fault), subbasin boundaries that cross valley alluvium generally have no hydraulic significance (HydroScience, 2000).



Inland Empire Energy Center

Figure 5.4-2

FEMA Flood Zone

The following sections summarize key elements of the basin's groundwater system. The summary is based mostly upon evaluations completed by EMWD (2001) and HydroScience (2000).

Aquifer System

Most groundwater produced from the basin is derived from valley alluvium. Fractured bedrock underlies and surrounds the alluvium throughout the basin. Wells completed in fractured bedrock generally yield only small quantities of water.

Valley alluvium fills an irregularly-shaped bedrock depression or basin carved by ancient streams and rivers. Basin features include deep "V"-shaped valleys, steep-sided canyons, shallow gently-sloping plateaus, and long linear ridges. Based upon maps of the buried bedrock surface prepared by Lee (1999), these buried features are similar to and in many cases extensions of features exposed at the surface.

The buried bedrock features of greatest water-bearing significance are the deep valleys. Together they form a complex interconnected network of alluvium-filled channels that store and yield significant quantities of groundwater. In the Perris North subbasin, a deep valley traverses the subbasin from north to south along the eastern subbasin boundary. This buried valley extends south through the central part of the Perris South I subbasin to the south-central portion of the Perris South II subbasin where it then converges with similar deep valleys traversing the Lakeview, Winchester, and Menifee I subbasins.

Widths of individual buried valleys range from less than one to more than two miles. Depths to bedrock range from a few feet below the ground surface (bgs) along subbasin boundaries to more than 1,000 feet along valley axes at some locations. The deepest depths to bedrock occur in the valley convergence area of the Perris South II subbasin and along the eastern boundary of the Lakeview subbasin.

Alluvial Aquifer

Water-bearing alluvium fills the bedrock basin and includes interbedded and intermixed sand, gravel, cobbles, boulders, silt, and clay typical of inland groundwater basins of Southern California. Individual beds and layers range in thickness from a few inches to several feet, but rarely correlate even short distances between wells. Observed differences in composition and thickness suggest the alluvium was deposited in a variety of depositional environments including meandering streams, quiet-water lakes and ponds, high-flow rivers, periodic floods along valley floors, and flash floods near mountain fronts.

Morton (1999) classifies the alluvium as modern, young, and old with ages ranging from Holocene to possibly late Pliocene (less than 10,000 to more than 2 million years old). Driller's logs alone generally provide few clues for distinguishing these different materials with depth.

The yields from wells tapping alluvium range from less than 50 to more than 1,500 gallons per minute (gpm). Well specific capacities range from less than 1 to more than 50 gallons per minute per foot of drawdown (gpm/ft). Well yields and specific capacities vary as a function of (1) thickness and character of the sediments tapped, (2) the type and length of well screen, and (3) rate and duration of pumping at the time of measurement.

The most prolific water-bearing alluvium occurs in four areas (1) Perris North subbasin, (2) northern part of the Perris South II subbasin, (3) northeastern half of the Lakeview subbasin, and (4) Menifee II subbasin. All these areas are heavily pumped.

Bedrock Aquifer

Groundwater occurs in limited quantities in fractured bedrock beneath and surrounding the valley alluvium. Bedrock materials include (1) "granitic" igneous rocks associated with the Southern California Batholith that intruded the region and solidified approximately 65 million years ago, and (2) mesozoic metasedimentary rocks (quartzite, graywacke, phyllite and schist) with ages ranging between 146 and 245 million years.

Yields from bedrock wells are generally less than 10 gpm, often less than 3 gpm. Yields exceeding 25 gpm are reported in some areas, but are rare. Well specific capacities are generally very low, usually on the order of 1 gpm/ft drawdown or less.

Given limitations in storage and yield, groundwater production from the bedrock aquifer is generally uneconomic except for limited domestic, stock watering and irrigation purposes. Limited data suggest the bedrock aquifer in some areas surrounding the valley alluvium may contribute small quantities of recharge to the alluvium. Actual recharge quantities are uncertain but reportedly will be evaluated as part of EMWD's regional groundwater modeling program. Given these limitations, the remaining sections focus solely on water-bearing alluvium.

Aquifer Hydraulic Properties

Available data indicate groundwater in the alluvium occurs under both water table and semi-confined conditions. Water table conditions occur in sediments subject to seasonal and long-term dewatering (historically the upper 100 to 250 feet).

Lithologic logs, well performance data, aquifer test results and estimates reported in previous reports indicate the hydraulic conductivity of the alluvium ranges from less than one to more than 40 feet per day (ft/d). Conductivities vary by depth and location within the basin. The highest known conductivities (greater than 15 ft/d) consistently occur in the following areas (1) south-central part of the Perris North subbasin, (2) along the buried bedrock valley in the Perris South I subbasin, (3) north-central part of the Perris South II subbasin, (4) northeastern part of the Lakeview subbasin, and (5) Menifee II subbasin.

Available data and historic modeling in the basin suggest specific yields in water table portions of the alluvium generally range between 5 and 10 percent.

5.4.1.4.2 Groundwater Levels

Groundwater levels in the basin have been monitored since the early 1900s. In addition to the EMED annual AB3030 monitoring program, other organizations also monitor their own networks of wells including (1) the County of Riverside Waste Management Department, and (2) March Air Reserve Base. EMWD has compiled and merged historic data from all readily available sources into a central computer database. These data are the basis for the following discussion.

Regional Groundwater Flow

Regionally, groundwater flows generally toward the south-central part of the Perris South II subbasin, then northwest into the Lakeview subbasin (HydroScience, 2000). In the far southern part of the basin, some groundwater flows west to east across the Menifee I and II subbasins toward the Diamond Valley Reservoir. The regional flow pattern is disrupted locally by extensive pumping. Persistent pumping depressions exist (1) in the east-central part of the Perris North subbasin, (2) along the north-south axis of the Perris South I subbasin, (3) in the northeastern part of the Lakeview subbasin, and (4) in the central part of the Menifee II subbasin. Regional flow gradients range from 10 to 100 feet per mile with the steepest gradients occurring in the vicinity of the pumping depressions (HydroScience, 2000).

Current Depths to Water

Current depths to water range from less than 20 feet bgs in the Winchester subbasin to nearly 300 feet bgs in the northeastern part of the Lakeview subbasin. In the Perris South II, Perris South III, and northern part of the Menifee I subbasins, depths to water generally range between 50 and 100 feet bgs (HydroScience, 2000).

Historic Groundwater Levels

Historic groundwater levels generally show mixed trends over time in response to periods of drought, above normal rainfall, and changes in the locations and magnitudes of pumping. Throughout most of the basin, groundwater levels declined during the 1950s, 1960s, and early 1970s in response to a sustained period of drought, but have since recovered to levels that in some areas are among the highest in recorded history. However, there are exceptions. Groundwater levels in the Lakeview subbasin have declined steadily on the order of 250 feet since about 1915. Groundwater levels in the Winchester subbasin show only very moderate changes over the past 70 years.

5.4.1.4.3 Groundwater Production

Some of the earliest pumping in the basin occurred in the late 1800s as dry farming yielded to irrigated agriculture (Waring, 1919). Over the past 20 to 30 years, there has been a slow but persistent shift from pumping for agricultural purposes to pumping for municipal uses. With the planned near-term startup of the EMWD's program to desalinate brackish groundwater for direct potable use, the use of groundwater for municipal purposes will significantly increase.

As part of the AB3030 monitoring program, EMWD's goal is to directly measure or estimate all groundwater produced from the basin. The District currently monitors production from 91 wells (EMWD, 2001). Production data are derived from the following sources (1) meters installed and monitored by EMWD, (2) private meters installed by producers and monitored by EMWD, (3) production estimates based upon energy costs, and (4) production estimates based upon land use.

In 2000, annual production from the basin totals nearly 23,000 AF (EMWD, 2001). Basin production has been above 20,000 AF/YR since approximately 1997. Based upon groundwater production recorded with the State, production in the basin has doubled since 1990.

Production by subbasin is summarized in Table 5.4-2. Nearly 90 percent of the water currently produced from the basin is from four subbasins (Lakeview, Perris North, Perris South I and Menifee II). Major water producers include EMWD, AG Sod, Agri Empire, Moreno Valley Golf Course, Menifee Lakes Nuevo Water Company, Nutrilite Products, NACO, and a number of private well owners.

Table 5.4-2 2000 Groundwater Production
West San Jacinto Groundwater Basin

Subbasin	Production (AF)	Percent of Total
Lakeview	6,209	27.2
Perris North	3,226	14.1
Perris South I	6,052	26.5
Perris South II	510	2.2
Perris South III	1,001	4.4
Winchester	451	2.0
S.J. Lower Pressure	844	3.7
Menifee I	0	0.0
Menifee II	4,521	19.8
Totals	**22,814**	**100.0**

Source: Table 4-6 EMWD (2001)

Significant reserves of brackish to saline groundwater occur in the southern part of the basin. The salinity of this water precludes direct use for potable and most agricultural purposes. Basin production is expected to increase in the future by approximately 8,000 AF/YR in response to planned extraction and desalination of brackish groundwater by EMWD. Desalted water will be distributed for municipal use. Planned extractions will occur in the Perris South II and Menifee I subbasins and possibly in the southeastern part of the Lakeview subbasin.

5.4.1.4.4 Groundwater Recharge

Recharge to basin aquifers is derived principally from:

- Subsurface inflow from adjacent groundwater subbasins
- Percolation of rainfall and runoff
- Mountain-front recharge
- Leakage from Perris Lake
- Irrigation return flows (native, imported and recycled water)
- Percolation from recycled water storage ponds

Estimates presented by Wildermuth (1994) indicate basin recharge from all sources is on the order of 50,000 AF/YR.

5.4.1.4.5 Recycled Water Recharge

EMWD produces recycled water from five regional water reclamation facilities:

- Hemet/San Jacinto (HSJRWRF)
- Moreno Valley (MVRWRF)
- Perris Valley (PVRWRF)
- Sun City (SCRWRF)
- Temecula Valley (TVRWRF)

Recycled water is sold for irrigation within the District service area. Storage ponds are utilized to retain water for distribution and sale. The ponds provide winter storage when demand is low. In the summer, stored water is used to help meet peak irrigation demands.

Storage ponds within the basin are unlined. During active water storage periods, percolation and groundwater recharge occurs at up to five locations in four subbasins:

- Plant site MVRWRF (Perris North subbasin)
- Skiland Ponds (Perris South II subbasin)
- Plant site vicinity PVRWRF (Perris South II subbasin)
- Plant site SCRWRF (Menifee I subbasin)
- Winchester ponds (Winchester subbasin)

Based upon estimates prepared by EMWD (2000a), basin recharge from recycled water storage ponds averages on the order of 8,300 AF/YR for the 10-year period from 1989 through 1998. Most recharge occurs in the Perris North and Perris South II subbasins.

Within the same 10-year period, recharge from agricultural return flows using recycled water purchased from EMWD for irrigation is estimated to be on the order of 1,700 AF/YR (EMWD, 2000a). Together, the total estimated recharge from recycled water sources averages on the order of 10,000 AF/YR.

5.4.1.4.6 Groundwater Storage and Yield

Based upon estimates presented in the Draft Groundwater Management Plan for the West San Jacinto Groundwater Basin (Wildermuth, 1994), groundwater in storage is on the order of 1,128,000 AF and the basin "Safe Yield" (including recycled water recharge) is on the order of 48,000 AF/YR.

5.4.1.4.7 Water Quality

This section summarizes variations and trends in the quality of groundwater and recharge water. Findings are based upon data compiled by EMWD over the past several years from a variety of sources, including its ongoing AB3030 monitoring program.

Groundwater

Groundwater quality within the basin varies by location, depth, and over time. The water generally has a mixed water character dominated by sodium chloride and calcium sodium chloride. Bicarbonate character groundwater occurs in some wells near the Lakeview Mountains. Sulfate character water occurs in the Menifee I subbasin near the SCRWRF. Limited available data suggest water character, unlike some other water quality properties, shows only minor variations with depth.

Groundwater within the basin is classified as fresh to saline based upon the concentration of total dissolved solids (TDS) (Freeze and Cherry, 1979):

- Fresh water (0-1,000 mg/L)
- Brackish (1,000-10,000 mg/L)
- Saline (10,000-100,000 mg/L)

TDS concentrations in groundwater range from less than 1,000 to more than 20,000 mg/L. Concentrations less than 1,000 mg/L occur in the Perris North subbasin, Perris South I subbasin, northeastern part of the Lakeview subbasin, and at some locations in other subbasins. The highest TDS concentrations (greater than 7,500 mg/L) occur in the Menifee I subbasin (deeper aquifer zones), northeastern part of the Perris South II subbasin, southwestern part of the Lakeview subbasin, and at isolated locations on the March Air Reserve Base (MARB) in the Perris North subbasin. Brackish groundwater with TDS concentrations generally between 1,000 mg/L and 3,000 mg/L occurs locally in nearly all of the subbasins, but in greater apparent volume in the Perris South II, Menifee I, and southwestern part of the Lakeview subbasin.

Variations in TDS concentrations with depth are known at only a limited number of well sites (generally those explored and tested by EMWD and MARB). In general, groundwater with TDS concentrations above 1,000 mg/L occur in aquifer zones less than 300 feet deep and greater than about 550 feet deep. TDS concentrations above 7,500 mg/L appear to occur most often above a depth of 300 feet.

A general increasing trend in TDS concentrations is observed over time throughout many parts of the basin. The most significant increase is reported in the central part of the Lakeview subbasin, where several wells have experienced a two- to four-fold increase in TDS concentration since the mid-1990s.

Groundwater contamination occurs in the basin at two locations:

- MARB, Perris North subbasin (on base and off base to the east and southeast)
- Double Butte Landfill, Winchester subbasin

Soils and groundwater contamination are known to exist on MARB as a result of historic base operations. The base and select off-site areas together are designated as an EPA Superfund site. Soils contamination is generally limited to specific sites on base. Groundwater contamination occurs both on base and off base (to the east and southeast). The base currently operates an Enhanced Groundwater Extraction and Treatment System (EGETS) along the eastern base boundary to capture and treat contaminated groundwater. The principal off base organic chemicals of concern are trichloroethylene (TCE) and tetrachloroethylene (PCE). Concentrations of these chemicals exceed maximum contaminant levels [MCL, 5 micrograms per liter (µg/L) at some off base locations and depths (HydroScience, 2001)].

In the southwestern part of the basin, organic chemicals and heavy metals have been detected above MCLs in monitoring wells for the Double Butte Landfill. Preliminary testing suggests some organic chemicals have moved south from the landfill into shallow aquifer zones of the Winchester subbasin. The extent of the contamination is not known (HydroScience, 2000).

Recharge Water

Water quality analyses are available for two recharge sources (1) Perris Lake, and (2) recycled water. The water character in Perris Lake is generally sodium chloride. TDS concentrations show cyclic variations over time with magnitudes ranging between 140 and 450 mg/L. The cyclic variations appear to correlate with long-term wet and dry climatic cycles (HydroScience, 2000).

The character of recycled water produced by the EMWD RWRFs is generally sodium chloride except for the SCRWRF that historically produced water with a sodium sulfate character. Between 1993 and 1999 average, TDS and nitrate (as NO_3) concentrations are shown in Table 5.4-3 as follows:

Table 5.4-3 Recycled Water Average TDS and Nitrate Concentrations

Plant	Ponds	TDS (mg/L)	NO_3 as NO_3 (mg/L)
MVRWRF	Plant, Skiland	465	19
PVRWRF	Case & Trumble	526	12
SCRWRF*	Plant	742	16
TVRWRF	Winchester	672	23

*1990-1996; plant inactive since 1996

Water Supply

EMWD is a member agency of the Metropolitan Water District of Southern California (MWD) and provides water service to the project area. All water used by IEEC would be supplied by EMWD.

The EMWD utilizes a variety of water supplies to meet the needs of its customers (Table 5.4-4). Current supplies include imported water purchased from MWD, imported seasonal storage, locally produced groundwater, desalinated groundwater, and transfers. These programs, in conjunction with continued expansion of EMWD's water recycling program, will provide a high degree of supply flexibility in meeting the growing demand for water in EMWD's service area (EMWD, 2000a).

Table 5.4-4 Current and Projected Water Supply (AF/YR) (1)

Water Supply Sources	Year				
	2000	2005	2010	2015	2020
POTABLE/TREATED WATER					
Imported (MWD)	64,390	69,539	74,748	80,970	91,846
Imported Seasonal Storage	3,000	5,392	11,463	14,771	18,166
Groundwater	17,218	16,003	16,280	17,280	17,280
Desalinated Groundwater	--	4,000	8,000	12,000	12,000
Transfers	--	6,750	6,000	5,250	4,500
Total Potable/Treated Water	84,608	101,684	116,491	130,271	143,792

(1) Source: EMWD, 2000a.

5.4.1.4.8 Past, Current and Projected Water Use

EMWD has undergone major changes in water demand patterns in the last 15 years. The change from an agricultural/rural market toward an urban/residential market has kept total demand for water in EMWD relatively constant even though total population has increased significantly, as agricultural lands become urbanized, driven primarily by the lack of affordable housing in nearby San Diego and Orange Counties.

The only potentially significant future change in demand patterns will be an increase in commercial/industrial demands as development becomes more balanced and the western Riverside County role as a "bedroom community" for the urbanized areas of Orange and San Diego counties changes (EMWD, 2000a).

EMWD has prepared a database of all proposed development projects that have gone through the "will serve letter" process. These are projects in the planning stage of development. Subsequently, plans of service are developed for these projects during preliminary design, followed by final design and construction. The "will serve" database provides a means of estimating future water demand over the next 5-10 years (EMWD, 2000a).

Imported Water

Over 75 percent of EMWD's current and future water supply is and will continue to be imported water purchased from MWD. On average, 75 percent of EMWD's imported supplies will consist of State Water Project (SWP) water from Northern California and 25 percent will be delivered via the Colorado River Aqueduct. Currently, virtually all imported water purchased by the EMWD is treated at two water filtration plants operated by MWD: the Mills Filtration Plant serving the northern portion of EMWD, and the Skinner Filtration Plant serving the southern portion of EMWD (EMWD, 2000a).

EMWD utilizes treated water from MWD and supplies that water to meet municipal and industrial demands within its service area. EMWD participates with MWD in a number of water management programs to ensure the adequacy of imported water supplies to meet the growing needs of the region. One such example is EMWD's participation in MWD's Seasonal Storage program. Presently a 3,000 AF/YR demonstration program, the Seasonal Storage program provides for the purchase of untreated SWP water from MWD during periods of seasonal or hydrologic surplus (primarily winter months) to recharge a local groundwater basin. This stored water is then extracted by EMWD's wells and used in-lieu of treated imported water during periods of potential deficit in imported water supplies. This program provides financial benefits to EMWD and major resource management benefits to MWD. Current plans call for the expansion of the Seasonal Storage program to approximately 18,000 AF/YR by 2020.

MWD's water management programs, together with the recent completion of major storage facilities on the MWD system, ensure that the supply of imported water to EMWD will be adequate to meet projected future increases in the demands for imported water within EMWD.

Groundwater Supply

In the year 2000, EMWD's 24 production wells produced over 17,000 AF of native groundwater for use by its customers. The majority of this supply is produced from groundwater subbasins in the Hemet/San Jacinto area and is used locally. Slightly over 3,000 AF/YR is produced from the Perris and Perris South subbasins and is blended with imported water for use in the western portions of EMWD's service territory.

EMWD's groundwater production is managed in cooperation with other groundwater users in the basin as part of a larger groundwater management plan. As an example, EMWD has recently completed construction of a first phase of a groundwater desalter program and is proceeding with implementation of a larger program to desalinate brackish groundwater and more fully develop the basin resources. The desalination program is part of a continuous management program for the groundwater resources.

Recycled Water

EMWD is currently a leading agency in southern California's water recycling efforts. In the year 2000, the EMWD sold over 25,000 AF of treated wastewater. Current recycled water customers include: agricultural irrigators, golf courses, and municipal irrigators (schools, parks, and greenbelts), as well as major environmental customers such as the State of California Department of Fish and Game's operation of the San Jacinto Wildlife Area (SJWA).

EMWD has prepared a recycled water master plan including major new recycled water projects including:

- landscape irrigation of major recreational land uses planned for MWD's Diamond Valley Lake Reservoir,
- potential use of recycled water for stabilizing and replenishing Lake Elsinore, and
- expanded use for industrial and municipal purposes (EMWD, 2000a).

Table 5.4-5 shows EMWD's projected recycled water use. The current market for recycled water within EMWD is dominated by large-scale agricultural customers. EMWD's plans for future recycled water use is directed to increasing municipal and industrial uses of recycled water and developing a winter market for seasonal surpluses. Table 3.4-5 (see Section 3.4.9.4, Water Quality) provides a summary of source water quality.

Table 5.4-5 EMWD Recycled Water Projected Use (AF/Year)

Year	Agricultural Irrigation	Municipal Industrial	SJWA Wetlands	Lake Elsinore Replenishment	Disposal/ Recharge	Total Recycled Flow
2000	19,600	4,000	1,850	0	11,122	36,572
2001	19,600	5,336	1,983	0	10,965	37,883
2002	19,600	6,672	2,115	0	10,805	39,192
2003	19,600	8,008	2,248	2,000	8,643	40,499
2004	19,600	9,344	2,380	2,000	8,480	41,804
2005	19,495	10,680	2,513	2,000	8,420	43,108
2006	19,070	12,017	2,645	2,500	8,178	44,410
2007	18,644	13,353	2,778	3,000	7,935	45,710
2008	18,218	14,689	2,910	4,000	7,193	47,009
2009	17,790	16,500	3,043	5,000	5,974	48,306

Table 5.4-5 EMWD Recycled Water Projected Use (AF/Year) (Continued)

Year	Agricultural Irrigation	Municipal Industrial	SJWA Wetlands	Lake Elsinore Replenishment	Disposal/ Recharge	Total Recycled Flow
2010	17,361	17,361	3,175	5,500	6,206	49,602
2011	17,361	17,500	3,308	6,747	5,820	50,735
2012	17,361	18,000	3,440	1,884	5,840	51,865
2013	17,361	18,500	3,573	7,699	5,860	52,993
2014	17,361	19,000	3,705	8,172	5,880	54,118
2015	17,361	19,500	3,838	8,642	5,900	55,241
2016	17,361	20,000	3,970	9,480	5,920	56,731
2017	17,361	20,500	4,103	10,315	5,940	58,218
2018	17,361	21,000	4,235	11,147	5,960	59,703
2019	17,361	21,500	4,362	11,976	5,980	61,185
2020	17,361	22,000	4,500	12,000	6,803	62,664

Source: EMWD.

5.4.1.5 Wastewater Treatment

EMWD is responsible for all sanitary sewer and industrial wastewater collection and treatment within its service area. EMWD operates five RWRF treating over 32 MGD of wastewater each year. Wastewater flows are anticipated to increase to 56 MGD by the year 2020 (EMWD, 2000a).

Non-reclaimable wastewater (also called "brine") will also be produced by the EMWD water reclamation facilities and collected from the EMWD service area. The non-reclaimable wastewater will be conveyed by pipelines to the Orange County Sanitation District (OCSD) for treatment and ultimate discharge to the ocean. Non-reclaimable wastewater must meet the water quality requirements of the OCSD National Pollution Discharge Elimination System (NPDES) permit.

EMWD recently constructed a section of non-reclaimable wastewater pipeline, Reach 4, under Railroad Canyon Road running from Sun City RWRF to Temescal Wash and connecting with the Temescal Valley Regional Interceptor (TVRI). This 30" diameter line has a capacity of 10 MGD and will initially be used to discharge non-reclaimable wastewater from EMWD's Sun City desalter. The TVRI, in turn, discharges into the Santa Ana Regional Interceptor (SARI) located in Corona, which then carries wastewater to OCSD wastewater treatment plant where the wastewater will be treated and then discharged to the ocean. EMWD currently owns 4.378 MGD of capacity in both the TVRI and the SARI lines.

EMWD does not presently produce or collect non-reclaimable wastewater. When the Sun City desalter comes on-line, EMWD will begin discharging approximately 0.5 MGD of non-reclaimable wastewater. A proposed second phase desalter project by EMWD would discharge an additional 0.5 MGD flow for a combined flow of 1 MGD concentrated non-reclaimable wastewater from the two groundwater desalters.

5.4.2 Environmental Impacts

Potential impacts of the project on water resources are evaluated for the following:

- Water supply
- Surface water quality and flood hazards
- Groundwater impacts
- Wastewater treatment
- Compliance with State water policy

Appendix G of CEQA, Environmental Checklist Form, provides guidance for determining addresses significance criteria with respect to water resources (Public Resources Code Sections 21000 et seq.). The project would have a significant environmental impact on water resources and hazards if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge.
- Substantially alter the existing drainage pattern of the site or create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.
- Place housing or structures within a 100-year flood hazard area.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.
- Have insufficient water supplies or insufficient wastewater treatment capacity to serve the project's projected demand.

5.4.2.1 Water Supply Impacts

Construction Impacts

During construction of the IEEC, water will be needed primarily for dust suppression. Because of the limited duration of construction activities (up to 24 months) and the relatively small water requirement (350 gpm for dust control and soil compaction) of the construction phase of the project, no significant adverse impacts to water supply are expected. Water for construction will be supplied by EMWD.

Operation Impacts

IEEC will require approximately 5,000 AF/YR of water for plant cooling and other uses (see Table 3.4-4). The plant will utilize recycled water, supplemented by raw water from MWD through EWMD as necessary, for cooling and process makeup requirements, and would use treated domestic water for potable water services. Average and peak day water balance diagrams are provided as Figures 3.4-6 and 3.4-7, respectively. As detailed in the attached

"Will-Serve Letter" (Appendix M), EMWD has indicated it is willing and able to supply water to the project.

Recycled Water Usage. As noted in Table 5.4-5, above, EMWD RWRFs presently produce more than 36,000 AF/YR of recycled water and plans for expansion of RWRFs will result in the production of approximately 62,000 AF/YR by the year 2020. Recycled water demand, however, varies seasonally with lower demands in winter months and higher demands in summer months (June through October). Excess recycled water produced in winter months is presently stored for future sales or disposed of via discharge to Reach 4 under an NPDES when recycled water exceeds EMWD's storage capacity. Recycled water storage also results in incidental recharge because EMWD's storage ponds are unlined.

The existing recycled water production is fully utilized in higher-usage summer months by existing agricultural users. To serve IEEC, EMWD will supplement the supply of recycled water with raw imported water in summer months, particularly during the first years of operation of IEEC. This will ensure that the total supply of water to the recycled water system is adequate for all customers. During the initial year of operation, for example, existing recycled water will be adequate to serve about 53 percent of IEEC water use and by 2020 sufficient recycled water should be available to meet the needs of existing users, IEEC and projected future customers without the use of raw water to supplement available recycled water sources (see Table 5.4-5).

IEEC's ability to use recycled water thus fits well with EMWD's current capacity to supply recycled water and long-term plans to increase the municipal and industrial uses of recycled water. Recycled water production is already sufficient to meet projected IEEC needs during November through May and will allow beneficial use of seasonal surplus water that is presently stored or disposed of by EMWD during those months.

Raw Water Usage. Raw water would be needed to supplement the recycled water supply. This projected use (estimated to be approximately 2,329 AF/YR during year 2005) comprises approximately 2.8 percent of the total potable/treated water supply available in year 2000 (84,608 AF/YR, see Table 5.4-4) that EMWD would supply to its customers that year. By 2020, it is projected that increased availability of recycled water will allow IEEC to greatly reduce or eliminate raw water supplements.

Raw water would be supplied by MWD through EMWD. MWD offers water on demand to its member agencies on a noninterruptible basis. EMWD would purchase non-interruptible service from MWD in order to ensure that service to IEEC would not reduce supplies within EMWD during imported supply deficiencies that may affect the supplies of interruptible services offered by MWD.

MWD's continuing management programs will ensure the adequacy of raw water supplied to the project. These programs are ongoing, are funded and financed by MWD and are not affected by the Energy Center. It is concluded, therefore, that IEEC's indirect use of raw water would not cause a significant impact on MWD or the environment.

5.4.2.2 Surface Water Impacts

Approximately 35 acres of land associated with the 45.8 acre IEEC site will be permanently disturbed. The fenced project area will be approximately 24 acres. Another 15 acres will be temporarily used for a construction laydown area. Best Management Practices (BMPs) and a Storm Water Pollution Prevention Plan (SWPPP) will be implemented to assure no significant increase in erosion from construction activities. Additionally, erosion and sediment controls, surface water pollution prevention measures, and other BMPs will be developed and implemented for both construction and operational phases. These plans will be prepared in accordance with the storm water discharge permit requirements of the Regional Water Quality Control Board (RWQCB).

All chemical storage tanks at the plant site will be located in secondary containment areas to control accidental spills and leaks. All refueling operations and maintenance of construction equipment will be performed only in designated lined and/or curbed areas. A spill contingency plan will be prepared for handling of all chemicals and wastes generated at the site. Storm water runoff from the curbed portions of the site (with potential for oil contamination) will be collected and routed through an oil-water separator and then reclaimed for use as cooling tower makeup. Thus, there would be no untreated surface discharges of storm water runoff from the curbed portions of the generating facility; and, therefore, no impacts to surface water quality are expected.

The design of the facility will conform to the Riverside County Hydrology Manual as stated in Appendix A (Foundations and Civil Engineering Design Criteria). Surface drainage systems will be designed to handle the flows resulting from the 1-hour, 3-hour, 6-hour, and 24-hour duration rainfall events for the 2-year, 5-year, and 10-year return frequencies. The surface drainage systems will also be designed to prevent flooding of permanent plant facilities and will include an onsite detention pond with a restricted outlet to ensure that none of the above storm events will cause a higher peak discharge after construction of the energy center than would otherwise exist prior to construction.

The plant site is not within a flood hazard zone as defined by the Federal Emergency Management Agency (FEMA, 1996).

The project is designed to avoid impacts to off-site surface water drainage systems. There are three main wastewater streams during project operation:

- Storm water runoff. Storm water runoff from the project site will be routed through detention ponds designed to retain silt and prevent impacts to the water quality of off-site drainages.
- Plant operations wastewater. Recycled and raw water used in the cooling tower and other project facilities will result in a wastewater stream that will be discharged to the non-reclaimable wastewater collection system operated by EMWD. There will not be any off-site discharge of plant process wastewater, so there will not be any impacts to surface water resources from plant operations.

- Sanitary system wastes. Sanitary wastes will be directed to an existing 30-inch sanitary sewer line in McLaughlin Road. The IEEC will employ approximately 23 people during operation. EMWD has indicated the existing sewer line has adequate capacity to handle the sanitary wastes generated during project operation. No adverse impacts to surface or groundwater are anticipated from sanitary system wastes.

Good engineering practices and BMPs will be employed in the project design and operation. IEEC will not: alter the existing drainage pattern; create or contribute runoff water exceeding capacity of existing or planned stormwater systems; degrade water quality; or, place structures within a 100-year flood hazard area. Therefore, no significant impacts to surface water quality or quantity are expected during construction or operation of the proposed facility.

5.4.2.3 Groundwater Impacts

Direct Impacts

Activities at the IEEC plant site have very little potential to impact groundwater resources. Groundwater beneath the plant site is approximately 78 feet bgs and groundwater will not be used by the project. Since stormwater runoff from the power plant site will be controlled and properly disposed, no groundwater impacts from IEEC operation would be expected. No underground storage tanks are proposed at the power plant site. All aboveground chemical storage tanks will have secondary containment structures and the potential for release is considered remote. In the unlikely event that a spill does occur, the spill would be immediately cleaned up by trained individuals. Solid wastes and small amounts of hazardous waste will be generated by the project, however, these wastes will be properly handled and disposed offsite using licensed transporters (see Waste Management, Section 5.13).

The IEEC will employ approximately 23 people during operation. Sanitary wastes from the IEEC Administration Building will be conveyed to an existing EMWD sanitary sewer line in McLaughlin Road. No adverse impacts to groundwater are anticipated from the operation of the sanitation system.

IEEC's use of recycled water is consistent with EMWD's water management plans. Table 5.4-5 shows that with the planned increase in use of recycled water for industrial and municipal uses, changes to the quantity of recycled water requiring disposal or available for incidental recharge are part of EMWD's planned recycled water use.

IEEC will not deplete groundwater supplies or interfere substantially with groundwater recharge. Therefore, no significant impacts to groundwater are expected from the construction or operation of the IEEC.

Indirect Impacts

Recycled water provided by EMWD to the IEEC will be supplied from two wastewater treatment plants (MVRWRF and PVRWRF, see Figure 5.4-3). During winter months when current demand for recycled water is low, EMWD stores recycled water from these plants in ponds at four locations (see Figure 5.4-3):

- MVRWRF plant site (Perris North subbasin)
- Skiland (Perris South II subbasin, water from MVRWRF)
- Case Road (Perris South II subbasin, water from PVRWRF)
- Trumble Road (Perris South II subbasin, water from PVRWRF)

During winter storage, estimated losses as a result of evaporation, are on the order of 100 AF/YR (EMWD, 2000a). In addition, since these ponds are unlined, incidental percolation occurs resulting in recharge to the local groundwater system. Using estimates developed by EMWD (2000a), the average recharge from the above ponds over a 10-year period from 1989 through 1998 is on the order of 6,700 AF/YR. Historically, during winters when the volume of recycled water produced exceeds the combined capacity provided by storage ponds, evaporation and incidental percolation, recycled water is exported out of the basin by discharges to Reach 4 via EMWD's NPDES. The discharge flows to Lake Elsinore. To date, exports have been infrequent, but are predicted by EMWD to increase (with increasing recycled water production) unless the District develops new in-basin winter uses for recycled water. Water requirements of the IEEC are compatible with EMWDs current winter and long-term year-round objectives for recycled water use.

Potential impacts associated with diversion of stored recycled water to the IEEC include:

- Reduction in the volume of stored recycled water lost to evaporation. [Positive impact]
- Reduction in groundwater recharge and total inorganic nitrogen (TIN) loading in the Perris North subbasin resulting from decreased percolation of recycled water from ponds at the MVRWRF; potential decrease in local groundwater mounding beneath the plant site, and; potential decrease in local groundwater levels due to reduced recharge. [Net positive impact]
- Reduction in groundwater recharge and TIN loading in the Perris South II subbasin resulting from decreased percolation of recycled water from ponds at the PVRWRF; potential decrease in groundwater mounding beneath storage ponds; potential decrease in local groundwater levels due to reduced recharge and; decrease in the volume of high salinity groundwater migrating into the Lakeview subbasin. [Net positive impact]

The project area for the IEEC is within an area of the WSJGB planned for extraction of brackish groundwater by EMWD. Up to 8 mgd of brackish water will be desalted and distributed for potable use. Diversion of recycled water to the IEEC will potentially reduce the sustainable yield of the proposed brackish water development area from on the order of 13,000 AF/YR (HydroScience, 2000) to approximately 10,500 AF/YR. The actual magnitude and duration of the yield reduction will depend largely upon (1) planned groundwater management practices and operations of EMWD and other major producers, and (2) local climatic cycles.

Given the above conditions, recycled water use by the IEEC would not substantially deplete existing groundwater supplies in the area.

5.4.2.4 Wastewater Treatment Impacts

As indicated in the attached "Will-Serve Letter" (Appendix M), EMWD is willing and able to provide sewer service to the IEEC. Sewer service will be segregated into reclaimable wastewaters from the sanitary sewer system and non-reclaimable wastewater from the process system and cooling tower blowdown.

IEEC will produce approximately 0.86 MGD (on average) of non-reclaimable wastewater at peak rates of flow up to 1.2 MGD. A brine line with a 1.2 MGD capacity will be constructed to convey non-reclaimable wastewater from the project site to the existing EMWD Reach 4 pipeline that conveys water to the TVRI and SARI systems.

It is readily apparent that the 1.2 MGD peak flow of non-reclaimable wastewater generated by IEEC together with the 1.0 MGD flow of non-reclaimable wastewater generated by the EMWD desalter projects can be accommodated within the 10 MGD capacity of Reach 4 and within the 4.378 MGD capacity which EMWD owns within the TVRI and SARI pipelines.

As part of its right to discharge into the TVRI/SARI pipeline, EMWD has the right to purchase capacity within the OCSD treatment plant in order to accommodate flow as it actually occurs. Exercise of this right by EMWD will not significantly affect OCSD's facilities. OCSD currently is offering capacity for sale. The timing and sizing of future facilities is not determined by the IEEC. OCSD has a capital financing program already in place to complete planned improvements to its facilities.

The OCSD has established maximum allowable concentration limits (Table 5.4-6) for non-reclaimable wastewater discharged to their system. The table compares projected non-reclaimable wastewater quality from IEEC with discharge standards. In complying with EMWD discharge requirements, the IEEC wastewater streams will also comply with the OCSD maximum allowable concentration limits.

Table 5.4-6 Comparison of IEEC Produced Non-Reclaimable Wastewater Quality with EMWD Maximum Allowable Concentration (mg/L)

Constituent	EMWD[1] Maximum Allowable Concentration	IEEC Effluent[2]
Arsenic	2.0	0.182
Cadmium	1.0	0.039
Chromium	2.0	0.065
Copper	3.0	0.091
Cyanide (Total)	5.0	0.0013
Cyanide (Amenable)	1.0	0.0013 (total)
Lead	2.0	0.195
Mercury	0.03	0.0065

Table 5.4-6 Comparison of IEEC Produced Non-Reclaimable Wastewater Quality with EMWD Maximum Allowable Concentration (mg/L) (Continued)

Constituent	EMWD[1] Maximum Allowable Concentration	IEEC Effluent[2]
Nickel	10.0	0.260
Oil and Grease[2]	100.0	N/A
Silver	5.0	0.078
Polychlorinated Biphenals	0.01	N/A
Total Toxic Organics	0.58	
Zinc	10.0	1.053

(1) Source: M. Truax, EMWD.

(2) Assumes design influent water quality as shown in Table 3.4-5.

N/A – not applicable

IEEC will not violate any water quality standards or waste discharge requirements. The project will not result in construction of new wastewater facilities or expansion of existing facilities. EMWD's capacity in the non-reclaimable wastewaster system is sufficient to handle non-reclaimable wastewater from IEEC. Therefore, IEEC will not have a significant impact on wastewater treatment facilities.

5.4.2.5 Compliance with State Water Policy

State of California Water Resources Control Board Resolution 75-58. In 1975, the SCWRCB issued a policy on the use and disposal of inland surface waters used for power plant cooling (Resolution No. 75-58). The policy contains the following principles:

- An order of priority of water sources for power plant cooling. The order is: 1) wastewater being discharged to the ocean, 2) ocean water, 3) brackish water from natural sources or irrigation return flows, 4) inland waste waters of low TDS, and 5) other inland waters. Ocean discharge water and ocean water are not locally available to the IEEC. IEEC is in compliance with this policy because the project will use water recycled by EMWD from wastewater collected in its service area.
- The discharge of blowdown water from cooling towers must not cause a violation of water quality objectives or waste discharge requirements established by Regional Boards. IEEC blowdown water in the cooling towers will be cycled approximately 5 to 13 times to reduce overall project water requirements. IEEC is in compliance with this policy because high TDS wastewater will be discharged to the EMWD's non-reclaimable wastewater collection system and wastewater disposal will not cause a violation of water quality objectives or waste discharge requirements.

California Water Conservation Policy. California Water Code, Section 461 requires all water users to conserve and reuse available water supplies to the maximum extent possible. The IEEC will comply with this water conservation policy. Water conservation measures include use of recycled water from EMWD, reuse of cooling tower water (cycled a minimum of 5 times) and reuse of the blowdown water from the HRSG, reverse osmosis system reject,

and process wastewater for use in the cooling tower (70 to 170 gpm). The use of wet surface condensers with evaporative cooling towers reduces impact on water by recycling the cooling water. This cooling method significantly reduces the quantity of water that must pass through the system in contrast to a once-through cooling system.

5.4.3 Mitigation Measures

This section presents Applicant proposed mitigation measures that will be implemented to reduce impacts to water resources in areas affected by the proposed project, including the plant site, transmission lines, pipelines, and ancillary facilities. Additionally, the measures specified in Section 5.6 (Agriculture and Soils) will be implemented to minimize impacts to the soil resources, erosion control, and associated water quality-related impacts. The following mitigation measures are proposed:

- Design site drainage plans to be in conformance with the Riverside County Hydrology Manual and local ordinances.
- Provide appropriate storm water drainage for the plant site to minimize soil erosion and sediment transport associated with runoff from the site.
- Perform construction activities at the Energy Center site in accordance with the SWPPP and associated Monitoring Plan, which will be required for the project in accordance with the California NPDES General Permit for Storm Water Discharge Associated with Construction Activity. The SWPPP will include Best Management Practices to control erosion, sediment transport, and discharge of pollutants during construction.
- Conduct operations at the plant site in accordance with the SWPPP and associated Monitoring Plan, which will be required for the project in accordance with the California NPDES General Permit for Storm Water Discharges Associated with Industrial Activities. Implement the Best Management Practices listed in the SWPPP to prevent or control pollutants potentially associated with the operation of the plant from entering storm waters.
- During construction of pipelines and transmission lines, utilize existing roads to limit disturbance. Implement Best Management Practices to control soil erosion. Design and locate foundations and pipeline stream crossings in accordance with the Riverside County Hydrology Manual and local ordinances.

No significant unavoidable adverse impacts will occur to water resources due to construction or operation of IEEC.

5.4.4 Cumulative Impacts

Construction and operation of the project will require the use of recycled and raw water supplied by EMWD and the disposal of non-reclaimable wastewater to EMWD. Existing and planned projects in the project area would not result in cumulative impacts as described below:

- **Recycled Water Use.** The project will utilize recycled water to the extent that such supply is available. EMWD will determine the availability of recycled water to the project such that use by the Energy Center will not compete with other recycled water uses.
- **Raw Water Use**. The indirect use of imported raw water created by the project would not impact the adequacy of water supplies for other users including potential new users in the area. EMWD's existing supply sources are adequate to meet projected future demands largely due to the ongoing and aggressive water management programs of the agency. In addition, MWD has completed projects to ensure the reliability of its existing imported water sources.
- **Groundwater Impacts.** The use of recycled water by the project is consistent with the management plan for the groundwater basin and provides the following. The use (1) improves salt management in the groundwater basin, (2) reduces total organic nitrogen loading in key areas, and (3) will help decrease the volume of high salinity groundwater migrating into the Lakeview subbasin due to high groundwater levels in the adjacent Perris South II subbasin.
- **Non-Reclaimable Wastewater.** The non-reclaimable wastewater generated by the project will be discharged into existing non-reclaimable waste lines that have been sized in anticipation of this type of use. Discharge standards are established for existing and future users to ensure that full use of these structures is accomplished within the limits of NPDES permits. EMWD has indicated that adequate capacity exists in the system to accommodate IEEC's use and all future projected uses.

5.4.5 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction, and operation of the IEEC, including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to water resources. The following LORS are applicable or potentially applicable to the proposed project in the context of water resources.

5.4.5.1 Federal Authorities and Administering Agencies

Clean Water Act of 1977 (including 1987 amendments) § 402, 33 USC § 1342; 40 CFR Parts 122 - 136. The Clean Water Act requires a general construction activities permit for discharge of storm water from construction sites disturbing five acres or more. The Act also requires a general storm water permit for operation.

Clean Water Act of 1977; 40 CFR Parts 112 and 125. The Clean Water Act authorizes EPA to regulate the discharge of point-source pollutants into surface waters via NPDES permits and pretreatment standards. These regulations also establish requirements for Spill Prevention, Control, and Countermeasures (SPCC) Plans for facilities handling large quantities of oil products.

Safe Drinking Water Act of 1974; 40 CFR Parts 122, 123, 146, and 147. The Safe Drinking Water Act establishes requirements for underground injection control (UIC) wells to prevent degradation of groundwater supplies. The administering agencies for this authority are the RWQCB Santa Ana Region, and the EPA, Region IX.

5.4.5.2 State Authorities and Administering Agencies

The California Porter-Cologne Water Quality Control Act 1998; California Water Code § 13000 - 14957; Division 7, Water Quality. The Porter-Cologne Water Quality Control Act authorizes the state to develop and implement a statewide program for the control of the quality of all waters of the state. The Act establishes the state board and each regional board as the principal state agencies with primary responsibility for the coordination and control of water quality. Under § 13172, siting, operation, and closure of waste disposal sites are regulated. The Board requires classification of the waste and the disposal site. Discharges of waste must comply with the groundwater protection and monitoring requirements of the Resource Conservation and Recovery Act of 1976, as amended (42 USC Sec. 6901 et *seq.),* and any Federal Acts which amend or supplement the Resource Conservation and Recovery Act of 1976, together with any more stringent requirements necessary to implement this revision or Article 9.5 (commencing with Section 25208) of Chapter 6.5 of Division 20 of the Health and Safety Code.

The administering agency for the above authority is the CEC, State Water Resources Control Board, and the Regional Water Quality Control Board, Central Valley Region.

California Water Code § 461; California Constitution, Article 10 § 2. This article prohibits the waste or unreasonable use of water, and regulates the method of use and method of diversion of water. The administering agency for this authority is the State Water Resources Control Board.

State Water Resources Control Board, Resolution 75-58. The Board prescribes state water quality control policy on the use and disposal of inland water used for power plant cooling. It establishes an order of priority for power plant cooling and prescribes that the use of water for power plant cooling analyze the impact on Delta outflow and Delta water quality objectives, and stipulates that the discharge of blowdown water from cooling towers must not cause a violation of water quality objectives or waste discharge requirements.

The administering agencies for the above authority are the State Water Resources Control Board and the CEC.

California Public Resources Code § 25523(a), 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2 Subchapter 5. Article 1, Appendix B, Part (1). The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection. The administering agency for this authority is the CEC.

5.4.6 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to water resources for IEEC are provided in Table 5.4-7.

Table 5.4-7 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Santa Ana Regional Water Quality Control Board (SARWQCB) 3737 Maine Street, Suite 500 Riverside, CA 92501	Staff (909) 782-4130	Storm Water Permit for General Construction Activity and Industrial Activities.
County Building and Safety Department 4080 Lemon Street, 7th Floor Riverside, CA 92501	Staff (909) 955-2000	Review of grading and drainage plans, sewer design review.
Eastern Municipal Water District PO Box 8300 Perris, CA 92572	Charles Bachman Assistant General Manager (909) 928-3777	Water Service, Sewer Service, Facility Construction, Discharge Requirements.
Orange County Sanitation District 10884 Ellis Avenue Fountain Valley, CA 92708	Staff (714) 962-2411	Non-Reclaimable Wastewater Discharge Requirements
Santa Ana Regional Interceptor (SARI)		Conveyance of Non-Reclaimable Wastewater

5.4.7 Permits Required and Permit Schedule

Agency-required permits related to water resources are summarized below in Table 5.4-8. Agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 5.4-8 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Grading/Erosion Control Permit	30 days prior to start of construction activities.
NPDES General Permit for Storm Water Discharges Associated with Construction Activities	Submit application 30 days prior to start of construction.
NPDES General Permit for Storm Water Discharges Associated with Industrial Activities	Submit application 30 days prior to start of operation.

5.4.8 References

California Regional Water Quality Control Board. 1995. Water Quality Control Plan, Santa Ana River Basin (8), Santa Ana Region.

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SECTION 5.5 GEOLOGIC RESOURCES AND HAZARDS CONTENTS

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5.5 GEOLOGIC RESOURCES AND HAZARDS

This section addresses the potential environmental effects on geologic resources and potential geologic hazards that may be encountered from development of the Inland Empire Energy Center (IEEC or Energy Center). The Energy Center site, like most locations in California, lies in Seismic Zone 4, but the soils and location are not subject to liquefaction, subsidence, landslides, or flooding. In preparation of this section, a geologic literature search was performed and applicable documents, such as maps and reports, were reviewed. In addition, pertinent findings presented in a geotechnical engineering investigation conducted at the proposed location of the Energy Center site (plant site) were incorporated. A copy of the geotechnical investigation report is provided in Appendix G.

The Energy Center site will be located near the town of Romoland on approximately 45.8 acres of land presently used for growing wheat. The site is located between Ethanac Road to the north and McLaughlin Road to the south with Antelope Road forming the western boundary of the site. Figures 3.2-1 and 3.2-2 (see Section 3.2) illustrate the project region and the location of the Energy Center site, electric transmission line, natural gas supply pipeline alternatives and compressor station, and non-reclaimable wastewater discharge line.

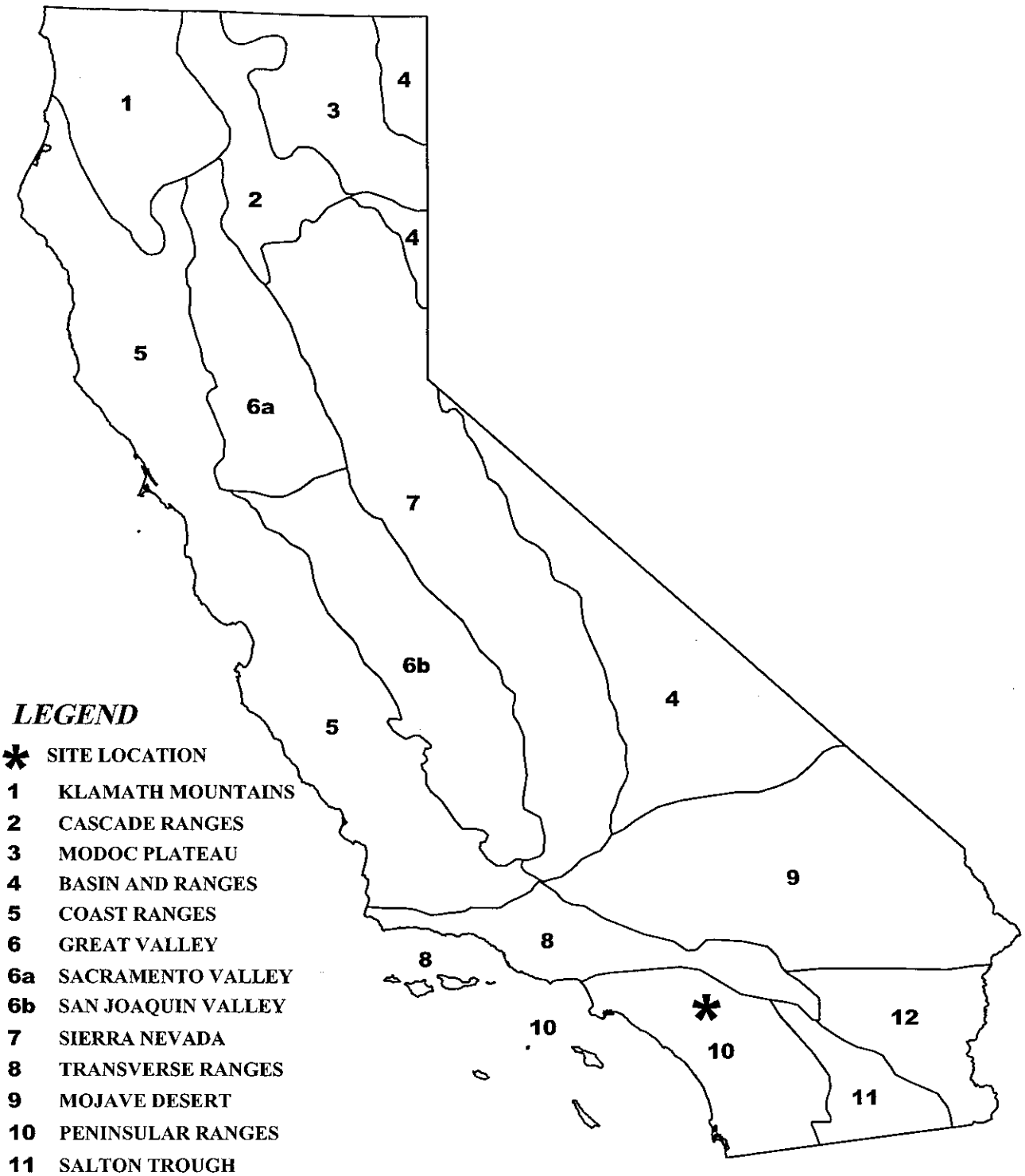
5.5.1 Affected Environment

5.5.1.1 Regional Geology and Physiography

The Energy Center site and associated linear facilities are located in Perris Valley, which lies in the northern portion of the Peninsular Ranges Physiographic Province of California (Figure 5.5-1). Perris Valley is located in the central part of the Perris Block, which is a stable structural block of crystalline basement rock of generally low relief bounded on the northeast by the San Jacinto fault zone, on the north by the Cucamonga fault and the San Gabriel Mountains, and on the southwest by the Elsinore fault zone (Rogers, 1966; see Figure 5.5-2).

Part of the Perris Block is an alluviated valley terrain that includes isolated small mountains or hills of basement rocks. The alluviated area west of these hills is known as Perris Valley and the area east of them is referred to as the San Jacinto Valley (see Figure 5.5-2). The alluviated terrain has an average altitude of 1,700 feet and drains south to Lake Elsinore. The hills within Perris Valley rise to an altitude of about 2,500 feet.

The Perris Valley, also referred to as the Perris Plain, is a broad, nearly flat surface dotted with bedrock hills, extending from near Corona, southeasterly to Hemet. This plain is covered with Holocene and Pleistocene age alluvial sediments. There are numerous northeast-trending bedrock hills/ridges that interrupt its surface and are described as residual knobs of resistant rock (monadnocks), which survived prolonged erosion. It has been suggested that a surface of low relief developed on the crystalline bedrock, leaving behind the scattered monadnocks (Norris and Webb, 1990). During early to middle Cenozoic time, drainage was to the northeast via the San Jacinto River, as deduced from buried channels located geophysically and by well logs (Norris and Webb, 1990). Development of this channeled surface was



LEGEND

*	SITE LOCATION
1	KLAMATH MOUNTAINS
2	CASCADE RANGES
3	MODOC PLATEAU
4	BASIN AND RANGES
5	COAST RANGES
6	GREAT VALLEY
6a	SACRAMENTO VALLEY
6b	SAN JOAQUIN VALLEY
7	SIERRA NEVADA
8	TRANSVERSE RANGES
9	MOJAVE DESERT
10	PENINSULAR RANGES
11	SALTON TROUGH
12	COLORADO DESERT

SOURCE:
Norris R.M. and Webb R.W., 1990.

Inland Empire Energy Center
Inland Empire Energy Center, LLC

FIGURE 5.5-1
Physiographic Provinces of California

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followed by a period of nonmarine sedimentation, which produced the Perris surface. Drainage shifted toward the Pacific Ocean and the Perris surface was eroded, leaving scraps of older, higher surfaces at elevations of about 2,100 feet. The present-day surface corresponds generally to what is referred to as the Perris Plain.

As shown on Figure 5.5-2, the monadnocks divide the Perris Plain into northeast-trending valleys. These interconnected valleys were carved out of the former mountainous terrain by streams that drained either northeastward or southwestward across it. Streams from the mountains to the north, south, east, and west of the Energy Center site and associated linear facilities drain into the valleys. The most prominent of these streams is the San Jacinto River, which is crossed by the Alternative B Moreno Valley natural gas pipeline route. Over time, as a result of this drainage, alluvial deposits filled the valleys. The older sediments are generally buried by progressively younger alluvium. Consequently, most of the immediate surficial deposits in the area are probably a few hundred to several thousands of years old (Dibblee 1981a; Reynolds and Reynolds 1991).

The monadnocks surrounding the Energy Center site and associated linear facilities predominately consist of igneous plutons that form the cores of the mountain ranges in the region. These plutonic rocks belong to the Peninsular Ranges batholith and were formed during the Nevadan-orogeny (Cretaceous Period). The batholithic rocks range in composition from gabbro to granite. In addition, prebatholithic, early to middle Mesozoic age, metasedimentary and metavolcanic rocks are exposed locally. The metamorphic rocks in the area consist primarily of gray foliated rocks that range form argillites through mica schists to fine-grained gneisses, and include lenses of quartzite and marble (Morton, 1972). In places, the bedrock exhibits moderately to well developed joints and fracture sets (Rasmussen, 1989).

The structure of the area is controlled by faulting, the trend of which is predominately in a northwesterly direction, which is characteristic of the general structural trend of California. Most of the basement rocks in the region were faulted as a result of early convergence of the North American and Pacific plates.

The San Jacinto fault zone is a major fault zone within the Peninsular Ranges Physiographic Province and is generally considered to be the most active fault in Southern California (Rasmussen, 1989). The San Jacinto fault zone within the San Jacinto Valley consists of two major fault segments, the San Jacinto Valley segment along the northeastern margin of the valley, and the Casa Loma fault along the southwestern margin of the valley. The area between these two faults represents a downfaulted alluviated basin or graben (Dibblee, 1981a). The Casa Loma fault is located approximately 10 miles northeast of the Energy Center site and the San Jacinto Valley segment is located approximately 12 miles northeast from the Energy Center site. The northern portion of the Alternative B Moreno Valley natural gas pipeline route is located within this fault zone (see Figure 5.5-2).

5.5.1.2 Tectonic Setting

Southern California is characterized by random seismic shaking and potential ground rupture. It lies at the boundary of the North American and Pacific Plates, which is an active predominately strike-slip plate boundary. About 25 million years ago, the tectonic regime in the area changed from convergent to a transform boundary between the North American and the Pacific Plates (Harden, 1998). The western Pacific Plate, on which the site is located, is moving to the northwest relative to the eastern or North American plate. This transform boundary is commonly referred to as the San Andreas Fault Zone. In the region surrounding the Energy Center site and associated linear facilities, seismic activity is observed along the San Andreas, San Jacinto, and Elsinore fault zones.

5.5.1.3 Local Geology

The Energy Center site and associated linear facilities are located primarily within U.S. Geological Survey (USGS) Perris, Romoland, Lake View, Sunnymead, and El Casco quadrangles (1:24,000). The Energy Center site and ancillary facilities are located on a relatively flat alluvial surface built up by sediments shed off the adjacent highlands. Figure 5.5-3 (maps A through C), are 1:24,000 scale geologic maps of the Energy Center site and associated linear facilities.

As shown on Figure 5.5-3 (maps A through C) the Energy Center site and associated linear facilities are underlain by Quaternary alluvial deposits (Qal), which consist of locally derived unconsolidated brownish sediments ranging from clay to gravel in size (Morton, 1991 and CDMG, 1972).

Findings from a preliminary geotechnical investigation conducted at the Energy Center site by URS Corporation (URS) in December 2000 (see Appendix G), indicate that the site is underlain with soil and alluvium, with crystalline bedrock at depth. The soil present across the site ranges in depth from 1 to 3.5 feet. It consists of porous, dense to very dense, light brown, silty, fine to coarse sand. It has been plowed repeatedly in the past for agricultural use.

Soil borings taken at the Energy Center site encountered alluvial deposits to a maximum depth of 100 feet below ground surface. The alluvium consists primarily of very dense, clayey sand; silty to well-graded, fine to course sand with and without gravel; and hard clay. The alluvial soil within the upper five feet of the ground surface is typically porous. Groundwater was encountered at a depth of 78.5 feet.

As shown on the regional geologic map (Figure 5.5-2), the Lakeview Mountains lie to the northwest of the site and a bedrock knob called Double Butte lies to the east. South of the Energy Center site and east of Sun City, lies an unnamed knob of granitic rock. The Alternative B Moreno Valley Natural Gas Pipeline crosses through a northeast-trending alluviated valley, which is bordered by the Lakeview Mountains on the east and the Bernasconi Hills to the west, and then passes north around the Bernasconi Hills and ends near the base of Mount Russell. These granitic rocks are predominately Cretaceous age and vary in composition from granodiorite to tonalite, with lesser gabbro, and gabbroic to dioritic dikes

(Morton, 1991 and CDMG, 1972). These granitic rocks are mapped as: Kgd (granodiorite and tonolite), Kt (tonolite and granodiorite), Kgb (gabbro), Kgm (foliated quartz diorite), and Klm (quartz diorite). Prebatholithic age rocks (pKmg) comprised of various types of metamorphic rocks are located east of milepost 10 along the Alternative B Moreno Valley natural gas pipeline route (Figure 5.5-3, Map C).

Based on mapping by Dibble (1981b), the Casa Loma fault crosses the Alternative B Moreno Valley natural gas pipeline at approximately milepost 13.5 (see Figure 5.5.3, Map C). This fault is concealed under alluvium (Qal) and its location is inferred. It is believed the Casa Loma fault converges to the north with the San Jacinto fault east of Sunnymead. The Casa Loma fault has displayed evidence of Holocene activity and is discussed further in the following section. Published mapping of active faults indicates there is no evidence of active faulting in the vicinity of the Energy Center site.

5.5.1.4 Seismic Setting

The right-lateral strike-slip motion of the San Andreas Fault System, which locally consists of the San Andreas, San Jacinto, and Elsinore fault zones, are the primary seismic sources that may potentially affect the Energy Center site and associated linear facilities. The site lies in the Perris Valley between the San Jacinto and Elsinore fault zones. The San Jacinto and Elsinore fault zones are the closest active fault zones to the Energy Center site located at distances of 10 and 12 miles, respectively. Both faults have been zoned as active Earthquake Fault Hazard Zones under the State of California's Alquist-Priolo Act (CDMG, 1999a). Specifically, with respect to the Alternative B Moreno Valley natural gas pipeline, the Lakeview, Sunnymead, and El Casco quadrangles are identified as "Earthquake Fault Zones".

Table 5.5-1 identifies faults located within 63 miles (100 kilometers) of the Energy Center site and associated linear facilities, which are considered active (Petersen *et. al.,* 1996). Three of the faults are considered type "A" faults, those with slip rates in excess of five millimeters per year (mm/yr), well constrained paleoseismic data, and capable of producing an earthquake with a moment magnitude (M_w) of 7.0 or greater. The type "A" faults are the San Andreas, San Jacinto, and Elsinore fault zones. Each of these fault zones consists of several active segments, which have variable physical characteristics as shown on Table 5.5-1. The type "B" faults that may have a strong effect on the site are the Newport – Inglewood, Raymond, and Calico-Hidalgo faults. Type "B" faults are those with slip rates greater than 2 mm/yr and M_w greater than 6.5. The site is considered susceptible to seismicity and seismic damage due to activity on the nearby faults. The San Jacinto and Elsinore fault zones are the most likely to cause seismically induced damage. The approximate location of the Type A and B faults listed in Table 5.5-1 are shown on Figure 5.5-4.

The San Andreas, San Jacinto, and Elsinore fault zones that are historically the most active of those listed in Table 5.5-1, and are briefly described below. Other active or potentially active faults are located within the general region, but because of their greater distance from the site and/or lower expected maximum probable earthquake magnitude, they are less likely to cause seismic damage at the site.

Table 5.5-1 Active Faults in the Project Area

FAULT NAME AND GEOMETRY (ss) strike slip, (r) reverse, (n) normal (rl) rt. lateral, (ll) left lateral, (o) oblique	Distance from IEEC (km)**	Length (km)	Slip Rate (mm/yr)	Rank (1)	Mmax (2)	R.I (3)	Rake	Dip	Endpt. N	Endpt. S	Comment
A FAULTS											
SAN ANDREAS FAULT ZONE											
San Andreas – San Bernardino (rl-22)	42	107	24.00	M	7.3	433	180	90	-117.53; 34.31	-116.48; 33.92	Slip rate reported by Weldon and Sieh (1985).
San Andreas (southern) (rl-ss)	42	203	24.00	P	7.4	220	180	90	-117.53; 34.31	-115.71; 33.35	Rupture of San Bernardino and Coachella segments. Slip rate based on Coachella segment.
San Andreas – Mojave (rl-ss)	42	99	30.00	P	7.1	550	180	90	-118.50; 34.70	-117.53; 34.31	Slip rate based on Sieh (1984) Salyards et al. 91992), and WGCEP (1995)
San Andreas (1857 rupture) (rl-ss)	42	345	34.00	W	7.8	206	180	90	-120.56; 36.00	-117.53; 34.31	Rupture of Parkfield, Cholame, Carrizo, and Mojave segments. Max. magnitude based on 1857 event (Ellsworth, 1990). Slip rate based on Carrizo segment.
SAN JACINTO – IMPERIAL FAULT ZONE											
San Jacinto – Coyote Creek (rl-ss)	80	40	4.00	M	6.8	175	180	90	-116.51; 33.46	-116.19; 33.20	Slip rate and fault length reported by WGCEP (1995).
San Jacinto – Anza (rl-ss)	30	90	12.00	M	7.2	250	180	90	-116.92; 33.74	116.12; 33.26	Slip rate and fault length reported by WGCEP (1995).
San Jacinto – San Jacinto Valley (rl-ss)	15	42	12.00	P	6.9	83	180		-117.24; 34.02	-116.92; 33.74	Slip rate and fault length reported by WGCEP (1995).
San Jacinto – San Bernardino (rl-ss)	15	35	12.00	P	6.7	100	180	90	-117.51; 34.25	-117.24; 34.02	Slip rate and fault length reported by WGCEP (1995).
ELSINORE FAULT ZONE											
Elsinore – Julian (rl-ss)	50	75	5.00	P	7.1	340	180	90	-117.01; 33.38	-116.36; 32.97	Slip rate and fault length reported by WGCEP (1995).
Elsinore – Temecula (rl-ss)	17	42	5.00	M	6.8	240	180	90	-117.35; 33.64	-117.01; 33.34	Slip rate and fault length reported by WGCEP (1995).
Elsinore – Glen Ivy (rl-ss)	17	38	5.00	M	6.8	340	180	90	-117.64; 33.85	-117.35; 33.64	Reported slip rates vary from 3.0-7.2 (Millman and Rockwell, 1986).
B FAULTS											
TRANSVERSE RANGES AND LA BASIN											
Newport – Inglewood (rl-ss)	90	64	1.00	P	6.9	1006	180	90	-118.37; 34.03	-117.92; 33.61	Mio-Pliocene slip rate of 0.5 mm/yr reported by Freeman, et al. (1992). Offsets observed in the Huntington Beach area indicate significant Holocene displacement. Apparent vertical separation of 0.46 m of 3-4ka A soil horizon is suggestive of higher slip rate. If apparent vertical separation reflects actual vertical displacement, then H:V ratio of 20:1 for fault (Freeeman, et al., 1992) would suggest Holocene rate of 2 to 3 mm/yr. We use 1 mm/yr for fault, based on WGCEP (1995).
Raymond (ll-r-o, 75N)	95	21	0.50	P	6.5	1541	0	75	-118.22; 34.12	-118.00; 34.17	Slip rate estimated by authors is poorly constrained, based on focal mechanism of 1988 Pasadena earthquake and assumed vertical component of offset, reported by Crook et al. (1987). Crook, et al. reported average recurrence interval of 3000 yrs. Dolan, et al. (1995) reported 0.4 mm/yr slip rate for Raymond fault.

Table 5.5-1 Active Faults in the Project Area (Continued)

FAULT NAME AND GEOMETRY (ss) strike slip, (r) reverse, (n) normal (rl) rt. lateral, (ll) left lateral, (o) oblique	Distance from IEEC (km)**	Length (km)	Slip Rate (mm/yr)	Rank (1)	Mmax (2)	R.I (3)	Rake	Dip	Endpt. N	Endpt. S	Comment
E. TRANSVERSE RANGES AND MOJAVE											
Calico-Hidalgo (rl-ss)	95	95	0.60	P	7.1	5000	180	90	116.92; 34.99	116.26; 34.36	See Blackwater fault.

(1) W –well-constrained slip rate; M – moderately constrained slip rate; P – poorly constrained slip rate.

(2) Maximum moment magnitude calculated from relationships (rupture area) derived by Wells and Coppersmith (1994)

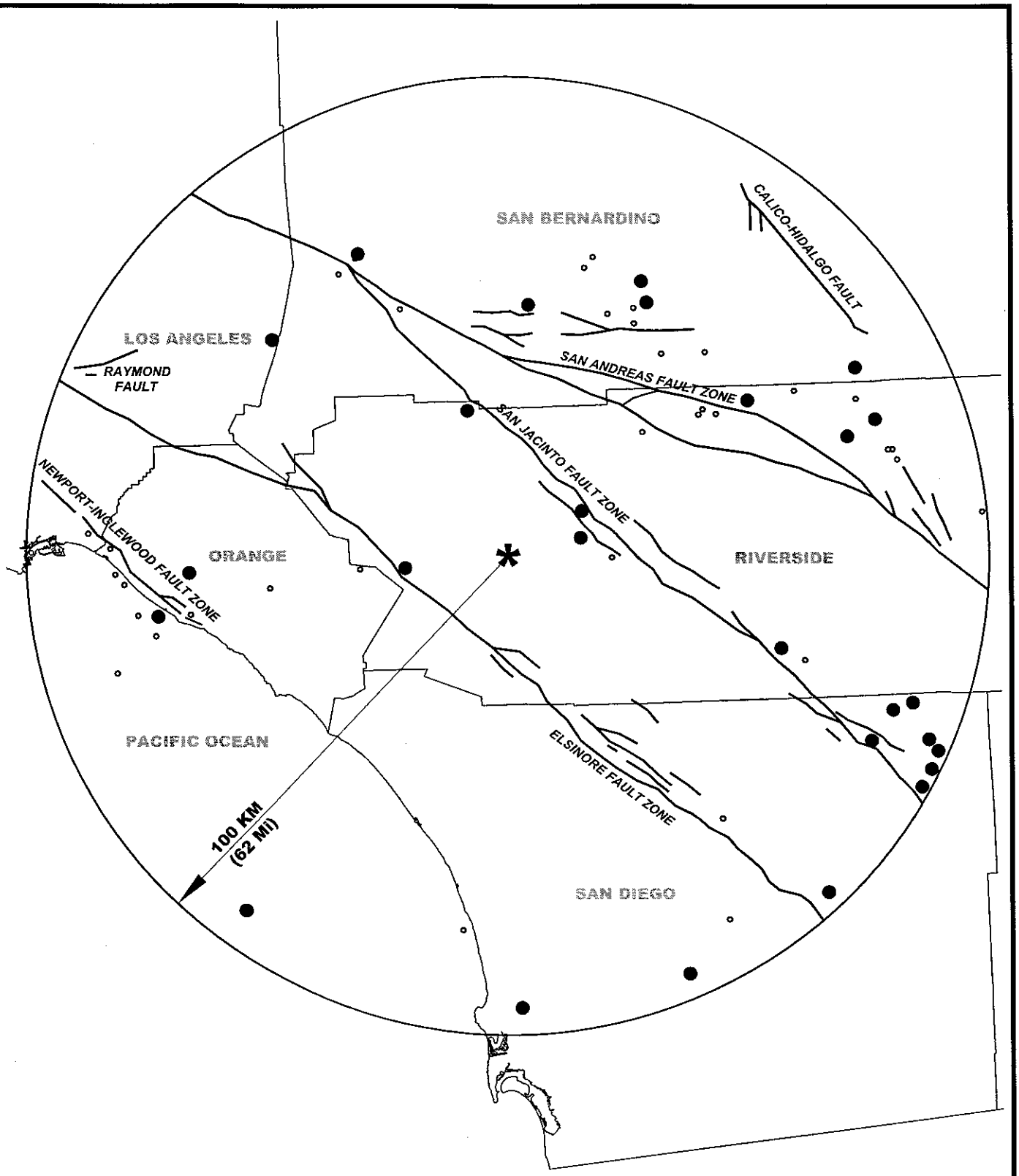
(3) R.I. – recurrence interval

* Data from Petersen et al., 1996. Probabilistic Seismic Hazard Assessment for the State of California.

** Approximate distance.

IEEC: Inland Empire Energy Center

WGCEP: Working Group on California Earthquake Potential



LEGEND

- SITE LOCATION
- 5.0-5.5 MAGNITUDE
- > 5.5 MAGNITUDE
- 100 KILOMETER BUFFER

10 0 10 20

APPROXIMATE GRAPHIC SCALE IN MILES

SOURCE:
Fault Traces : URS 2001
Seismicity: National Earthquake Information Center USGS Earthquake Database.

Inland Empire Energy Center
Inland Empire Energy Center, LLC

Figure 5.5-4
Regional Fault and Seismicity Map
(Greater or Equal to Magnitude 5.0)

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San Andreas Fault

The San Andreas fault zone is part of a complex system of faults, isolated segments of the East Pacific Rise, and scraps of tectonic plates lying east of the East Pacific Rise that collectively separate the North American plate from the Pacific plate (Wallace 1990). Relative movement between the Pacific and the North American tectonic plates dominates the regional seismo-tectonic setting. The boundary between the Pacific and North American tectonic plates extends from the Rivera triple junction, south of Baja California, northwards to the Mendocino triple junction, located approximately 50 miles off the coast of Northern California. Atwater (1970) and, more recently, Irwin (1990) describes the evolution of the Pacific-North American plate boundary. For much of the length of the plate boundary, and certainly for the site region, the San Andreas fault functions as a transform fault (tectonic plate boundary) with strike-slip displacement (Wilson 1965). In Southern California, the relative horizontal (strike-slip) movement along this boundary is about 45 mm/yr., and is being distributed among the various faults of the San Andreas system (Petersen *et al.,* 1996). Over geologic time, the San Andreas fault accommodates about 24 mm/yr of this movement (Petersen *et al.,* 1996).

The San Andreas fault zone is approximately 26 miles northwest of the site. The San Andreas fault zone consists of four active fault segments ranging in length from 61 miles to 214 miles. The location of the main trace is evidenced by vegetation lineaments, fault scarps, springs, linear ridges, and offset drainages (Rasmussen, 1989).

The San Andreas fault has been seismically quiet in the Southern California area in recent time. The last significant earthquake along it in this area was the great earthquake of 1857, which was centered at Fort Tejon, north of Gorman. This fault has a pattern of almost no movement for long periods of time followed by a sudden release of energy (Rasmussen, 1989). The Fort Tejon earthquake had an estimated Richter magnitude greater than 8.0, comparable to the 1906 San Francisco earthquake. The estimated recurrence interval for this portion of the San Andreas fault is 206 years.

San Jacinto Fault Zone

The San Jacinto fault zone splays southeastward from the San Andreas fault zone in the San Gabriel Mountains and separates the San Jacinto block to the east from the Perris Block on the west. The San Jacinto fault zone consists of several active right-lateral strike-slip faults. Evidence of movement includes crushed zones in dominantly plutonic rocks, fault-line and eroded scarps, offset roof pendants, and linear topographic trends paralleling known faults (Norris & Webb, 1990). Evidence for most recent movement includes epicenter swarms, at least seven earthquakes of magnitude 6 or greater since 1890, and alignment of hot springs. The total cumulative right-slip on the San Jacinto fault zone is estimated to be as much as 18 miles (Dibblee, 1981a).

The San Jacinto fault zone has been a source of moderate to large earthquakes in southern California and has been more active than the San Andreas fault zone relative to historical

seismicity (Dibblee, 1981a and Rasmussen, 1989). The San Jacinto fault zone in the vicinity of the site consists of four active fault segments ranging in length from 22 miles to 56 miles. The San Jacinto Valley segment lies to the northeast of the site. It is approximately 42 km in length with a recurrence interval of 83 years and is capable of a magnitude M_w 6.9 event. The Working Group on California Earthquake Probabilities assessed the rupture probability for the San Jacinto Valley segment at 43 percent before the year 2024 (URS, 2000). The last event on the segment was a magnitude 6.8 earthquake occurring on April 12, 1918.

The Casa Loma fault is the northwestern extension of the San Jacinto fault under the San Jacinto Valley and is concealed under alluvial deposits. Its position is inferred locally by the steep, straight base of Park Hill in Hemet, a small southwest-facing scarp at Casa Loma Hill, and a low linear northeast-facing scarp in the alluvium between Hemet and Casa Loma Hill (Dibblee, 1981a). It is believed the fault converges with the San Jacinto Valley fault approximately 5 miles northeast of Mouth Russell, east of Sunnymead. It is interpreted to be a deep graben that sagged, as the Perris Block was in part pulled away from the San Jacinto block, and as the Perris Block shifted northwestward with respect to the San Jacinto block. This fault has displayed evidence of Holocene activity consisting of creep since 1939, probably owing to groundwater withdrawal (Jennings, 1994).

The Casa Loma branch of the San Jacinto fault zone is considered the most important fault to the site from a seismic shaking standpoint due to its relatively close proximity. The recurrence intervals for maximum probable earthquakes cannot yet be precisely determined from a statistical standpoint, because recorded information on seismic activity does not encompass a sufficient span of time (Rasmussen, 1989). However, based on current information, it is possible that a maximum probable earthquake of magnitude 7.0 along the Casa Loma fault may occur (Rasmussen, 1989).

Elsinore Fault Zone

The Elsinore fault zone is a prominent and relatively youthful structural boundary that separates the Perris Block on its eastern side from the Santa Ana Mountains along the western side. It is a major northwest-trending strike-slip fault marked through most of its length by a bold topographic expression consisting of linearly aligned ridges, swales, and hollows (CDMG, 1977). Parallel to the San Jacinto and subparallel to the San Andreas, the Elsinore fault zone predictably has been assigned right-slip movement. The Elsinore fault zone disappears northwest beneath the sediments of the Los Angeles Basin, where the Elsinore apparently bifurcates into the Chino fault on the northeast and the Whittier fault on the southwest. The Elsinore fault zone is believed to be about the same age as the San Jacinto, and seems to have accumulated about 18 miles of right slip based on matching facies-change boundaries in Paleocene rocks on both sides of the fault (Norris & Webb, 1990).

Subsurface investigations have shown that the Elsinore fault zone is active (Rasmussen, 1989). The Elsinore fault zone accommodates 10 to 15 percent of the plate-boundary slip in southern California and could produce earthquakes of magnitude 7 or larger (URS, 2000). The Elsinore fault zone in the region of the site is divided into four active fault segments (see

Table 5.5-1). The Temecula segment, closest to the site, lies approximately 11 miles to the southwest and is approximately 27 miles in length and capable of a magnitude M_w 6.8 event. The recurrence interval has been estimated at 240 years for this segment (Petersen *et. al.*, 1996). The assessed rupture probability for the Temecula segment is 16 percent before the year 2024 (URS, 2000).

Seismically, the Elsinore fault zone is relatively quiescent, especially when compared with other faults of the San Andreas system to the east. Several significant earthquakes have occurred along the Elsinore fault zone within the last 100 years. In 1910, a M_w 5.0 earthquake occurred in the Temescal Valley area. In 1956 an earthquake of Richter magnitude 4.7 occurred in the Temescal Valley area causing rock slides (Rasmussen, 1989)

5.5.1.5 Earthquake History

Although the San Andreas fault zone is of primary concern to many Southern California and Riverside County residents because of its length and activity, the San Jacinto and Elsinore fault zones are also active and are potential sources of major earthquakes. The U.S. Geological Survey has recorded occurrences of seismic events along the San Jacinto, Elsinore, and San Andreas faults zones. Shown on Table 5.5-2 are recorded earthquakes of magnitude greater than 5.0 that have occurred within 63 miles (100 km) of the site. The approximate locations of the earthquake epicenters are plotted on Figure 5.5-4. Fifteen earthquakes of magnitudes greater that 6 were recorded in 1800, 1812, 1890, 1892, 1899 (2x), 1918, 1923, 1933, 1948, 1954, 1968, 1990, and 1992 (2x); these events occurred in the last 201 years, for an average of one every thirteen years.

5.5.1.6 Geologic Hazards

The most important geologic hazard that could affect the project area is the risk to life and property from a large earthquake event by the San Andreas, San Jacinto and Elsinore fault zones, which are capable of producing magnitude 7.8, 7.2, and 7.1 events, respectively.

Earthquake hazards include a number of phenomenon, such as seismic shaking, surface rupture, liquefaction, subsidence and settlement, and seismically induced landslides that may produce adverse effects on human activities. The susceptibility of a site to a particular hazard is a function of a number of factors including the local geologic conditions, the magnitude and source mechanism of the earthquake, and distance to seismic sources.

The following subsections discuss the potential geologic hazards that might occur in the project area and are based on a literature search and information provided in the geotechnical report conducted at the site by URS [2000 (Appendix G)].

Seismic Shaking

Seismic waves passing through earth material during an earthquake cause the ground to shake. Severe ground shaking is the most widespread and destructive aspect of earthquakes. The intensity of ground shaking depends on the distance of the earthquake epicenter to the site, the magnitude of the earthquake, site soil conditions, and the characteristic of the source.

Table 5.5-2 Earthquakes within 100 km of IEEC with Magnitudes Greater Than or Equal to 5

Source[1]	Date				Location		Local Magnitude	Distance[2] (km)
	Year	Month	Day	Time	Latitude	Longitude		
CDMG	1910	05	15	1547	33.70	-117.40	6.00	15
CDMG	1918	04	21	2232	33.75	-117.00	6.80	15
CDMG	1910	04	11	0757	33.70	-117.40	5.00	24
CDMG	1910	05	13	0620	33.70	-117.40	5.00	24
CDMG	1918	06	06	2232	33.75	-117.00	5.00	30
CDMG	1963	09	23	1441	33.71	-116.93	5.00	35
CDMG	1899	12	25	1225	33.80	-117.00	6.60	36
CDMG	1938	05	31	0834	33.70	-117.51	5.50	43
CDMG	1920	01	01	0235	33.20	-116.70	5.00	50
CDMG	1800	11	22	2130	33.00	-117.30	6.50	51
PDE	1980	02	25	1047	33.52	-116.55	5.60	56
CDMG	1916	09	30	0211	33.50	-116.50	5.00	60
CDMG	1923	07	23	0730	34.00	-117.25	6.25	61
CDMG	1946	09	28	0719	33.95	-116.85	5.00	61
CDMG	1944	06	12	1045	33.98	-116.72	5.10	70
PDE	1989	04	07	2007	33.62	-117.90	5.00	72
CDMG	1944	06	12	1116	33.99	-116.71	5.30	72
PDE	1988	12	16	0553	33.98	-116.68	5.20	73
CDMG	1812	12	08	1500	33.70	-117.90	6.90	74
CDMG	1969	04	28	2320	33.34	-116.35	5.80	75
PDE	1986	07	08	0920	34.00	-116.61	6.00	78
CDMG	1933	03	11	0154	33.62	-117.97	6.30	78
CDMG	1933	03	11	0518	33.58	-117.98	5.20	78
CDMG	1935	10	24	1448	34.10	-116.80	5.10	78
CDMG	1890	02	09	1206	33.40	-116.30	6.30	79
CDMG	1894	10	23	2303	32.80	-116.80	5.70	79
PDE	1994	04	06	1901	34.19	-117.10	5.00	82

Table 5.5-2 Earthquakes within 100 km of IEEC with Magnitudes Greater Than or Equal to 5 (Continued)

Source[1]	Date				Location		Local Magnitude	Distance[2] (km)
	Year	Month	Day	Time	Latitude	Longitude		
CDMG	1933	03	14	1901	33.62	-118.02	5.10	82
CDMG	1937	03	25	1649	33.41	-116.26	6.00	82
PDE	1992	06	28	1443	34.16	-116.86	5.50	83
PDE	1992	06	28	1701	34.18	-116.92	5.00	83
CDMG	1862	05	27	2000	32.70	-117.20	5.90	83
CDMG	1889	02	07	0520	34.10	-116.70	5.30	83
CDMG	1907	09	20	0154	34.20	-117.10	6.00	83
CDMG	1930	01	16	0024	34.18	-116.92	5.20	83
CDMG	1930	01	16	0034	34.18	-116.92	5.10	83
CDMG	1940	06	04	1035	33.00	-116.43	5.10	83
PDE	1986	07	13	1347	32.97	-117.87	5.80	85
PDE	1988	11	20	0539	33.51	-118.07	5.00	85
PDE	1992	08	17	2041	34.19	-116.86	5.30	86
CDMG	1899	07	22	0046	34.20	-117.40	5.50	86
CDMG	1933	03	11	0658	33.68	-118.05	5.50	87
CDMG	1947	07	24	2210	34.02	-116.50	5.50	87
CDMG	1947	07	25	0046	34.02	-116.50	5.00	87
CDMG	1947	07	25	0619	34.02	-116.50	5.20	87
CDMG	1947	07	26	0249	34.02	-116.50	5.10	87
PDE	1992	06	28	1505	34.20	-116.83	6.70	88
CDMG	1948	12	04	2343	33.93	-116.38	6.50	88
CDMG	1933	03	11	0510	33.70	-118.07	5.10	89
CDMG	1933	03	11	0854	33.70	-118.07	5.10	89
PDE	1990	02	28	2343	34.14	-117.70	6.20	91
CDMG	1954	03	19	0954	33.28	-116.18	6.20	91
CDMG	1954	03	19	0955	33.28	-116.18	5.00	91
CDMG	1954	03	19	1021	33.28	-116.18	5.50	91

Table 5.5-2 Earthquakes within 100 km of IEEC with Magnitudes Greater Than or Equal to 5 (Continued)

Source[1]	Date				Location		Local Magnitude	Distance[2] (km)
	Year	Month	Day	Time	Latitude	Longitude		
CDMG	1954	03	23	0414	33.28	-116.18	5.10	91
PDE	1992	07	09	0143	34.24	-116.84	5.70	92
CDMG	1892	05	28	1115	33.20	-116.20	6.30	92
CDMG	1933	03	11	0209	33.75	-118.08	5.00	92
CDMG	1933	03	11	0230	33.75	-118.08	5.10	92
CDMG	1933	03	11	0323	33.75	-118.08	5.00	92
CDMG	1933	03	11	0910	33.75	-118.08	5.10	92
CDMG	1933	03	13	1318	33.75	-118.08	5.30	92
CDMG	1943	08	29	0345	34.27	-116.97	5.50	92
PDE	1992	06	29	1601	33.88	-116.27	5.20	94
PDE	1992	07	24	1814	33.90	-116.28	5.00	94
PDE	1995	05	07	1103	33.90	-116.29	5.00	94
PDE-2	2001	02	10	2105	34.29	-116.95	5.10	94
PDE	1992	04	23	0450	33.96	-116.32	6.30	95
PDE	1992	06	30	1438	34.00	-116.36	5.10	95
CDMG	1970	09	12	1430	34.27	-117.54	5.40	97
CDMG	1933	10	02	0910	33.78	-118.13	5.40	98
CDMG	1945	08	15	1756	33.22	-116.13	5.70	98
PDE	1992	09	15	0847	34.06	-116.36	5.60	99
CDMG	1899	07	22	2032	34.30	-117.50	6.50	99
CDMG	1968	04	09	0228	33.19	-116.13	6.40	99

Notes:

(1) CDMG California Division of Mines and Geology (Real and others, 1978).
PDE Preliminary Determination of Epicenters from NEIS/CGS.

(2) "Distance in kilometers" is equal to the radial distance from the site.

Seismic ground shaking is the most likely seismic hazard to affect the site. According to the California Building Code (CBC), 1998 edition, the site is located in Seismic Zone 4. This location implies a minimum horizontal acceleration of 0.4g for use in earthquake resistant design. Mualchin and Jones (1992) produced a map of maximum credible earthquake accelerations for California; their figure for the site indicates a horizontal acceleration of 0.4g associated with a seismic event along the San Jacinto and Elsinore fault zones.

Ground motions can be estimated by probabilistic method at specified hazard levels. The California Division of Mines and Geology and the United States Geological Survey completed a study to identify the seismic hazard for the State based on a review of active and potentially active fault characteristics and historical seismicity throughout California (Petersen, *et al.* 1996). The results of these studies suggest that there is a 10 percent probability that the peak horizontal acceleration experienced at the site would exceed 0.45g in 50 years.

As part of the preliminary geotechnical assessment (URS, 2000, see Appendix G) a geotechnical survey was performed beneath the site and a shear wave velocity profile was determined to a depth of 131 feet. The shear wave velocity profile is a non-invasive and non-destructive in-situ seismic method to evaluate the physical properties of subsurface soil, such as density with respect to depth. The average corrected shear wave velocity was approximately 360 meters per second, which corresponds with a seismic soil profile of S_C (very dense soil or soft rock) in accordance with seismic design provision presented in the CBC (1998). Based on the geotechnical assessment, the recommended values to be used for the seismic design of the Energy Center site are presented in Table 5.5-3, below.

Table 5.5-3 Recommended Seismic Design Criteria
(Values taken from the Geotechnical Report provided in Appendix G, page 4-1)

Parameter	Value	1997 UBC Reference
Soil Profile	S_C	Table 16-J
Seismic Zone	4	Figure 16-2
Zone Factor, Z	0.4	Table 16-1
Seismic Source Name	San Jacinto Fault	Figure 0-33*
Seismic Source Type	B	Table 16-U
Distance to Seismic Source	15 km	Figure 0-34*
Near Source Factor N_a	1.0	Table 16-S
Near Source Factor N_v	1.0	Table 16-T
Seismic Coefficient C_a	0.40	Table 16-Q
Seismic Coefficient C_v	0.56	Table 16-R

* From "Maps of Known Active Faults Near-Source Zones in California and Adjacent Portions of Nevada", prepared by California Department of Conversation, Division of Mines and Geology, February.

Ground Rupture

Ground rupture along faults is generally limited to a linear zone a few meters wide. The geotechnical report states there is a low likelihood of fault rupture occurring at the Energy Center site (URS, 2000). The active faults closest to the Energy Center site are the San Jacinto

and Elsinore faults located at distances of approximately 10 and 12 miles from the site, respectively. The zone of faulting along the San Jacinto and Elsinore fault zones is well defined based on geomorphic and seismic evidence. Published mapping of active faults indicates there is no evidence of active faulting in the immediate vicinity of the Energy Center site, Alternative A Menifee Road natural gas pipeline, non-reclaimable wastewater pipelines, compressor station, and transmission upgrade.

There is a potential for ground rupture resulting from movement along the Casa Loma fault (shown on Figure 5.5-3, Map C), and crosses under the Alternative B Moreno Valley natural gas pipeline at approximately milepost 13.5 (Dibblee, 1981b). It is believed the fault converges with the San Jacinto Valley fault approximately 5 miles northeast of Mouth Russell, east of Sunnymead (Dibblee, 1981a). Alluvial deposits conceal the fault; however, its position is inferred by local geomorphic evidence. Evidence of Holocene activity is observed in a low linear northeast-facing scarp in alluvium between Hemet and Casa Loma Hill (Dibblee, 1981b).

Liquefaction

Liquefaction is a process by which water-saturated materials (including soil, sediment, and certain types of volcanic deposits) lose strength and fail during strong ground shaking. Liquefaction is defined as "the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure" (Youd, 1992). This behavior is most commonly induced by strong ground shaking associated with earthquakes. In some cases, a complete loss of strength occurs and catastrophic ground failure may result. However, liquefaction may happen where only minor shaking occurs, and ground surface deformations are much less serious. The potential for liquefaction is highest in clay-free granular sediments (sand and silt fraction) that are water saturated, poorly consolidated, and well sorted.

During the geotechnical assessment conducted at the site, groundwater was encountered at a depth of 78.5 feet (URS, 2000). In addition groundwater levels collected from wells located in the vicinity of the linear facilities indicates that groundwater is generally encountered a depths greater than 75 feet below grade. The subsurface soil beneath the Energy Center site consists of dense to very dense clays, silts and sands. Because the depth to groundwater is relatively deep and the Energy Center site is predominately underlain by relatively dense sediments, there is a low potential for liquefaction.

Subsidence and Settlement

Land surface subsidence can be induced by both natural and human phenomena. Natural phenomena include: subsidence resulting from tectonic deformations and seismically induced settlements; soil subsidence due to consolidation, hydrocompaction, or rapid sedimentation; subsidence due to oxidation or dewatering of organic-rich soils; and, subsidence related to subsurface cavities. Subsidence related to human activity includes subsurface fluid or sediment withdrawal.

Subsidence of the ground surface has occurred in the San Bernardino, San Jacinto, and Murrieta Valleys. The primary cause of subsidence in these areas has been a decline in static water levels caused by the removal of large quantities of groundwater from the groundwater basin (Rasmussen, 1989). Ground subsidence in the vicinity of the Energy Center site has not been documented. Further, no subsidence features were observed at the site during the geotechnical investigation conducted by URS (2000). Based on the findings and building recommendations presented in the geotechnical report (Appendix G), it appears there is a low potential for subsidence or settlement to occur at the Energy Center site.

In the event of a major earthquake, it is unlikely that subsidence and settlement would occur because of the low potential for ground failure resulting from liquefaction.

Seismically Induced Landslides

The region surrounding the Energy Center site and associated linear facilities is not prone to landslides. Most of the site exhibits little to no relief; therefore, landsliding is not considered a potential hazard. No landslide features such as scarps, slumps, slides, rock falls, or evidence of soil creep were identified on geologic maps for the project area.

Expansive Soils

Expansive soils shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. Soil present at the Energy Center site predominately consists of a sandy loam comprised of granitic materials. The sandy loam exhibits a low shrink-swell potential (USDA, 1971). Therefore, expansive soils are not considered a potential hazard.

5.5.1.7 Geological Resources

There are no significant geological resources (mineral deposits, sand and gravel deposits, etc.) within the vicinity of the Energy Center site and associated linear facilities (CDMG, 1972, 1996). Geologic resources in the region are sand and gravel, decomposed granite, stone/rock, and clay quarries/mines that are predominately located in western Riverside County near the City of Corona. The closest mineral mining operation is a decomposed granite pit approximately 15 miles northwest of the Energy Center site in the City of Riverside (CDMG, 1999b). The soils and bedrock at the site are unlikely to be a source of construction material because they contain too many fines for use as sand or gravel (USDA, 1971).

Recreational geologic resources typically include rock or mineral collecting, volcanoes, surface hydrothermal features, or surface expression of geologic features unique enough to generate recreational interests of the general public (e.g., natural bridges, caves, features associated with glaciation, and geomorphic features such as waterfalls, cliffs, canyons, and badlands). Based on a review of geologic literature and topographic maps, there is no indication that recreational geologic resources are associated with the project area.

5.5.2 Environmental Impacts

5.5.2.1 Significance Criteria

Appendix G of CEQA, the Environmental Checklist Form, along with criteria adopted by regulatory agencies provides guidance on significant criteria with respect to geological resources (Public Resources Code Sections 21000 et seq.). Based upon Appendix G (VI and X) the project would have a significant environmental impact on geologic resources and hazards if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soils creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.
- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local plan, specific plan or other land use plan.

The potential environmental impacts from construction and operation of the site on geologic resources and risks to life and property from geologic hazards are presented in the following subsections.

5.5.2.2 Construction

Construction-related impacts to the geologic environment primarily involve terrain modification (cuts, fills, and drainage diversion measures). Preparation of the ground surface at the Energy Center site will involve minor grading, leveling, and filling. The Energy Center will occupy approximately 35 acres of land within a 45.8-acre parcel. The site will be graded to achieve a minimum one percent slope to promote surface drainage and minimize soil erosion, and areas adjacent to equipment will be surfaced with asphalt, crushed stone, or gravel. The use of asphalt, crushed stone, or gravel, as an erosion control measure is not anticipated to adversely impact the surrounding environment. Slopes will be provided with temporary drainage and erosion control measures during construction until permanent

measures are installed. Specific drainage and erosion control measures to be practiced during site construction are presented in the geotechnical report provided in Appendix G. If site grading results in excess soil that cannot be used, it will be recycled or disposed of at a suitable location offsite. The minor amount of site grading required at the site will not result in significant adverse impacts to the geological environment.

The Energy Center site is situated on relatively dense Qal deposits. These sediments may require some additional drainage measures; otherwise, they present minimal problems for preparation of a level surface on which to construct the Energy Center site. No septic tanks or alternative wastewater treatment systems, such as a leach field, will be constructed for the project.

Soil present at the Energy Center site predominately consists of a sandy loam comprised of granitic materials. The sandy loam exhibits a low shrink-swell potential (USDA, 1971); consequently, soil expansion is not considered a significant hazard at the Energy Center site.

The San Jacinto and Elsinore fault zones are the closest active fault zones to the Energy Center site, located at distances of 10 and 12 miles, respectively. The San Andreas fault zone is located approximately 26 miles northwest of the Energy Center site. These faults have been zoned as active Earthquake Fault Hazard Zones under the State of California's Alquist-Priolo Act (CDMG, 1999a). However, the Energy Center site, wastewater pipeline, Alternative A Menifee Road natural gas pipeline and associated compressor station, and transmission line are not located in any "Earthquake Fault Zones". As well, these facilities are not located near any known landslide areas, areas prone to surface failure, or other hazardous geomorphic features. There is a potential for strong seismic ground shaking to affect these facilities in the event of a large magnitude earthquake occurring on fault segments associated with the San Andreas, Elsinore, or San Jacinto fault zones. Seismic hazards and potential adverse foundation conditions will be minimized by conformance with the recommended seismic design criteria of the CBC (1998).

The Alternative B Moreno Valley natural gas pipeline route is located in the Lakeview, Sunnymead, and El Casco quadrangles, which are identified as "Earthquake Fault Zones" in the Alquist-Priolo Act (CDMG, 1999a). Earthquake Fault Zones are delineated to define those areas within which fault-rupture hazard investigations are required prior to building structures for human occupancy (CDMG, 1999b). Because there will be no human occupancy immediately above the pipeline, a fault-rupture hazard investigation is not necessary. The Alternative B Moreno Valley natural gas pipeline crosses the Casa Loma fault at Milepost 13.5 in the Sunnymead Quadrangle. The Casa Loma fault is the northern extension of the San Jacinto fault. There is a potential for a large magnitude earthquake to occur on this fault, which may result in strong ground shaking and/or surface rupture. The pipeline will be designed and constructed to minimize these potential hazards. Seismically related ground failure from liquefaction is not anticipated due to the depth of groundwater, which is greater than 75 feet below ground surface based on groundwater level data provided by the California Department of Water Resources well data database. In addition, landslides are not anticipated

in the surrounding hills due to the competent nature of bedrock and the absence of landslide features such as scarps or slumps.

Construction of the Energy Center and associated linear facilities is not expected to negatively impact mineral resources since there are no known mineral resources associated with the project area (CDMG, 1999). In addition, soil at the Energy Center site is not considered a potential sand or gravel resource because it contains too many fines (USDA, 1971).

5.5.2.3 Operation

The project structures and equipment will be designed in accordance with CBC Seismic Zone 4 requirements. Compliance with the CBC (1998), Seismic Zone 4 requirements will minimize the exposure of people to the risks associated with large seismic events. In addition, the major structures will be designed to withstand the strong ground motion of a design earthquake. A design earthquake is the postulated earthquake that is used for evaluating the earthquake resistance of a particular structure. Because the seismic hazard in the region of the project area is relatively well defined, the design earthquake would be established by the maximum, or characteristic, magnitude earthquake that can potentially occur on nearby faults identified on Table 5.5-1. The plant arrangement is such that no major structures or equipment are within the projected trace of any active or potentially active faults. The Energy Center site location is not prone to landslides, subsidence, settlement, or other geologic hazards. The natural gas pipeline (both alternatives), compressor station, and the other linear project facilities will be designed and constructed in accordance with CBC seismic design criteria. The operation of the project will not result in a loss of geologic resources.

5.5.3 Design Features and Mitigation Measures

Potentially adverse foundation conditions that may be encountered during construction can be mitigated through appropriate design and construction of the Energy Center site in accordance with the recommendations in the Geotechnical Report (Appendix G). Likewise, seismic hazards can be minimized through the implementation of the recommended seismic design criteria presented in Table 5.5-3, and are further defined in Appendix A titled, "Structural and Seismic Engineering Design Criteria".

An engineering geologist(s), certified by the State of California, will be assigned to the project to carry out the duties required by the CBC, Section 70006 Grading Permit Requirements, including preparation of an Engineering Geologic Report, and to periodically monitor geologic conditions during construction, approve actual design features and mitigation measures used to protect the facility from geologic hazards, and prepare the final Geologic Grading Report.

Because the Alternative B Moreno Valley natural gas pipeline crosses the Casa Loma fault, which is considered an active fault strand within the San Jacinto fault zone, additional design and mitigation measures will be required for pipeline construction. Prior to pipeline construction, a geophysical investigation will be conducted to more accurately define the location of the Casa Loma fault. After identifying the location of the fault, the pipeline will be

constructed perpendicular to its trace so as to minimize the potential for damage resulting from potential surface rupture. A trench with a trapezoidal cross section, together with loose granular backfill, can enable a well designed pipeline to withstand the effects of surface fault rupture. Depending on the specific characteristics of the fault crossing location, other mitigation measures such as automatic shutoff valves could also be used to reduce the potential for natural gas hazards in the event of a rupture.

No significant unavoidable adverse impacts to geologic hazards and resources are anticipated due to construction and operation of the Energy Center.

5.5.4 Cumulative Impacts

Other potential projects that may be constructed in the project area have been identified in Table 5.7-4 (See Section 5.7, Land Use). For all major structures, each of these projects will comply with the requirements of CBC Seismic Zone 4. No other nearby facility or proposed project has common geological resources that would be impacted; therefore, site construction will not cause or contribute to significant cumulative impacts from geologic hazards.

5.5.5 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the Energy Center including transmission lines, compressor station, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to geologic resources or hazards. Applicable LORS are summarized in Table 6.1-1 (see Section 6.0). Unless specifically stated otherwise, the design of all structures and facilities will be based on the laws, ordinances, codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards with respect to the project's engineering geology are summarized in sections of Appendix A, "Foundations and Civil Engineering Design Criteria", and Appendix B, "Structural and Seismic Engineering Design Criteria".

PRC section 25520 et seq. and Title 20 CCR section 1741 et seq. mandate that geologic and seismic information be presented and that a discussion of geologic hazards be provided. These requirements have been addressed in this section of the AFC.

Safety during construction of the natural gas pipelines is mandated by the safety program requirements of the applicable Federal and State Laws. These programs provide for the training of workers, the utilization of safe procedures for accomplishing the work, and monitoring and inspection to assure that the safety programs are effective.

The pipelines will be designed, constructed, installed, operated and maintained in accordance with the applicable sections of 29 CFR 1910, 8 CCR 1, sec. 1509 and section 3203; California Labor Code Sec. 6300; and CPUC GO 112-D.

Compliance to the maximum practicable extent with the requirements of CPUC GO I 12-D will help mitigate the impacts or pipeline rupture by ensuring proper construction of the line, safe location of the line, appropriate depth of burial, and shutoff of gas flow in the event of

rupture. GO 1 12-D contains provisions for the design and construction of gas pipelines that ensure that the pipelines can contain the pressures used. These provisions entail use of adequate wall thickness, proper weld design and welding procedures, corrosion protection, and automatic shutoff valves to shut off the gas in the event of a rupture.

5.5.6 Involved Agencies and Agency Contacts

Several agencies are involved with geologic hazards and resources. These include the California Division of Mines and Geology, and the County of Riverside. The agency contacts are shown in Table 5.5-4.

Table 5.5-4 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501	Planning Director (909) 955-3200	Building, Grading and Erosion Control Permits.
Department of Mines and Geology 801 K Street Sacramento, CA 95814	State Geologist (916) 445-1923	Information regarding geologic resources and hazards.

5.5.7 Permits Required and Permit Schedule

Permits required and permit schedule for matters dealing with geologic resources and hazards for the Energy Center are provided in Table 5.5-5.

Table 5.5-5 Permits Required* and Permit Schedule

Permit	Schedule
Grading Permit	30 days prior to start of construction activities.
Building Permit	Submit application 2 months prior to start of construction.

*Although the listed permits are not technically required under the Warren-Alquist Act, the CEC typically requires project developers to obtain grading and building permits from local jurisdiction.

5.5.8 References

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5.6 AGRICULTURE AND SOILS

This section addresses the potential environmental effects of construction and operation of the proposed Inland Empire Energy Center (IEEC or Energy Center) on agriculture and soils. Also discussed are proposed mitigation measures to reduce or eliminate potential environmental impacts.

5.6.1 Affected Environment

The IEEC site is located on a 45.8 acre parcel in western Riverside County, southeast of the community of Romoland. The dominant land use in the area is agricultural production, mainly wheat. The proposed Alternative A and B natural gas pipelines and compressor station, electrical transmission line, and non-reclaimable wastewater pipeline, cross similar land uses (see Figure 5.7-3).

Information on types and distribution of soils within the project area was derived from a published soil survey report prepared by the National Resource Conservation Service (SCS, 1971) [formerly the Soil Conservation Service] and review of the NRCS national database information (NRCS, 2001). Soil types are characterized by soil map units that provide information on the soil series and phase. Soil series comprise soils exhibiting a common range of physical and chemical characteristics. Soil map units may contain soil inclusions that have different characteristics but which are too small to be represented on the landscape-level scale used for mapping (scale 1:24,000; USGS Quadrangle Maps).

The soil survey maps for the project area shown on Figures 5.6-1A, 1B, and 1C, as well as descriptive information, are taken from *Soil Survey of Western Riverside Area, California* (USDA SCS, 1971).

5.6.1.1 Agricultural Resources

Existing land use, including agricultural use for the Energy Center, natural gas pipeline alternatives and compressor station, electrical transmission line, and non-reclaimable wastewater pipeline, is provided in Section 5.7, Land Use. The following section is limited to agricultural use for each project component.

Project Site and Surrounding Area

The 45.8 acre site where the Energy Center will be located is presently used for growing wheat. The site is dry-land farmed, without irrigation. The Energy Center, switchyard, and detention basin will occupy approximately 35 acres of this land (see Table 3.7-5).

Alternative A Menifee Road Natural Gas Pipeline Route and Compressor Station

Land use along the proposed 0.9 mile route for the Alternative A Menifee Road natural gas pipeline and the 2.6 acre compressor station is primarily agricultural (see Figure 5.7-3). The IEEC site is currently used for the production of wheat.

Alternative B Moreno Valley Natural Gas Pipeline Route

Land use along the proposed 14.8-mile route for the Alternative B Moreno Valley natural gas pipeline is primarily agricultural (see Figure 5.7-3). Agricultural uses are as follows: wheat, row crops, orchards, irrigated hay (alfalfa), and pasture.

Proposed Electrical Transmission Line

The 0.9 mile electrical transmission line is within an existing SCE transmission line corridor. Land beneath the existing transmission lines is used for un-irrigated agricultural crops, presently wheat.

Proposed Non-Reclaimable Wastewater Pipeline

The proposed 4.7 mile non-reclaimable wastewater pipeline will be within the right-of-way of McLaughlin Road and within the paved right-of-way of Murrieta Road. McLaughlin Road is adjacent to agricultural lands, primarily used for growing wheat (see Figure 5.7-3). Lands adjacent to Murrieta Road are urbanized and are not used for agriculture.

5.6.1.2 Prime Farmland

"Prime farmland" is land with the best combination of physical and chemical characteristics that are able to sustain long-term production of agricultural crops. "Farmland of statewide importance" is land with a good combination of physical and chemical characteristics for agricultural production, having only minor shortcomings, such as less ability to store soil moisture, compared to prime farmland. "Unique farmland" is land used for production of the state's major crops on soils not qualifying for prime or statewide importance (CDC, 1998). Based on a review of Important Farmland Maps (1:100,000 scale) published by the California Department of Conservation (CDC, 1998), the project site is not located within an area qualifying as farmland of statewide importance, or unique farmland. However, a small portion of the Energy Center site, the entire compressor station area, a portion of the Alternative A Menifee Road natural gas pipeline, and portions of the Alternative B Moreno Valley natural gas pipeline and non-reclaimable wastewater pipeline routes qualify as prime farmland pursuant to U.S. Department of Agriculture criteria (CDC, 1993). The soil types that qualify as prime farmland are noted in Table 5.6-1 (also see Figures 5.6-1A, 1B, and 1C).

Project features that fall within soils designated as prime farmland:

- Approximately 1 acre of the Energy Center site (near the southeast corner)
- Approximately 0.3 miles of the Alternative A Menifee Road natural gas pipeline route
- Compressor station for Alternative A Menifee Road natural gas pipeline
- Approximately 8 miles of the Alternative B Moreno Valley natural gas pipeline route, mostly between milepost (MP) 0 and 8 and MP 12 and 13
- 1.3 miles of the wastewater pipeline route, mostly between MP 2 and MP 3

Table 5.6-1 Soil Mapping Units Description and Properties

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
AkC	[1]**Arbuckle loam**. Deep to very deep, well-drained, on alluvial fans and in alluvium metasedimentary rocks.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
AlC	[1]**Arbuckle gravelly loam**. Deep to very deep, well-drained, on alluvial fans.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
AuC	[1]**Auld clay**. Moderately deep to very deep, well-drained, on decomposing gabbro, on uplands.	2 to 8	2.5 to 5	Slight to moderate	IIe-5 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is high.
BkC2	**Buchenau silt loam**. Moderately deep to very deep, moderately well-drained, on alluvial fans.	2 to 8	2 to 4.5	Moderate	IIIe-1 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
CaC2	**Cajalco fine sandy loam, eroded**. Moderately deep to very deep, well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	2 to 8	1.5 to 4	Slight to moderate	IIIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
CaF2	**Cajalco fine sandy loam, eroded**. Moderately deep to very deep, well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	15 to 35	1.5 to 4	High	VIe-1 (Nonirrigated)	Permeability is moderate and the shrink-swell potential is low.
CbD2	**Cajalco rocky fine sandy loam, eroded**. Moderately deep to very deep, moderately well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	5 to 15	1.5 to 4	Slight to moderate	VIe-7 (Nonirrigated)	Permeability is moderate and shrink-swell potential is low.
CbF2	**Cajalco rocky fine sandy loam, eroded**. Moderately deep to very deep, moderately well-drained, in decomposing gabbro and other basic igneous rocks, on uplands.	15 to 50	1.5 to 4	High	VIe-7 (Nonirrigated)	Permeability is moderate and the shrink-swell potential is low.
ChC	**Cieneba sandy loam**. Shallow, well to excessively drained, in coarse-grained igneous rock, on uplands.	5 to 8	1 to 2	Slight	IVe-1 (Irrigated)	Permeability is rapid to slow and the shrink-swell potential is low.
CkD2	**Cieneba rocky sandy loam, eroded**. Shallow, well to excessively drained, in coarse-grained igneous rock, on uplands.	8 to 15	1 to 2	Moderate	VIe-7 (Nonirrigated)	Permeability is rapid to slow and the shrink-swell potential is low.
CkF2	**Cieneba rocky sandy loam, eroded**. Shallow, well to excessively drained, in coarse-grained igneous rock, on uplands.	15 to 50	1 to 2	High	VIIe-1 (Nonirrigated)	Permeability is rapid and the shrink-swell potential is low.
Ds2	**Domino fine sandy loam, eroded**. Moderately deep to deep, moderately well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 3.5	Slight to moderate	IIIe-8 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
Dt	**Domino fine sandy loam, saline-alkali**. Moderately deep to very deep, moderately well to well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 3.5	none to slight	IIIs-6 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
Du	**Domino silt loam**. Moderately deep, moderately well to well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 3.5	Slight	IIIs-8 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
Dv	**Domino silt loam, saline-alkali**. Moderately deep to very deep, moderately well to well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 3.5	Slight	IIIs-6 (Irrigated)	Permeability is slow and the shrink-swell potential is low.
EnA	**Exeter sandy loam**. Moderately deep, well-drained, in basins.	0 to 2	1.5 to 4.5	Slight	IIIs-8 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
EnC2	**Exeter sandy loam, eroded**. Moderately deep to deep, well-drained, in basins and on alluvial fans.	2 to 8	1.5 to 4.5	Slight to moderate	IIIe-8 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EoB	**Exeter sandy loam, slightly saline-alkali**. Moderately deep to very deep, well-drained, in basins and on alluvial fans.	0 to 5	1.5 to 4.5	Slight	IIIs-6 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EpA	[1]**Exeter sandy loam**. Deep, well-drained, in basins and on alluvial fans.	0 to 2	1.5 to 4.5	Slight	IIs-8 (Irrigated)	The shrink-swell potential is low.
EpC2	[1]**Exeter sandy loam, eroded**. Deep to very deep, well-drained, in basins and on alluvial fans.	2 to 8	1.5 to 4.5	Slight to moderate	IIe-1 (Irrigated)	The shrink-swell potential is low.
EwB	[2]**Exeter very fine sandy loam**. Moderately deep to deep, well-drained, in basins and on alluvial fans.	0 to 5	1.5 to 4.5	Slight to moderate	IIIe-8 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
EyB	**Exeter very fine sandy loam**. Deep to very deep, well-drained, in basins and on alluvial fans.	0 to 5	1.5 to 4.5	Slight to moderate	IIe-1 (Irrigated)	The shrink-swell potential is low.
FaD2	**Fallbrook sandy loam, eroded**. Shallow to very deep, well-drained, on granodiorite and tonalite, on uplands.	8 to 15	1 to 3	Moderate	IVe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low
FcF2	**Fallbrook rocky sandy loam**. Shallow, well-drained, on granodiorite and tonalite, on uplands.	15 to 50	1 to 3	High	VIIe-1 (Nonirrigated)	Permeability is rapid to moderately slow and the shrink-swell potential is low.
FfC2	**Fallbrook fine sandy loam, eroded**. Moderately deep to very deep, well-drained, on granodiorite and tonalite, on uplands.	2 to 8	1 to 3	Slight	IIIe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
FwE2	**Friant fine sandy loam, eroded**. Shallow to deep, well-drained, on slightly weathered mica-schist, on uplands.	5 to 25	1 to 1.5	Moderate	VIe-8 (Nonirrigated)	Permeability is moderately rapid to slow and the shrink-swell potential is low.
GaC	[1]**Garretson very fine sandy loam**. Deep to very deep, well-drained, in alluvial fans of mostly metasedimentary materials.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated)	The shrink-swell potential is low.
GaD2	**Garretson very fine sandy loam, eroded**. Moderately deep to very deep, well-drained, in alluvial fans of mostly metasedimentary materials.	8 to 15	>5	Moderate	IIIe-1 (Irrigated)	The shrink-swell potential is low.
GdC	[1]**Garretson gravelly very fine sandy loam**. Deep to very deep, well-drained, on alluvial fans.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low
GlC	[1]**Gorgonio loamy sand**. Deep, somewhat excessive to excessively drained, on alluvial fans consisting mainly of granitic materials.	2 to 8	>5	Slight	IIs-4 (Irrigated)	Permeability is rapid to moderately rapid and the shrink-swell potential is low.
GyA	[1]**Greenfield sandy loam**. Very deep, well-drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	5	Slight	I-1 (Irrigated)	The shrink-swell potential is low.
GyC2	[1,2]**Greenfield sandy loam, eroded**. Very deep, well-drained, on alluvial fans and terraces.	2 to 8	5	Slight to moderate	IIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low
GyD2	**Greenfield sandy loam, eroded**. Moderately deep to very deep, well-drained, on alluvial fans and terraces.	8 to 15	5	Moderate	IIIe-1 (Irrigated)	The shrink-swell potential is low.
HcA	[1]**Hanford coarse sandy loam**. Very deep, well to somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	0 to 2	>5	Slight	IIs-4 (Irrigated)	Permeability is rapid to moderately rapid and the shrink-swell potential is low.
HcC	[1]**Hanford coarse sandy loam**. Deep to very deep, well to somewhat excessively drained, on alluvial fans.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated), IVec-1 (Nonirrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
HcD2	**Hanford coarse sandy loam, eroded**. Moderately deep to very deep, well to somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	8 to 15	>5	Moderate	IIIe-1 (Irrigated), IVec-1 (Nonirrigated)	The shrink-swell potential is low.
HdD2	**Hanford cobbly coarse sandy loam, eroded**. Moderately deep to very deep, somewhat excessively drained, on alluvial fans consisting mainly of granitic materials.	2 to 15	>5	Slight to moderate	VIe-7 (Nonirrigated)	Permeability is rapid to slow and the shrink-swell potential is low.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
HuC2	[1]**Honcut loam, eroded**. Deep to very deep, well-drained, on alluvial fans.	2 to 8	>5	Slight to moderate	IIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
LaC	**Las Posas loam**. Moderately deep to very deep, well-drained, on gabbro and other intrusive basic igneous rocks, on uplands.	2 to 8	1 to 4	Slight to moderate	IIIe-1 (Irrigated)	The shrink-swell potential is moderate.
LoF2	**Lodo gravelly loam, eroded**. Shallow to moderately deep, somewhat excessively drained, on metamorphosed fine-grained sandstone, on uplands.	15 to 50	0.5 to 1.5	High	VIIe-1 (Nonirrigated)	Permeability is rapid to moderately slow and the shrink-swell potential is low.
LpE2	**Lodp rocky loam, eroded**. Shallow, somewhat excessively drained, on metamorphosed fine grained sandstone, on uplands.	8 to 25	0.5 to 1.5	High	VIIe-1 (Nonirrigated)	Permeability is moderate and the shrink-swell potential is low.
MaA	**Madera fine sandy loam**. Moderately deep, moderately well-drained, on dissected terraces and old alluvial fans.	0 to 2	1 to 3	Slight	IIIs-3 (Irrigated)	Permeability is very slow and the shrink-swell potential is low.
MaB2	[2]**Madera fine sandy loam, eroded**. Moderately deep, moderately well drained, on dissected terraces and old alluvial fans.	2 to 5	1 to 3	Slight to moderate	IIIe-3 (Irrigated)	Permeability is slow to very slow and the shrink-swell potential is low.
MaD2	**Madera fine sandy loam, eroded**. Moderately deep, moderately well drained, on dissected terraces and old alluvial fans.	5 to 15	1 to 3	Moderate	IVe-3 (Irrigated)	Permeability is slow to very slow and the shrink-swell potential is low.
MdC	[1]**Metz loamy sand, channeled**. Very deep, somewhat excessively drained, on alluvial fans.	2 to 8	>5	Slight	IIIs-4 (Irrigated)	Permeability is moderately rapid to very rapid and the shrink-swell potential is low.
MmB	[2]**Monserate sandy loam**. Moderately deep to deep, well-drained, on alluvial fans consisting mainly of granitic materials.	0 to 5	1 to 3	Slight	IIIe-8 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is low.
MmC2	**Monserate sandy loam, eroded**. Moderately deep to deep, well-drained, on alluvial fans consisting mainly of granitic materials.	5 to 8	1 to 3	Moderate	IIIe-8 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
MnD2	[2]**Monserate sandy loam, eroded**. Shallow, well-drained, on alluvial fans consisting mainly of granitic materials.	5 to 15	1 to 3	High	VIe-8 (Nonirrigated)	Permeability is moderately rapid to slow and the shrink-swell potential is low.
PaA	[1]**Pachappa fine sandy loam**. Very deep, well-drained, onalluvial fans consisting mainly of granitic material.	0 to 2	>5	Slight	I-1 (Irrigated)	The shrink-swell potential is low.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
PaC2	[1]**Pachappa fine sandy loam, eroded**. Deep to very deep, well-drained, on alluvial fans consisting mainly of granitic materials.	2 to 8	>5	Moderate	IIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
PlB	**Placentia fine sandy loam**. Moderately well-drained, on alluvial fans and terraces.	0 to 5	>5	Moderate	IVe-3 (Irrigated)	Permeability is very slow and the shrink-swell potential is low.
PlD	**Placentia fine sandy loam**. Moderately well-drained, on alluvial fans and terraces.	5 to 15	>5	Moderate	IVe-3 (Irrigated)	Permeability is very slow and the shrink-swell potential is low.
PoC	[1]**Potterville clay**. Moderately deep to very deep, well-drained, on alluvial fans consisting mainly of very fine basic igneous materials.	0 to 8	>5	Slight	IIe-5 (Irrigated)	Permeability is moderately slow to slow and the shrink-swell potential is high.
PsC	**Potterville clay**. Moderately deep, well-drained, on alluvial fans consisting mainly of very fine basic igneous materials.	2 to 8	3 to 4	Moderate	IIIe-5 (Irrigated)	Permeability is slow to moderately slow and the shrink-swell potential is high.
RaA	[1]**Ramona sandy loam, severely eroded**. Very deep, well-drained, on alluvial fans and terraces.	0 to 2	>5	Slight	I-1 (Irrigated)	The shrink-swell potential is low.
RaB2	[1]**Ramona sandy loam, eroded** Deep to very deep, well-drained, on alluvial fans and terraces.	2 to 5	>5	Moderate	IIe-1 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
RaB3	[1]**Ramona sandy loam, severely eroded**. Moderately deep to very deep, well-drained, on alluvial fans and terraces.	0 to 5	>5	Moderate	IIIe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
RaC3	[1]**Ramona sandy loam, eroded**. Moderately deep to very deep, well-drained, on alluvial fans and terraces.	5 to 8	>5	High	IIIe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
ReC2	[1]**Ramona very fine sandy loam, eroded**. Moderately deep to very deep, well-drained, on alluvial fans and terraces.	0 to 8	>5	Moderate	IIIe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
RsC	**Riverwash**. Very deep, drainage variable, in valley fills and on alluvial fans, lie in beds of major streams and larger creeks.	0 to 8	>1.5	N/A	VIIIw-4 (Nonirrigated)	N/A
RtF	**Rock land**. Somewhat excessively drained.	15 to 75	<1.5	N/A	VIIIs-1 (Nonirrigated)	Permeability is moderate.
SeC2	**San Emigdio fine sandy loam, eroded**. Deep to very deep, well-drained, on alluvial fans.	2 to 8	>5	Moderate	IIe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
SgA	**San Emigdio fine sandy loam**. Very deep, well-drained, on alluvial fans.	0 to 2	>5	Slight	I-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
SgC	**San Emigdio loam**. Deep to very deep, well-drained, on alluvial fans.	2 to 8	>5	Moderate	IIe-1 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
TeG	**Terrace escarpments**. Shallow to moderately deep, somewhat excessively drained to moderately well-drained, on terraces or barrancas.	30 to 75	<3	High	VIIe-1 (Nonirrigated)	Permeability is rapid to moderately slow.
Tr2	**Traver loamy fine sand, saline-alkali, eroded**. Moderately deep to very deep, moderately well drained, on valley plains and in basins.	0 to 5	>5	Slight	IIIs-6 (Irrigated)	Permeability is moderate and the shrink-swell potential is low.
Tt2	**Traver fine sandy loam, stongly saline-alkali, eroded**. Very deep, moderately well-drained, on valley plains and in basins.	0 to 5	>5	none to slight	IVs-6 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is low.
VsC	**Vista coarse sandy loam**. Moderately deep to very deep, well-drained, on weathered granite and granodiorite, on uplands.	2 to 8	1.5 to 3	Slight	IIIe-1 (Irrigated)	The shrink-swell potential is low.
VsD2	**Vista coarse sandy loam, eroded**. Shallow to very deep, well-drained, on weathered granite and granodiorite, on uplands.	9 to 15	1.5 to 3	Moderate	IVe-1 (Irrigated)	Permeability is moderately rapid and the shrink-swell potential is low.
VtF2	**Vista rocky coarse sandy loam, eroded**. Moderately deep to very deep, well-drained, on weathered granite and granodiorite, on uplands.	2 to 35	1.5 to 3	Moderate	VIe-7 (Nonirrigated)	Permeability is rapid to slow and the shrink-swell potential is low.
Wb	**Waukena fine sandy loam, saline-alkali**. Moderately deep to very deep, moderately well-drained, in basins and on flood plains.	0 to 2	>5	Slight	IIIs-6 (Irrigated)	Permeability is slow and the shrink-swell potential is low.
Wc	**Waukena fine sandy loam, strongly saline-alkali**. Very deep, moderately well-drained, in basins and on flood plains.	0 to 2	>5	None	IVs-6 (Irrigated)	Permeability is moderately slow to slow and the shrink-swell potential is low.
Wd	**Waukena loam, saline-alkali**. Moderately deep to very deep, moderately well-drained, in basins and in flood plains.	0 to 2	>5	Slight	IIIs-6 (Irrigated)	Permeability is moderate to slow and the shrink-swell potential is moderate.
Wf	**Willows silty clay**. Very deep, poorly drained, in basins and on edged of alluvial fans.	0 to 2	>5	None	IIIw-5 (Irrigated)	Permeability is slow and the shrink-swell potential is high.

Table 5.6-1 Soil Mapping Units Description and Properties (Continued)

Map Symbol	Map Unit Name and Description	Slope %	Depth to Bedrock (feet)	Erosion Susceptibility	Land Capability	Comments
Wg	**Willows silty clay, saline-alkali**. Very deep, poorly drained, in basins and on edges of alluvial fans.	0 to 2	>5	Slight	IIIw-6 (Irrigated)	Permeability is slow and the shrink-swell potential is high.
Wh	**Willows silty clay, strongly saline-alkali**. Moderately deep to very deep, poorly drained, in basins and on edges of alluvial fans.	0 to 2	>5	N/A	IVw-6 (Irrigated)	Permeability is moderately rapid to slow and the shrink-swell potential is high.
Wm	**Willows silty clay, saline-alkali**. Deep, poorly drained, in basins and on edges of alluvial fans.	0 to 2	>5	None	IIIw-6 (Irrigated)	Permeability is slow and the shrink-swell potential is high.
Wn	**Willows silty clay, strongly saline-alkali**. Deep, poorly drained, in basins and on edges of alluvial fans.	0 to 2	>5	N/A	IVw-6 (Irrigated)	Permeability is moderately rapid to slow and the shrink-swell potential is high.
WyC2	**Wyman loam, eroded**. Deep to very deep, well-drained, on alluvial fans consisting mainly of basic sedimentary materials.	2 to 8	>5	Moderate	IIe-1 (Irrigated)	Permeability is moderately slow and the shrink-swell potential is moderate.
YbC	**Yokohl loam**. Well-drained, on old alluvial fans and terraces.	2 to 8	1 to 3.5	Slight	IVe-3 (Irrigated)	Permeability is very slow and the shrink-swell potential is moderate.
YrD2	**Ysidora very fine sandy loam, eroded**. Moderately deep to deep, moderately well-drained, on old alluvial fans consisting mainly of metasedimentary materials.	2 to 15	1 to 3	High	IVe-8 (Irrigated)	Permeability is moderate to very slow and the shrink-swell potential is low.
YsE3	**Ysidora gravelly very fine sandy loam, severely eroded**. Shallow, moderately well-drained, on old alluvial fans consisting mainly of metasedimentary materials.	8 to 25	1 to 3	High	VIIe-1 (Nonirrigated)	Permeability is moderately rapid and the shrink-swell potential is low.

(1) Soil types that qualify as "Prime Farmland" within the proposed project area including proposed linear facilities and the proposed compressor station.

(2) Soils found within the proposed project site (not along linear facilities)

5.6.1.3 Soil Resources

Energy Center Site

The Western Riverside County soil survey identifies the following soils on the proposed Energy Center site [U.S. Department of Agriculture, Soil Conservation Service (USDA SCS, 1971)]:

- MmB – Monserate sandy loam, 0 to 5 percent slopes. This soil type comprises more than 90% of the project site. The Monserate sandy loams are shallow to deep, well-drained soils developed in alluvium consisting mainly of granitic materials. Monserate sandy loams consist of a surface layer of brown and yellowish red sandy loam about 10 inches thick, a reddish brown sandy clay loam subsoil, and a dark brown layer that is cemented with iron and silica at a depth of about 26 inches, which decreases in cementation with depth (USDA SCS, 1971).
- MnD2 – Monserate sandy loam, eroded, 5 to 15 percent slopes. Similar to MmB, above, but it is found on steeper slopes (USDA SCS, 1971).
- EwB – Exeter very fine sandy loam, 0 to 5 percent slopes. The Exeter very fine sandy loam is a moderately deep to deep, well-drained soil developed in alluvium from moderately coarse granitic materials. Exeter very fine sandy loam consists of a surface layer of brown sandy loam about 16 inches thick, brown heavy loam subsoil, and an indurated silica hardpan at a depth of about 37 inches, which decreases in cementation with depth (USDA SCS, 1971).
- GyC2 – Greenfield sandy loam, eroded, 2 to 8 percent slopes. The Greenfield sandy loam is a very deep, well-drained soil developed in alluvium consisting mainly of granitic materials. Greenfield sandy loam consists of a surface layer of brown sandy loam about 26 inches thick and brown sandy loam and pale brown loam subsoil that extends to the bedrock at a depth of about 60 inches (USDA SCS, 1971). This soil also qualifies as prime farmland (CDC, 1993).
- MaB2 – Madera fine sandy loam, eroded, 2 to 5 percent slopes. The Madera fine sandy loam is a moderately deep, moderately well drained soil developed in alluvium consisting mainly of granitic materials. Madera fine sandy loam consists of a surface layer of pale brown and brown fine sandy loam about 19 inches thick, a yellowish brown clay subsoil, and an indurated hardpan at a depth of about 26 inches (USDA, SCS 1971).

The shrink-swell potential of all of these soils is low, runoff is slow to rapid, and erosion hazard is slight for the most extensive soil type on the site, Monserate sandy loam, MmB, 0 to 5 percent slopes. Proper surface drainage is important to reduce the slight hazard of erosion.

Alternative A Menifee Road Natural Gas Pipeline Route and Compressor Station

Soil types along the Alternative A Menifee Road natural gas pipeline and compressor station site are identified in Figure 5.6-1A, 1B, and 1C (Soil Mapping Units) and described in Table 5.6-1 (Soil Mapping Units Description). For most of the proposed route, the hazard of erosion is slight. For the first approximately 600 feet of the proposed pipeline from the Energy Center

site, there is Monserate sandy loam, eroded (MnD2), which has a high hazard of erosion when the slope is between 5 and 15 percent.

Alternative B Moreno Valley Natural Gas Pipeline Route

Soil types, along the alternative natural gas pipeline route, are identified in Figure 5.6-1A, 1B, and 1C (Soil Mapping Units) and described in Table 5.6-1 (Soil Mapping Units Description). For the soils along the proposed Alternative B route, the hazard of erosion ranges from none to moderate (USDA, SCS 1971). There are approximately 2.9 miles of pipeline length with moderate erosion potential, primarily located between milepost (MP) 0 and MP 4, and between MP 7 and MP 9.

Electrical Transmission Line

Soil types along the 0.9 mile electrical transmission line are identified in Figure 5.6-1 (Soil Mapping Units) and described in Table 5.6-1 (Soil Mapping Units Description). For most of the soils along the proposed route, the hazard of erosion ranges from slight to moderate, with the exception of Monserate sandy loam, eroded, which has a high hazard of erosion, when at 5 to 15 percent slopes (USDA, SCS 1971). The proposed electrical transmission line route is on a level area, and does not have 5 to 15 percent slopes. The first approximately 600 feet of the proposed electrical transmission line route from the Energy Center site consists of the high hazard of erosion soil, Monserate sandy loam, eroded, 5 to 15 percent slopes (see Figure 5.6-1A, 1B, and 1C).

Proposed Non-Reclaimable Wastewater Pipeline

The soil types along the proposed 4.7 mile non-reclaimable wastewater pipeline are identified in Figure 5.6-1A, 1B, and 1C (Soil Mapping Units) and described in Table 5.6-1 (Soil Mapping Units Description). For the soils along the McLaughlin Road portion of the proposed route, the hazard of erosion ranges from slight to moderate (USDA, SCS 1971). The Murrieta Road portion of the route will be within the paved area of the road.

5.6.2 Environmental Impacts

The following subsections describe the potential environmental effects on agricultural resources and soils during the construction and operation phases of the project.

Significance Criteria

For evaluation of the potential impacts to agricultural resources and prime farmland, an impact would be significant if the project would:

- Cause substantial displacement or curtailment of agricultural land uses
- Cause substantial degradation of agricultural land productivity
- Cause the conversion of prime farmland, agricultural areas of statewide importance, or unique farmland to non-agricultural use
- Conflict with existing zoning for agricultural use

For evaluation of the potential impacts to soil resources, an impact would be significant if the project would:

- Result in substantial soil erosion or loss of topsoil
- Result in substantial sedimentation in stream channels and stream crossings

5.6.2.1 Agricultural Resources

Construction Impacts to Agricultural Resources

Construction of the Energy Center and its related facilities would temporarily impact approximately 113.9 acres of agricultural land as shown in Table 5.6-2. With the exception of the Energy Center site and the compressor station for the Alternative A Menifee Road natural gas pipeline, the temporary disturbance to agricultural production would not last longer than two crop seasons. The natural gas and wastewater pipelines and electrical transmission line construction would probably not require more than two to three months of construction at any location and, following recontouring to pre-construction conditions, agricultural use could resume immediately after construction is completed. At the Energy Center site, approximately 11 acres would be temporarily disturbed during a construction period lasting approximately 25 months. These lands are currently used for growing wheat, and they could return to this use once construction has been completed. Overall, the construction impacts to agriculture will be temporary and will not cause a substantial curtailment of agricultural production activity in Riverside County.

Table 5.6-2 Temporary and Permanent Impacts to Agricultural Land (acres)

Project Component	Temporary	Permanent
Energy Center Site	11	35
Transmission Line	1.6	0.1
Wastewater Pipeline[1]	0	0
Alternative A Natural Gas Pipeline[1]	0	0
Alternative B Natural Gas Pipeline	~97.3	0
Compressor Station	4	2.6
Total[2]	113.9	37.7

(1) Pipeline is within road right-of-way adjacent to agricultural lands. Construction impacts can be confined to the right-of-way.

(2) Total is based on Alternative A natural gas pipeline and compressor station.

Operational Impacts to Agricultural Resources

Once the Energy Center, alternative natural gas pipelines, electrical transmission line, compressor station, and wastewater pipeline are constructed, there will be minimal impacts to agricultural resources. The Energy Center and related facilities will occupy approximately 35 acres of the 46-acre site, and the remaining 11 acres of land could continue to be used for agriculture. When considering all project components, the project will permanently impact approximately 37.7 acres of agricultural land. Loss of these 37.7 acres from Riverside

County's 636,337 acres of agricultural land is not considered significant (SCS, 1998). The project will not cause a substantial curtailment of agricultural production in Riverside County. If the decommissioning plan calls for removal of above ground facilities, the land occupied by those facilities could be returned to agricultural production.

On agricultural areas crossed by the natural gas pipeline the pipeline will be buried at a depth that will allow continued use for agriculture because agricultural use may continue after construction. No significant impacts to agricultural use are anticipated.

5.6.2.2 Prime Farmland

Construction Impacts to Prime Farmland

Linear Facilities. There will be temporary construction impacts to prime farmland located along sections of the natural gas pipeline alternatives. Where the pipelines cross agricultural lands, they will be buried at a depth that will allow the land to continue to be used for farmland. The non-reclaimable wastewater pipeline route along McLaughlin and Murrieta roads will be constructed within the road right-of-way that has already been removed from agricultural production. In addition, lands adjacent to Murrieta Road are urbanized and not used for agriculture.

Energy Center Site. The approximately 1.0 acre of prime farmland at the Energy Center site is located in the southwest corner of the site. The proposed Energy Center site is located within an area covered by the Menifee North Specific Plan and Environmental Impact Report (EIR; Riverside County, 1994). The EIR considered the conversion of prime farmland to non-agricultural uses and found that this was a significant impact that could not be mitigated. The EIR was certified by the County with a finding of overriding considerations for the unavoidable impacts to prime farmland. Loss of prime farmland is a potentially significant impact. Applicant-proposed mitigation measures are included in Section 5.6.3, Mitigation Measures.

Compressor Station. The compressor station will occupy 2.6 acres of the 6.6 acre parcel, all of which is considered prime farmland.

Operational Impacts to Prime Farmland

Following construction of the Energy Center and linear facilities, there will be no additional impacts to prime farmland in Riverside County.

5.6.2.3 Soils Resources

Potential impacts to soil resources include increased soil erosion, soil compaction, loss of soil productivity and disturbance of saturated soils. In general, soil erosion may result in the loss of topsoil.

Soil compaction results from vehicle traffic along access roads and in equipment staging areas. Compaction damages soil structure and reduces pore space, which impedes the movement of air and water. The degree of compaction depends on the moisture content and

texture of the soil. Construction during late winter and early spring could result in compaction of saturated soils.

Without proper erosion control measures, construction activities could also lower soil productivity by removing topsoil and altering the subsoil and drainage properties of the soil. Loss of soil productivity would hamper mitigation and revegetation efforts.

Construction Impacts to Soil Resources

Effects that construction can have on soil resources include increased soil erosion, soil compaction, loss of soil productivity, and disturbance of saturated soils.

Project Site. Construction of the Energy Center will require some grading and earthwork. The existing site topography is relatively level, however some fill may be imported to provide a level area for the Energy Center site. Site drainage within the curbed areas of the plant site will be routed to an oil water separator for pre-treatment before disposal. Storm water from the site will flow to a detention basin before release to the existing natural offsite drainage (see Figure 3.5-2). Surface water drainage is explained in more detail in Section 3.0, Facility Description and Location, and Section 5.4, Water Resources.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain towards the natural drainage system (see Figure 5.4-1). Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations for Seismic Zone 4. Slopes for embankments will be no steeper than 2:1 (horizontal:vertical) (see Figure 3.5-2).

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. Structural fill supporting foundations, roads, parking areas, etc., will be compacted in accordance with applicable standards. Final grading will include gravel surfacing of portions of the site to control erosion except for paved roadways and landscaped areas (see Figure 3.5-3). See also Section 5.5, Geologic Resources and Hazards for discussion of potential mineral resources impacts.

The cut-and-fill operations at the plant site will result in alteration of the existing soil profiles. Clearing of the protective vegetation cover and the subsequent soil disturbance will likely result in short-term increases in water and wind erosion rates. The surficial soil at the Energy Center site is predominantly Monserate sandy loam (MmB), 0 to 5 percent slopes. This soil has a slight susceptibility to erosion, but with relatively level terrain at the site, soil erosion will be insignificant (see Table 5.6-1). The proposed project design will include measures to stabilize fill areas and cut slopes and to control drainage and erosion. These design measures are expected to minimize erosion and sedimentation to acceptable levels.

Construction vehicle and equipment use on disturbed soils at the plant site will also likely temporarily increase wind erosion rates at the plant site and the adjacent construction laydown areas. Approximately 11 acres of land adjacent to the plant site and switchyard will be

temporarily disturbed for construction laydown, construction parking, offices, tool storage and sanitary facilities (see Table 3.7-5). Temporary impacts to these areas include vegetation and soil disturbance and soil compaction. Wind and water erosion rates at the laydown areas are expected to temporarily increase due to surface disturbance and compaction.

Following construction, wind and water erosion on the plant site will be reduced, because the plant site will be leveled, compacted, covered with gravel, and drainage will be controlled through a storm drain system. Calculation of soil loss from the power plant site was not considered appropriate because of the proposed surface design (see Figure 3.5-3) and implementation of the landscaping plan which will effectively eliminate soil loss. Implementation of the mitigation measures discussed in Section 5.6.3 is expected to limit potential impacts to the soil resources at the Energy Center site to less than significant levels.

Alternative A Menifee Road Natural Gas Pipeline Route and Compressor Station. The approximately 0.9 mile long natural gas pipeline and 2.6 acre compressor station will be located on agricultural lands, mainly used for growing wheat. Temporary construction disturbances for the pipeline are expected to be approximately 75 feet wide, for a total of approximately 8.2 acres (see Table 3.7-5). Temporary construction disturbances for the compressor station are expected to be approximately 4 acres (see Table 3.7-5). Activities during the construction phase will temporarily disturb vegetation and potentially increase the potential for wind and water erosion along the route and around the construction site for the compressor station. Erosion and dust control techniques will be implemented as part of the Construction Storm Water Pollution Plan that will incorporate Best Management Practices (BMPs) during construction and impacts to soils along this pipeline and compressor station are expected to be insignificant.

Alternative B Moreno Valley Natural Gas Pipeline Route. The approximately 14.8 mile long natural gas pipeline will be located mostly on agricultural lands, mainly used for growing wheat and alfalfa. Temporary construction disturbances are expected to be approximately 75 feet wide, for a total of approximately 134.5 acres (see Table 3.7-5). Activities during the construction phase will temporarily disturb vegetation and potentially increase the potential for wind and water erosion along the route. Soil erosion could result in increased sedimentation to the San Jacinto River where the Alternative B Moreno Valley natural gas pipeline route crosses the river between MP 9 and 11. To reduce impacts to the San Jacinto River due to possible increased sedimentation, there will be directional drilling at the following locations:

- Davis Road at crossing of Old San Jacinto River (MP 10.8)
- Davis Road at crossing of San Jacinto River (MP 9.6)

Erosion and dust control techniques will be implemented as part of the Construction Storm Water Pollution Plan that will incorporate BMPs during construction and impacts to soils along this pipeline are expected to be insignificant.

Electrical Transmission Line. The approximately 0.9 mile long electrical transmission line, which will be suspended by approximately 5 pole structures, will be located mostly on agricultural lands currently used for growing wheat. Temporary construction disturbances are expected to be approximately 10,000 square feet for each pole structure, for a total of approximately 1.6 acres (see Table 3.7-5). Activities during the construction phase will temporarily disturb vegetation and potentially increase the potential for wind and water erosion along the route. Although Monserate sandy loam, eroded (MnD2), 5 to 15 percent slopes, is considered to have a high hazard of erosion, the hazard is reduced because the electrical transmission line route is level. Erosion and dust control techniques will be implemented during construction and impacts to soils along this pipeline are expected to be insignificant.

Non-Reclaimable Wastewater Pipeline. Of the 4.7 miles of non-reclaimable wastewater pipeline, approximately 2.7 miles of the route will be located buried beneath the pavement of Murrieta Road, and approximately 2.0 miles of the route will be located within the right-of-way of McLaughlin Road with adjacent agricultural lands currently used for agricultural and urban uses. Temporary construction disturbances are expected to be approximately 20 feet wide for the length of the non-reclaimable wastewater pipeline, for a total of 11.3 acres (see Table 3.7-5). Activities during the construction phase will temporarily disturb vegetation and increase the potential for wind and water erosion. Erosion and dust control techniques will be implemented during construction and impacts to the soils along the pipeline are expected to be insignificant.

Operational Impacts to Soil Resources

Operation of the project should not result in significant impacts to soil from either erosion or compaction. Routine vehicular access to the individual project components during operation of the project will be limited to existing roads, most of which are paved. Standard operational activities will not involve disruption of soil. Impacts to soil resources during project operations are expected to be insignificant.

5.6.3 Mitigation Measures

This section discusses mitigation measures that will be implemented to reduce any IEEC-related impacts to agricultural and soil resources and to agricultural operations.

Agricultural Resources

There will be temporary construction impacts to prime farmland located along sections of the natural gas pipeline alternatives. Where the pipelines cross agricultural lands, they will be buried at a depth that will allow the land to continue to be used for farmland. The non-reclaimable wastewater pipeline route along McLaughlin and Murrieta roads will be constructed within the road right-of-way that has already been removed from agricultural production. In addition, lands adjacent to Murrieta Road are urbanized and not used for agriculture. No mitigation measures for impacts to prime farmland are necessary for the linear facilities.

The approximately 1.0 acre of prime farmland at the Energy Center site is located in the southwest corner of the site. The Energy Center site is zoned for Industrial Development, and the MNSP and associated EIR address the loss of prime farmland for lands in the MNSP and the county of Riverside has certified the MNSP and EIR.

The compressor station will occupy 2.6 acres of prime farmland that will be permanently removed from agricultural production. In accordance with discussions with the County of Riverside Planning Department (County or Riverside, 2001) the applicant proposes to work with the Department of Conservation to identify appropriate mitigation measures in the context of the overall changes in the region's land use. As a follow-up, the applicant contacted the California Department of Conservation (CDOC) Farmland Conservancy Program. They explained that they do not directly have mitigation funds, but that several national, non-profit entities are working to preserve farmland. The CDOC does offer a program using agricultural easements. In addition, they noted that appropriate conservation measures depended on numerous regional and locational factors (CDOC, 2001).

Soil Resources

Appropriate erosion control measures will be required to address temporary construction disturbances, at both the Energy Center and its related linear facilities, to help maintain soil resources, water quality (only for Alternative B Moreno Valley natural gas pipeline route), protect property from erosion damage, and prevent accelerated soil loss, which destroys soil productivity and its capacity to support and maintain vegetation. Temporary erosion control measures will be installed before construction begins and will be removed from the site after completion of construction.

The following mitigation measures will be implemented to reduce potential temporary construction-related impacts at the Energy Center, natural gas pipeline route, possible compressor station, and wastewater pipeline route.

- Prepare an Erosion Control Plan prior to construction and implement the plan during and following construction.
- Stabilize disturbed areas that will not be covered with surface structures (e.g., buildings) or pavement following grading and/or cut-and-fill operations. In areas to be disturbed or excavated along pipeline routes and where vegetation is present prior to construction, topsoil will be selectively salvaged and replaced.
- Limit soil erosion/dust generation by wetting active construction areas with water (including roads) or by applying commercial dust palliatives (soil binders).
- Conduct visual post-construction monitoring of areas that were disturbed during the construction phase, particularly noting steep slope areas or other erosion prone areas; implement corrective measures in areas that do not respond adequately to initial stabilization techniques or in areas where accelerated erosion is occurring.
- In agricultural areas, construct pipelines at a depth that will minimize land use conflicts. Where practical, construction activities will be timed to avoid impacts to cultivated areas.

- Perform construction activities in accordance with the Stormwater Pollution Prevention Plan (SWPPP) and associated Monitoring Program. These items will be required for the project in accordance with California's General Industrial Stormwater Permit for Construction Sites under the United States Environmental Protection Agency (US EPA) National Pollutant Discharge Elimination System (NPDES) Program. The SWPPP will include erosion control measures, including Best Management Practices (BMPs) to reduce erosion and sedimentation.

Operation of the project should not result in significant impacts to soil from either erosion or compaction. Routine vehicular access to the individual project components during operation of the project will be limited to existing roads, most of which are paved. Standard operational activities will not involve disruption of soil. Impacts to soil resources during project operations are expected to be insignificant. No significant unavoidable adverse impacts on agricultural or soil resources are anticipated as a result of the construction and operation of the IEEC.

5.6.4 Cumulative Impacts

Other potential projects that may be constructed in the project area have been identified in Table 5.7-4 (See Section 5.7, Land Use).

The IEEC will not cause or contribute to a significant cumulative impact to erosion or sedimentation. Although it may result in an insignificant incremental increase in soil erosion and sedimentation, impacts to soil resources will be minor because of the relatively level nature of most of the area and impacts will be further minimized by implementation of mitigation measures during both construction and operation. Construction impacts will be short term. The Energy Center site will be graded and surfaced to prevent erosion. Construction areas along project linear features are primarily in agricultural lands that may continue to be used for agricultural production once construction has been completed.

Agricultural use is currently declining in Riverside County as residential development occurs throughout the region. The County General Plan and Specific Plans address the changing land use character of the County.

Although the loss of 2.6 acres of prime farmland will incrementally contribute to the declining agricultural use in the County, the loss 2.6 acres is negligible in the overall context of changing land use in Riverside County.

Western Riverside County is currently evolving from agricultural land use to commercial, industrial and residential. Consequently, agricultural land is being converted to other uses. For example, the MNSP approved the conversion of 1,050 acres of farmland. In addition, 21 currently approved master plans within approximately five miles of the IEEC have over 18,000 acres of development (Myers Group, 2001). Although the exact acreage of farmable land and prime farmland affected by this acreage is unknown, the distribution of soils qualifying as prime farmland suggests a substantial acreage of prime farmland will be converted.

5.6.5 Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the IEEC, including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to Agriculture and Soils.

The following LORS are applicable to protection of soil resources and protection of surface water quality from any project-related erosion impacts.

5.6.5.1 Federal Authorities and Administering Agencies

Clean Water Act of 1977 (including its 1987 amendments) 33 USC § 1342; 40 CFR Parts 122-136. These authorities establish requirements for any facility or activity which has or which will discharge wastes (including sediment due to accelerated erosion) that may interfere with the beneficial uses of affected waters. There are no surface water features on the Energy Center site or within 1 mile of the site. Although the Alternative B Moreno Valley natural gas pipeline proposed route crosses the San Jacinto River, there will be directional drilling to avoid impacts due to possible increased sedimentation

The administering agency for the above authority is the Regional Water Quality Control Board (RWQCB), Santa Ana Region under the direction of the State Water Resources Control Board (SWRCB).

5.6.5.2 State Authorities and Administering Agencies

California Public Resources Code § 25523(a); CCR §§ 1752, 1752.5, 2300-2309, and Chapter 2, -Subchapter 5. Article 1. Appendix B. Part (i). This authority provides for protection of environmental quality. With respect to the IEEC and agriculture and soils, it requires submission of information to the CEC concerning potential environmental impacts to agriculture and soils. In addition, the CEC's decision on the AFC must include consideration of these same issues.

The administering agency for the above authority is the CEC.

The California Porter-Cologne Water Quality Control Act of 1972, California Water Code § 13260 – 13269; 23 CCR Chapter 9. The code requires adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls. Discharge of waste earthen material into surface waters resulting from land disturbance may require the filing of a report of waste discharge (Water Code § 13260(a)), and provides for the insurance of waste discharge requirements with respect to the discharge of any waste that can affect the quality of the waters of the state. Concerning potential surface water pollution from project area runoff, the waste discharge requirements may incorporate requirements based on the following sources of recommended methods and procedures:

- State water Resources Control Board. 1996. *Erosion and Sediment Control Field Manual.*

- US EPA. 1973. *Processes, Procedures and Methods to Control Pollution resulting From All Construction Activity.* Presents information on processes, procedures, and methods for controlling sediment, storm water, and pollutants form construction activities.
- California Department of Resources Conservation. 1978. *Erosion and Sediment Control Handbook.* Provides procedures by which physical and climatic data and erosion control practices can be considered in making an assessment of a site for determining the need for an erosion control plan and for preparing an erosion control plan.

The administering agencies for the above authority are the CEC, the RWQCB (Santa Ana Region), and the State Water Resource Control Board.

SWRCB Water Quality Order No. 91-B-DWQ (as amended by Water Quality Order No. 92-13-DWQ), General Permit No. CAS000001, authorizes a general permit to regulate industrial stormwater discharges. A notice of Intent will be filed with the RWQCB prior to the start of construction. A Stormwater Pollution Prevention Plan (SWPPP) will be developed in accordance with the guidelines of federal NPDES permit requirements, which address both construction and operations stormwater pollution prevention. The SWPPP will identify BMPs to be employed at the facility to prevent stormwater pollution during the project's operating lifetime.

The administering agencies for the above authority are the CEC, the RWQCB (Santa Ana Region), and the State Water Resource Control Board.

SWRCB Water Quality Order No. 92-08-DWQ, General Permit No. CAS000002, authorizes a general permit for stormwater discharges associated with construction activity disturbing more than 5 acres.

The administering agencies for the above authority are the CEC, the RWQCB (Santa Ana Region), and the State Water Resource Control Board.

5.6.5.3 Local Authorities and Administering Agencies

Riverside County, General Plan – Conservation Element. This element sets forth policies addressing soils, water, mineral resources, and vegetation.

The administering agency for the above authority is Riverside County Transportation and Land Management Agency Department.

Riverside County Hydrology Manual. Assists in designing drainage system to meet all applicable criteria.

The administering agency for the above authority is Riverside County Transportation and Land Management Agency.

Riverside County Code of Building Regulation Grading Ordinance. This chapter outlines how project construction must comply with grading requirements. A grading permit and building permit are required.

The administering agency for the above authority is the Riverside County Department of Building and Safety.

5.6.5.4 Industry Codes and Standards

U.S. Department of Agriculture, SCS, National Engineering handbook (1983). Section 2 and 3. The U.S. Department of Agriculture prescribes standards of technical excellence for the SCS, now called the NRCS for the planning, design, and construction of soil conservation practices.

The administering agency for the above authority is the NRCS.

5.6.5.5 IEEC Compliance with Agricultural and Soils LORS

The IEEC will obtain a general stormwater permit and will grade and excavate in accordance with approved grading plans to reduce soil erosion from development of the project.

5.6.6 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to agricultural and soil resources for the IEEC are provided in Table 5.6-3.

Table 5.6-3 Involved Agencies and Agency Contacts

Agency/Address	Contact	Item
Riverside County Building and Safety Department 4080 Lemon Street, 7th Floor Riverside, CA 92501	(909) 955-2000	Grading and trenching
Riverside County Transportation and Land Management Agency 4080 Lemon Street, 9th Floor Riverside, CA 92501	(909) 955-6838	Grading Permit
California Department of Conservation	(916) 324-0860	Prime farmland mapping
Santa Ana Regional Water Quality Control Board 3737 Main Street, Suite 500 Riverside, CA 92501-3348	(909) 782-4130	NPDES Permits, SWPPP

5.6.7 Permits Required and Permit Schedule

The Riverside County Department of Building and Safety will require a grading and erosion control permit prior to the start of construction. The State Water Resources Control Board will require a NPDES General permit for Storm Water Discharges prior to the start of construction. The schedule for acquiring these permits is summarized in Tables 5.6-4.

Table 5.6-4 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Grading/Erosion Control Permit	30 days prior to start of construction activities.
NPDES General Permit for Storm Water Discharges Associated with Construction Activities	Submit application 120 days prior to start of construction.
NPDES General Permit for Storm Water Discharges Associated with Industrial Activity	Submit application 120 days prior to start of operation.

5.6.8 References

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5.7 LAND USE

This section provides a discussion of existing land uses and an evaluation of potential land use impacts associated with the Inland Empire Energy Center (IEEC or Energy Center) in accordance with CEC guidelines.

Land use issues have been identified and evaluated based on: on-site surveys; review of current U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps; aerial photography; review of local land use ordinances; and review of land use goals and policies identified in Riverside County's General Plan, the County's Menifee North Specific Plan, and the General Plan for the City of Perris, and the Moreno Highlands Specific Plan administered by the City of Moreno Valley (Figure 5.7-1 shows the lands covered under the above-referenced plans). For the purposes of evaluating land use issues, the project area includes lands within one mile of the Energy Center site and within 0.25 mile of linear facilities (i.e., transmission line, natural gas pipeline routes, and non-reclaimable wastewater pipeline). Project components within applicable County General and Specific Plans are illustrated in Figure 5.7-1. General and Specific Plan land use designations, zoning, and existing land uses are shown in Figures 5.7-2A-C, 5.7-3A-C, and 5.7-4A-C, respectively.

The IEEC consists of a natural gas-fired power plant, transmission interconnection, alternative natural gas pipeline routes, and recycled water supply and non-reclaimable wastewater pipelines (see Section 3.0 for a complete description of the proposed facilities).

The following section provides an overview of regional land use and applicable plans and policies, and discusses the potentially affected environment associated with each project component. Potential impacts to existing or planned land uses are also described. Land uses reviewed include recreational sites, agricultural areas, wildlife areas, open spaces, schools, churches, health care facilities, parks, and commercial, industrial, and residential areas. Sensitive land uses may include cultural and historic sites.

Table 5.7-1 provides descriptions of each of the land use designations crossed, or located adjacent to, project facilities for each respective plan. Table 5.7-2 describes the zoning districts included within the study area (i.e., zoning districts crossed or located adjacent to project components), whereas Table 5.7-3 describes the location [i.e., milepost (MP)] of the project components to the respective zoning districts.

5.7.1 Affected Environment

5.7.1.1 Overview

The proposed Energy Center site and ancillary facilities (e.g., transmission line, alternative natural gas pipelines, and recycled water supply and non-reclaimable wastewater pipeline) are located within portions of unincorporated areas of southwestern Riverside County near the community of Romoland (see Figure 3.2-1, Regional Location Map). A portion of the Alternative B Moreno Valley natural gas pipeline route from MP 12.2 to MP 14.8 is within the City of Moreno Valley and a short portion of the proposed non-reclaimable wastewater

Table 5.7-1. General Plan Land Use Designations[1]

Land Use Designation	Definition
Land Use Designations included in "Commercial/Business Park" as shown on Figures 5.7-2A and B	
Riverside County	
Commercial (Senior Design)	The purpose of this designation is to provide areas where primarily professional and administrative offices and related uses may be located. In addition, these uses shall provide handicapped parking supplies 100 percent over the number required in the County's ordinance for other areas designated for commercial use. This land use designation also requires that buildings be designed for easy access, with ramped curbs and entrances, oversized door openings, automatic door openers, etc. Finally, utilities shall be placed so as to facilitate pedestrian movement.
Commercial	As acknowledged in the Menifee North Specific Plan, this designation shall provide commercial uses that will serve residents of Menifee North, off-site users, and persons employed in the area. The commercial sites are located to provide easy access for both on-site residents and the regional area.
Business Park	The Menifee North Specific Plan states that this particular land use designation is intended to provide development areas for professional office and related supportive commercial uses as well as some limited types of "clean" light industrial uses [as allowed in the Plan's Industrial Park (IP) zone].
Commercial/Business Park	This land use, as noted in the Menifee North Specific Plan, is intended to provide areas for wholesale commercial, business/office, support commercial and possibly some light industrial uses [as allowed in the Plan's Industrial Park (IP) zone].
City of Perris	
Commercial Community	Commercial activities within this designation include retail, professional office, and service-oriented business activities serving the city-wide population. Development generally occurs on 10 to 30 acres of land and can include 100,000 to 200,000 square feet of building floor area. Sites are typically located on arterial roadways to accommodate higher traffic volumes generated by their presence.
Land Use Designations included in "Rural Residential" as shown on Figures 5.7-2A, B, and C	
Riverside County	
Residential, 1 DU/AC	As acknowledged in the County's Sun City/Menifee Valley Community Plan, this designation allows for single-family dwellings, including mobile homes, not to exceed one dwelling unit per acre, thus resulting in 2.5 persons per acre. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities
Residential, 2-3 DU/AC	This land use designation, as noted in the Sun City/Menifee Valley Community Plan, provides for the development of single family housing, including mobile homes, not to exceed 2-3 dwelling units per acre (range of 5 to 7.5 persons per acre). This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
Residential, Hillside	Under the County's Sun City/Menifee Valley Community Plan, persons are allowed to construct single-family dwellings in this land use designation at a density of 1 dwelling unit per acre (resulting in an average population density of 2.5 persons per acre). In addition, development of hillside areas shall be designed to blend with undeveloped natural contours of the site and should attempt to avoid an unvaried, unnatural or manufactured appearance. Other ancillary uses permitted under this designation include animal husbandry, small-scale agriculture, and other limited agricultural activities.
Residential, Low Density	The County's Menifee North Specific Plan designates 6.2 acres within Planning Area 10 as Residential, Low Density. This area allows for the development of a minimum of 2 dwelling units per acre, resulting in a population density of 5 persons per acre. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
Residential, 0.5 DU/AC	This designation allows for 0.5 dwelling units per acre (2-acre lots or larger) under the County's Lakeview/Nuevo Community Plan. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
City of Moreno Valley	
Residential, Low Density	This designation provides for areas of single-family housing at a threshold density of 6 dwelling units per acre, resulting in population densities of 15 persons per acre. Typical low-density development includes detached single family homes and cluster housing.

Table 5.7-1. General Plan Land Use Designations[1]
(Continued)

Land Use Designation	Definition
Land Use Designations included in "Residential, Medium Density" as shown on Figures 5.7-2A, B, and C	
Riverside County	
Residential, Medium Density	The County's Menifee North Specific Plan designates 166.9 acres within Planning Areas 25, 32, 35, 37, and 40 as Residential, Medium Density. This area allows for the development of a minimum of 2 dwelling units per acre, resulting in a population density of 5 persons per acre. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
Residential, 2-4 DU/AC	This designation allows for 2 to 4 single-family dwelling units, including mobile homes, per acre under the County's Lakeview/Nuevo Community Plan, resulting in 5 to 10 persons per acre. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
Residential, 3-5 DU/AC	Under the County's Lakeview/Nuevo Community Plan, these areas are designated for 3 to 5 single- and multiple-family (e.g., apartment homes, townhomes, etc.) dwelling units per acre, resulting in 7.5 to 12.5 persons per acre. This land use designation also allows for associated uses such as animal husbandry, small-scale agriculture, and other limited agricultural activities.
Land Use Designations included in "Industrial" as shown on Figures 5.7-2A and C	
Riverside County	
Manufacturing-General	The purpose of this designation, under the Sun City/Menifee Valley Community Plan, is to designate areas for industrial development that shall be designed to provide convenience to, but not detrimental to, residential and commercial areas; to include necessary transportation facilities; and to provide adequate facilities and services. Typical uses permitted under this category include food, textile, paper product, and lumber and wood manufacturing facilities. Agricultural and commercial (e.g., service-oriented) development also are designated uses.
Industrial	The County designates Planning Areas 2 and 3 of the Menifee North Specific Plan for Industrial uses, equaling a total of 197.5 acres. This particular designation is intended to support the commercial uses in the region and to blend in with the adjacent industrial land uses. Typical uses permitted in this designation include manufacturing facilities for the production of chemicals, food, textile, paper, metal, and plastic and synthetic goods. Other uses allowed in this designation included particular types of agricultural and commercial (e.g., service-oriented) development.
City of Moreno Valley	
Public	Within the Moreno Highlands Specific Plan, this particular land use designation provides for the conduct of public and institutional activities, such as providing protected designated areas for pubic and institutional activities.
Land Use Designations included in "Agricultural" as shown on Figures 5.7-2C	
Riverside County	
Agriculture	The County's Lakeview/Nuevo Community Plan designates Agricultural areas for one-family dwelling units (7,200 square feet minimum lot size), animal husbandry, and farm animals. Agricultural mobile homes permitted for owner/farm worker with Plot Plan approval.
City of Moreno Valley	
Agriculture	The purpose of the Agricultural designation is to provide certain protection for agricultural operations in existence while at the same time protecting the rights of property owners who may own, occupy or use land in the area of agricultural property. Permitted uses include single-family residences with a lot size not to be less than 20,000 square feet.

Table 5.7-1. General Plan Land Use Designations[1]
(Continued)

Land Use Designation	Definition
Land Use Designations included in "Open Space/Preserve/Recreation" as shown on Figures 5.7-2C	
Riverside County	
Open Space	The County's Lakeview/Nuevo Community Plan provides the Open Space designation to areas as a method to protect County environmental resources and maximize public health and safety in areas where significant environmental hazards and/or resources exist. Uses permitted within the Open Space designation include utilities, both public and private; golf courses; field, tree, and bush crops; and water works facilities intended primarily for the distribution of water for agricultural purposes.
San Jacinto Wildlife Preserve	The San Jacinto Wildlife Preserve is an area designated for the protection of sensitive plant and animal species (e.g., Stephens' kangaroo rat). The designation precludes residential development, but not the installation of buried utilities, public and private, subject to a Public Use Permit. The Long-term Habitat Conservation Plan implemented by the Riverside County Habitat Conservation Agency provides prescriptions for the management of the Preserve.
City of Moreno Valley	
Open Space	The primary purpose of the Open Space designation is to provide for low-intensity, outdoor-oriented recreational facilities; preserve unique natural and environmentally sensitive areas; and protect and preserve the public health, safety, and welfare. Typical developments within the Open Space areas include trail and bikeway systems and golf courses.

Source: County of Riverside General Plan (1995); Moreno Highlands Specific Plan (SP No. 212-1) (1999); Menifee North Specific Plan (SP No. 260) (1994); Sun City/Menifee Valley Community Plan (1992); and Lakeview/Nuevo Community Plan (1990).

[1] The land use designations identified have been summarized, and only those designations directly affected by or that are adjacent to the proposed project are discussed.

Table 5.7-2. Zoning Districts Within the Study Area[1]

Zoning District	Definition
Zoning Districts included in "Commercial/Business Park" as shown on Figures 5.7-2A and B	
Riverside County	
Scenic Highway Commercial (C-P-S)	Specific wholesale and retail commercial uses subject to the provisions of County Zoning Code Section 18.30.
General Commercial (C-1/C-P)	General business and appurtenant accessory uses only in enclosed buildings with not more than 200 square feet of outside storage area subject to the provisions of the County Zoning Code Section 18.30.
City of Perris	
Commercial Community (CC)	Zone allows for development of retail, professional office, and service-oriented business activities under Title 19 of the City's Zoning Ordinance.
Zoning Districts included in "Rural Residential" as shown on Figures 5.7-2A, B, and C	
Riverside County	
Rural Residential (R-R)	0.5 acre minimum lots; agricultural/residential use. Permitted uses include structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas such as transmission lines, pipelines, hydroelectric power plants, and the like, subject to the provisions of Section 18.30 of the County Zoning Code.
One-Family Dwellings (R-1)	7,200 square feet minimum lot size; residential and limited agricultural use. Permitted uses include single-family dwellings, including mobile home parks, and field and tree crops subject to the provisions of Section 18.30 of the County Zoning Code.
One-Family Dwellings (R-10,000)	10,000 square feet minimum lot size; same uses permitted within R-1 zoning district subject to the provisions of Section 18.30 of the County Zoning Code.
Mobile Home Subdivisions and Mobile Home Parks (R-T)	Minimum lot size requirements range from 7,200 to 3,600 square feet; single-family and mobile home park use. Uses permitted include recreational facilities included as part of the residential subdivision per Section 18.30 of the County Zoning Code.
City of Moreno Valley	
Residential (R-6)	Maximum residential density of 6 dwelling units per acre in accordance with Section 9.02.020 of the City Zoning Ordinance.
Zoning Districts included in "Industrial" as shown on Figures 5.7-2A and C	
Riverside County	
Manufacturing-Heavy (M-H) and Manufacturing-Medium (M-M)	Manufacturing and industrial use. Permitted uses include manufacturing of food, textile, paper, chemical, wood, metal, and plastic products. Other permitted uses include public utility substations and storage yards; professional and service oriented commercial activities; and limited agricultural developments in accordance with Section 18.30 of the County Zoning Code.
City of Moreno Valley	
Public	Within the Moreno Highlands Specific Plan, this particular land use designation provides for the conduct of public and institutional activities. Uses permitted include protected designated areas for pubic and institutional activities subject to Section 9.02.020 of the City Zoning Ordinance.
Zoning Districts included in "Agricultural" as shown on Figures 5.7-2C	
Riverside County	
Light Agriculture (A-1) and (A-1-1)	0.5 and 1.0 acre minimum (A-1 and A-1-1, respectively); agriculture/residential use. Permitted uses include single-family residential dwellings, including mobile homes on permanent foundations. Other permitted uses include water works facilities intended primarily for the production and distribution of water for irrigation purposes, animal husbandry, and field and tree crops in accordance with Section 18.30 of the County Zoning Code.

Table 5.7-2. Zoning Districts Within the Study Area[1]
(Continued)

Zoning District	Definition
Zoning Districts included in "Open Space/Preserve/Recreation" as shown on Figures 5.7-2C	
Riverside County	
Open Area Combining Zone-Residential Developments (R-5)	No residential construction permitted. Permitted uses include golf courses, clubhouses and appurtenant facilities, noncommercial community association, lakes and picnic grounds, and recreation assembly buildings subject to Section 18.30 of the County Zoning Code.
Natural Assets (N-A)	20 acre minimum lots; single-family dwellings and associated agricultural uses. Other permitted uses include golf courses and appurtenant facilities, riding academies and stables, and fishing lakes subject to the provisions of Section 18.30 of the County Zoning Code.
City of Moreno Valley	
Open Space (OS)	The primary purpose of the Open Space designation is to provide for low-intensity, outdoor-oriented recreational facilities; preserve unique natural and environmentally sensitive areas; and protect and preserve the public health, safety, and welfare. Typical development within the Open Space areas includes trail and bikeway systems and golf courses.
Golf Course (GS)	Permitted uses include golf courses and appurtenant facilities in accordance with Section 9.02.020 of the City Zoning Ordinance.
Public	This particular land use designation provides for the conduct of public and institutional activities, such as providing protected designated areas for public and institutional activities.

Source: Land Use Ordinance of Riverside County (2000); City of Moreno Valley Zoning Ordinance (1989); and City of Perris Zoning Ordinance (1997)

[1] The zoning districts identified have been summarized, and only those districts directly affected by, or that are adjacent to, the proposed project are discussed.

Table 5.7-3 Current Land Use, Zoning, Land Use Designations, and Potentially Sensitive Land Uses within the Study Area[1]

Project Element	Milepost*	Current Land Use	Zoning	Land Use Plan Designation	Sensitive Land Use
Energy Center Site	0.0	Agriculture (cropland)	Manufacturing-Heavy (M-H)	Industrial	None
Transmission Line Interconnection	0.0 – 0.6	Agriculture (cropland)/Rural Residential	Manufacturing-Heavy (M-H) and Rural Residential (R-R)	Utility Easement/Existing Uses	None
	0.6 – 0.9	Rural Residential/Agriculture (cropland)/Industrial	Rural Residential (R-R) and Manufacturing-Medium (M-M)	Utility Easement/Existing Uses	None
Alternative A Menifee Road Natural Gas Pipeline	0.0 – 0.8	Agriculture (cropland)	Rural Residential (R-R), Manufacturing-Service Commercial (M-SC), Manufacturing-Heavy (M-H), Manufacturing-Medium (M-M)	Industrial, Utility Easement/Existing Uses	None
Compressor Station	--	Agriculture (cropland)	Manufacturing-Service Commercial (M-SC)	Manufacturing-General (M)	None
Alternative B Moreno Valley Natural Gas Pipeline	0.0 – 1.5	Rural Residential/Residential Medium Density/ Agriculture (cropland)/Industrial/ Commercial	Rural Residential (R-R), Manufacturing-Heavy (M-H), Mobile Home Subdivisions & Mobile Home Parks (R-T), One-Family Dwellings (R-1), Scenic Highway Commercial (C-P-S), and Industrial Park (I-P)	Commercial, and Commercial/Business Park	None
	1.5 – 5.0	Agricultural/Rural Residential/Public Utility	One-Family Dwellings (R-1), Light Agriculture (A-1)	Residential (3-5 DU/AC), Residential (2-4 DU/AC), Residential (0.5 DU/AC), Commercial, and Open Space	None
	5.0 – 8.2	Agricultural/Rural Residential/ Public Utility/Rural Residential	Rural Residential (R-R) and Mobile Home Subdivisions & Mobile Home Parks (R-T)	Residential (2-4 DU/AC), Residential (0.5 DU/AC), Commercial, and Open Space	
	8.2 – 9.2	Agricultural/Recreational	Light Agriculture (A-1)	Residential (2-4 DU/AC), and Agriculture	

Table 5.7-3 Current Land Use, Zoning, Land Use Designations, and Potentially Sensitive Land Uses within the Study Area[1] (Continued)

Project Element	Milepost*	Current Land Use	Zoning	Land Use Plan Designation	Sensitive Land Use
	9.2 – 13.3	Rural Residential/Natural Preserve	One-Family Dwellings (R-1), Light Agriculture (A-1), Natural Assets (N-A), and Open Space (OS)	Agriculture, San Jacinto Wildlife Area, Agriculture, Open Space, and Low Density Residential	San Jacinto Wildlife Area
	13.3 – 14.8	Agricultural/Industrial	Public (P), Open Space (OS), and Golf Course (GC)	Low Density Residential, Golf Course, and Open Space	None
Non-Reclaimable Wastewater Pipeline	0.0 – 1.0	Rural Residential/Agriculture (cropland)	Manufacturing-Heavy (M-H), Rural Residential (R-R), Controlled Development Areas with Mobile Homes (W-2-M), One-Family Dwellings (R-1), Community Commercial (CC), and Scenic Highway Commercial (C-P-S)	Industrial, Utility Easement/Existing Uses, Residential (1 DU/AC Minimum), Residential (2-4 DU/AC), Commercial Community, and Commercial (Senior Design)	None
	1.0 – 2.0	Agricultural/Rural Residential/Residential, Medium Density	Rural Residential (R-R), One-Family Dwellings (R-1), Open Area Combining Zone-Residential Development (R-5), Mobile Home Subdivisions & Mobile Home Parks (R-T), and Scenic Highway Commercial (C-P-S)	Residential (2-4 DU/AC), and Commercial (Senior Design)	None
	2.0 – 4.7	Rural Residential/Residential, Medium Density	One-Family Dwellings (R-1), General Commercial (C-1/C-P), and Mobile Home Subdivisions & Mobile Home Parks (R-T)	Residential (2-4 DU/AC), Commercial (Senior Design), and Industrial	None

* See Figure 5.7-1A, B, and C for Milepost locations (distances are approximate).

[1] The study area consists of that area within one (1) mile of the Energy Center site and within a one-half-mile corridor (0.25 miles each side) along the project linear features.

pipeline along McLaughlin Road from MP 1.0 to MP 1.4 is within the jurisdiction of the City of Perris (see Figure 5.7-1).

Riverside County has a land area of approximately 7,200 square miles. The County has traditionally had a strong agricultural component, yet the services sector is the largest industry in the County. Important land uses include urban residential and commercial, government, recreation, transportation and military bases. Rapid growth of the Riverside County is currently occurring in the unincorporated portions of the County including the project region.

5.7.1.2 Plans and Policies

County and City Land Use Plans and Policies
County and regional land use management plans relevant to the proposed IEEC project study area include the following:

- Riverside County General Plan
- Menifee North Specific Plan
- Sun City/Menifee Valley Community Plan
- City of Perris General Plan
- City of Moreno Valley's Moreno Highlands Specific Plan
- Lakeview/Nuevo Community Plan

Figure 5.7-1 shows the overall applicability of such plans to each project component. Table 5-7.1 provides descriptions of each of the land use designations crossed, or located adjacent to, project facilities for each respective plan, whereas Table 5.7-3 describes the specific land use designations crossed by the project components for each respective plan.

Riverside County General Plan. Portions of the Alternative B Moreno Valley natural gas pipeline route are within areas covered by the Riverside County General Plan.

Land use plans and controls for unincorporated lands in the Energy Center area are administered by the Riverside County Transportation and Land Management Agency. The General Plan currently in effect in Riverside County applies County policies to property within the unincorporated area through the use of land use designations. General Plan land use designations in the Energy Center area are illustrated in Figure 5.7-2 and defined in Table 5.7-1 (General Plan Land Use Designations). Land use designations prescribed under the County's General Plan apply to those unincorporated areas not otherwise covered by a Specific Plan or Community Plan. Not all lands within the project study area are designated for specific types of uses under the County's General Plan (see Figure 5.7-12A and B for non-designated areas). Plot plan approval is required for development within areas not designated for land use under the County's General Plan. Plot plan approvals are granted when a proposed development meets the requirements for the zoning district within which the property is located. Proposed development within areas not designated under the County's

General Plan and that (1) does not meet the development standards for a specific land use, or (2) is not a permitted use under the zoning district within which the property is located requires a Conditional Use Permit, Public Use Permit, or rezoning, whichever is applicable.

The Riverside County General Plan includes specific policies designed to preserve and enhance existing development and to provide for orderly and appropriate new development to meet the needs of the area in the future. The General Plan has seven elements, including administrative, land use, regional, public facilities and services, housing, environmental hazards and resources, and community policies. All of these elements contain goals, policies and implementation measures pertinent to proposed development. Zoning, subdivision approvals, regulations, and other actions must be consistent with the General Plan.

The County of Riverside and the Riverside County Transportation Commission (RCTC) have begun a comprehensive planning process to determine future placement of buildings, roads, and open spaces for Riverside County. This process has been named the Riverside County Integrated Project (RCIP) and will create three plans that are interrelated. The plans include a General Plan for land use and housing; a Multiple Species Habitat Conservation Plan (MSHCP) to determine what land should be set aside as open space and maintained for plant and animal conservation; and the Community and Environmental Transportation Acceptability Process (CETAP) that identifies potential improvements for highways and transit systems in the County. For many years, transportation, land use, and environmental planning have occurred independently. The RCIP integrates transportation, land use, and environmental planning elements.

Started in 1999, the RCIP represents a three-year planning effort to simultaneously prepare environmental, transportation, housing and development guidelines for the first half of the twenty-first century, based on population doubling in 2020. This integrated planning effort, to be completed in 2002, and will represent an update to the County's General Plan.

The MSHCP is an element of the RCIP to conserve open space, nature preserves, and wildlife to be set aside in some areas. The MSHCP is designed to protect over 150 plant and wildlife species and conserve over 500,000 acres in western Riverside County. The MSHCP is in the planning stages with environmental studies currently being conducted. It is expected that the approval process will begin in the year 2002. More detailed information regarding the MSHCP and the potential implications for this Plan as it relates to the proposed project is provided in Section 5.3 (Biological Resources).

Menifee North Specific Plan. The proposed Energy Center site is located within the Menifee North Specific Plan (Specific Plan No. 260). The Riverside County Board of Supervisors adopted this Specific Plan in December 1994 as an amendment to the County's General Plan (Ordinance No. 348.3649). The Specific Plan is administered by Riverside County's Transportation and Land Management Agency. With the adoption of this Specific Plan, a special Specific Plan Zone was created which set out particular permitted uses and development standards applicable to each of the 47 individual planning areas included in the

Specific Plan. As acknowledged in the Board's resolution to adopt the Specific Plan, the Plan provides for the following planning objectives:

- Increases opportunities to plan multiple ownerships into a master plan development
- Development of community facilities (e.g., community center, neighborhood parks, and open space)
- Encourages development superior to piecemeal development since it gives the opportunity for long-range infrastructure planning and cumulative impact analysis and mitigation
- "Results in a logical extension of urban development in an area adjacent to planned development"
- Maximizes the use of the "next logical, contiguous area for development and provides a viable alternative to the agricultural uses which are diminishing of their own volition"

The Menifee North Specific Plan implements all of the elements of the County's General Plan, and proposes land use, zoning, infrastructure, and design standards for 1,636.2 acres of land located along the State Route 74 and Briggs Road corridors, between the communities of Romoland and Homeland. The Specific Plan proposes a mix of uses within the planning area, including 197.5 acres of industrial uses; 585.3 acres of residential uses; 142.7 acres of commercial uses; 168.6 acres for Business Park or mixed Commercial/Business Park; and additional acreage for infrastructure services, including schools, utility easements, community parks, open space, drainage channels, roadways, fire stations, etc.

The area administered under the Specific Plan includes 47 individual planning areas, each with separate zoning and development standards. The proposed Energy Center site is located in Planning Area 3; within Planning Area 3, the site area is designated "Industrial" under the Specific Plan. Planning Area 3 consists of approximately 76.4 acres, roughly 40 percent of the industrial land use area found in the Specific Plan. The Energy Center site is approximately 46 acres, 24 acres of that will be fenced and used for the facility. According to the Specific Plan, industrial land uses are intended to support the commercial uses in the region and to blend in with the adjacent industrial land uses.

Development standards within the Menifee North Specific Plan must conform to the zoning rules specified in the County's Zoning Ordinance. Pursuant to the Zoning Ordinance, under Section 17.73, land uses within Planning Area 3 must conform to the zoning development standards for the district Manufacturing-Heavy (M-H). Development standards for the M-H district is included in Article XII, Section 12.4 of the Land Use Ordinance of Riverside County (Ordinance No. 348). More information regarding development standards and uses permitted within the M-H zoning district is included in Section 5.7.1.3 of this report.

Sun City/Menifee Valley Community Plan. Part of the non-reclaimable wastewater pipeline from MP 1.2 to MP 4.9 is located within the Sun City/Menifee Valley Community Plan. The Alternative A Menifee Road natural gas pipeline route and associated compressor station are also within the area covered by this plan.

Land use plans and controls included in this Plan are administered by the County's Planning Department. The Plan, adopted in 1992 by the County Board of Supervisors, covers approximately 27,857 acres of unincorporated areas in Riverside County. The Community Plan Planning Area is generally bounded to the north by McLaughlin Road, to the east by Leon Road, to the south by Keller Road, and to the west by Goetz Road. In adopting the Community Plan, the County Board of Supervisors included the following land use goals:

- Establish a growth pattern which is orderly, efficient and economically feasible, and therefore consistent with the Comprehensive General Plan
- Achieve a well-balanced and diversified economy within the Planning Area, with a variety of economic and employment opportunities
- Assure ample opportunities for orderly industrial development which will include a variety of types of industry and provide adequate supplies of suitable and properly distributed industrial land in such a manner that maximum compatibility of industry with other land uses is achieved and sufficient employment opportunities are provided
- Encourage the development of those areas where necessary public services can be provided and where development is compatible with surrounding land uses

County policy is applied to property within this particular planning area through the use of land use designations. Land use designations included within the Community Plan for the project area are illustrated in Figure 5.7-2A and defined in Table 5.7-1 (General Plan Land Use Designations). Land use designations for specific Energy Center components are as follows:

- The non-reclaimable wastewater pipeline will be located within the existing rights-of-way of McLaughlin and Murrieta Roads within the Community Plan. Areas within existing roadway rights-of-ways are not zoned for land use. However, an encroachment permit would be required for installation of the pipeline within the above-referenced roadway rights-of-way. Lands that are adjacent to the wastewater pipeline include a mix of Commercial (Senior Design); Manufacturing-General; and Residential development planned at 1, 2-3, and 2-4 dwelling units per acre (see Figure 5.7-2A).
- Alternative A Menifee Road Natural Gas Pipeline Route. The pipeline route is along McLaughlin Road and adjacent to the BNSF Railway. Land use designation in the Community Plan are Industrial (see Figure 5.7-2A).
- Compressor Station. The 6.6-acre compressor station site is designated Industrial in the Community Plan. Surrounding lands are designated Industrial and Rural Residential (see Figure 5.7-2A).

Lakeview/Nuevo Community Plan. The northern part of the Alternative B Moreno Valley natural gas pipeline between MP 12.3 and MP 14.8 crosses an area covered by Riverside County's Lakeview/Nuevo Community Plan.

Adopted in December 1990 by the Riverside County Board of Supervisors, this Plan is administered by Riverside County's Transportation and Land Management Agency and provides land use policies and goals and objectives to provide for orderly development of land and conservation of natural resources. The Plan covers an area measuring approximately 47 square miles in central Riverside County in and near the unincorporated communities of Nuevo and Lakeview. The northern border of the Plan is located approximately 4 miles south of the limits of the City of Moreno Valley. The Community Plan land use designations within the vicinity of the proposed natural gas pipeline include a mix of Agriculture, Commercial, Open Space, and areas planned for Residential development at rates of 0.5, 2-4, and 3-5 dwelling units per acre (see Figure 5.7-2C).

Where the proposed pipeline runs along Davis Road between MP 9.1 to MP 11.5, it would cross portions of the San Jacinto Wildlife Area designated in the Lakeview/Nuevo Community Plan. This Wildlife Area is managed by the California Department of Fish and Game for the protection and enhancement of sensitive plant and wildlife species (e.g., Stephens' kangaroo rat). Section 5.3 (Biological Resources) includes more detailed information regarding the Wildlife Area and associated plant and wildlife species, as well as potential impacts and applicable mitigation measures.

The zoning district applicable to the San Jacinto Wildlife Area within the Lakeview/Nuevo Community Plan is the Natural Assets (N-A) zoning district (Guerin, 2001). An encroachment permit would be required from the County's Transportation and Land Management Agency for construction of the Alternate B Moreno Valley natural gas pipeline within existing roadway rights-of-ways. The natural gas pipeline would be subject to approval under a Conditional Use Permit. However, this particular alternative could be permitted under a Public Use Permit at the discretion of the County Planning Director (Guerin, 2001).

City of Perris General Plan. A portion of the non-reclaimable wastewater pipeline from MP 1.0 to MP 1.4 is within the jurisdiction of the City of Perris (see Figure 5.7-1).

The City of Perris General Plan is administered by the City's Planning and Community Development Department. The General Plan, adopted in 1991, applies to property within the City's incorporated area (with exception of roadway rights-of-ways) through the use of land use designations. General Plan land use designations included in the project study area in the City of Perris include Community Commercial, Light Industrial, and Business Park (see Figure 5.7-2A).

The portion of the non-reclaimable wastewater pipeline located in the City of Perris (MP 1.0 to MP 1.4) would be installed within the right-of-way of McLaughlin Road. The City's jurisdiction within the project study area includes all lands north of the centerline of McLaughlin Road between Trumble Road and Barnett Road located east and west of

Interstate 215, respectively (Lopez, 2001) (see Figure 5.7-1). An encroachment permit would be required from the City's Public Works Department to construct and operate the wastewater pipeline within the McLaughlin Road right-of-way (Lopez, 2001). Lands located in roadway rights-of-ways are not subject to the land use policies and standards covered under the City's General Plan as such lands are not designated for land use (Morales, 2001).

Moreno Highlands Specific Plan. Approximately 2.5 miles of the Alternative B Moreno Valley Interconnect natural gas pipeline from MP 12.3 to MP 14.8 crosses lands under the jurisdiction of the City of Moreno Valley (see Figure 5.7-1C).

Within the City, the pipeline traverses the Moreno Highlands Specific Plan (Specific Plan No. 212-1). Land use plans and controls for this project component are administered by the City of Moreno Valley's Community and Economic Development Department. The Plan acknowledges, among others, the following land use planning goals and objectives:

- Development of a master-planned community, integrating innovative community design and concepts
- Construction of all required infrastructure improvements consistent with the needs of development
- Minimization of the consumption of natural resources through efficient land use design, phased development, and specific zoning regulations
- Provision of special consideration to community edges that abut the San Jacinto Wildlife Area
- Development of a mixed-use activity area with the Plan that integrates residential, office, restaurant, hotel, and other commercial uses

Land Use Designations for the 2.5-mile section of the Alternative B Moreno Valley natural gas pipeline within the City of Moreno Valley are illustrated in Figure 5.7-2C and defined in Table 5.7-1 (General Plan Land Use Designations). The General Plan designations for this portion of the pipeline include Low Density Residential, Parks/Open Space/Recreation, and Public.

State Land Use Plans and Policies

The CEC is responsible for both policy development and permitting for generating projects over 50 MW. Large generating facilities, such as the IEEC, require CEC siting approval. Approval of generating facilities requires that the CEC state land use plans and policies or make findings of overriding considerations. The CEC is also the lead agency for implementation of CEQA review for the IEEC.

The Williamson Act embodies a state land use policy designed to preserve open space and agricultural land. It discourages premature urbanization and prevents landowners from being forced to develop their property because their property taxes are based on the greater value of the land for commercial or residential use.

The Department of Conservation, Office of Land Conservation (OLC) administers the contracts associated with land under the Williamson Act. OLC was contacted to determine whether the Energy Center site or associated facilities traverse lands subject to the Williamson Act. Based on informal consultations with OLC, it was determined that the proposed Energy Center will not impact lands subject to the Williamson Act (Nordstrom, 2001).

Prime or Unique Farmland

Based on a review of Important Farmland maps (1:100,000 scale) published by the California Department of Conservation (CDC, 1998), almost the entire project site is not located within an area qualifying as "prime farmland", farmland of "statewide importance", or "unique" farmland. However, approximately 1 acre of the Energy Center site, approximately 0.3 miles of the Alternative A Menifee Road natural gas pipeline, the entire compressor station site area, approximately 8.0 miles of the Alternative B Moreno Valley natural gas pipeline route, mostly between MP 0 and MP 8, and MP 12 and MP 13, and approximately 1.3 miles of the non-reclaimable wastewater pipeline route, mostly between MP 2 and MP 3, qualify as prime farmland, since the soils along portions of pipelines meet the criteria of the U.S. Department of Agriculture (CDC, 1993) for prime farmland. A portion of the Alternative B Menifee Road natural gas pipeline and the non-reclaimable wastewater pipeline are going to be built beneath the right-of-way pavement and will not affect prime farmland.

Please refer to Section 5.6, Agriculture and Soils, for additional discussion of Prime or Unique Farmland.

5.7.1.3 County and City Zoning Regulations

Zoning is one of the regulatory mechanisms used by Riverside County and the cities of Perris and Moreno Valley to implement land use policies. The proposed Energy Center site and most of the linear facilities are located in unincorporated areas of Riverside County. However, portions of the Alternative B Moreno Valley natural gas pipeline and wastewater pipeline are located in the City of Moreno Valley and the City of Perris, respectively. Table 5.7-2 describes the zoning districts included within the study area (i.e., zoning districts crossed or located adjacent to Energy Center components), whereas Table 5.7-3 describes the location (i.e., Milepost) of the Energy Center components to the respective zoning districts.

Riverside County. The Riverside County Zoning Ordinance was adopted in 1948 (Land Use Ordinance, 2000) and is revised on an annual basis. The ordinance implements the General Plan by applying development standards and construction requirements to land as it is developed within the unincorporated portions of Riverside County. It regulates such items as building height, property line setbacks, parking spaces and design, landscaping, and land use. Figures 5.7-3A, 5.7-3B, and 5.7-3C illustrate zoning for all project components located within unincorporated areas of Riverside County. Zoning districts affected by the proposed Energy Center within Riverside County are defined in Table 5.7-2.

Energy Center Site

The proposed Energy Center site was re-zoned with the adoption of the Menifee North Specific Plan in 1994 from Rural Residential to the Specific Plan Zone. This particular zone incorporates the same permitted uses as are contained in the Manufacturing-Heavy (M-H) zoning district as described in Article XII of the Zoning Ordinance. Development standards for each of the 47 planning areas included as part of the Menifee North Specific Plan, including the Energy Center site, are provided in Article XVIIa, Section 17.73 (S.P. Zone Requirements and Standards for Specific Plan No. 260) of the Zoning Ordinance. Section 17.73 of Article XVIIa was added to the County Zoning Ordinance with the adoption of the Menifee North Specific Plan.

The Riverside County Zoning Ordinance (Ordinance No. 348) (December 2000) identifies permitted uses and sets forth development standards for the M-H zoning district in Article XII, Sections 12.2 and 12.4. The Riverside County M-H zoning district is intended to:

> (1) promote and attract industrial and manufacturing activities which will provide jobs to local residents and strengthen the County's economic base; (2) provide the necessary improvements to support industrial growth; (3) insure that new industry is compatible with uses on adjacent lands; and (4) protect industrial areas from encroachment by incompatible uses that may jeopardize industry (Riverside County Land Use Ordinance, Article XII, Section 12.1)

The M-H zone is the heaviest industrial zoning designation available in the Riverside County Land Use Ordinance. It is therefore the most applicable zoning district for power plant development and operation. Power plants are not specifically addressed as part of the M-H zone in the County's Land Use Ordinance, but could be permitted under a Conditional Use Permit. In fact, meetings and conversations with Riverside County planning staff revealed that the County would be inclined to permit the Energy Center under a Conditional Use Permit. Conditionally permitted uses include any of the several listed uses defined in the County Zoning Ordinance, and require Conditional Use Permits with special conditions tailored to each individual development. Uses that are closely related to power generation facilities, such as public utility substations, are permitted uses in the M-H zone (i.e., do not require a discretionary Conditional Use Permit). However, the County Zoning Ordinance states that any use not specifically listed in the permitted/conditional use subsections may be considered a permitted or conditionally permitted use providing that the Planning Director finds that the proposed use is substantially the same in character and intensity as those listed in the designated subsections (Section 12.2).

As an alternative to a Conditional Use Permit, the Energy Center could also be authorized under a Public Use Permit in the M-H zoning district. Section 18.29 of the County's Land Use Ordinance states that public utility uses may be allowed in any zone with an approved Public Use Permit.

Pursuant to Section 18.34 (Structure Height) of the County's Land Use Ordinance, structures other than buildings shall not exceed 50 feet unless a height up to 105 feet is approved. The proposed project's heat recovery steam generator (HRSG) stacks could be approximately 195 feet high. At this height, the project would exceed the County's height requirement. As a result, a height variance would be required for the height of the heat recovery steam generator stacks. The County Land Use Ordinance (Section 18.27) states that a variance shall be limited to modifications of property development standards.

Transmission Line Interconnection

The 0.9-mile long transmission interconnection would be constructed within SCE's existing utility easement. The interconnection would cross land zoned as Manufacturing-Heavy (M-H), Manufacturing-Medium (M-M), and Rural Residential (R-R). Descriptions of these particular zoning districts is provided in Table 5.7-2, whereas Table 5.7-3 describes the location of each zoning district in relation (i.e., by milepost) to the project facility.

Alternative A Menifee Road Natural Gas Pipeline and Compressor Station

The 0.9-mile long Alternative A Menifee Road natural gas pipeline and associated compressor station is located entirely within an unincorporated area of Riverside County. The pipeline will be located within or immediately adjacent to a combination of existing utility (i.e., Southern California Edison), roadway (e.g., McLaughlin Road), and railroad rights-of-way. Zoning designations adjacent to the portion of the route that would be installed within McLaughlin Road include Rural Residential (R-R), Manufacturing-Heavy (M-H), Manufacturing-Medium (M-M), and Manufacturing-Service Commercial (M-SC). The portion of the pipeline located adjacent to the railroad would cross land zoned as M-SC.

The associated compressor station would be constructed on land zoned M-SC. Construction and operation of the compressor station on areas zoned M-SC would require a Conditional Use Permit.

Alternative B Moreno Valley Natural Gas Pipeline

Approximately 12.3 miles of this 14.8-mile long pipeline alternative are located on unincorporated land under the jurisdiction of Riverside County; the remainder of this pipeline alternative is located in the City of Moreno Valley (see Figure 5.7-1). The pipeline would be constructed within existing roadway rights-of-ways, and therefore would not be subject to development standards under the County's Zoning Ordinance. Land adjacent to this alternative pipeline route are designated a mix of Manufacturing-Medium (M-M); Rural Residential (R-R); Industrial Park (I-P); Scenic Highway Commercial (C-P-S); One-Family Dwellings (R-1); Light Agriculture (A-1); and N-A.

Non-Reclaimable Wastewater Pipeline

The non-reclaimable wastewater pipeline is located on lands under the jurisdiction of the County of Riverside. The non-reclaimable wastewater pipeline would be constructed within existing roadway rights-of-ways and, therefore, would not be subject to development standards provided under the County's Zoning Ordinance (roadway rights-of-ways are not zoned for land use). Zoning designations for land located adjacent to the non-reclaimable wastewater pipeline by Milepost located are provided in Table 5.7-3, whereas Table 5.7-2 provides definitions of the zoning districts.

City of Moreno Valley. The Alternative B Moreno Valley natural gas pipeline is the only project component that would be constructed in the City of Moreno Valley.

In the City of Moreno Valley, the Alternative B natural gas pipeline would be located within existing roadway rights-of-ways. Placement of the pipeline within existing roadway rights-of-way would require an encroachment permit from the City's Public Works and Land Development Department (Vigil, 2001). Lands adjacent to the Alternative B gas pipeline route within the City of Moreno Valley are zoned for a mix of Open Space (OS), Agriculture (AG), Residential (6 dwelling units per acre) (R-6), and Golf Course (CG). Figure 5.7-3C illustrates zoning for all project components within the City of Moreno Valley. Zoning designations included within the project study area are defined in Table 5.7-2, whereas Table 5.7-3 describes adjacent zoning districts by milepost along the route.

City of Perris. The City's zoning ordinance was adopted in 1997 and is revised on an annual basis (Blair, 2001). The proposed non-reclaimable wastewater pipeline is the only project component located in the City of Perris.

The non-reclaimable wastewater pipeline would be installed within the right-of-way of McLaughlin Road. More specifically, the pipeline would cross through the City along McLaughlin between approximately MP 1.0 to 1.4. The City's jurisdiction within the project study area includes all lands north of the centerline of McLaughlin Road between Trumble Road and Barnett Road located east and west of Interstate 215, respectively (see Figure 5.7-1). An encroachment permit would be required from the City's Public Works Department to construct and operate the non-reclaimable wastewater pipeline within the McLaughlin Road right-of-way (Lopez, 2001). Lands located in roadway rights-of-ways are not zoned for land development purposes (Morales, 2001).

Within the City of Perris, lands that are included in the Energy Center study area are zoned Community Commercial (CC), Light Industrial (LI), and Business Park. The only zoning district located immediately adjacent to the proposed non-reclaimable wastewater pipeline is Community Commercial (CC). Figure 5.7-3A illustrates zoning designations for all project components. City of Perris zoning designations within the Energy Center study area and along the non-reclaimable wastewater pipeline route is defined in Table 5.7-2. The non-reclaimable wastewater pipeline is the only project component located within the limits of the City of Perris.

5.7.1.4 Current Land Use in Areas Where Project Components Will be Located

Current land use for project components is summarized in Table 5.7-3. Descriptions of existing land use for areas where the project components would be located are provided below.

Energy Center Site. The 45.8-acre site is presently used as irrigated farmland, with wheat being the predominant crop grown at the site. One 500 kV and one 161 kV electric power transmission line, each owned and operated by SCE, cross the southernmost portion of the site in an east-west direction. The SCE Valley Substation is located east of the site, near the southwest corner of Menifee Road and State Highway 74. Surrounding land uses are as follows: an asphalt production facility is located to the north; the Burlington Northern and Santa Fe (BNSF) railroad traverses the northeastern corner of the Energy Center site; an asphalt recycling storage facility is to the east; non-conforming rural residential residences are to the south of McLaughlin Road; and a heavy construction equipment storage yard is to the west of the site.

Current land uses within one mile of the Energy Center site are illustrated in Figure 5.7-4A. Industrial, commercial, agricultural and residential uses are the predominant land uses within one mile of the proposed Energy Center site (see Figure 5.7-4A). Rural residential development (1-3 dwelling units per acre) and medium-density residential development (3-5 dwelling units per acre) is interspersed throughout the project area. Medium-density residential development is concentrated in the areas north of the Energy Center site in and near the community of Romoland, and also along the southern portion of the proposed non-reclaimable wastewater pipeline within the master-planned retirement community of Sun City. Romoland is located approximately ¼ mile north of the Energy Center site, and Sun City is located approximately 3 miles southwest of the proposed Energy Center site.

Commercial development is concentrated on the north and south sides of Ethanac Road and Highway 74, and generally between Sherman and Palomar Roads within the vicinity of the Energy Center site. Commercial development within the Energy Center study area typically consists of convenience stores, hotels/motels, gas stations, restaurants, and auto repair and salvage yard establishments. Industrial development also is interspersed along the Ethanac Road and Highway 74 corridors. Industrial development within the Energy Center study area typically consists of auto salvage yards, asphalt production facilities, and Southern California Edison's (SCE) substation located less than a mile from the Energy Center site at the southwest corner of Highway 74 and Menifee Road. Interspersed areas of commercial development were identified within the vicinity of the non-reclaimable wastewater pipeline route within Sun City.

Agricultural land is interspersed throughout the area surrounding the proposed Energy Center site, but is generally concentrated east and west of Menifee Road. Agricultural development also exists south of the proposed Energy Center site along the north and south sides of the McLaughlin Road alignment.

One school, the Romoland Elementary School, is located approximately 0.25 miles north of the proposed Energy Center site near the northeast corner of Antelope Road and Highway 74.

Finally, there would be no off-site construction laydown or parking areas required for the construction of the proposed Energy Center. All such areas would be limited to the Energy Center site itself.

Transmission Line Interconnection. The proposed 0.9-mile-long transmission line route would be located within an existing east-west utility/transmission line easement owned and operated by SCE (see Figure 5.7-2A). Land on the south side of the proposed transmission line route is used primarily for unirrigated agricultural (cropland) purposes with some rural residential uses south of McLaughlin Road; commercial and industrial uses are on the north side of the route.

Alternative A Menifee Road Natural Gas Pipeline and Compressor Station. This 0.9-mile long natural gas pipeline would be located within or immediately adjacent to a combination of existing utility (i.e., Southern California Edison), roadway (McLaughlin Road), and railroad rights-of-way. Land use adjacent to the Alternative A pipeline is unirrigated agricultural along McLaughlin Road (see Figure 5.7-1A). The proposed compressor station associated with the Alternative A pipeline would be located on lands currently used for agricultural purposes.

Alternative B Moreno Valley Natural Gas Pipeline. Land use adjacent to the proposed 14.8-mile long natural gas pipeline consists of a mix of industrial, agricultural, rural residential, open space, and commercial development as illustrated in Figure 5.7-4A, B, and C. Some of the agricultural land along the san Jacinto River west of San Jacinto Road is irrigated. The pipeline alignment would be located within existing roadway rights-of-way from MP 0.3 to MP 5.5, and from MP 9.1 to MP 14.8. From MP 5.5 to MP 9.1, the pipeline route would be within agricultural lands.

One recreational facility was identified within the vicinity of the natural gas pipeline: a shooting range at approximately Milepost 8.8.

The County's Lakeview/Nuevo Community Plan (1993) indicates that the northern portion of the pipeline crosses the San Jacinto Wildlife Area (within the existing right-of-way of Davis Road) from approximately MP 9.2 to 13.3. This 3,104-acre wildlife area is managed by the California Department of Fish and Game and has been designated to preserve and protect various sensitive plant and animal species (e.g., Stephens' kangaroo rat). More specific information regarding biological resources within the project area can be found in Section 5.3 of this application.

Non-Reclaimable Wastewater Pipeline. Land uses along the 4.7-mile non-reclaimable wastewater pipeline are illustrated in Figure 5.7-2A, and summarized in Table 5.7-3. Adjacent land uses include agricultural and rural residential uses along McLaughlin Road and medium-density residential uses along Murietta Road. Areas of commercial development are also located along the pipeline route in the community of Sun City.

Four churches/places of worship were identified near the proposed non-reclaimable wastewater pipeline along Murrieta Road in and near the community of Sun City.

5.7.2 Environmental Impacts

In accordance with CEQA Guidelines, Appendix G, IX Land Use and Planning, a project may have a significant affect on the environment if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Potential environmental impacts relative to land use are discussed for the Energy Center study area, which includes lands within 1 mile of the proposed Energy Center site and within a one-half mile wide corridor along the Energy Center's linear facilities (i.e., 0.25-mile on either side of linear facilities). The following section identifies potential construction- and operation-related impacts, and cumulative impacts. Applicable habitat conservation plans and natural community plans are discussed in Section 5.3, Biological Resources.

5.7.2.1 Compatibility with Existing and Proposed Land Uses

Energy Center Site. The Energy Center facility is used for agricultural purposes (i.e., cropland). The proposed Energy Center will convert approximately 35 acres (see Table 3.8-3) of agricultural land to industrial uses. The electrical generation facilities will be situated in the northern part of the site, adjacent to the asphalt production facility that is immediately north of the Energy Center site. An asphalt recycling facility occupies the property immediately east of the Energy Center site. Land immediately west of the site is used for storage of heavy construction equipment by Kewitt Construction Company. The surrounding industrial uses to the north, east, and west of the site are compatible uses and will be unaffected by installation of the new facilities. The southern portion of the property is adjacent to a SCE transmission line corridor. Interspersed rural residential developments, intermixed with agricultural (cropland) areas, are located south of the site but are separated from the generation facility by undeveloped areas of the site and the existing SCE transmission line corridor. Given the specific location of the proposed facilities on the Energy Center site, and the existing industrial businesses adjacent to the site, the proposed project is consistent with the existing uses on these adjacent parcels.

Transmission Line Interconnection. The proposed 0.9-mile long 500 kV transmission line interconnection is not expected to have a significant impact on land use. The proposed transmission interconnection would be located within an existing SCE transmission line utility corridor. Lands crossed by the proposed route include agricultural land in SCE's existing easement. Once the transmission line is installed, land will be restored to its original condition. Operational impacts will be limited to the total area permanently affected by the

poles (i.e., non-usable land following construction). Structures will be located to reduce conflicts with existing transmission line facilities. An aerial crossing agreement between BNSF and the Applicant would be required for installation of the transmission line across the railroad location.

Alternative A Menifee Road Natural Gas Pipeline and Compressor Station. This 0.9-mile long natural gas pipeline alternative will not cause significant land use impacts, change the character of the area, or alter the pattern of existing land uses. This particular alternative crosses a mix of vacant and agricultural lands within SCE's existing utility easement and within or adjacent to McLaughlin Road and the BNSF railway rights-of-ways. The associated compressor station would be located on 6.6 acres of land currently used for agricultural purposes. Installation of the buried pipeline would not result in significant changes to existing land uses or circulation patterns. The pipeline would be buried at depths that would minimize disruptions to agricultural uses.

Alternative B Moreno Valley Natural Gas Pipeline. The 14.8-mile-long natural gas pipeline will not cause significant land use impacts, change the character of the area, or alter the pattern of existing land uses. The pipeline would be located within existing roadway rights-of-way or beneath agricultural lands, thereby minimizing impacts to surrounding land uses. The pipeline would be buried at a depth that would avoid disrupting agricultural activities.

Land use adjacent to this route includes rural residential, commercial, agricultural, and open space areas. The pipeline traverses the San Jacinto Wildlife Area between approximately MP 9.2 and MP 11.5. However, constructing the pipeline within the existing right-of-way of Davis Road would minimize impacts to the Area. Short-term disruptions would occur during the construction phase of the project. However, the natural gas pipeline will not cause significant land use impacts, change the character of the area, or alter the pattern of existing land uses.

Non-Reclaimable Wastewater Pipeline. Construction of the proposed 4.7-mile non-reclaimable wastewater pipeline is not expected to have significant impacts on existing or proposed land use. The pipeline would be constructed within road right-of-way along unimproved portions of McLaughlin Road and within the pavement of Murrieta Road through the community of Sun City. Constructing the pipeline within existing roadway rights-of-way would minimize impacts to adjacent land uses.

5.7.2.2 Consistency with Land Use Plans, Policies, and Regulations

Energy Center Site. The Energy Center will be located on lands that are designated Industrial under the County's Menifee North Specific Plan. The Energy Center site is zoned M-H under the County's Zoning Ordinance, the heaviest Industrial-related zoning district provided in the County's Zoning Ordinance. The Energy Center facility will occupy approximately 35 acres of the 45.8-acre project site. The Energy Center will be consistent with county and local government planning and policies. Based on consultations with staff at the Riverside County

Transportation and Land Management Agency, the proposed Energy Center would likely be permitted under a Conditional Use Permit in the M-H zoning district. However, an alternative approach would be to permit the project under a Public Use Permit.

The Energy Center will be consistent with the County's Industrial land use designation because the M-H zoning district – within which the Energy Center site is located – is one of the zones that corresponds and is consistent with the Industrial classification. Furthermore, the Energy Center is a conditionally permitted use in the M-H zoning district subject to its compliance with applicable development standards. A variance will be required for the HRSG stacks to exceed the height limit set forth in the County's Zoning Ordinance within the M-H zoning district. Operation of the Energy Center will not significantly impact land use of the Energy Center site or surrounding land uses.

Transmission Line Interconnection. The proposed transmission interconnection would be located primarily within SCE's existing transmission line easement on lands designated as Industrial and Utility Easements/Existing Uses under the Menifee North Specific Plan. Lands crossed by the proposed route are zoned Rural Residential (R-R), Manufacturing-Heavy (M-H), and Manufacturing-Medium (M-M) (see Figure 5.7-3A).

The transmission line will be consistent with the County's Industrial and Utility Easements/Existing Uses land use designations because the M-H and M-M are zones that are consistent with the aforementioned land use classifications. In addition, the transmission interconnection is a conditionally permitted use within the R-R zone. This zoning district allows for the construction of utility structures and pertinent facilities necessary and incidental to the development and transmission of, among other things, electrical power and gas (see Article V, Section 5.1 of the County Zoning Ordinance). Furthermore, the proposed transmission line would be located entirely within SCE's existing utility easement. Therefore, this project component will be consistent with county planning and policies.

Alternative A Menifee Road Natural Gas Pipeline and Compressor Station. Within Riverside County, the Alternative A natural gas pipeline route would be constructed within existing roadway rights-of-ways. Public utilities are a conditionally permitted use within any zoning district provided that a Public Use Permit is granted for the facility in accordance with Section 18.29 of Riverside County's Zoning Ordinance. Because public/roadway rights-of-ways are not designated for land use under the County's General Plan, or zoned for any particular land use. The Alternative A natural gas pipeline would be consistent with applicable County standards. Such utilities are permitted uses within public easements. An encroachment permit would be required however form the County's Transportation and Land Management Agency for installation of the pipeline within existing roadway rights-of-ways.

The compressor station proposed near the northwest corner of Menifee and Rouse Roads would be constructed on agricultural lands (i.e., cropland) within the M-SC zoning district. Although natural gas compressor stations are not explicitly listed as a permitted use within this particular zoning district, the Planning Director has the authority to authorize the facility as a permitted or conditionally permitted use if it is shown that the proposed use is

substantially the same in character and intensity as those listed in the designated subsections of the Zoning Code (Section 12.2). Public utility substations and storage yards are permitted uses within the M-SC zoning district. The proposed compressor station is consistent with the planning and development policies of the County.

IEEC will obtain appropriate easements in areas where construction impacts property owners outside existing public easements/rights-of-ways.

Alternative B Moreno Valley Natural Gas Pipeline. Within Riverside County, the Alternative B natural gas pipeline route would be constructed within existing roadway rights-of-ways. Public utilities are a conditionally permitted use within any zoning district provided that a Public Use Permit is granted for the facility in accordance with Section 18.29 of Riverside County's Zoning Ordinance. Because public/roadway rights-of-ways are not designated for land use under the County's General Plan, or zoned for any particular land use. The Alternative B natural gas pipeline would be consistent with applicable County standards. Such utilities are permitted uses within public easements. An encroachment permit would be required however form the County's Transportation and Land Management Agency for installation of the pipeline within existing roadway rights-of-ways.

Construction of the pipeline within the City of Moreno Valley would occur within existing roadway rights-of-way, including Davis Road, Air Forbes Avenue, and Virginia Street. Lands located within existing roadway rights-of-way are not subject to zoning code/ordinance standards. Public utilities, like natural gas pipelines, are uses that are conditionally permitted within roadway rights-of-ways subject to compliance with any applicable development standards. Construction of the pipeline within the rights-of-way of city-owned and city-maintained roadways would require an Encroachment Permit from the City of Moreno Valley's Public Works and Land Development Department.

During the several months when construction takes place, excavation and installation of the natural gas pipeline will have the potential to cause some damage to crops located in the right-of-way, restrict irrigation, and lead to soil compaction from the operation of heavy equipment. The applicant will obtain easements from property owners, as necessary. Once the pipeline is installed, adjacent agricultural uses will not be restricted by the presence of the natural gas pipeline. Installation of the pipeline is not anticipated to result in significant impacts to adjacent land uses.

Non-Reclaimable Wastewater Pipeline. The proposed 4.7-mile non-reclaimable wastewater pipeline will be constructed within existing roadway and utility rights-of-way, thereby minimizing impacts to adjacent land uses. Approximately 2.0 miles of the route would cross unimproved (i.e., unpaved) portions of McLaughlin Road that parallel the edges of primarily agricultural properties. The remainder of the pipeline would be constructed within improved (i.e., paved) portions of McLaughlin and Murrieta Roads. Pipelines are a permitted use in any zoning district provided the project meets the requirements under a Public Use Permit as described in Section 18.29 of the County Zoning Ordinance.

After completion of construction, the land will be restored to its original condition. Once the pipeline is installed, adjacent agricultural uses will not be restricted by the presence of the non-reclaimable wastewater pipeline.

5.7.3 Mitigation Measures

The land use impact analysis assumes implementation of Applicant-proposed mitigation measures and Best Management Practices (BMP) where needed to reduce significant impacts with respect to air quality, noise, visual resources, and traffic and transportation (see Sections 5.2, 5.9, 5.10, and 5.11, respectively). Although no significant land use impacts are identified in the land use analysis, the following are general mitigation measures that will be implemented/incorporated into project design for the proposed IEEC. These mitigation measures will help to avoid or minimize land use impacts associated with the construction and operation of the proposed Energy Center.

- Obtain necessary land use approvals and permits (i.e., Conditional Use Permits, Variance, and Encroachment Permits)
- Schedule construction scheduling (e.g., daily/weekly scheduling) to avoid conflicts with agricultural operations, if construction activities extend outside existing public easements/rights-of-ways.
- Repair or replace agricultural facilities (e.g., irrigation systems, fences, and gates) that are damaged during construction of the Alternative B Moreno Valley natural gas pipeline.

No significant unavoidable adverse impact on land use resources is anticipated as a result of the construction and operation of IEEC.

5.7.4 Cumulative Impacts

Properties located adjacent to the north and south of the project site include a mixture of lots zoned for manufacturing and industrial uses. While it is possible that approval of this project will stimulate additional requests for industrial use in the area, such uses have been anticipated and planned for under Riverside County's Menifee North Specific Plan (1994). The proposed Energy Center site is located in Planning Area 3 of the County's Menifee North Specific Plan; the 45.8-acre site accounts for approximately 23 percent of the 197.5 acres of industrial lands within the planning area designated for such use. The approximately 35 acres developed as a result of this project would be consistent with the planned use and would not cause significant cumulative impacts.

Table 5.7-4 includes a listing of discretionary permits (e.g., conditional use permits, plot plans, etc.) that have been approved or are under review within a one-mile radius of the proposed Energy Center site. None of the identified discretionary approvals would cause a significant change in land use patterns and, taken together with the proposed projects, there would not be a significant cumulative impact.

Table 5.7-4. Discretionary Projects Subject Review from January 2000 to July 2001 within a One-Mile Radius

Case Number	Case Status	Decision Date	Description	Location (distance from IEEC)
CZ06422	Approved	09/26/2000	Request for change of zone from R-T to R-1	SW ⅞ mile
CUP02479	Approved	N/A	"OLDPLAN, HIST"	NW ¾ mile
CUP03312	Approved	03/14/2000	ARCO AM/PM Mini Mart Gas Station	NW ¾ mile
CUP03291S1	Approved	06/20/2000	Revise driveway cut on Hwy 74 to curb and gutter	E ⅞ mile
CUP03144S1	Approved	09/12/2000	Phase 2 concrete batch plant	N < ¼ mile
CUP03300	Approved	11/28/2000	Heavy equipment storage yard/warehouse/offices	W ¼ mile
CUP03293	Approved	06/20/2000	Fast food restaurant	W ¾ mile
PP16442	Void	03/20/2000	Plot plan for 4 buildings to manufacture air pollution equipment	NW ¾ mile
PP16783	Approved	11/16/2000	Landscaping plot plan for CUP03312	NW ¾ mile
PP16760	Approved	12/05/2000	Model home complex for TRE29113 – 5 houses	SW ⅞ mile
PP17134	Applied	05/22/2001	Landscape plans for front yard/TR29113 – 1	SW ⅞ mile
PP16919	Approved	02/14/2001	Add 2 faced 5x8 sign (Taco Bell)	SW 1 mile
PP08355S2	Approved	06/28/2000	Remove mansard roof; install signs and paneled walls	SW 1 mile
PP16208	Approved	04/23/2001	Contractor storage yard w/caretaker unit	W < ¼ mile
PP16814	Approved	12/04/2000	Pole sign/wall signs/canopy sign – ARCO	E ⅞ mile
PP16245	Approved	03/24/2000	Landscaping for CUP03291 (ARCO AM/PM Mini-mart)	E ⅞ mile
PP15480S1	Approved	03/01/2000	SC to Plot Plan 15480	NW ¼ mile
TT 29494	Processing Hearing Planning Commission 7/25/01 staff recommends approval		Map reference Fiesta Homes 325 development units (DUs)	NE ¾ mile

Table 5.7-4. Discretionary Projects Subject Review from January 2000 to July 2001 within a One-Mile Radius (Continued)

Case Number	Case Status	Decision Date	Description	Location (distance from IEEC)
TT 29113	Approved Under construction first phase approximately 20 homes in framing stage		Map reference TT 29113 138 DUs	SW ⅞ mile
TT 30161 Not yet submitted	Proposed 99 residential lots with 4.34 acres of commercial on west end at Encanto will be submitted August 15, 2001		Map reference SCE project site	SW ¾ mile
Not yet submitted	Proposed 166 lots partially graded for fill for Tract 29113		Map reference boundary adjacent to SCE project site and Ashby 667 DUs	SW ⅛ mile
Not yet submitted	Ashby Financial under option to purchase		667 DUs proposed	SW ¼ mile
SP 260	Approved		Menifee North Specific Plan approved 12/21/94. Subject property is within Menifee North.	NE ⅛ mile
Withdrawn	To be resubmitted to County of Riverside November 2001		Menifee Ranch Specific Plan	E ⅞ mile

Source: Riverside County LMS, 2001 (www.tmla.co.riverside.ca.us/lms/lms.htm#one)

5.7.5 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the IEEC including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS. Applicable LORS pertaining to land use as they relate to the proposed IEEC include the following:

5.7.5.1 State Authorities and Administering Agencies

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2. Subchapter 5, Appendix B, Part (i)(3) and (4). The authorities include provisions to assure protection of environmental quality, including compatibility of a proposed project with relevant land use plans. The administering agency for this authority is the CEC.

California Streets and Highways Code § 670. The code prescribes permit requirements for encroachment upon state highway rights-of-way. The administering agency for the above authority is the California Department of Transportation (CalTrans).

5.7.5.2 Local Authorities and Administering Agencies

Riverside County General Plan. The administering agency for this authority is the County of Riverside Transportation and Land Management Agency.

Riverside County Zoning Ordinance. The Zoning Ordinance was adopted by the County in 1948 to regulate land uses and implement the General Plan through development controls. The current zoning for the IEEC facility is M-H. The M-H zoning classification is the most intensive industrial classification in the County's zoning scheme, included in the Menifee North Specific Plan (1994). Although the zoning classification does not specifically refer to natural gas power plants, the County's Zoning Ordinance allows for the development of such facilities under a Public Use Permit or Conditional Use Permit; a Public Use Permit may be obtained within any zoning district in accordance with Section 18.29 of the Zoning Ordinance. Uses that are closely related to power generation, such as public utility substations, are permitted uses (do not require a discretionary conditional use permit) in the M-H zone. Furthermore, petroleum refineries and explosives manufacturing facilities – uses that could be considered similar or more intense industrial uses than a power plant – are listed in the County Zoning Code as conditionally permitted uses in the M-H zone (see Article XII, Section 12.2 of the County Zoning Ordinance).

The administering agency for the above authorities is the County of Riverside Transportation and Land Management Agency. The following provisions of the Riverside County Land Use Zoning Ordinance (Ordinance No. 348) are applicable to the proposed project:

Section 12.2 – Regulates uses in the M-H zone.

Section 12.4(a) – Imposes a minimum lot size within M-H zone of 10,000 square feet with a minimum average width of 75 feet, except that a lot size not less then 7,000 square feet and an

average width of not less than 65 feet may be permitted when sewers are available and will be utilized for the development.

Section 12.4(b) – Imposes the following minimum setbacks in the M-H zoning district:

- Front, side, or rear yard setback shall be 25 feet from property line when such yards adjoin a lot zoned R-R, R-1, R-A, R-2, R-3, R-4, R-6, R-T, R-T-R, or W-2-M.
- There is no minimum front, side, or rear yard setback when such yards adjoin a lot with a zoning classification other than those listed above.
- Where the front, side, or rear yard adjoins a street, the minimum setback shall be 25 feet from the property line.
- The setback area shall only be used for driveways, automobile parking, or landscaping with the exception of those portions of the setback area for which landscaping is required in Section 12.4(e) (see below). A setback area that adjoins a street separating it from a lot with a zoning classification other than those specified in 12.4(b), may also be used for loading docks.

Section 12.4(c) – This section imposes height requirements for structures, including buildings, in the M-H zone as follows:

- Structures shall not exceed 40 feet at the yard setback line.
- Buildings shall not exceed 50 feet unless a height up to 75 feet is approved pursuant to Section 18.34 of the County Zoning Ordinance
- Structures other than buildings shall not exceed 50 feet unless a height up to 105 feet is approved pursuant to Section 18.34 of the County Zoning Ordinance.

Section 12.4(e) – Imposes the following landscaping requirements:

- A minimum of 10 percent of the site proposed for development shall be landscaped and irrigated.
- A minimum 10-foot-wide strip adjacent to street right-of-way lines shall be appropriately landscaped and maintained, except for designated pedestrian and vehicular accessways. The landscaping strip shall not include landscaping located within the street right-of-way.
- A minimum landscaped strip of 20 feet for areas adjacent to lots zoned R-R, R-1, R-A, R-2, R-3, R-4, R-6, R-T, R-T-R, or W-2-M, or separated by a street from a lot with the above-referenced zoning, shall be landscaped and maintained, unless a tree screen or other buffer treatment is approved by the hearing officer or body. In no case shall landscaping be less than 10 feet wide excluding curbing.

Section 12.4(f) – Parking areas must comply with the provisions of Section 18.12 of the Zoning Ordinance.

Section 12.4(i) – Applies development standards to public utilities.

Section 12.4(k) – This section requires that all lighting fixtures, including spot lights, electrical reflectors, and other means of illumination for signs, structures, landscaping, parking, loading, unloading and similar areas, shall be focused, directed, and arranged to prevent glare or direct illumination on streets or adjoining properties.

Section 17.73 – This section, added in connection with the adoption of the Menifee North Specific Plan (Specific Plan No. 260), sets forth particular permitted uses and development standards for each of the 47 Planning Areas included in the Plan. This includes Planning Area 3 within which the proposed Energy Center site is located.

Section 18.12 – Requires two parking spaces for each of three employees on each of the two busiest employee shifts, plus one space per company-owned vehicle.

Section 18.29 – This section permits utility and public service facilities through obtaining a Public Use Permit from the Planning Commission if that Commission finds that the "...use will not be detrimental to the health, safety, or public welfare of the community." The Planning Director has made an administrative determination that the proposed uses are appropriate due to their similarity to uses including public utility and service facilities (Riverside County, 2000).

Menifee North Specific Plan. The project is generally consistent with the "Industrial" land use designation for the project site under the Menifee North Specific Plan. The administering agency for this Plan is the County of Riverside Planning Department.

Sun City/Menifee Valley Community Plan. The administering agency for this authority is the Riverside County Planning Department. The wastewater pipeline would be constructed and operated within the existing rights-of-way of McLaughlin and Murrieta Roads; General Plan Land Use and zoning district designations do not apply to roadway rights-of-way. However, an encroachment permit would be required from the County's Transportation and Land Management Agency.

City of Moreno Valley Zoning Ordinance. The Zoning Ordinance was adopted by the City to regulate land uses and implement the General Plan. An Encroachment Permit will be required for construction and operation of the natural gas pipeline within existing roadway rights-of-way maintained by the City.

5.7.5.3 IEEC Compliance with Land Use LORS

The IEEC will comply with state and local land use LORS as described in this section.

5.7.6 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to land use for IEEC are provided in Table 5.7-5.

Table 5.7-5. Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Riverside County Transportation and Land Management Agency 4080 Lemon Street, 7th Floor Riverside, CA 92501	John Garrett (909) 955-6790	Encroachment permits for water supply and natural gas pipeline.
Riverside County Transportation and Land Management Agency 4080 Lemon Street, 7th Floor Riverside, CA 92501	Keith Gardner (909) 955-9076	Public Use Permit/Conditional Use Permit for project components on overland/cross-country lands (e.g., outside of existing roadway rights-of-ways).
City of Moreno Valley, Public Works-Land Development Department P.O. Box 88005 Moreno Valley, CA 92552	Ernie Vigil (909) 413-3111	Use Permit for pipeline on agricultural lands Encroachment permits for natural gas pipeline.
Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501	Various Staff (909) 955-3200	Conditional Use Permit or Public Use Permit for power plant facility and natural gas pipeline compressor station; variance from height limitation.
Riverside County Transportation Commission 3560 University Avenue Riverside, CA 92501	Claudia Chase (909) 787-7937 Brian Cunderland (909) 787-7994	License Agreement for aerial crossing of Burlington Northern and Santa Fe railroad.
Department of Conservation, Division of Land Resource Protection 801 K Street, MS 13-71 Sacramento, CA 95814	Jim Nordstrom (916) 324-0859	Information regarding lands in project area covered under the Williamson Act.

5.7.7 Permits Required and Permit Schedule

Agency-required permits and permit schedule related to land use are summarized in Table 5.7-6.

Table 5.7-6. Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Riverside County Encroachment Permit(s) for Wastewater Supply and Natural Gas Pipeline Alternatives A and B	2-3 months for processing and approval.
City of Moreno Valley Encroachment Permit for natural gas pipeline Alternative B	2-3 months for processing and approval.
City of Perris Encroachment Permit for Wastewater Pipeline	2-4 months for processing and approval.
California Department of Transportation Encroachment Permit for Interstate 215 Crossing for Wastewater Pipeline	3-6 months for processing and approval.
Riverside County Conditional Use/Public Use Permit for pipeline natural gas pipeline, Alternative A on overland/cross-country lands (e.g., outside of existing roadway rights-of-ways) (Alternative B)	3-6 months for processing and approval. Conditional Use Permit application submitted after AFC filing. Final approval will occur after CEC certification.
Riverside County Variance for exceeding height limit required for HRSG stacks	6 months for processing and approval.
License Agreement for transmission line interconnection crossing of Burlington Northern & Santa Fe Railroad	2-3 months for processing and approval.

5.7.8 References

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5.8 SOCIOECONOMICS

This section discusses the socioeconomic effects of the proposed project on regional and community resources. The regional area includes Riverside County and the Riverside-San Bernardino Standard Metropolitan Statistical Area (SMSA). The immediate project area includes unincorporated portions of southwestern Riverside County, the communities of Romoland and Sun City, and the southeastern portion of the City of Perris. Population data and growth trends, the economic base of the region, workforce requirements and availability, housing, and public services are considered in this section.

5.8.1 Affected Environment

The proposed Inland Empire Energy Center (IEEC or Energy Center) site is located in Riverside County approximately 6 miles west of the City of Hemet and about 30 miles southeast of the City of Riverside. The proposed Energy Center site is located near the communities of Romoland and Sun City in an unincorporated portion of Riverside County on land bordered to the west by Interstate 215 and to the east by Menifee Road. Ethanac and McLaughlin Roads are the nearest roads to the north and south of the proposed Energy Center site, respectively (see Figure 3.2-1). The Energy Center includes the following project features:

- The Energy Center site, approximately 45.8-acres
- Two natural gas pipeline alternatives:
  - Alternative A Menifee Road natural gas pipeline, approximately 0.9 mile in length. This alternative gas pipeline route also includes a compressor station on a 2.6 acre site within a 6.6 acre parcel.
  - Alternative B Moreno Valley natural gas pipeline, approximately 14.8 miles in length will connect to a Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.
- A non-reclaimable wastewater pipeline approximately 4.7 miles in length
- A transmission line, approximately 0.9 mile in length.

As shown on Figure 5.7-3 (Section 5.7, Land Use), the Energy Center site is currently used as cropland. Crops also occupy most of the land immediately to the east, south and west of the project site. An asphalt production facility is located immediately north of the proposed project site. Low-density residential uses are intermixed within the agricultural lands located south of the project site. High-density residential areas are generally concentrated north of the project site in the community of Romoland.

5.8.1.1 Existing and Projected Employment

The economy of the Riverside County area has traditionally had a strong agricultural component. However, within the last 50 years, agriculture has dropped to 2.9 percent of total employment. Services is the largest industry in the county, accounting for 27.5 percent of total employment, with health service being the largest component of the service industry. Other

significant industry sectors providing employment are retail trade at 20.3 percent and government at 17.9 percent (EDD, 2001).

The California Employment Development Department (EDD) reported that for the month of May, 2001 the Riverside-San Bernardino MSA had a total civilian labor force of 1,538,700 persons and an unemployment rate of 4.4 percent (EDD, 2001). In May 2001, the Riverside area employment showed a net increase of 0.3 percent in employment from the levels measured in March 2001 and a net increase of 1.3 percent in employment since May 2000. In May 2001, the EDD estimated that the construction sector employed 81,000 persons, an increase of 4.8 percent since May 2000, and that 51,300 were employed in the transportation and public utility sector, an increase of 1.4 percent since May 2000 (EDD, 2001).

Future employment levels cannot be precisely predicted, however the overall total employment in Riverside County is expected to continue to increase in response to the expected population increase described in the following section.

5.8.1.2 Demographics and Community Trends

According to the US Census Bureau, preliminary data suggest that the population of Riverside County grew from 1,170,413 to 1,545,387 between 1990 and 2000, which represents an annual average growth rate of approximately than 3.2 percent (US Census, 2000).

The Riverside Economic Development Agency (EDA) reports that the most rapid growth in Riverside County is occurring in the cities of Temecula and La Quinta and their surrounding unincorporated areas, in the southwestern and central portions of the County, respectively (EDA, 2001). The EDA bases its county population change estimates on US Census Bureau data.

Population forecasts by the EDD indicate that the population of Riverside County is expected to reach 2,773,400 by the year 2020 (EDD, 2001). According to these projections, the influx of new residents will add approximately 1,202,500 or 77 percent to the current population.

For racial and economic demographic information see Section 5.8.3, Environmental Justice Screening Analysis.

5.8.1.3 Housing

In 2000, Riverside County had approximately 582,419 dwelling units, increasing from the 483,847 units that existed in 1990. The additional 98,572 units represent an average annual growth rate in dwelling units of less than 2 percent (US Census, 2001). According to federal housing standards, the housing market in an area is considered to be in short supply when the overall vacancy rate is less than 5 percent. In 2000, the California Department of Finance (CDOF) reported a Riverside County housing vacancy rate of 16.97 percent (CDOF, 2000). At these levels, the housing market in Riverside County is not considered to be in short supply.

5.8.1.4 Public Services and Facilities

A number of public services and facilities are provided to residents in the project area, including water and sewer services, police services, fire protection services, and school facilities.

Water

The Eastern Municipal Water District (EMWD) supplies water in and around the communities surrounding the proposed project; the Energy Center site is included in this service area. The Urban Water Management Plan (EMWD, 2000) describes the water system analysis, identifies improvements to correct existing deficiencies and serve future growth, and presents the estimated costs and phasing of the recommended improvements.

Additional discussion of water supply is provided in Section 5.4, Water Resources.

Sewer

Wastewater collection, treatment, and disposal services in the Energy Center area are provided by the EMWD. Sewage is collected locally and transported by sewers to one of the five Regional Water Reclamation Facilities (RWRF) within its service area. The RWRFs provide tertiary sewage treatment through a pure oxygen activated sludge process and chemical disinfection. The treated effluent is stored on site before much of it is sold for municipal, agricultural, or public use (EMWD, 2001).

Police

Police services in most parts of Riverside County are provided by the Riverside County Sheriff's Department. In 2001, the Riverside County Sheriff's Department stated that the average response time for calls in the unincorporated portions of Riverside County was estimated to be 15 minutes. The Riverside County Sheriff's station serving the Energy Center area is the Perris substation located at 403 E. 4th in the City of Perris. Average response time to calls in the vicinity of the Energy Center site is estimated at no longer than 15 minutes (Srgt. B. Deluney, Riverside County Sheriff's Department, personal communication, 2001).

Fire and Emergency Services

The Riverside County Fire Department (RCFD) serves the project area. The closest station is Station No. 7, located at 27860 Bradley Road in Sun City, approximately 2.5 miles from the project site. Station No. 7 is staffed on a 24-hour basis. The average response time to calls is 5 minutes throughout the service area. The response time to the project site is currently estimated at 5 minutes (Officer Wetherholt, RCFD, personal communication, 2001).

Emergency medical services are provided by county sheriff and fire units and local ambulance services. There are a number of emergency hospitals in the Riverside area that can provide most types of routine and emergency medical treatment, including intensive care. The closest emergency medical facility to the project site is the Menifee Valley Medical Center, located at

28400 McCall Boulevard in Sun City (Officer Wetherholt, RCFD, personal communication, 2001).

Schools

The immediate project area is served by the following school districts:

- Romoland School District
- Perris Union High School District

The Romoland School District maintains two facilities in the city of Romoland. Romoland Elementary School is located at 25890 Antelope and Harvest Valley Elementary School is located at 29955 Watson Road. Both schools are elementary education facilities, serving kindergarten through eighth grade. During the 2000-2001 school year, attendance at both schools totaled 1,411 students. (J. Lussier, Romoland School District, personal communication, 2001).

The Perris Union High School District (PUHSD) maintains six facilities in Perris Valley. Total enrollment within the district is approximately 6,000 students (PUHSD, 2001). Children attending either of the two elementary education facilities within the Romoland School District would attend Perris High School. Perris High is located at 175 East Nuevo Road in the City of Perris.

Recreation

The County of Riverside maintains 35 regional parks throughout the County, with the majority of the parks located in developed portions of western Riverside County and along the Colorado River. The Riverside County Regional Parks and Open Space district is currently anticipating the need for a number of new parks in the central region of the County. There are no county or state maintained regional parks with a one-mile radius of the project site. (Riverside County, 2001).

Sun City, Perris, and the community of Romoland all maintain local parks. It is anticipated that newly developed communities in the surrounding vicinity, such as Menifee del Norte, will include neighborhood parks, but it is unknown when these parks will be completed. Currently, there is no city maintained parks within a one-mile radius of the project site.

5.8.2 Environmental Impacts

The potential socioeconomic impacts of the Energy Center were determined by comparing the construction and operational workforce with the socioeconomic resources of the surrounding communities of Sun City, Romoland, and Perris as well as unincorporated areas in the vicinity of the Energy Center area. Regional consequences were determined by comparing the Energy Center workforce with the socioeconomic resources of Riverside County. Potential socioeconomic impacts can include effects on a community's population, economic base, employment, housing, and public services and facilities, including water supplies, waste water treatment facilities, fire and police services, and school facilities. CEQA clarifies that an

"economic or social change by itself shall not be considered a significant effect on the environment." Rather, a "social or economic change related to a physical change may be considered in determining whether the physical change is significant (Title 14 California Code of Regulations § 15382). CEQA guidelines (Title 14 California Code of Regulations § 15000 et. Seq. Appendix B XII, XIII, XIV) explain that a significant socioeconomic effect may exist if a project would:

- Induce substantial growth or concentration of population, either directly or indirectly
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere
- Displace substantial numbers of people, necessitating the construction of housing elsewhere
- Disrupt or divide the physical arrangement of an established community
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following: fire protection, police protection, schools, parks, or other public facilities
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated
- Does the project include recreational facilities or require the construction of expansion of recreational facilities that might have an adverse physical effect on the environment.

Senate Bill 28 (approved by Governor Gray Davis and filed with the Secretary of State on May 22, 2001) adds new subsection (f) to California Public Resources Code § 25514 setting the following additional requirement:

- . . . whether increased property taxes due to the construction of the project are sufficient to support needed local improvements and public services required to serve the project.

5.8.2.1 Construction Impacts

Construction-related impacts are short-term impacts that may be caused by people moving into the Energy Center area to participate in the construction of the proposed facility, and would include any associated increase in demand for public services and facilities.

Construction Impacts on Employment

Construction of the Energy Center is expected to begin August 2002 and continue for a total of 24 months until July 2004. Construction would provide job opportunities for an average of 250 construction workers during construction of the project (see Figure 3.7-1). The maximum

construction workforce of the Energy Center will be approximately 490 workers for approximately 4 to 5 months during the construction period.

The Riverside-San Bernardino Building Trades Council (RSBTC) coordinates labor union activities and oversees the allocation of appropriately skilled workers for construction projects in the Riverside area. The RSBTC estimates that a labor pool of 10,000 skilled construction workers would be available for construction of the proposed project. Therefore, RSBTC expects to be able to provide a sufficient number of appropriately skilled construction workers during the scheduled 2002-2004 construction period (P. Eckert, RSBTC, personal communication, 2001). Table 3.7-2 provides a summary of the skilled labor by craft needed throughout the construction of the Energy Center. Because worker availability depends on the number of projects being constructed during the time of Energy Center's construction, RBSTC was not able to accurately estimate the availability of skilled labor by craft in the Riverside region (P. Eckert, RSBTC, personal communication, 2001).

Payrolls of project construction employees will have a positive impact on the area. In estimating the economic impact of these construction jobs, an average annual salary, including benefits, of $50,000 for each construction-related employee was assumed. An average of 250 construction workers will be employed on the Energy Center for 24 months, so the estimated 24 month construction payroll will be approximately $25.0 million. This figure does not include the amount of indirect employment resulting from increased trade at suppliers and construction-related businesses during this period.

Construction Impacts on Population

Construction of the proposed project could affect the population of the area during the construction period only if a substantial number of workers had to relocate to the area because of the project. However, the average construction workforce of 250 persons is an insignificant portion of the total construction workforce of approximately 81,000 within Riverside-San Bernardino MSA (EDD, 2001). Because the project is within commuting distance of the greater Riverside area, very few construction workers are expected to relocate as a result of project construction. Therefore, the Energy Center will not contribute to a significant increase in population in Riverside County or communities near the project.

Construction Impacts on Housing

While the construction workforce would most likely commute to the Energy Center site on a daily basis, there is an adequate amount of motel space available in the surrounding area to accommodate those workers who might choose to commute to the Energy Center site on a work-week basis. Should Energy Center construction workers choose to relocate to the area, they would easily be accommodated given the current housing vacancy rate of 16.97 percent throughout Riverside County (CDOF, 2001). Because the majority of the construction workforce is expected to commute rather than relocate for the 24-month construction period, construction of the proposed project is not expected to increase the demand for housing.

Construction Impacts on Education

Construction of the Energy Center is not expected to have a significant impact on education in the area. No significant population change is expected during the construction phase and therefore, there should be no influx of families with school aged children into the area. However, the property will be required to pay the applicable property taxes (Table 5.8-1) and the following statutory facility fees associated with the issuance of a building permit. The project is located within the Romoland School District and Perris Union High School District that have a total school impact fee of $0.33 per square foot for commercial and industrial development. The covered and closed structures to be built will total approximately 12,600 square feet, which results in a $4,158 school impact fee to be paid by Energy Center.

Table 5.8-1 Potential Distribution of Annual Property Taxes to be Paid by the Energy Center(1)

Property Tax Distribution (Tax Rate Area 70-000)	Percent	Tax
County Free Library	2.943064	$117,723
County Structure Fire Protection	6.335532	$253,421
County Waste Resource Management District	0.000000	$0
CSA 146	0.000000	$0
CSA 152	0.000000	$0
Eastern Municipal Water Implementation District 13	0.924376	$36,975
Eastern Municipal Water Implementation District A	0.000000	$0
Eastern Municipal Water Adjacent	5.183822	$207,353
Flood Control Administration	0.288742	$11,550
Flood Control Zone 4	4.759733	$190,389
General	30.396007	$1,215,840
General Purposes	0.000000	$0
Mount San Jacinto Junior College	4.279247	$171,170
MWD Adjacent 1301999	0.000000	$0
Perris Area Elementary School Fund	10.373410	$414,936
Perris Union Junior High School	6.921538	$276,862
Perris Union High School	19.274786	$770,991
Perris Valley Cemetery	0.224828	$8,993
Riverside County Regional Park and Open Space	0.459792	$18,392
Riverside County Office of Education	4.540921	$181,637
Romoland School	3.070140	$122,806
San Jacinto Basin Resource Conservation	0.024062	$962
Valley Health System Hospital District	0.000000	$0
Total	100.000000	$4,000,000

Source: Riverside County Tax Allocation Office. 2000.

(1) Table is an estimate of distribution based on current tax rate area. Should the project circumstances change, such as inclusion in a redevelopment district, these estimates may change.

Construction Impacts on Recreation

Construction related activities are not expected to cause impacts to the surrounding local and regional recreational facilities.

Construction Impacts on Public Services and Facilities

The proposed project will not cause significant population changes or housing impacts in the Riverside-San Bernardino SMSA, and the project is not expected to cause construction-related increases in the demand for public services or facilities.

Construction Impacts on Fiscal Resources and Local Economy

During construction of the proposed project, an estimated $5-10 million will be spent on local purchases.

5.8.2.2 Operational Impacts

Operation Impacts on Employment

When the proposed Energy Center is completed, it is estimated that approximately 23 people will be permanently employed at the site. The operational workforce will be drawn from the local area and from within the Calpine organization. A local hiring policy will be followed; however, a few staff (probably less than five people) with specialized skills and expertise to operate the electrical generation equipment may need to relocate to the area. The small number of employees who may relocate is not expected to create a significant adverse impact.

Operational payroll for the Energy Center will have a positive impact on the surrounding community. Annual operational payroll, including all salaries, overtime, benefits, and incentives, is estimated to be $1.3 million.

Operation Impacts on Population

A sufficient number of qualified personnel are available in the area to fill most of the operational positions, so the proposed project is not expected to significantly increase the population of Riverside County. However, to assess the potential for long-term population impacts, a "worst case" could be assumed in which approximately 10 of the operational employees moved to the project area and that each employees' family would average 2.8 persons, based on average family size data compiled for California (US Census, 2001). Using these "worst case" assumptions, 28 additional persons could move to Riverside County due to the operating needs of the proposed facility.

In the "worst case" scenario described above, the addition of 28 people to an estimated Riverside County population of 1,545,387 would represent an insignificant increase to the current total population. While these additional people could locate near the proposed Energy Center site, they would most likely be dispersed throughout the Riverside area. Given the small size of the proposed operational workforce, the relatively large current population of the

area, and the probability of dispersion, even long-term "worst case" operational impacts on population would be insignificant.

Operation Impacts on Housing

Under the "worst case" scenario, where 10 of the operational workers would relocate to Riverside County, there would be a demand for 10 additional housing units. With an existing vacancy rate of 16.97 percent, approximately 98,836 units are currently available in the Riverside area. Even under a "worst case" situation, adequate housing would be available for these personnel, based on existing vacancy rates. Accordingly, operation of the Energy Center will not significantly affect the demand for housing in Riverside County.

Operational Impacts on Education

Operation of the Energy Center will not cause significant impacts to the area schools due to the small number of permanent employees.

Operational Impacts on Recreation

Operation of the Energy Center will not cause significant impacts to local or regional recreational facilities due to the small number of permanent employees.

Operation Impacts on Public Services and Facilities

Operation of the Energy Center will not cause significant population changes in the area surrounding the Energy Center site or Riverside County, or create a demand for additional housing, therefore no operational staff-related increase in demand for public services or facilities is expected. However, operation of the Energy Center could increase the need for plant-related services or facilities in the area, including water service, sewer service, and fire and police services as follows:

- The proposed Energy Center will require an average of approximately 5,000 acre-feet of water per year. Impacts to the water supply are discussed in Section 5.4, Water Resources.
- The proposed facility will have two wastewater streams: process wastewater and sanitary wastewater. Process wastewater streams will be connected to the EMWD system and discharge to EMWD's non-reclaimable wastewater collection pipeline. Sanitary wastes will be discharged to an existing EMWD sewer line that runs along McLaughlin Road near the southern IEEC site boundary. The project will not impact the community sewer or wastewater collection and treatment system. See Section 5.4, Water Resources for a discussion of the disposal and treatment of wastewater.
- On-site fire protection systems will be provided to limit the potential for injury, loss of life, loss of property, and plant down time from a fire or an explosion. The systems that will be included in the facility, described in Section 3.4.10, Fire Protection, will consist of fire water storage tanks, pumping systems, and a variety of suppression systems. On-site personnel will be trained to effectively deal with emergency situations and local fire authorities will be provided with the facility layout, material

hazards, and evacuation routes. An Emergency Response and Waste Contingency Manual will be compiled and updated to ensure safe and effective firefighting measures on-site. When implemented, these on-site systems and measures are expected to reduce the fire hazard of these facilities and the potential impact to the RCFD. With these systems and measures in place, it is expected that the RCFD will be able to adequately respond to emergencies at the project site.

- The Energy Center will have security fencing and gates to prevent any unauthorized access to the project site or its facilities. Security personnel will also patrol the facility and its premises on a regular basis. By providing extensive on-site security, the demand on the Sheriff's Department will be reduced. In addition, the Energy Center will be operated on a 24-hour basis, thus assuring that staff will be available on site to respond to any emergencies. With these systems in place, it is expected that project operations would not affect the ability of the Riverside County Sheriff's Department to adequately respond and provide services to the project area.

Operation Impacts on Fiscal Resources and the Local Economy

Based on the approximate $325-400 million capital cost of the facility, Riverside County would initially expect to receive approximately $4.0 million in additional property tax annually. Based on current tax distribution rates, the distribution of taxes would be as shown in Table 5.8-1.

Sales taxes, which will be applied to goods purchased in California, will be taxed at a rate of 7.50% beginning in 2003. The sales taxes to be paid by Energy Center on an estimated $4 million in local purchases totaling approximately $300,000 per year could be distributed as shown in Table 5.8-2.

Table 5.8-2 Potential Distribution of Annual Sales Taxes to be Paid by the Energy Center

Sales Tax Distribution	Tax Rate	Amount of Tax
County General Fund	1.00	40,000
Local Funds	0.25	10,000
Riverside County Transportation Commission	0.5	20,000
State of California	5.75	230,000
Total	7.50	300,000

Source: State Board of Equalization. 2001. S. Smith, personal communication.
Franchise Tax Board. 2001. D. Nelson, personal communication.

In addition to increased tax revenues, local and regional spending by Energy Center will stimulate the creation of new jobs in the Riverside area and will have a positive fiscal and economic impact on the local area.

5.8.3 Environmental Justice Screening Analysis

The purpose of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations* (1994), is to identify disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies

on minority and/or low-income communities. According to federal guidelines, a minority population is defined as a minority group that has a population of greater than 50 percent of the affected area's general population (EPA, 1998).

The Energy Center project requires no federal actions and involves no federal funding, however the federal methodology is used here to identify if minority or low-income populations might be disproportionately impacted by the project.

US Census Bureau information on racial demographics in Riverside County indicates that, according to the 2000 census, approximately 65.6 percent of the county's population is white. Figure 5.8-1 (in pocket) illustrates percentage distribution of the white and non-white population for the 27 census tracts within six miles of the Energy Center site. A summary of population and race information for the 27 census tracts within six miles of the Energy Center site is presented in Table 5.8-3. US Census Data for the nearby census tracts indicates that approximately 31.4 to 95.6 percent of the population is identified as white. There are six census tracts that are contain a greater than 50% minority population. All of these tracts are located at a distance of greater than three miles from the project site. These tracts are generally in and around the city of Perris. Additionally, the average white population contained within the six mile radius of the site is 70.0%. Therefore, environmental impacts are not likely to fall disproportionately on minority populations.

In keeping with the established federal standards on minority populations, a low-income community is defined as one whose general population is comprised of 50 percent or more people living under the poverty threshold. Following the Office of Management and Budget's (OMB's) Directive 14, the Census Bureau uses a set of income thresholds that vary by family size and composition to determine poverty levels. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level." This evaluation was performed using data from the 1990 census because comparative data from the 2000 census has not been released and was not available at the time this document was prepared. If the 2000 census data become available during the CEC review process, these data will be provided.

A summary of the median household income and percent of the population for each of the census tracts within six miles of the project site is presented in Table 5.8-4. The percentage of individuals living below the poverty line within six miles of the Energy Center site varies, but on average it is approximately 12.5 percent. Since the percentage of people living under the poverty level is well below 50 percent, environmental impacts will not likely fall disproportionately on low-income members of the community.

5.8.4 Mitigation Measures

There will be no significant adverse impacts on socioeconomics as a result of construction or operation of the Energy Center. Therefore, no mitigation is needed.

Table 5.8-3 Population and Race Information for Census Tracts Near the Project Site[1]

Tract	Total Population	Race	
		White (%)	Non-White (%)
426.02	4,220	51.7	48.3
426.03	14,563	41.8	58.2
427.06	6,032	37.4	62.6
427.08	4,413	82.3	27.7
427.09	3,749	88.2	21.8
427.10	3,913	95.6	4.4
427.11	4,860	93.4	6.6
427.12	7,539	84.7	15.3
427.13	4,231	81.1	18.9
427.14	2,979	92.8	7.2
427.15	4,502	80.5	19.5
427.16	4,754	91.6	8.4
427.17	2,790	78.1	21.9
427.18	5,072	66.8	33.2
427.19	3,641	69.2	30.8
427.20	2,996	79.6	20.4
427.21	4,761	76.8	23.2
427.22	8,339	82.4	17.6
427.23	4,347	80.7	19.3
428.00	6,451	31.4	68.6
429.01	5,289	49.2	50.8
429.02	3,929	48.3	51.7
429.03	3,829	57.1	42.9
429.04	6,877	47.2	52.8
432.08	6,506	85.5	14.5
433.05	5,642	88.6	11.4
464.04	2,511	73.7	26.3

1 – Data from 2000 Census (U.S. Census Bureau, 2001)

Table 5.8-4 Household Information for Census Tracts Near the Project Site[1]

Tract	Total Population	Economic Status	
		Median Household Income	Percent Population Below Poverty Line (individuals)
426.01	16,702	$41,801	7.68
426.02	1,972	$36,853	16.36
426.03	7,088	$35,956	11.32
427.02	14,510	$24,205	5.71
427.03	17,520	$45,713	5.35
427.05	12,886	$27,664	12.13
427.06	2,703	$40,717	11.49
427.07	9,186	$25,049	11.27
428.00	6,354	$20,665	23.50
429.00	16,130	$25,219	20.34

1 – Data from 1990 Census (U.S. Census Bureau, 2001)

5.8.5 Cumulative Impacts

The potential for cumulative socioeconomic impacts exists when there are other projects proposed in the region that have overlapping construction schedules and project operations that could impact similar resources. The Riverside County area has been experiencing growth that has placed demands on the construction industry; however the average construction workforce of 250 persons is an insignificant portion of the available construction workforce of approximately 10,000. Energy Center is being constructed within the general commuting distance of the Riverside area and will not cause the immigration of non-local workers that could potentially affect the resources of the host communities.

The annual income and property tax revenues generated by Energy Center are expected to provide additional public resources and potential improvements that will outweigh any short-term impacts on public services. Overall, no adverse significant cumulative socioeconomic impacts are expected to occur from the construction or operation of the facility.

5.8.6 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the Energy Center, including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS.

5.8.6.1 State Authorities and Administering Agencies

California Public Resources Code § 25514 (f) (SB28 Approved by Governor and filed with Secretary of State May 22, 2001. Chaptered July 24, 2001 as an urgency measure.) The presiding members proposed decision must include findings as to whether the increased property taxes due to the construction of the project are sufficient to support needed local improvements and public services required to serve the project.

The administering agency for the above authority is the CEC.

California Education Code § 17620; California Gov. Code § 65955 *et seq*. The code includes provisions for levies against new industrial construction within the boundaries of the school district for the construction or reconstruction of school facilities. The Energy Center will comply with this requirement through the payment of school impact fees.

The administering agency for the above authority is the County of Riverside.

California Environmental Quality Act; California Public Resources Code § 25523(a)i 20 CCR &§ 1752, 1752.5, 2300 - 2309, and Chapter 2. Subchapter 5, Appendix B, Part (i); 14 CCR §§ 15131, 15382. Under the California Resources Agency regulations for implementation of CEQA, economic or social effects of a project "shall not be treated as significant effects on the environment" but may be "used to determine the significance of physical changes caused by the Project" (14 CCR § 1513 1). The analysis provided in Section 5.8 of the AFC complies with this requirement.

The administering agency for the above authorities is the CEC.

5.8.6.2 Energy Center Compliance With Socioeconomic LORS

The Energy Center will comply with State LORS that apply to Socioeconomics as described above.

5.8.7 Involved Agencies and Agency Contacts

Involved agencies and agency contacts are listed in Table 5.8-5.

5.8.8 Permits Required and Permit Schedule

No permits are required by any agency in the project area regarding potential socioeconomic impacts.

Table 5.8-5 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Riverside County Office of Education 3939 13th Street Riverside, CA 92502	Steve Long, Ph.D. Superintendent (909) 826-6530	School Enrollment
Riverside County Sheriff's Department— Public Information 4095 Lemon Street, 2nd Floor Riverside, CA 92501	Sergeant Mark Loman (909) 955-2400	Police Service
Riverside County Fire Department Fire Prevention 210 W. San Jacinto Perris, CA 92570	Chief James Engel (909) 940-6900	Fire Prevention and Service
Riverside-San Bernardino County Building Trades Council 1074 E. LaCadena Drive, Suite #8 Riverside, CA 92501	Phil Eckert (909) 684-1040	Employment Resources

5.8.9 References

California Department of Finance (CDOF), Demographics Research Unit. 2000. (http://www.dof.ca.gov/html/Demograp/druhpar.htm)

California Employment Development Department (EDD). 2001. (http://www.edd.cahwnet.gov/)

Eastern Municipal Water District. 2000. Urban Water Management Plan.

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Franchise Tax Board. 2001. Personal Communication, D. Nelson with M. dos Santos (Foster Wheeler Environmental Corporation).

Perris Union High School District (PUHSD). 2001.

Riverside County Regional Park and Open Space District. 2001. (http://www.co.riverside.us/activity/parks).

Riverside County Sheriff's Department (RCSD). 2001.

Riverside County Tax Allocation Office. 2001. *Tax Rate Areas.*

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State Board of Equalization. 2001. Personal Communication, S. Smith and M. dos Santos (Foster Wheeler Environmental Corporation).

U.S. Census Bureau. Census 1990. 2001. (http:\\www.census.gov)

U.S. Census Bureau. Census 2000. 2001. (http:\\www.census.gov)

U.S. Department of Health and Human Services. 2000 (http://aspe.os.dhhs.gov/poverty/00poverty.htm)

U.S. Environmental Protection Agency (EPA), Office of Federal Activities. 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance.

Figure 5.8-1 Minority Population Within 6 Miles of the Energy Center Site

IN POCKET

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5.9 NOISE

This section assesses the existing noise in the project area, the applicable noise plans and ordinances, and the potential noise effects related to the Inland Empire Energy Center (IEEC or Energy Center). This assessment includes an evaluation of the potential effects to the nearest sensitive receptors and to power plant operations personnel. An essential part of this assessment is a comparison of expected noise levels with acceptable noise levels presented in applicable laws, ordinances, regulations, and standards (LORS) and with existing background levels at noise-sensitive receptors.

5.9.1 Fundamentals of Acoustics

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. See Table 5.9-1 for definition of terms. In this section, some statistical noise levels are stated in terms of dBA. Noise levels stated in terms of dBA reflect the variable frequency response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not detect well. The A-weighted scale is used in most ordinances and standards. The equivalent sound pressure level (L_{eq}) is defined as the average noise level, on an energy basis, for a stated period of time (e.g., hourly). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electronic filter corresponding to the A-weighted curve. The sound level meter also performs the calculations required to determine the L_{eq} for the measurement period.

Other measurements are used to give insight into the noise level distribution over the measurement period. The L_{90} statistical or exceedance level is a measurement that represents the noise level that is exceeded during 90 percent of the measurement period. L_{90} is indicative of the background sound level in the absence of intrusive sounds. Similarly, the L_{10} represents the noise level exceeded for 10 percent of the measurement period. L_{10} is indicative of traffic noise and other intrusive intermittent sounds. Technical noise terms used in this section are summarized in Table 5.9-1.

In determining the daily level of environmental noise, the difference in response of people to daytime and nighttime noise exposure must be accounted for. During the nighttime, exterior background noise levels are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Further, most people sleep at night and are sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, the CNEL was developed. CNEL is a noise index that accounts for the greater annoyance caused by noise during the evening and nighttime hours. CNEL values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period. Certain penalty factors are added to each evening and nighttime hourly L_{eq}, before the 24-hour CNEL is calculated. These penalties reflect the increased sensitivity to noise during evening and nighttime hours.

Table 5.9-1 Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the sound pressure to the reference pressure which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (L_{eq})	The energy-averaged A-weighted noise level during the measurement period.
Statistical or Exceedance Noise Level (L_n)	The noise level exceeded during n % of the measurement period, where n is a number between 0 and 100 (e.g., L_{90})
Community Noise Equivalent Level (CNEL)	The energy-averaged A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels from 7:00 p.m. to 10:00 p.m. and addition of 10 decibels to sound levels between 10:00 p.m. and 7:00 a.m.
Day-Night Noise Level (L_{dn} or DNL)	The energy-averaged A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to sound levels from 10:00 p.m. to 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location. The ambient level is typically defined by the L_{eq} level.
Background Level	The underlying ever-present lower level noise that remains in the absence of intrusive sounds. Distant sources, such as traffic, typically makeup the background. The background level is generally defined by the L_{90} statistical level.
Intrusive Level	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level. The intrusive level is generally defined by the L_{10} statistical level.
C-Weighted Sound level dBC	The sound level obtained by the using the C weighting scheme that emphasizes low frequencies.

The daytime, evening, and nighttime periods and their associated noise penalty factors are as follows:

- Daytime: 7 a.m. - 7 p.m. No penalty
- Evening: 7 p.m. - 10 p.m. 5 dBA penalty
- Nighttime: 10 p.m. - 7 a.m. 10 dBA penalty

The Day-Night Sound Level (DNL or L_{dn}) differs from the CNEL in that it does not penalize evening hours.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as startle and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the last category. No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of standard is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is by comparing it to the existing or "ambient" environment to which that person has adapted. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the listeners.

With regard to increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this section:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- In a laboratory, a 3 dBA change is considered a just-perceptible difference.
- A change in noise level of at least 5 dBA is required before any noticeable change would be observed.
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and would likely cause an adverse community response.

Table 5.9-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry (Beranek, 1988).

Table 5.9-2 Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
Shotgun (at shooter's ear)	140	Carrier flight deck	Painfully loud
Civil defense siren (100 ft)	130		
Jet takeoff (200 ft)	120		Threshold of pain
Loud rock music	110	Rock music concert	
Pile driver (50 ft)	100		Very loud
Ambulance siren (100 ft)	90	Boiler room	
Pneumatic drill (50 ft)	80	Noisy restaurant	
Busy traffic; hair dryer	70		Moderately loud
Normal conversation (5 ft)	60	Data processing center	
Light traffic (100 ft); rainfall	50	Private business office	
Bird calls (distant)	40	Average living room library	Quiet
Soft whisper (5 ft); rustling leaves	30	Quiet bedroom	
	20	Recording studio	
Normal breathing	10		Threshold of hearing
	0		

5.9.2 Affected Environment

The land uses around the IEEC site include an asphalt plant immediately to the north, a railroad, commercial uses, and a large substation to the east, 500 kV and 161 kV transmission lines and agricultural with farm residences to the south, and a construction equipment storage yard to the west. The nearest residence with a clear line-of-sight to the project is about 1600 feet northwest of the center of the site on the south side of Ethanac Road. There are isolated farm residences, also with a clear line-of-sight, at slightly greater distances to the southeast, south and southwest. A small subdivision is located north of the site beyond the asphalt plant and Highway 74 also at a distance of about 1600 feet. However, the subdivision area is shielded from the site by commercial buildings on both sides of the highway. There is also a subdivision northwest of the site starting at a distance of about 1800 feet from the site center.

During the day, the primary source of noise in the area is the asphalt plant immediately north of the site. Traffic noise from Highway 74 and Ethanac Road north of the site is present throughout the day and night at varying levels. The 500 kV transmission lines on the south boundary of the site produces a low level crackling or sizzling sound that is audible primarily within the right-of-way.

The Alternative A, a 0.9 mile gas pipeline and proposed compressor station about one mile southeast of the site on Rouse Road about 600 feet west of Menifee Road that could also potentially be impacted by project noise was studied. Land use around the compressor site is agricultural. The nearest residence is a rural residence on Menifee Road about 600 feet north-northeast of the site. Traffic on Menifee Road is the primary source of permanent noise. An

irrigation pump powered by a diesel engine was located at the western boundary about 1000 feet from the residence. This was the primary source of nighttime noise.

Land uses in the vicinity of Alternative B, the proposed 14.8-mile long natural gas pipeline, consist of a mix of industrial, agricultural, rural residential, open space, and commercial development.

A shooting range at approximately Milepost 8.8 was identified within the vicinity of the natural gas pipeline.

The County's Lakeview/Nuevo Community Plan (1993) indicates that the northern portion of the pipeline crosses the San Jacinto Wildlife Area (within the existing right-of-way of Davis Road).

The CEC's power plant certification guidelines require that noise measurements be made at noise-sensitive locations where there is a potential for an increase of 5 dBA or more over existing background noise levels during construction or operation of a proposed power plant. Consequently, an ambient noise survey was conducted during the period of June 13 - 14, 2001, to document existing levels of noise. Three monitoring locations, representative of the nearest noise-sensitive receptors, were selected around the Energy Center site, and the compressor station. Noise levels at each location were continuously monitored over a 25-hour period. The selected locations are shown in Figure 5.9-1. A brief description of each monitoring location and the types of sounds heard during the survey are presented below.

- ***Location 1*** - About 1600 feet northwest of the Energy Center site at the nearest residence on Ethanac Road. The microphone was attached to a chain link fence about 120 feet east of the house and about 100 feet south of Ethanac Road at the same distance as the house is from the road. Sources of noise included traffic on Ethanac Road and Highway 74 throughout the day and night and also noise from the nearby asphalt plant during the day.
- ***Location 2*** - About 2200 feet southwest of the Energy Center site near the intersection of Dawson and McLaughlin Roads. The microphone was attached to the northeast leg of the 500 kV transmission line tower northeast of the intersection. Sources of noise included distant traffic on Ethanac Road and Highway 74 and local traffic on McLaughlin Road. The asphalt plant was clearly audible during the day. Noise from the transmission line was audible at a very low level when other sounds were not present.
- ***Location 3*** - At the southeast corner of the compressor station site about 600 feet west of Menifee Road and ten feet north of Rouse Road. The microphone was mounted on a real-estate sign at the corner of the site. Rouse Road is a very lightly traveled dirt road that only leads to a nearby farm. Traffic on Menifee and Rouse Roads were the primary noise sources. A diesel-powered irrigation pump about 1000 feet to the west was a secondary noise source.

5.9.2.1 Noise Survey Methodology

Continuous measurements of the A-weighted sound level were made over the complete 25-hour period using two (2) Larson-Davis Laboratories Model 700 sound level meters (LDL 700) with integral data loggers. The instruments were equipped with optional circuitry and microphones to permit them to meet the requirements of ANSI S1.4-1983 for Type I precision sound level meters. The Bruel & Kjaer (B&K) Type 4176 ½" prepolarized random incidence microphones were remotely mounted (via a 10-foot microphone extension cable and preamplifier) at a height of about 5 feet above the ground. Foam windscreens, 3½ inch in diameter, were used to reduce wind-generated noise.

The calibration levels of the instruments were checked before and after the 25-hour monitoring period using a B&K Type 4230 sound level calibrator. The analyzers were internally timed to turn on at 1600 (4 p.m.) on June 13, 2001 and off at 1700 (5 p.m.) on June 14, 2001. They were generally unattended during the monitoring period, but the monitoring technician did visit each site four times to make observations about sounds heard and general weather conditions. Observations were made in the afternoon between 1600 and 1730 and evening between 2000 and 2100 on June 13, late night between 0220 and 0320 and mid-day between 1100 and 1200 on June 14, 2001.

The LDL 700's were programmed to measure and record the equivalent sound level (L_{eq}) for each minute of the 25-hour period as well as compute and store the statistical sound levels exceeded 10, 50 and 90 percent of each hour (L_{10}, L_{50} and L_{90}). The L_{eq} for each hour of the period was also computed and recorded. At the end of the 25-hour period, the data were downloaded directly into a laptop computer for storage and further analysis, including computation of the 24-hour L_{eq}, day/night level (L_{dn}), and the community noise exposure level (CNEL). A spreadsheet program was used to produce graphs of the data. One graph was produced of the 1-minute L_{eq} levels to show the often rapid variation in sound levels experienced in outdoor environments (see Figure 5.9-2 through 5.9-4). Another graph was produced of the hourly L_{eq} levels and the L_{50} and L_{90} statistical sound levels showing all three curves in the same plot (see Figure 5.9-2 through 5.9-4). All of the hourly data is also presented in tabular format in Table 5.9-3.

5.9.2.2 Noise Survey Results

Weather conditions during the survey were generally hot with low humidity and light winds. Temperatures ranged from 63 degrees at 3 a.m. to 89 degrees at 4 p.m. Humidity levels ranged from 8 percent at 11 a.m. to 60 percent at 3 a.m. Winds ranged from calm to about 10 mph and were generally out of the northwest to northeast. Skies were clear and there was no precipitation.

A summary of the hourly sound level data is presented in the bottom section of Table 5.9-3. The CNEL levels ranged from 56.4 dBA to 62.4 dBA at the three locations. These levels are within the moderate range and are typical of populated areas with light traffic. Generally, for residential areas, CNEL or L_{dn} levels below 55 dBA would be acceptable and levels above 65 dBA would be unacceptable.

Table 5.9-3 Hourly L_{eq} and Composite Noise Levels Calpine IEEC Combined-Cycle Energy Center

		Location 1				Location 2				Location 3			
		NW Residence				SW Residence				Compressor Station			
Date	Hour	L_{eq}	L_{10}	L_{50}	L_{90}	L_{eq}	L_{10}	L_{50}	L_{90}	L_{eq}	L_{10}	L_{50}	L_{90}
6/13/01	1600	63.0	65.5	57.5	52.5	52.5	53.0	46.0	43.0	56.0	56.5	49.5	45.5
"	1700	57.5	60.5	56.5	53.0	49.5	51.0	45.0	42.5	56.0	55.5	50.5	46.0
"	1800	59.0	59.5	54.0	49.5	53.5	52.5	43.5	40.5	60.0	57.0	50.5	45.0
"	1900	54.0	57.0	52.5	48.5	48.0	50.5	42.5	39.5	54.0	54.0	49.5	43.5
"	2000	53.0	56.0	50.5	46.5	43.5	45.0	40.0	38.0	51.5	54.0	47.5	42.0
"	2100	55.5	58.5	51.0	46.5	51.5	55.0	43.0	41.0	55.5	56.0	48.5	43.5
"	2200	53.0	55.0	50.0	**46.0**	50.0	44.5	41.0	**39.0**	51.5	54.0	47.5	**43.0**
"	2300	52.0	53.5	49.0	**44.0**	43.0	45.0	42.5	**40.0**	52.5	54.0	52.0	**50.5**
6/14/01	0000	49.5	52.5	47.0	**40.0**	42.0	44.0	41.0	**38.0**	52.0	53.5	52.0	**50.0**
"	0100	48.5	52.0	45.0	**36.0**	41.5	44.5	40.5	**37.0**	52.5	54.5	52.5	**50.0**
"	0200	48.0	51.0	45.5	**40.0**	42.5	44.5	41.0	**38.0**	52.5	55.0	51.5	**49.5**
"	0300	49.0	52.5	47.0	**40.5**	44.5	46.0	42.0	**39.0**	54.0	56.5	53.0	**50.5**
"	0400	54.5	57.0	52.0	47.0	49.0	50.5	47.0	43.0	54.0	56.0	53.0	49.5
"	0500	58.0	61.5	56.0	52.0	52.0	54.0	51.5	49.0	57.5	59.0	56.0	53.5
"	0600	60.5	63.0	59.5	55.5	56.0	58.0	56.0	52.0	56.5	57.5	55.0	52.5
"	0700	62.0	64.0	59.5	57.5	53.5	56.0	52.5	49.5	56.5	54.5	51.0	48.5
"	0800	64.0	63.5	59.0	57.0	47.5	49.0	44.5	42.0	57.0	51.0	47.0	44.5
"	0900	60.0	62.0	58.5	56.0	48.5	48.0	41.5	39.5	52.5	49.0	43.5	41.5
"	1000	60.0	61.5	58.0	55.5	50.5	49.0	41.0	38.5	56.5	50.0	43.0	40.5
"	1100	60.5	63.0	60.0	57.0	49.5	51.5	46.5	41.5	51.0	50.5	44.0	40.0
"	1200	58.0	61.0	56.5	52.5	50.0	50.5	45.0	41.0	54.0	51.0	44.0	40.0
"	1300	55.5	58.5	53.5	48.0	51.0	51.5	43.5	39.5	60.0	55.0	43.5	40.5
"	1400	56.0	58.5	52.5	47.0	46.0	49.0	42.5	38.0	52.5	53.0	44.0	40.0
"	1500	55.5	58.0	52.0	47.5	51.5	53.0	44.0	38.5	49.5	49.0	43.5	40.5
"	1600	58.0	60.5	56.5	52.0	50.5	54.0	46.5	42.5	52.5	52.5	47.5	43.0
	L_{eq}(24)	58.2				50.2				55.3			
	DNL	62.2				56.2				60.9			
	CNEL	62.4				56.4				61.1			
Average of 6 quietest continuous nighttime hrs. (L_{90})					41.1				38.5				48.9
Avg. of nighttime hrs. (L_{90})					44.5				41.7				49.9

Note: Nighttime hours are shaded.

Late-night background or L_{90} noise levels (Table 5.9-3, shaded area, L_{90}) averaged over the six quietest hours ranged from 38.5 dBA at Location 2 to 48.9 dBA at Location 3. Average nighttime hours ranged from 41.7 dBA at Location 2 to 49.9 dBA at Location 3. The background level at Location 3 was maintained by the irrigation pump almost 1000 meters from the microphone. Distant traffic maintained the levels at the other three locations. Noise levels from the proposed new units will be compared with these minimum background levels to determine the significance of any noise impact.

Graphs of the continuous data using these statistical measures present a more complete description of the noise environment against which noise from the proposed project should be compared. The most important time period is late at night during normal sleep hours when ambient noise levels are low because human activity is at a minimum and traffic levels have generally diminished.

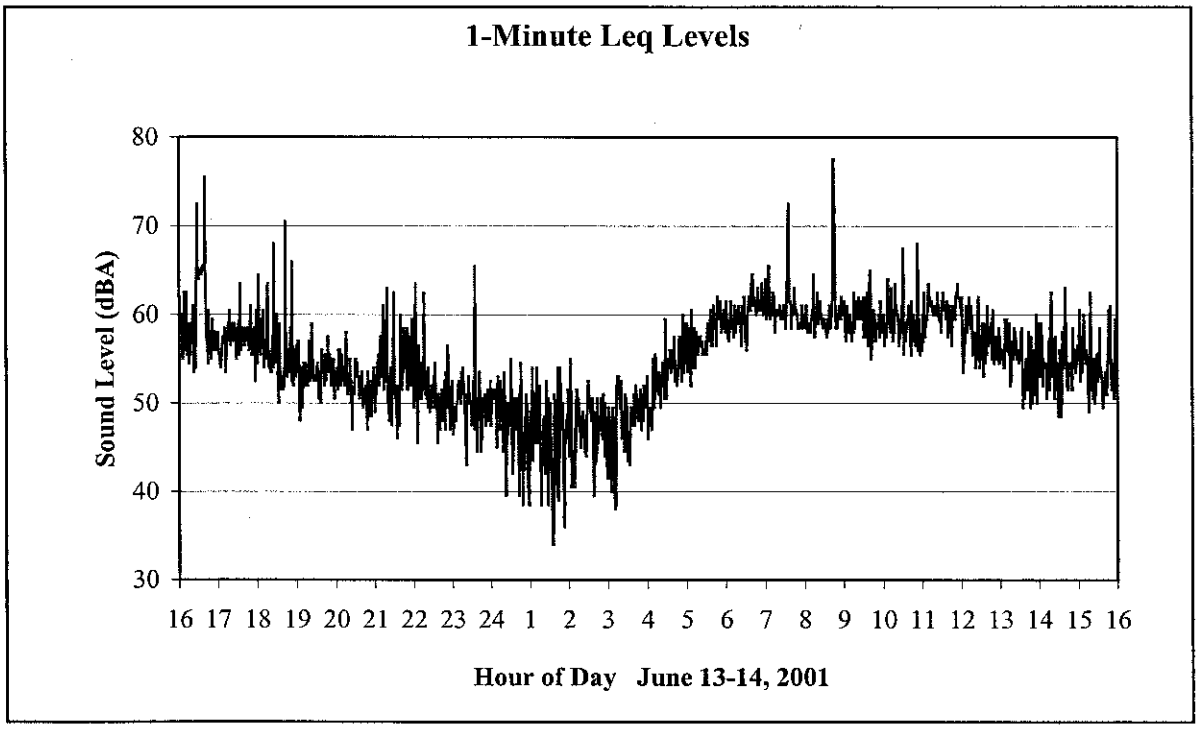
The data graphs are presented in Figures 5.9-2 through 5.9-4 for the three locations. The top graph in each figure is a plot of the 1-minute L_{eq} levels. The effects of individual events, such as heavy truck passages, can be seen as spikes in these graphs. The lower graph is of the hourly equivalent noise levels and the statistical levels exceeded 50 and 90 percent of each hour (L_{eq}, L_{50} and L_{90}). Of the curves in these graphs, the L_{90} background or residual sound levels (lower curve in lower graphs) are the most important for impact assessment purposes. The L_{90} level would be most affected by a new facility, such as an Energy Center, that generally produces a constant level of noise. The L_{eq} level, on which the L_{dn} level is based, will likely be the least affected.

The L_{90} pattern at Location 1 (Figure 5.9-2, lower curve of the lower graph) is typical with lower levels at night and higher levels during the day. The hour between 1 and 2 a.m. seems to have had the least amount of traffic, or at least the longest intervals between traffic, which allowed the L_{90} to drop to 36 dBA. The nighttime levels were typically about 45 dBA. Daytime levels were significantly higher at about 60 dBA due to increased traffic and operation of the nearby asphalt plant. The wide variation between the lowest L_{50} and L_{90} at Location 1, 45 dBA versus 36 dBA, is most likely a result of the periodic nighttime traffic on Ethanac Road and Highway 74.

The close spacing of the curves at other times suggests that the volume of traffic is relatively high and does not allow the noise level to decrease significantly between individual passages of trucks and cars.

The upper graph in the figure shows the noise level at a higher resolution of 1-minute intervals. The tallest spikes are likely due to trucks passing by on Ethanac Road or other activity very near the microphone.

Figure 5.9-2 Monitoring Location 1 – Nearest Residence to NW on Ethanac Road



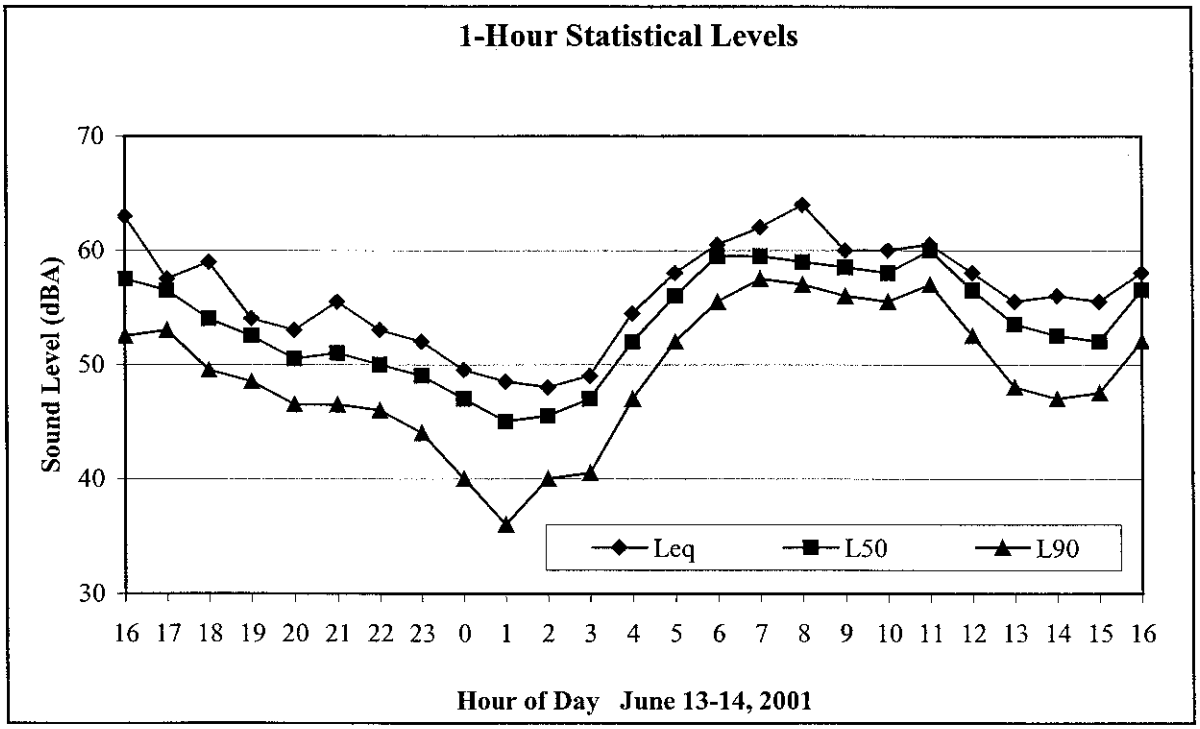
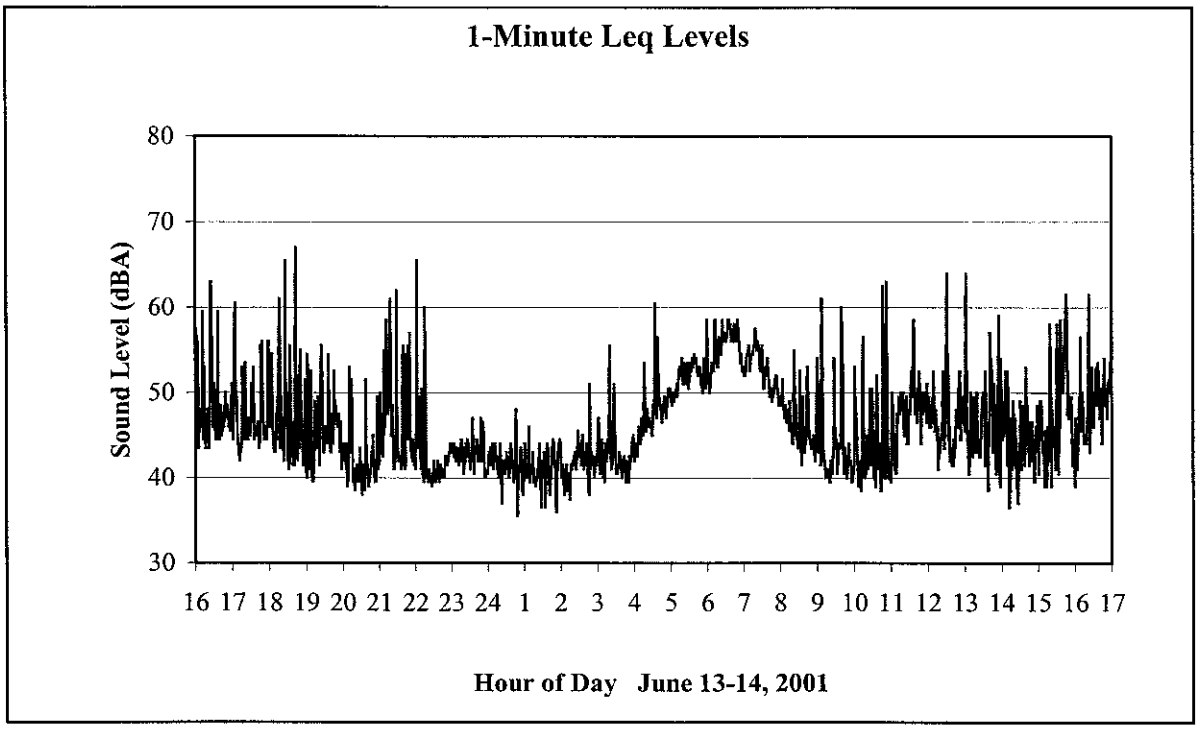


Figure 5.9-3 Monitoring Location 2 – Nearest Residences to SW on Dawson Road



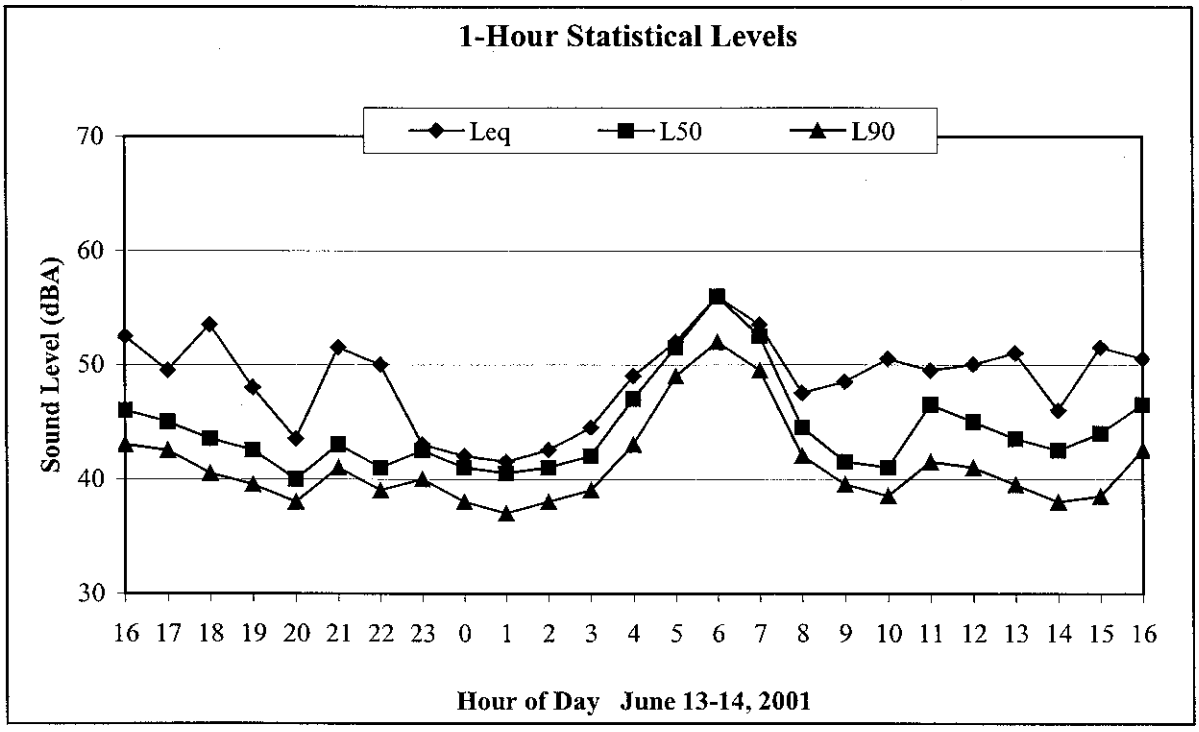
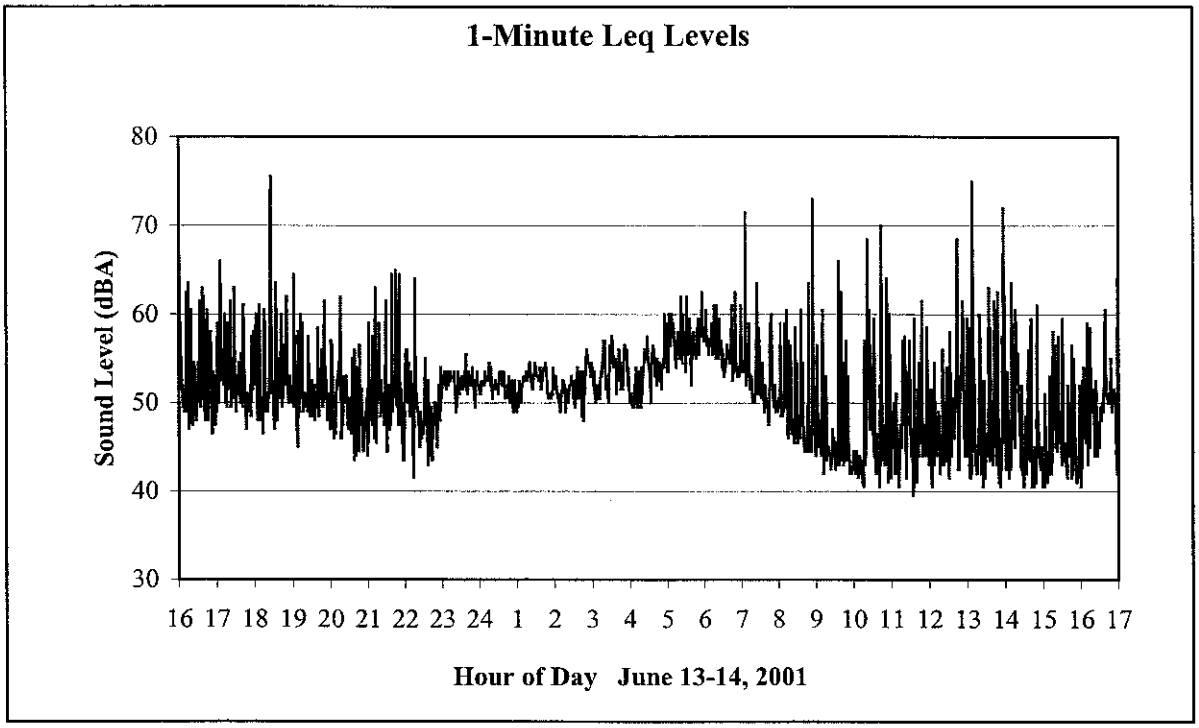
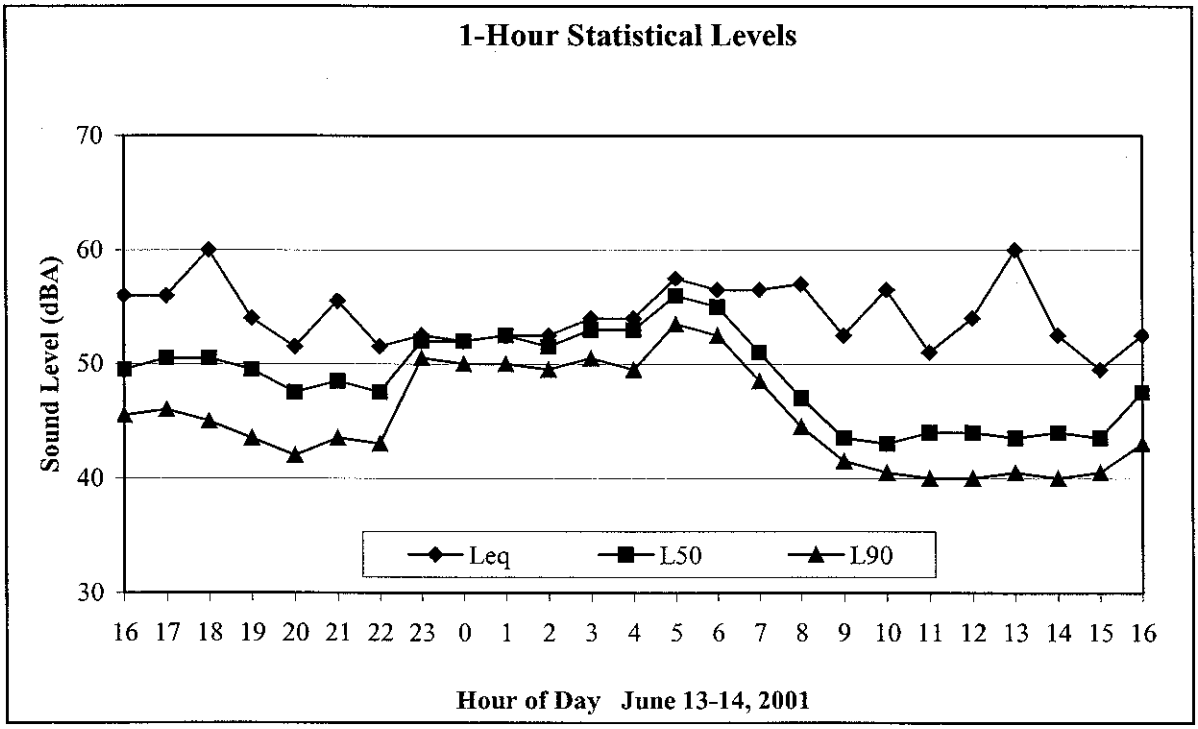


Figure 5.9-4 Monitoring Location 3 – Compressor Station Site on Rouse Road





The graphs for Location 1 (Figure 5.9-2) indicate typical noise levels between 50 and 60 dBA. The L_{eq} is below 50 dBA for 2 nighttime hours and the L_{90} is below 40 dBA for only one nighttime hour. The L_{90} average of all nighttime hours is 44.5 and the late-night levels were 41.1.

The graphs for Location 2 (Figure 5.9-3) indicate a slightly quieter environment with L_{90} levels typically between 40 and 50 dBA. The taller spikes in the upper graph are likely passages of individual cars on trucks on Dawson Road. The general rise in levels, including the background, between 4 a.m. and 9 a.m. is associated with morning rush traffic. Average late-night levels were lowest at this location with an average of 41.7 dBA and a 6-hour L_{90} average of 38.5 dBA.

The graphs for Location 3 on Rouse Road (Figure 5.9-4) clearly show the influence of the irrigation pump at night. L_{90} level abruptly rose from about 43 dBA at 10:00 p.m. to 50 dBA at 11:00 p.m., then remained at that level throughout the night. The nearby residence was subjected to these same levels. The height of the spikes in the upper graph is generally taller than at the other locations because the microphone was closer to the road. This placement had no effect on the L_{50} and L_{90} statistical levels, however. Also, vehicles on Rouse Road tended to be louder because it is a bumpy dirt road.

In summary, the existing noise environment is moderate to quiet in the project areas. There are no significant sources of industrial noise, except during the day near the asphalt plant, and traffic is the primary source of noise at all locations. Significant insect activity was not observed. Location 2 was monitored at the base of SCE's existing 500 kV transmission line.

5.9.3 Environmental Impacts

5.9.3.1 Significance Criteria

Noise will be produced at the site during construction and operation of the combined cycle Energy Center generating equipment. Potential noise impacts and compliance with standards have been assessed by calculating expected noise levels from these activities at the nearest sensitive receptors around the site.

Potential noise impacts from the project will be evaluated against criteria provided in both the regulations adopted by the CEC and the CEQA guidelines. The CEQA guidelines provide general criteria for determining the significance of project impacts as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including ... ambient noise" (Title 14 Ca. Code of Regs. § 15382). The CEQA Guidelines (Title 14 Ca. Code of Regs. § 1500 et. seq., Appendix G XI) explains that a significant effect from noise may exist if a project would result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working on the project area to excessive noise levels?

The CEC regulations at Appendix B, Section (g)(4)(A) further define the area impacted by the project as "that area where there is a potential increase of 5 dB(A) or more, during either construction or operations, over existing background levels." In addition, Section 9g)(4)(D) of appendix D requires that Applicants provide an estimate of the noise levels during both construction and operation at residences, hospitals, libraries, schools, places of worship or other facilities where quiet is an important attribute of the environment, within the area impacted by the proposed project.

5.9.3.2 Construction Impacts

Noise produced during the construction of the Energy Centers is intermittent in nature and difficult to quantify or predict. The only available references and field studies in the professional literature are from the 1970's [Barnes, 1976 (5); Miller, 1978 (6); USEPA, 1971 (7)] and largely relate to the construction of very large coal fired stations. Consequently, the applicability of these studies to the construction of a modern combined cycle plant is somewhat tenuous, but no better resources exist.

Construction of a generating facility like the Energy Center is customarily divided into five phases: 1) site preparation and excavation; 2) concrete pouring; 3) steel erection; 4) mechanical; and 5) clean-up (Miller et al. 1978). Each of these phases is characterized by the use of different types of construction equipment. The estimated sound levels produced at 50 ft. from a hypothetical acoustic center by individual pieces of equipment typically associated with these phases and from the plant in general on a long-term, average basis are listed in Table 5.9-4. Similar types of equipment will be used for construction of IEEC.

These long-term composite levels, intended to represent the combined noise of all activities on site at 50 ft. from a hypothetical acoustic center, can be used to roughly estimate construction noise levels at more distant receptors (accounting only for the change in distance). Four specific design points, designated as DP-1 through DP-4, have been selected to represent the nearest residential receptors as illustrated in Figure 5.9-5. The construction noise levels that are expected to occur at each design point are summarized in Table 5.9-5.

Table 5.9-4 Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Short-Term Maximum Equipment Noise Level at 50 feet, dBA	Long-Term Composite Site Noise Level at 50 feet, dBA
Site Clearing and Excavation	Dump Truck Backhoe	91 85	89
Concrete Pouring	Truck Concrete Mixer	91 85	78
Steel Erection	Derrick Crane Jack Hammer	88 88	87
Mechanical	Derrick Crane Pneumatic Tools	88 86	87
Clean-Up	Derrick Crane Truck	88 91	89

Source: USEPA 1971, Barnes et al. 1976

Table 5.9-5 Average Construction Noise Levels at Design Points (dBA)

Construction Phase	DP-1 Ethanac Rd. (1665 ft. from Ctr. of Site)	DP-2 Dawson & McLaughlin Roads (1980 ft. from Ctr. of Site)	DP-3 Palomar & McLaughlin Roads (1560 ft. from Ctr. of Site)	DP-4 Highway 74 (2165 ft. from Ctr. of Site)
Site Clearing & Excavation	59	57	59	56
Concrete Pouring	48	46	48	45
Steel Erection	57	55	57	54
Mechanical	57	55	57	54
Clean-Up	59	57	59	56
Maximum Level	**59**	**57**	**59**	**56**
Typ. Daytime L_{10} Ambient from Table 5.9-3	**60**	**50**	**50**	**60**

Because construction noise is sporadic in nature; i.e. it is typically an irregular series of relatively loud events separated by quieter periods, it is best compared to the L_{10} ambient level, which identifies and quantifies the intermittent peak noise levels normally occurring at each location due to such things as individual trucks passing by, aircraft overflights, motorcycles, etc. If construction noise is expected to exceed the normal L_{10} level it will probably be noticeable but if the average construction level is comparable to or less than the existing L_{10} the likelihood is that construction activities will not be particularly noticeable.

As can be seen from in Table 5.9-5, the nearest receptors north of the site (DP-1 and DP-4) are likely to experience construction noise levels that are comparable to existing daytime traffic noise levels and the probability of a noticeable impact is considered fairly low. To the south of the site, however, where ambient background levels are lower (Figure 5.9-3), noise from the construction of the project will most likely be evident. Maximum construction levels at DP-2 and DP-3 are expected to exceed the existing daytime L_{10} by roughly 7 to 9 dBA. To minimize construction impacts in accordance with the Menifee North Specific Plan (MNSP), noisy construction activities will typically be limited to the hours of 7 a.m. to 7 p.m. to the extent feasible.

These are typical construction noise levels for the Energy Center project site and linears.

5.9.3.3 Operational Impacts

Noise will be generated by the facility during normal operation. It is the intent of the Applicant to design and build the Energy Center so that it complies with all applicable LORS relating to noise, and to avoid creating a significant adverse impact to residential areas, which are the nearest sensitive receptors.

5.9.3.3.1 Location of Sensitive Receptors

In accordance with CEQA guidelines and widely accepted siting practices the plant will be designed so that its noise does not cause a substantial increase in the pre-existing ambient sound level during normal full load operation. Quantitatively, an increase in overall sound level of 5 dBA or less is generally considered insignificant or barely perceptible. The areas potentially impacted by a greater than 5 dBA increase are shown in Figure 5.9-1. In order to determine the significance of this impact, the impact should be compared against the Specific Plan adopted when the IEEC and surrounding lands were zoned for heavy industrial uses and its accompanying EIR. The impact areas are located directly adjacent to the industrial zoned property in the MNSP. This plan shows industrial zoning and development on the parcel proposed for IEEC and surrounding uses. The plan also shows development of these industrial uses in close proximity to residential development. The EIR for the MNSP identifies a maximum outdoor noise level of 65 CNEL for exterior living areas of residential land uses. The EIR specifically identified potential noise increases due to development under the plan from increased traffic and development of the industrial park on surrounding uses (see pages V-33 through V-39). Noise mitigation for residential areas is required when noise levels are greater than 65 CNEL. These sections also note the mitigation for excess noise involves noise barriers at the receiving noise sensitive use such as berms and sound walls (see page V-39).

Thus the EIR recognizes that development in accordance with the plan will result in an increase in noise. The EIR also recognizes that mitigation is not required for residences until the noise level exceeds 65 CNEL.

Should mitigation be required the mitigation should include berms and sound walls at the receiving use.

As illustrated in Figure 5.9-5 there are a number of isolated residences and medium density residential areas within a few thousand feet of the Energy Center. Four design points (DP) are shown representing the nearest residential land uses:

DP-1 Ethanac Road, NW of site

DP-2 McLaughlin and Dawson Roads, SW of site

DP-3 McLaughlin and Palomar Roads, SE of site

DP-4 North side of Highway 74, North of site

There are several isolated residences south of the site that is somewhat closer to the Energy Center; however, they are non-conforming land uses located within the same industrially zoned tract as the project site.

5.9.3.3.2 Allowable Receptor Levels – LORS

The following discussion is based upon the "Noise Assessment for the Menifee North Project, County of Riverside" (January 1990) prepared by Mestre Greve Associates, which is included in the MNSP.

Existing Conditions per Menifee North Specific Plan (MNSP)

The MNSP provides:

Noise Criteria. Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) the variations associated with the time of day. The predominant rating scale now in use in California for land use compatibility assessment is the CNEL. The CNEL scale represents a time weighted 24 hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5dBA, while nighttime (10 p.m. to 7.a.m.) noises are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. The day-night or L_{dn} scale is similar to the CNEL scale except that evening noises are not penalized. A CNEL noise level may be reported as a "CNEL of 60 dBA" "60 dBA CNEL," or simply "60 CNEL."

The criteria used to assess the acceptability of community noise levels vary with the municipality. The County of Riverside uses 65 CNEL as the critical criterion for assessing the compatibility of residential land uses with noise sources. The County of Riverside recommends that the exterior living areas (yards and patios) for new residential land uses do not exceed 65 CNEL. In addition, for multi-family residential projects, the California Noise Insulation Standard (California Administrative Code, Title 25, Chapter 1, Subchapter 1, Article 4) requires that the indoor noise levels in multi-family residential development do not exceed a CNEL of 45 dBA. The County of Riverside indoor noise standards are consistent with State of California standards. The County of Riverside requires that both single and multi-family developments achieve an indoor noise standard of 45 CNEL.

Noise standards for school sites, per State of California Section 216 of the Streets and Highways Code, specify interior noise level guidelines for classrooms in schools located adjacent to a freeway. The guidelines require an L_{10} noise level of 55 dBA or an L_{eq} noise level of 52 dBA. These guidelines do not specifically apply to the school sites that are part of the MNSP; however, they may be used as a guideline to assess the compatibility of the school sites with the noise environment. The County of Riverside does not have a standard for schools (MNSP, 1997).

5.9.3.3.3 Receptor Design Levels – Broadband Noise

Since design limits based on absolute sound levels do not always ensure that a new source will be regarded as acceptable within a given environment, the Energy Center will also be designed so that operations noise levels does not cause a significant increase over the existing ambient level. The most meaningful metric for defining the existing background noise level is the residual sound level, or L_{90}. This statistical descriptor quantifies the true background level that occurs in the lulls between sporadic noise events such as cars passing nearby or dogs barking. The minimum L_{90} level that is consistently present and available to mask or obscure the noise of new source best represents a conservative design datum against which to compare plant noise.

Ambient survey data recorded at DP-1 (Figure 5.9-2) show that the hourly L_{90} levels fluctuate between 58 to 36 dBA throughout the course of a 24 hour day, essentially reflecting traffic volume on both Ethanac Road and Highway 74. Most of the time ambient noise levels are above, and frequently well above 45 dBA, with the only relatively quiet period occurring between 11:00 p.m. to 3:00 a.m. when the L_{90} was typically 40 dBA. Although there was a short-lived dip below 40 dBA caused by two brief traffic lulls between 1:30 a.m. and 2:00 a.m. (visible in the 1 minute L_{eq} plot), it is fair to say that the minimum sound level that is consistently present at this location is 40 dBA. Consequently, under common circumstances noise from the IEEC will not increase ambient noise at this location more than 5 dBA. The proposed Energy Center noise design level of 45 dBA during the night would effectively limit the likelihood of disturbance at this design point. In addition, this design level would go well beyond the requirements of the most stringent LORS.

At DP-4 on Highway 74 about 1000 ft. east of the Ethanac Road, survey location ambient sound levels are likely to be at least equal to if not greater than those measured at DP-1 since Highway 74 is the dominant source of ambient noise throughout the entire survey area. Accordingly, a 45 dBA Energy Center noise limit during the night at DP-4 should also minimize the likelihood of disturbance and keep any increase over the pre-existing ambient to 5 dBA or less.

South of the plant at survey Location 2 (McLaughlin and Dawson Roads) ambient levels are generally lower because of the increased distance from Highway 74. Because the residences along McLaughlin are all essentially the same distance from the main sources of local traffic noise (Ethanac and Highway 74) the sound levels recorded at Location 2 (Figure 5.9-3) are probably representative of the levels experienced at all homes in this area. The survey data indicate that a minimum L_{90} level of about 39 dBA occurs intermittently throughout the day; consequently, the proposed Energy Center design limit of 45 dBA is considered appropriate for Design Points 2 and 3, the nearest residential land uses south of the site. The proposed noise limit will most likely result in a perceptible, but less than objectionable, noise increase during the periods when the ambient noise levels are at their lowest.

The planned design goals for each of the design points are summarized in Table 5.9-6.

Table 5.9-6 Summary of Design Noise Limits at Nearby Sensitive Receptors

Location	Minimum Consistent Hourly L90, dBA	Energy Center Design Target, dBA
DP-1. Ethanac Road	40	45
DP-2. McLaughlin & Dawson Roads	39	45
DP-3. McLaughlin & Palomar Roads	39 (Estimated)	45
DP-4. Highway 74 North of Site	40 (Estimated)	45

5.9.3.3.4 Tonal Noise Emissions

An assumption implicit in the idea that a 5 dBA increase in sound level is not readily perceptible is that the new noise source produces a bland, broadband noise spectrum without any identifiable or distinctive pure tones. The threshold of disturbance is much lower for noise sources that are at all tonal in nature.

As a general rule, combined cycle plants, even those without significant noise controls, do not produce discrete tones that are prominent or noticeable at typical receptor distances. At the distances surveyed here no significant tones are anticipated.

That is not to say that audible tones are impossible - certain sources within the plant such as the combustion turbine inlets, transformers, pump motors, cooling tower fan gearboxes, etc. have been known to sometimes produce significant tones. It is the Applicant's intention to anticipate the potential for audible tones in the design and specification of the plant's

equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest receptors.

5.9.3.3.5 Plant Noise Modeling

In order to evaluate the expected impact of the Energy Center noise on the surrounding community and determine how the plant should be designed to minimize this impact an analytical noise model of the plant was developed.

A noise modeling program, Cadna/A ver. 3.0 produced by the German firm DataKustik, GmbH specifically for applications such as the Energy Center, was used to evaluate the noise emissions of the facility. Based on the sound power levels input for each source, the program maps the noise contours of the overall plant in accordance with a variety of international standards, primarily VDI 2714 (Ref. 2) and ISO 9613 (Ref. 3). All sound propagation losses such as geometric spreading, air absorption, ground absorption and barrier blockage are calculated automatically in accordance with these recognized standards. Internal shielding within the plant, such as by the HRSG's and cooling tower, is realistically accounted for in the model since the physical dimensions of each source are also input into the program and considered in the calculations. Shielding beyond the plant has only been considered in connection with several substantial commercial structures estimated to be 35 ft. high (Datatronics) north of the site at the corner of Matthews and Hwy 74. Shielding provided by the asphalt plant, located just north of the proposed Energy Center was not included in the model. The open grass fields around the project site have been modeled as soft ground in the ground absorption calculations.

The key to the accuracy of any model is the accuracy of the sound power levels used to represent each source. All initial inputs to the current model have been derived exclusively from first-hand field measurements of similar or identical equipment in actual operation at numerous combined cycle facilities. Starting from these values, representative of standard equipment, a number of iterations were performed to determine what power level is allowable from each source in order to satisfy the overall plant design and meet the targeted noise levels at each receptor location. The quantitative reduction in effective sound power level for each source from its baseline value to a value that satisfies the overall design has been set to correspond to specific physical improvements that are realistic, practical and economically feasible. The major noise abatement elements that emerged from the modeling study are below.

5.9.3.3.6 Predicted Plant Noise Levels During Base Load Operation

The results of the noise modeling study are summarized in Figure 5.9-6 and Table 5.9-7, which show the expected noise emission contours of the attenuated Energy Center during full load operation. Without any special noise treatment or non-standard noise abatement measures plant levels would be approximately 10 to 12 dBA higher at any given location. A very extensive and costly series of mitigation measures will be required to realize the performance shown in the contour plot.

Table 5.9-7 Expected Energy Center Performance at Nearby Sensitive Receptors

Location	Expected Energy Center Noise Level During Base Load Operation, dBA	Proposed Energy Center Design Limit, dBA
DP-1. Ethanac Road	44	45
DP-2. McLaughlin & Dawson Roads	44	45
DP-3. McLaughlin & Palomar Roads	43	45
DP-4. Highway 74 North of Site	45	45

As can be seen from the graphic and the summary presented in Table 5.9-8, this plant design is expected to produce noise levels that are equal to or below the design targets established for the four key design points.

Table 5.9-8 Existing and Expected Future Community Noise Equivalent Levels (CNEL) at Nearest Residential Receptors

	Ambient Noise Survey CNEL, dBA	Expected Energy Center CNEL, dBA*	Projected Combined CNEL, dBA**
Location 1 (DP-1)	62.4	51	62.7
Location 2 (DP-2)	56.4	51	57.5
DP-3	56 (Estimated to be similar to DP-2)	50	57
DP-4	62 (Estimated to be similar to DP-1)	52	62

*Assuming continuous 24 hour a day operation.

**The numbers are added log.

After the addition of the Energy Center, little change is anticipated in the CNEL and the overall cumulative value is expected to well below the 65 CNEL required by the MNSP.

5.9.3.3.7 Low Frequency Noise Emissions

Simple cycle combustion turbine units commonly produce enough low frequency airborne noise to rattle windows and induce vibrations in distant structures; however, this is not the case with typical combined cycle generating facilities. At simple cycle plants the turbine exhaust is vented directly to atmosphere and the low frequency noise generated in the exhaust system is difficult to silence - but at plants such as the IEEC the exhaust of each turbine enters an HRSG, which acts as an expansion chamber muffler by virtue of its size and shape. The large interior dimensions of the HRSG allow it to very effectively attenuate long wavelength low frequency noise. The end result is that the noise emissions from the HRSG walls and stack exit contain only a moderate amount of low frequency noise; much less than is needed to cause perceptible vibration at nearby receptors.

The approximate quantitative threshold for the perception of vibrations due to airborne noise is given in ANSI B133.8 *Gas Turbine Installation Sound Emissions*, Appendix B (Ref. 4) as a level of between 75 and 80 dBC. C-weighted sound levels are a much better measure of noises that contain significant low frequency energy. As indicated in Table 5.9-9 the C-weighted emissions of the plant are expected to be well below 75 dBC.

Table 5.9-9 Expected C-Weighted Energy Center Noise Levels at Nearby Sensitive Receptors

Location	Expected Energy Center Noise Level During Base Load Operation, dBC	Approx. Threshold of Perceptible Vibrations due to Airborne Noise, dBC
DP-1. Ethanac Road	58	75
DP-2. McLaughlin & Dawson Roads	56	75
DP-3. McLaughlin & Palomar Roads	58	75
DP-4. Highway 74 North of Site	61	75

5.9.3.3.8 Start-up Noise Emissions

During a normal plant start-up the steam that is initially produced soon after turbine ignition cannot be immediately admitted to the steam turbine because the steam must be heated to a minimum superheat temperature. Until the condenser is ready to accept HRSG steam production (either via the bypass system or from the steam turbine), it must be released to atmosphere through several drum vents on top of each HRSG. Noise from these and other vents associated with start-up processes is often significant and it is difficult to avoid a temporary increase in plant noise above normal steady state levels during these transient activities. Nevertheless, every effort will be made to anticipate and minimize start-up noise by including silencing measures for these sources as a part of the initial mitigation plan. The duration that the drum vents are open will be minimized through use of the steam turbine bypass system, which allows steam to be discharged directly to the condenser until conditions are such that the steam turbine can be started.

Most normal plant starts occur in the early morning hours, typically 5:00 a.m. to 8:00 a.m. to meet peak morning demand; coincidentally, this is the time when ambient noise levels are relatively high due to morning traffic. In general, ambient levels during this period were found to be 10 to 15 dBA higher than during the preceding nighttime hours. Consequently, under typical circumstances a temporary increase in Energy Center noise during a start will not necessarily result in an adverse noise impact on the community. In any event, mitigation is planned to minimize the impact of start up sources in case it is desirable to start the Energy Center at other times of day.

5.9.4 Mitigation Measures

5.9.4.1 Construction Noise Mitigation

In addition to being difficult to predict, construction noise is also difficult to mitigate and impossible to prevent. To minimize disturbance noisy construction activities will typically be limited to normal daytime hours (7:00 a.m. to 7:00 p.m.), consistent with the MNSP, and reasonable effort will be made to limit noise. In particular, special attention will be paid in the commissioning and testing phase to steam blows, steam venting, and bypass operations in order to ensure that the noise generated by these activities is minimized. One or more steam blow silencers will be used. Neighbors will be notified in advance of activities that are expected to be particularly noisy.

5.9.4.2 Operational Noise Mitigation

In general, the noise emissions of the major plant components will be limited by purchase specification or other means to the allowable sound power levels developed in the model study. The most practical and sensible method of realizing the required performance for each noise source is yet to be determined in conjunction with the overall detailed design of the facility; however, it is currently envisioned that the following primary noise control measures will be needed to realize the modeled plant performance.

The specific noise controls outlined above are subject to revision as the plant design progresses and issues of constructability, maintenance, operations, cost, and general feasibility are fully evaluated. Some items may ultimately be added, deleted or modified as appropriate to realize the design targets listed in Table 5.9-6. Table 5.9-10 lists the anticipated noise mitigation measures.

5.9.4.3 Noise Complaint Resolution Procedure

IEEC will create a complaint resolution procedure to provide an efficient and effective means of receiving and resolving any noise complaints. An outline sample form for the procedure is provided in Figure 5.9-7.

Any noise complaints received by the facility switchboard operator will be entered in a "Noise Complaint Logbook" kept at the switchboard desk. The caller will then be transferred to the plant manager or shift supervisor who will obtain a thorough understanding of the complaint. The manager or supervisor will briefly explain the resolution procedure to the caller and provide assurance that the problem will be investigated in a timely manner and corrected to the fullest extent practicable.

The manager will then record the information from the logbook on a blank "Noise Complaint Resolution" form presented below.

Table 5.9-10 Anticipated Noise Mitigation Measures

Plant Component	Mitigation Measure, Improvement or Upgrade Associated with Preliminary Plant Design
Cooling Tower	Noise barrier wall south of tower to block inlet noise and splash noise
	Non-standard, slow speed, fans
	Low noise, slow speed motors
HRSG's	Heavy stack silencing
	Extra-thick casing plate
	Inlet duct noise barriers
	Acoustically lagged steam lines and valve bodies
	Silencers and/or enclosures for ammonia injection blowers
	Acoustically lagged burner control skids
	High performance steam vent silencers
Combustion Turbine Packages	Purchase manufacturer's low noise option (includes exhaust diffuser duct noise barriers)
	Additional noise barriers around generators and load compartments
	Noise barrier around accessory module – north unit only
	Low noise CT compartment ventilation system
Steam Turbine and Generator	Enclosure STG support structure with heavy acoustical cladding to contain noise from condenser, steam lines and ST peripherals
	Specify very low noise ST and generator enclosures; custom design possible
Transformers	Noise barrier walls for north and east sides in addition to planned firewalls
Start-up Drain Vents	Vent silencers and acoustical lagging on vent stacks
Gas metering/pressure letdown station	Acoustical lagging or local noise barrier wall

Figure 5.9-7 Noise Complaint Resolution Form

NOISE COMPLAINT RESOLUTION FORM INLAND EMPIRE ENERGY CENTER RIVERSIDE COUNTY, CALIFORNIA
Complainant's name and address:
Date complaint received: Time complaint received:
Nature of noise complaint:
Definition of problem after investigation by plant personnel:
Initial noise levels at 3 feet: _____ dBA Initial noise levels at the complainant's property: _____ dBA Final noise levels at 3 feet: _____ dBA Final noise levels at the complainant's property: _____ dBA
Description of corrective measures taken:
Approximate installed cost of corrective measures: Date installation completed: Date first letter sent to complainant: (copy attached) Date final letter sent to complainant: (copy attached)
This information is certified to be correct: Plant Manager's Signature

The plant manager or designee will investigate the reported noise problem. The offending equipment or activity will be identified and noise levels documented by taking near- and far-field measurements prior to applying any treatment. Any corrective actions will be determined based on the investigation findings.

5.9.5 Cumulative Impacts

Increases in noise levels above existing ambient levels during construction and operation will generally not be noticeable beyond one mile from the site. Thus, direct cumulative impacts with other projects will only occur if the other new projects are located within a one-mile radius of the site. No similar projects are known to be planned in the area, and so no direct cumulative noise impacts will occur (County of Riverside, 2001).

Small increases in highway traffic noise will occur throughout a large area extending beyond the one-mile radius described above during construction and operation of the project. Increased traffic noise will exist from the origination point of each individual trip to the IEEC as well as on the return trip. Some overlap with traffic due to other new and planned projects will undoubtedly occur at distant locations. However, significant changes in the volume of traffic are required to effect even minor changes in noise levels. For example, a doubling of the volume of traffic is required to increase the traffic noise level by the barely noticeable amount of 3 decibels. The cumulative increase in traffic volume will not be doubled at any location, near or far. Thus, there will be no noticeable indirect cumulative noise impact due to highway traffic. Furthermore, these impacts have also been addressed in the MNSP and associated EIR. The Energy Center development and associated traffic noise are consistent with the MNSP.

5.9.6 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the IEEC, including transmission lines, pipelines, and ancillary facilities, will be conducted in accordance with all LORS pertinent to noise from the project. The following LORS are applicable or potentially applicable to the proposed project in the context of noise.

5.9.6.1 Federal Authorities and Administering Agencies

Noise Control Act of 1972, 42 USC § 4901 *et seq.*; 40 CFR Parts 201-211. This Act sets performance standards for noise emissions from "major sources." EPA has identified a day/night level (Ldn) of 55 dBA as providing reasonable protection against community annoyance and activity interference due to noise.

The Noise Control Act is administered by EPA.

EPA 1974 Noise Guidelines. USEPA developed guidelines (1974) to assist state and local government entities in development of state and local LORS for noise. The recommended level for protection against activity interference and annoyance at rural residences is a day/night level (Ldn) of 55 dBA. The Ldn is designed to adjust for the greater sensitivity of people to noise at night during normal sleep hours.

The guidelines are not administered, per se, by any agency.

Occupational Safety and Health Act of 1970, (29 CFR § 1910 *et seq.*). On-site noise levels are regulated through the Occupational Health and Safety Act of 1970 (OSHA). The noise exposure level of workers is regulated at 90 dBA over an 8-hour work shift to protect hearing (29 Code of Federal Regulations [CFR] 1910.95). On-site noise levels will generally be in the 70 to 85 dBA range. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The Energy Center will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

The administering agency for the above authority is the Federal Occupational Safety and Health Administration (Fed-OSHA).

5.9.6.2 State Authorities and Administering Agencies

The state does not promulgate a statewide uniform standard, but requires that each county include within their General Plan a Noise Element for control of environmental noise. Additionally, requirements for occupational noise exposure are set forth in Title 8 of the California Code of Regulations.

Cal-OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, § 5095, *et seq.*). Cal-OSHA regulations are the same as the federal OSHA criteria described above. The criteria is based on a worker's noise level exposure over a specific time period. Maximum permissible worker noise exposure levels to protect against damage to the workers' hearing have been established. Compliance with these levels will be achieved through either engineering controls or hearing protection and warning signs.

The administering agency for the above authority is Cal-OSHA.

California Vehicle Code, Sections 23130 and 23130.5. Noise limits for highway vehicles are regulated under this code.

The vehicle code is administered by the California Highway Patrol and the Riverside County Sheriff's Office.

5.9.6.3 Local Authorities and Administering Agencies

Riverside County General Plan, Noise Element, 1989. The California State Planning Law (California Government Code Section 65302) requires that all cities, counties and entities (such as multi-city port authorities) prepare and adopt a General Plan to guide community change. City and county General Plans must contain provisions for controlling excessive noise.

Menifee North Specific Plan No. 260, 1997. The Menifee North Specific Plan identifies measures to control noise specific to the plan area.

5.9.6.4 IEEC Compliance With Noise LORS

The design, construction and operation of the IEEC will conform to all worker safety and health noise limits. In addition, the noise from the Energy Center will be well below all applicable community and residential noise standards.

5.9.7 Involved Agencies and Agency Contacts

But for the jurisdiction of the CEC, the agency responsible for enforcement of noise levels at the IEEC is the Riverside County Planning and Community Development Department. The person to contact regarding noise emission levels from the IEEC is shown in Table 5.9-11.

Table 5.9-11 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
County of Riverside Transportation and land Management Agency	909-955-3200	Information regarding County General Plan and MNSP Noise Elements.

5.9.8 Permits Required and Permit Schedule

No permits are required.

5.9.9 References

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ISO 9613-2:1996(E) *Acoustics – Attenuation of sound during propagation outdoors* – Part 2 General method of calculation, 1996.

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5.10 VISUAL RESOURCES

Visual resources are the natural and cultural features of the landscape that can be seen and that contribute to the public's appreciative enjoyment of the environment. Visual resource or aesthetic impacts are generally defined in terms of a project's physical characteristics and potential visibility, and the extent to which the Energy Center's presence may change the perceived visual character and quality of the environment in which it may be located.

This section was prepared following CEC guidelines for preparing visual impact assessments for AFCs. Section 5.10.1 documents the visual conditions that currently exist in the Energy Center area. Section 5.10.2 discusses the potential environmental effects as they relate to visual resources. Section 5.10.3 discusses the potential cumulative impacts of this and other visual projects in the area. Section 5.10.4 summarizes the mitigation measures proposed to reduce the Energy Center's impacts on visual resources. LORS are described in Section 5.10.5. Required permits are discussed in Section 5.10.6. Section 5.10.7 lists the references used in preparation of this section.

Figure 5.10-1 is a map that indicates the locations of the visually most important Energy Center features and the key observation points referenced in the section. Figures 5.10-2a and 2b are a computer-generated map that indicates the extent of the Energy Center viewshed. Figures 5.10-3 and 5.10-4 are landscape plans for the Energy Center and switchyard site and for the gas compressor site. Figures 5.10-5 through 5.10-10 depict the current appearance of the views from the key observation points and simulations of their appearance after project construction. All figures are at the back of section.

5.10.1 Affected Environment

5.10.1.1 Regional Setting

The various components of the Inland Empire Energy Center (IEEC or Energy Center) will be developed in the portion of Riverside County that centers on the unincorporated community of Romoland. This area lies immediately east of the City of Perris and 20 miles south of the City of Riverside (see Figure 3.2.1, Regional Location). The Energy Center area is located in the San Jacinto, Perris, and Menifee Valleys, which consist of broad, flat alluvial plains that are punctuated by small, rocky hills, and bordered by treeless buttes that rise up to 300 feet or more from the valley floor. At present, the Energy Center area landscape has a mixed land use character. The valleys in the Energy Center area are surrounded by arid, undeveloped hill lands, and much of the flat land on the plains is devoted to a mix of irrigated and dry-farmed field crops. The incorporated communities of Moreno Valley and Perris, and the unincorporated communities of Romoland and Sun City are nodes of suburban density residential, commercial and industrial development. Pockets of rural residential development surround these communities and are found in other locations scattered throughout the area as well. Most views in the portions of the Energy Center area that are outside of the more developed areas are of broad, sweeping expanses defined by distant buttes and even more distant mountains. In the more developed portions of the area, views are often limited to some degree by close-by structures and trees. Electric power infrastructure is a well-established part

of the landscape in this area. Southern California Edison's Valley Substation, a large 500 kV substation located east of Romoland and a little over 0.5 miles east of the IEEC site is the focal point of a system of 500 kV and 115 kV lines which thread through the surrounding landscape.

Although much of the Energy Center landscape now has a rural or quasi-rural appearance, it is in reality a landscape that is in transition to a more uniformly urbanized level of development. Figures 5.7-2a, 2b, and 2c in the Land Use Section indicate the future land uses that would be permitted in the vicinity of the various project elements under adopted community and specific plans. As these figures suggest, and as the summaries of the plans presented in the Land Use Section indicate, the plans will permit a conversion of much of the area's now-open agricultural lands to rural residential development, to suburban density residential and commercial uses, and to industrial use. Such conversion is already starting to take place in the corridor along Interstate 215 where residential tract developments are now under construction. As a consequence of the development that has been planned and is now taking place, in the not-too-distant future, much of the Energy Center area landscape will be more developed and less open. There will be fewer sweeping views and more views in which widened roads, intensive roadside landscaping, buildings, and infrastructure facilities dominate. This will be particularly true in the area around the IEEC site, where the North Menifee Specific Area plan provides a detailed blueprint for conversion of lands that are now undeveloped and lightly developed to intensive industrial, commercial, and residential use.

5.10.1.2 Energy Center Site and Linear Corridors

Energy Center and Switchyard Site

The electric generation facility and switchyard will be located on a 45.8 acre property located just south of Romoland in the area defined by Antelope, McLaughlin, San Jacinto, Matthews, and Ethanac Roads (see Figure 5.10-1). On the west, the site is bordered by the partially developed alignment of Antelope Road, and on the east, by an undeveloped section of San Jacinto Road. On the south, the site is bordered by an approximately 300 foot wide Southern California Edison transmission line right-of-way that extends along McLaughlin Road. On the north, the site is bordered by an asphalt plant and a short segment of the AT&SF rail line.

The site is flat and open, and at present it is used for dry farming of grains. The grain field on the site extends into the SCE right-of-way that borders the parcel along its southern edge. SCE uses this right of way for a single circuit 500kV transmission line carried on lattice steel towers and for a set of closely spaced wood poles that carry both distribution lines and a 115 kV transmission line. The parcels to the east of the Energy Centers site are generally open in character and are used for the storage of recycled asphalt. A large area located immediately to the west of the site in the area between Antelope and Dawson Roads is fenced off and used for the storage of construction equipment. The parcel to the north of the site is occupied by an active asphalt plant that includes elevated hoppers and a related set of aerial conveyor belts and conveyance tubes as well as large piles of gravel. Additional neighbors in the vicinity include a concrete block plant, moderately-sized foundry, and crematorium.

Because of its agricultural use, the site has no natural vegetation. In spring and summer, its surface is a green, and then brown grain field, and in winter, the soil is left bare. Because of its flat, featureless character, site could not be characterized as containing any scenic features or having intrinsic visual sensitivity.

Electric Transmission Line

The electric energy generated by the IEEC will be transported by means of a new, overhead 500 kV transmission line to Southern California Edison's Valley substation, which is located approximately 0.7 mile to the east of the site. The alignment that this transmission line will follow is indicated on Figure 3.2-2 and Figure 5.10-1. The transmission line will first travel south across the Energy Center property, pass under SCE's existing 500 kV line, and then make use of the southern half of SCE's existing right-of-way. The northern half of the SCE right-of-way is now occupied by a single circuit 500 kV line carried on lattice steel towers that use SCE's improved-appearance "Tetra" design. The four legs of these towers define a 35 foot by 42 foot footprint. At the crossbars, these towers are 107 feet wide. The overall tower height is approximately 128 feet. At the southern edge of the right-of-way, adjacent to McLaughlin Road, there is a set of closely spaced wood poles that carry both 115 kV transmission line and a low voltage distribution line. To make room for the new transmission line, the wooden poles would be removed, and the existing 115 kV and distribution lines would be placed underground. The transmission line route between the site and the substation is flat and except for an area just east of Palomar Road where it crosses a parcel with a tree plantation, it is open in character. This proposed transmission line right of way does not contain any notable scenic features and because of its existing character as a high voltage transmission line corridor would not be considered to be an area of high visual quality.

Natural Gas Pipeline

The locations of the two alternative routes for supplying natural gas to the plant are indicated on Figure 3.2-2.

Alternative A Menifee Road natural gas pipeline would entail the construction of a new 0.9-mile pipeline that would connect with an existing Sempra gas transmission line at Menifee Road. The route followed by this alternative would be located in the rights-of-way of Junipero, Matthews, McLaughlin, Menifee, and San Jacinto Roads. The new gas compressor station that would be a part of this alternative would be located on a 6.69-acre parcel located northeast of the intersection of Rouse Road and Junipero Road (see Figure 5.10-1). Because the gas line would be buried in the street rights-of-way, the route's level of visual sensitivity is low. The compressor station site is an open agricultural field that has no vegetation other than crops, and no scenic features.

Alternative B Moreno Valley natural gas pipeline would involve construction of a 14.8-mile pipeline that would connect with an existing main pipeline at a point along Virginia Boulevard near Grant Boulevard in the San Jacinto Valley. This pipeline would be located within the rights-of-ways of a series of north-south roads in the San Jacinto and Perris

Valleys. Because the natural gas line would be buried in the rights-of-way of developed roads, the route's level of visual sensitivity is low. Project development of a natural gas compressor station would not be a part of this alternative.

Non-Reclaimable Wastewater Pipelines

The location of the route followed by the non-reclaimable wastewater pipeline that would serve the IEEC are indicated on Figure 3.2-2.

The primary source of the cooling water required by the plant will be from an existing recycled water line buried in the right-of-way along McLaughlin Road. This line will be tapped for the Energy Center by a short underground pipeline that travels across the site and across the SCE right-of-way. On this short route, there are no visual resources of any consequence.

The IEEC's process non-reclaimable wastewater will be transported away from the plant by a 4.7-mile pipeline that will take it to an existing brine line located on the southwest side of Sun City. This wastewater line will be located in the rights of way of McLaughlin and Murietta Roads. Because the line would be buried in the rights-of-way of developed roads, the route's level of visual sensitivity is low.

5.10.1.3 Potential Energy Center Site Visibility

Figure 5.10-2 provides a generalized indication of the Energy Center viewshed, that is, the areas from which the Energy Center is most likely to be visible. Since the Energy Center has the largest and most potentially visible elements of the Energy Center, it was considered to be the appropriate focus of the viewshed map.

Identification of the Energy Center's viewshed was based on review of project engineering drawings, and a geographic information system (GIS) viewshed program. The viewshed map indicates two categories of view areas: (1) those in which the tops of the IEEC's HRSG structures are likely to be generally visible, and (2) those in which only the top of the stack would be seen. This viewshed map is generalized because although the GIS viewshed program accounts for the screening effects of major topographic features, it does not factor in the structures and vegetation in the foreground of views, which in many cases can partially or fully screen the views toward the Energy Center. This viewshed map, then, must be treated as an indicator of the physical extent of potential views toward the taller project features. Although the Energy Center's taller features are potentially visible for very long distances in some directions, as a practical matter, the boundaries of the viewshed were set at 3 miles from the plant in directions where views were not otherwise blocked by topography. This cut-off was made because after several miles, a feature of the size of the proposed Energy Center becomes a minor element in the view and is often difficult to detect in the larger scene. Three miles was selected as the threshold because elements of a view that are 3 miles or more from the viewpoint are considered part of the background—the landscape zone in which little color or texture is apparent, colors blur into values of blue or gray, and individual visual impacts become least apparent (USDA Forest Service 1973, pp. 56-57).

5.10.1.4 Sensitive Viewing Areas and Key Observation Points

To assess the IEEC's potential impacts on visual resources, the view areas most sensitive to the Energy Center's potential visual impacts were identified and, in consultation with CEC staff, six Key Observation Points (KOPs) were selected for detailed analysis. For all of these KOPs, photo simulations were developed to serve as a basis for visualizing the Energy Center's potential effects. In evaluating the sensitivity of the viewing areas potentially affected by the project, consideration was given to distance from the Energy Center site, number of viewers, and the presence of recreational or residential uses. The potentially sensitive viewing areas selected for analysis are indicated on Figure 5.10.1, and the views from the KOPs are described below.

In responding to the CEC's requirement that an assessment be made of the visual quality of the landscapes potentially affected by the Energy Center, the discussion of the views seen from the KOPs includes ratings of the visual quality of the landscapes. These ratings were developed based on a series of in-field observations carried out during the months of July 2000, and February and July 2001, review of photos of the area, review of local planning documents, review of methods for assessment of visual quality, and review of research on public perception of the environment and scenic beauty ratings of landscape scenes. The final assessment of the visual quality of the views from each of the KOPs was made based on professional judgment, taking into consideration a broad spectrum of landscape assessment factors in a holistic way. Factors considered included an evaluation of:

- Natural features, including topography, water courses, rock outcrops, and natural vegetation
- Positive and negative effects of man-made alterations and structures on visual quality
- Visual composition, including assessment of the complexity and vividness of patterns in the landscape
- Spatial organization, including assessment of criteria such as perceived accessibility, mystery, enclosure, scale, image, refuge, prospect, and contemplation

The relevance of these factors for landscape evaluation has been established by landscape perception and assessment research over the past 20 years. Based on these considerations, a group of landscape scholars at Virginia Technical University (Buhyoff et al., 1994) developed landscape quality ratings, specifically, the six landscape quality classes listed in Table 5.10-1. This scale provides a strong framework for qualitative ratings because it is based on findings of the full range of available research on the ways in which the public evaluates visual quality. In addition, the scale has a common-sense quality and is easily understood because it defines landscape quality in relative terms, contrasting landscapes that are low, below average, average, above average, high, and outstanding in visual quality.

Table 5.10-1 Landscape Visual Quality Scale Used in Rating Project Area Viewsheds

Rating	Explanation
Outstanding Visual Quality	A rating reserved for landscapes with exceptionally high visual quality. These landscapes are significant nationally or regionally. They usually contain exceptional natural or cultural features that contribute to this rating. They are what we think of as "picture post card" landscapes. People are attracted to these landscapes to view them.
High Visual Quality	Landscapes that have high quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes which have high potential for recreational activities or in which the visual experience is important.
Moderately High Visual Quality	Landscapes that have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to man-made or natural features contained within the landscape, to the arrangement of spaces in the landscape or to the two-dimensional attributes of the landscape.
Moderate Visual Quality	Landscapes that have average scenic value. They usually lack significant man-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.
Moderately Low Visual Quality	Landscapes that have below average scenic value but not low scenic value. They may contain visually discordant man-made alterations, but these features do not dominate the landscape. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes with low scenic value. The landscape is often dominated by visually discordant man-made alterations, or they are landscapes that do not include places that people will find inviting and lack interest in terms of two-dimensional visual attributes.

Note: Rating scale based on Buhyoff et al., 1994.

KOP 1—Dawson Road at Almaden Lane

Figure 5.10-5a represents the view from KOP 1, a viewpoint located along Dawson Road at its intersection with Almaden Lane. This viewpoint lies approximately 0.50 miles southwest of the Energy Center site's southwestern corner. This viewpoint was selected to represent views toward the Energy Center site from the corridor along the southern portion of Dawson Road, where there is a small number of rural residences along the western side of the road. It also represents views that would be seen by residents of the rural residential neighborhood along Almaden Lane and Airstream Way at times when they would drive out of the area by way of Dawson Road. Because of the presence of vegetation, in the front yards of the homes along Dawson Road, most of the views from these properties are not as open as the view seen in Figure 5.10.5a. Within the rural residential area along Almaden Lane and Airstream Way, the views toward the Energy Center site are blocked by structures, trees, and other foreground elements which dominate the views in this area. The open land visible in the foreground of the view has been approved for development with a subdivision of single family homes on relatively small lots. When this residential project is developed, the views from this area toward the Energy Center site would be substantially blocked by the subdivision's perimeter wall, the homes, and any associated landscaping. Because of the Energy Center site's partial visibility from the front yards of the existing residences along Dawson Road, and because of its visibility to residents traveling north on Dawson Road, this view has a high level of sensitivity.

The major elements in this view are the expanse of flat, open agricultural land in the foreground, the Lakeview Mountains in the background, and the developed features in the middleground that include industrial structures, a collection of trailers and old vehicles and equipment, the SCE 500 kV transmission line, and the wood pole line that shares the SCE right-of-way. Applying the Buhyoff landscape visual quality scale, the view from this area would be classified as having moderately low visual quality. The open space in the foreground and the mountains in the backdrop provide a measure of visual interest, but the developed features in the middleground detract from the overall level of visual quality.

KOP 2—Dawson Road at McLaughlin Road

Figure 5.10-6a is a carefully composed photograph of the view toward the Energy Center site taken near the intersection of Dawson Road at McLaughlin Road. This viewpoint lies approximately 0.28 mile south of the Energy Center site's southwestern corner. It was selected to represent views toward the Energy Center site as experienced from the eight residences that cluster around this intersection, from up to three mobile homes located in the construction equipment storage yard located along McLaughlin Road slightly east of Dawson Road, and by residents of the rural residential area to the south as they travel north along Dawson Road. From the residences on the east side of Dawson Road and on the south side of McLaughlin Road, views toward the Energy Center site are partially screened by outbuildings, trailers, fences, trees, and other visual obstructions located on their properties. From the residences on the western side of Dawson Road, views toward the Energy Center site are partially blocked by the structures on the residential properties on the east side of the road. Because of the

Energy Center site's partial to full visibility from the residential properties in this area, and because of its visibility to residents traveling north on Dawson Road, this view has a high level of sensitivity.

The photograph presented in Figure 5.10-6a represents the best case view from this area. Southern California Edison's transmission line corridor parallels McLaughlin Road. This line's bundled conductors and the approximately 128 foot high towers that support them, as well as the wood poles located immediately along the northern edge of McLaughlin Road that carry a 115 line and a local distribution line dominate the views from this area. Based on instructions from CEC staff during a pre-filing site visit, the photograph of the view from this KOP was composed in a way that these transmission line conductors and support structures would not be visible. This view may be representative of views from any portions of the properties lying north of the transmission line corridor where there are no intervening obstructions, but it is not representative of the views from the areas within and south of the transmission corridor where the transmission towers and conductors dominate the view.

The major elements in this view are the expanse of flat, open agricultural land in the foreground, the Lakeview Mountains in the background, and the developed features in the middleground that include industrial structures and transmission lines. Applying the Buhyoff landscape visual quality scale, the view in this photo would be classified as having moderately low to moderate visual quality. The open space in the foreground and the mountains in the backdrop provide a measure of visual interest, but the developed features in the middleground detract somewhat from the overall level of visual quality. In areas lying within and to the south of the transmission line corridor where the transmission lines are visible and dominate the foreground of the view, the level of visual quality would be classified as moderately low.

KOP 3—Ethanac Road near Tyler Avenue

Figure 5.10-7a is a photograph of the existing view from KOP 3, a viewpoint located along Ethanac Road near Tyler Avenue. This viewpoint lies approximately 0.40 mile northwest of the Energy Center site. It was selected to represent views toward the Energy Center site from the area along Ethanac Road, which defines the southern edge of the community of Romoland. The Energy Center site is visible to community residents as they travel east on this street, and is to some degree potentially visible as they travel southeast on nearby areas of Tyler, Harrison, and Van Buren Avenues. The Energy Center site is also potentially visible to some degree from the yards of residences along Ethanac Road and nearby areas of Tyler, Harrison, and Van Buren Avenues. It is important to note that the views from the residential properties toward the site are to a very large degree screened by outbuildings, fences, and plantings on the properties themselves and by similar features on intervening properties. The relatively unobstructed view presented in Figure 5.10-7a is visible only from a short stretch of Ethanac Road. Because of the Energy Center site's visibility to residents traveling east on Ethanac Road and partial visibility to resident traveling southeast on nearby residential streets, and because the potential for some limited visibility from residence along and near Ethanac Road, this view has a high level of sensitivity.

The major elements in this view is are the open field in the immediate foreground, the faintly visible mountains in the background, and the heavy equipment storage area, wood pole line and 500 kV transmission line in the middleground and far foreground. Applying the Buhyoff landscape visual quality scale, the view from this area would be classified as having moderately low visual quality. The open space in the foreground and the mountains in the backdrop provide a modest measure of visual interest, but the developed features in the middleground and far foreground dominate the view and detract from the overall level of visual quality.

KOP 4—Spring Winds Drive at North Winds Drive

Figure 5.10-8a represents the view from KOP 4, a viewpoint located along Spring Winds Drive just east of North Winds Drive in the Trade Winds mobile home subdivision, which is located north of Highway 74, due north of the Energy Center site. This viewpoint lies approximately 0.23 mile north of the Energy Center site. It was selected to represent views toward the Energy Center site from this mobile home subdivision, which is the place where the homes closest to the Energy Center site are located. Within this subdivision, there are approximately 90 mobile homes, each located on its own landscaped lot. The view presented in Figure 5.10-8a has the potential to be seen by the residents of the approximately ten residences that front on the north and south sides of Spring Winds Drive. From some of these residences, particularly those located on the north side of Spring Winds Drive, intervening homes and trees would provide more screening of the views toward the site than is seen in this photo. The view presented in Figure 5.10-8a is one of the more open views toward the site from this area because it is the view down a drainage right-of-way that is kept free of structures and vegetation. Most of the rest of the homes in the subdivision are located along streets that are oriented north-south. Although the site is visible to some degree from the centers of these streets, from most of the properties along them, the views toward the site are blocked by the fences and landscaping in the individual yards, and by the structures and landscaping on nearby lots. The view presented in Figure 5.10-8a represents the view from one of the points in the subdivision that is closest to the Energy Center site. The northern end of the subdivision lies approximately 0.4 mile from the Energy Center site's outer boundary. Because the view from KOP 4 is potentially visible to occupants of the residences along Spring Winds Drive, and to residents of other portions of the subdivision as they drive south on the subdivision's streets, this view has a high level of sensitivity.

The major elements in this view is are the residences and fenced yards in the immediate foreground, the utility poles and wires and the asphalt plant in the far foreground, and the transmission tower and a small portion of a hill in the background. Applying the Buhyoff landscape visual quality scale, the view from this KOP would be classified as having low visual quality.

KOP 5—Highway 74 at Exit From Post Office Parking Lot

Figure 5.10-9a represents the view from KOP 5, a viewpoint located along Highway 74 at the exit from the parking lot that serves a commercial strip that includes the Romoland Post Office, a storefront church, and a large produce market. This KOP lies approximately 0.25 mile northeast of the Energy Center site's northeastern corner. This viewpoint was selected because it represents views that would be seen by people using this shopping strip, which because of the presence of the post office, is an important community activity center. This view is also intended to be representative of the views seen by eastbound travelers along Highway 74, although it is not fully within the primary cone of vision of drivers on this portion of the road. This State Route is the primary east-west thoroughfare through the Perris Valley, and has a two-way average daily traffic (ADT) level of 20,000 vehicles per day. Although Riverside County has nominated the segment of Highway 74 in this area as eligible for inclusion the State Scenic Highway system, the steps for completion of the inclusion process for the portion of State Highway 74 passing through the Energy Center area have not been completed. The only special protections that the County has established to protect the visual qualities of the landscape along this portion of the highway has been to adopt regulations that limit the development of new billboards in the corridor within 500 feet of the roadway. Because of the Energy Center site's visibility from the parking lot of the commercial strip that is an important community use area and because of its visibility from heavily traveled Highway 74, the sensitivity of this view is moderately high.

The major components of this view are the expanse of flat, open agricultural land in the foreground and the hills in the middleground and in the far distance. Utility lines are visible in the immediate foreground, and wood pole utility lines and the SCE 500 kV transmission line are visible in the middleground, along with a line of tall trees. Applying the Buhyoff landscape visual quality scale, the view seen in this photograph would be classified as having a moderate to moderately high level of visual quality. It is important to note that the view presented in Figure 5.10-9a is not entirely representative of the character and quality of views toward the Energy Center site in this area. In response to specific instructions by CEC staff, the photo from this viewpoint was carefully composed to avoid taking in any of the billboards that line this section of the highway, the commercial establishments along the south side of the road, or the industrial facilities that lie in the area to the south of the highway. From many sections of Highway 74 in this immediate area, views toward the Energy Center site are blocked by commercial and industrial uses located to the south of the road. From Highway 74 and from the commercial center's parking lot, billboards and commercial and industrial facilities are seen in the foreground of most views toward the Energy Center site. Because of the presence of these features, most of the views toward the Energy Center site from this area have a level of visual quality that is moderately low.

KOP 6—View Toward Gas Compressor Site from Menifee Road

Figure 5.10-10a presents a photograph of the view from KOP 6, a viewpoint located along Menifee Road north of Rouse Road that was selected to represent views toward the 6.69 acre site that would be developed with gas compressor station under Alternative A Menifee Road

natural gas pipeline. This viewpoint lies approximately 0.12 mile to the east of this site, and represents the views that would be seen from two residences located near this point. Also, to some degree, it represents the view that would be seen by drivers on Menifee Road, although it does not lie entirely within the primary cone of vision of drivers on this portion of the road. Under the Riverside County Comprehensive General Plan, the segment of Menifee Road in this area has been designated as eligible for county scenic highway status. However, no special regulations have been adopted to protect the views along such roads. Because of the open nature of the landscape in this area, the compressor station site is generally fully visible from the two residences and from Menifee Road. Because of the small number of residences involved and the moderate volumes of traffic on Menifee Road, the sensitivity of this view is moderate at most.

The major components of this view are the expanse of flat, open agricultural land in the foreground, the utility poles, structures, and trees in the far foreground, and the backdrop of hills in the far middleground. Applying the Buhyoff landscape visual quality scale, the view from this area would be classified as having moderate visual quality.

5.10.2 Environmental Consequences

5.10.2.1 Analysis Procedure

This analysis of visual impacts potentially caused by the IEEC is based on field observations and review of the following information: local planning documents, project maps and drawings, photographs of the Energy Center area, computer-generated visual simulations from each of the KOPs, and research on design measures for integrating electric facilities into their environmental settings.

Photographs are presented to represent the "before" conditions from each Key Observation Point. Visual simulations were produced to illustrate the "after" visual conditions from each of these points, providing the viewer with a clear image of the location, scale, and visual appearance of the proposed Energy Center. The "before" photos and the simulations of the "after" conditions are presented as pairs to facilitate comparison. The computer-generated simulations are the result of an objective analytical and computer modeling process described briefly below. The images are accurate within the constraints of the available site and project data.

Site reconnaissance was conducted to view the site and surrounding area, to identify potential key viewpoints, and to take representative photographs of existing visual conditions. A single lens reflex (SLR) 35 mm camera with a 50 mm lens (view angle 40 degrees) was used to photograph the sites.

For the views from the KOPs, computer modeling and rendering techniques were used to produce the simulation images. Existing topographic and site data provided the basis for developing an initial digital model. Project engineers provided site plans and digital data for the proposed generation facility, and site plans and elevations for the components of the transmission system. These were used to create three-dimensional (3-D) digital models of

these facilities. These models were combined with the digital site model to produce a complete computer model of the generating facility and portions of the overhead transmission system.

For each viewpoint, a viewer location was digitized from topographic maps and scaled aerial photographs, using 5 feet as the assumed viewer eye level. Computer "wire frame" perspective plots were then overlaid on the photographs of the views from the KOPs to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final "hardcopy" visual simulation images that appear in this AFC document were produced from the digital image files using a color printer.

5.10.2.2 Significance Criteria

Analysis of the Energy Center's impacts was based on evaluation of the changes to the existing visual resources that would result from construction and operation of the IEEC. An important aspect of this analysis was evaluation of the "after" views provided by the computer-generated visual simulations and their comparison to the existing visual environment. In making a determination of the extent and implications of the visual changes, consideration was given to:

- The specific changes in the affected visual environment's composition, character, and any specially valued qualities
- The affected visual environment's context
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration
- The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the likely changes

To make the determination of whether the Energy Center's visual effects would be "significant" under the provisions of the California Environmental Quality Act (CEQA), reference was made to Appendix G of the State CEQA Guidelines. The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of historic or aesthetic significance" (14 CCR, § 15382). Appendix G of the Guidelines, under Aesthetics, lists the following four questions for lead agencies to address:

- Would the Energy Center have a substantial adverse effect on a scenic vista?
- Would the Energy Center substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- Would the Energy Center substantially degrade the existing visual character or quality of the site and its surroundings?

- Would the Energy Center create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

5.10.2.3 Project Description

Energy Center and Switchyard

The features of the 670-MW (nominal gross output) natural gas-fired combined-cycle generating facility and the electrical switchyard, transmission line, and gas and water lines associated with it are described in detail in Chapter 3.0, Facility Location and Description. Figure 3.2-2 indicates the locations of the Energy Center, the transmission line, natural gas pipeline, and non-reclaimable wastewater pipelines. Figure 3.3-1 provides the layout of the Energy Center, and switchyard features on the site. Figures 3.4-1 and 3.4-2 provide elevation views of the Energy Center and switchyard. Figure 3.4-3 is an axonometric aerial view that provides an understanding of the physical relationships among the various project elements on the Energy Center site. Table 5.10-2 summarizes the equipment dimensions of the major features of the Energy Center and switchyard.

In a departure from the more usual design of combined cycle power plants, the two HRSG stacks have been located next to each other. This side-by-side configuration has been used to improve the thermal rise of the exhaust stream that emanates from the stacks.

A 20-foot high sound wall will extend across the entire width of the Energy Center and switchyard in the area immediately south of the cooling tower. Chain-link fencing will be installed along each of the remaining edges of the entire 25-acre enclosed site and will also be used to separately enclose the switchyard, storm water detention pond, and other areas requiring controlled access.

On-site storm water runoff will be collected and directed to a sedimentation/detention basin located at the southwest corner of the site. This basin will consist of a square excavated area, approximately 250 feet on a side, surrounded by a chain-link fence.

Construction Lay Down Area

As detailed in Section 3.7, construction of the Energy Center from site preparation and grading to commercial operation is expected to take place during 25-month period extending from summer/fall 2002 to the fall/winter of 2004. During the construction period, parking for construction workers and laydown of equipment will take place on the portions of the Energy Center property located to the north and south of the 25-acre area that the completed Energy Center will occupy.

Landscaping and Relationship to Antelope Road

The Energy Center site falls within the area whose development is governed by Riverside County's Menifee North Specific Plan (Riverside County 1997). This plan provides a detailed blueprint for the development of lands to the south and east of Romoland, specifying not only land uses, but requirements for road development and landscaping as well. The design of the site responds to the requirements set out in this Plan. Under the Menifee North plan, Antelope

Table 5.10-2 IEEC Equipment Dimensions

Feature	Height (feet)	Length (feet)	Width (feet)	Diameter (feet)
HRSG Units				
HRSG casings		143	15-52	
To top of HRSG casings	73			
To operating decks	80			
To top of highest relief valves and vent	108			
HRSG stacks (individual stacks)	195			18.5
Combustion Turbines				
Combustion turbines	26-40	100	33	
Combustion turbine air inlet filters	65	52	45	
Steam Turbine Generator				
STG enclosure	55	100	26	
Cooling Tower (14 cells)		840	66	
Height to top of deck	45			
Height to top of fan stacks	59			
Fan stack diameter				38
Auxiliary Boiler stack	80			4
Emergency Generator stack	35			1
Tanks				
Recycled water storage tank	43	--	--	110
Demineralized water storage tank	25	--	--	40
Fire water storage tank	34	--	--	40
Condensate surge tank	25	--	--	40
Non-reclaimable wastewater tank	25	--	--	40
Buildings				
Administration and control building	30	150	90	
Water treatment/oil & chemical storage	30	125	70	
Fire pump house	20	40	30	
Cooling tower chemical feed building	20	40	25	
Switchyard				
Switchyard bus structures	48	--	--	
T-line take-off structure	100	80	--	
Switchyard control building	20	45	30	
Sound Wall	20	1,160	--	

Road, which borders the site on the west, is designated as a secondary arterial with an 88-foot right-of-way. In response to this designation, as a part of this project, Calpine will widen its half of the segment of Antelope Road adjacent to the Energy Center property, will develop its half of the roadway to county standards, and will install the landscape treatment the plan specifies along the eastern edge of the widened right-of-way.

In addition to providing the landscaping that the Menifee North plan calls for along Antelope Road, Calpine has also prepared a landscape plan for the remainder of the site. The project will provide a twenty-two-foot landscaped right-of-way and an additional six-foot landscape area for a total landscape development zone of twenty-eight feet, in compliance with the Menifee North plan. This plan calls for planting an informal border of tall, fast-growing, broadleaf trees around the perimeter to provide screening of views toward the site. The planting plan is also intended to soften the Energy Center's profile, and integrate the facility into the overall landscape composition expected to evolve over time in this area with implementation of the Menifee North Specific Plan's landscaping guidelines. The tree species specified will be selected from the list of recommended trees contained in the Menifee North plan. On the southern side of the property, the line of screening trees had to be sited along an alignment somewhat north of the Energy Center property's southern boundary to accommodate the 70-foot wide right-of-way of a potential storm water drain that is being planned for eventual development through this area. A copy of the landscape plan for the Energy Center and switching site, with identification of recommended tree species is presented as Figure 5.10-3.

Lighting

The IEEC will require nighttime lighting for operational safety and security. To reduce offsite impacts of this requirement, lighting at the facility will be restricted to areas required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed onsite so that significant offsite light or glare will not be created. Fixtures of a non-glare type will be specified. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits or motion detectors will be provided, thus allowing these areas to remain unilluminated at most times, minimizing the amount of lighting potentially visible offsite. In addition, the 20 foot high sound wall along the southern edge of the site, and the landscaping planned around all four of the property's boundaries will provide further screening of the facility's required night lighting, particularly in views from areas located close by.

Water Vapor Plumes

The size and frequency of the water vapor plumes produced by this project will be similar to those predicted for other combined cycle power plant projects that the Commission has reviewed in other Southern California inland climatic settings. Under some circumstances, the Energy Center would produce visible water vapor plumes from the 14 cells of the cooling tower. Given the ambient meteorological conditions in the Energy Center area, it is anticipated, based on analyses of similar generation projects in the same region, that a visible

cooling tower plume will occur less than 10 percent of the time during daylight, non-fog, non-rain hours over the course of the year. Plumes will also occasionally be seen emanating from the HRSG stacks, and like the cooling tower plumes, it is also anticipated, based on analyses done for other projects, that plumes from the HRSG stacks will occur less than 10 percent of the time during daylight, non-fog, non-rain hours during the course of the year. During nighttime hours, an observer could see the plumes only if there were sufficient natural or artificial light. Because of the measures that will be taken to reduce lighting at the plant, any plumes that are created will not be highly visible during the nighttime hours. It is also important to note that the plumes will tend to form in the winter months and during early morning hours when the temperature is low and the humidity is relatively high. This is also the time when fog tends to form, and if fog is present, the plumes will tend to blend into the fog. The fog will not prevent the formation of visible water-vapor plumes; however, it will make it more difficult, if not impossible, for the plumes to be distinguished from the fog.

Electrical Transmission Line

The transmission line associated with the proposed Energy Center is described in Section 3.6. The transmission conductors will leave the switchyard by means of a 100 foot-high H-shaped take-off structure. From the switchyard they will travel south across the site on an alignment that is close to and parallel to the project parcel's eastern property line. This segment of the line will be supported by two single circuit lattice steel structures of the type presented on Figure 3.6-2. At a point just to the west of where the project's transmission link would cross the existing SCE 500 kV line, a new lattice steel tower, approximately 160 feet high would be added to the existing SCE 500 kV line to raise its conductors higher in order to provide the clearance to permit the IEEC's transmission line to pass under them. The structure added to the SCE line would be similar in design to the Tetra towers now used on this line. In the area on the south side of the existing 500 kV line, the three conductors of the project line will each connect to tubular steel turning tower. From here, the IEEC transmission line will extend eastward on an alignment located adjacent and parallel to the existing SCE 500 kV line. This segment of the line will travel for 0.7 miles until reaching SCE's Valley Substation. In this area, the line will be carried by double circuit lattice steel towers that range from 107 to 127 feet in height. The conductors for the IEEC line will be installed on the north side of the towers, and the south side will be reserved for a future SCE line. The transmission line's final tower before reaching the substation will be a lattice tower with a single circuit design. The transmission line's alignment and the locations of the towers are in Appendix I.

Similar to the existing SCE 500 kV transmission line towers, the new transmission structures will be given a neutral gray finish that will minimize reflectivity, be harmonious with the colors of the nearby IEEC structures and SCE substation structures, and will help to minimize the towers' contrast with the sky backdrop. Non-specular conductors will be used to reduce the visibility of the conductors. Insulators that are non-reflective and non-refractive will be specified to minimize insulator visibility.

Natural Gas Pipelines and Compressor Station

As indicated in Section 3.0, Facility Location and Description, there are two alternatives for the supply of natural gas to the Energy Center. Alternative A would entail the construction of a new pipeline that would connect with an existing Sempra gas transmission line at Menifee Road and the compressor station. Alternative B would involve construction of a 14.8-mile pipeline that would connect with an existing main pipeline that passes through the region to the north of the Energy Center area. The locations of the two alternative routes are indicated on Figure 3.2-2. The proposed pipeline routes are located within or adjacent to the rights of ways of roads, and in some places, along the edges of property boundaries. Since these lines would be buried and the surface conditions restored, the lines themselves would not be the source of long-term changes to the visual environment. Any noticeable visual effects associated with the pipelines would be restricted to the construction phase. During construction, the area along the rights-of-way would be temporarily disrupted by machinery, excavated piles of dirt, construction vehicles, and other disturbances associated with pipeline construction. However, these effects would be minor and temporary, and would not be significant.

Under gas pipeline Alternative A, construction of a compressor station would be required to maintain the required pressure in the gas pipeline. This compressor station would be developed on a 6.6-acre parcel of land located northeast of the intersection of Rouse Road with Junipero Road and approximately 0.8 miles southeast of the Energy Center site (see Figure 3.2-2 for location). In addition to providing the gas pressure needed to serve the IEEC, the compressor station would also boost the pressure in the Sempra line, which supplies the main Sempra system in San Diego County. Figure 3.10-1 depicts the site layout of the compressor station's primary elements. The largest structure on the site is a building that houses the compressors. This structure is 50 feet wide, 80 feet long, and 25 feet high. The station will also include a number of above-ground pipes and tanks. The tallest of these structures will be 22.5 feet high. To facilitate the compressor station's integration into its landscape backdrop, all equipment and structures will be treated with a gray-taupe color. The facility will be surrounded by a solid fence, and a border of trees selected for appropriateness to the area's landscape conditions will be planted around the perimeter to provide screening. A conceptual landscape plan for the compressor station site is presented as Figure 5.10-4.

Non-Reclaimable Wastewater Pipeline

The design features of the non-reclaimable wastewater pipeline that would be built to serve the Energy Center are described in Section 3.0. The locations of this pipeline are indicated on Figure 3.2-2. Since this line would be buried and the surface conditions restored, the line itself would not be the source of long-term changes to the visual environment. Any noticeable visual effects associated with the pipelines would be restricted to the construction phase. During construction, the area along the rights-of-way would be temporarily disrupted by machinery, excavated piles of dirt, construction vehicles, and other disturbances associated with pipeline construction. However, these effects would be minor and temporary, and would not be significant.

5.10.2.4 Assessment of Visual Effects

KOP 1—Dawson Road at Almaden Lane

Figure 5.10-5b is a simulated view of the Energy Center as it would appear from KOP 1 at the time it goes into operation, and Figure 5.10-5c is the same view as it would appear 20 years after construction and reflects the appearance of the project landscaping at a point when it is nearing maturity. As Figure 5.10-5b indicates, in the period immediately after construction, before the planned landscaping gains any height, the plant's stacks, HRSG units, cooling tower, and recycled water storage tank will all be clearly visible from this viewpoint, and will become important elements in the middleground of the view. The Energy Center will change the existing view in that it will fill the view's near middleground, blocking the existing views toward the industrial structures and the base of the mountains in the far middleground. The generating facility's features will be larger and bulkier than the transmission structures now visible in the view, but will not appear substantially taller than the wooden transmission poles or the lattice steel 500 kV transmission tower visible in front of the Energy Center. The tops of the HRSG structures, the cooling tower, and the water tanks will all be lower than the crest of the mountains in the background, and as a consequence, all elements of the Energy Center except the tops of the HRSG stacks will be visually absorbed by the mountain backdrop.

Figure 5.10-5c illustrates how the appearance of the Energy Center will change over time as the planned landscaping becomes established and gains height and mass. As this simulation indicates, at 20 years after construction, the trees around the Energy Center will have grown to the point where nearly all of the project's components except for the upper 60% of the stacks will be screened from view. Besides screening most elements of the Energy Center, the trees will create a tree line that is consistent with the prevailing patterns in this landscape.

The development of the Energy Center will change this view because it will add a number of large industrial forms into a landscape that is now more open and less intensively developed in character. Although the character of this scene will be changed to some degree, the overall visual quality of this view, which is now moderately low will not be decreased. The Energy Center facilities will have an orderly appearance, and except for the tops of the stacks, will be visually absorbed by the mountains in the background. Over time, the significant tree plantings around the site's perimeter will screen the project's lower elements, visually integrate the Energy Center into the overall landscape composition, and provide a new element of visual interest.

KOP 2—Dawson Road at McLaughlin Road

Figure 5.10-6b is a simulated view of the Energy Center as it would appear from KOP 2 after completion of construction and installation of the landscaping. Figure 5.10-6c is the same view as it would appear 20 years after construction and reflects the appearance of the Energy Center landscaping as it nears maturity. As indicted by Figure 5.10-6b, at the time the Energy Center starts operation, the plant stacks, HRSG units, cooling tower, and recycled water storage tank will all be clearly visible from this viewpoint, and will become the major elements in the middleground of the view. The Energy Center will change the existing view in

that it will fill the view's near middleground, blocking the existing views toward the industrial structures and the base of the mountains in the far middleground. The generating facility's features will be larger and bulkier than the transmission structure now visible in the middleground of this view, but will not appear substantially taller. In views from McLaughlin Road and areas to the south, the Energy Center's structures will appear shorter and less visually dominant than the existing 500 kV towers and wood poles located in the transmission corridor that parallels the north side of the road. The tops of the HRSG structures, turbines, warehouse structure, and water tanks will all be lower than the crest of the mountains in the background and as a consequence, they will be visually absorbed by the mountain backdrop. The tops of the cooling tower stacks extend above backdrop to only a small degree. Only the tops of the HRSG stacks will extend substantially above the backdrop.

Figure 5.10-5c illustrates how the appearance of the Energy Center will change over time as the planned landscaping becomes established and gains height and mass. As this simulation indicates, at 20 years after construction, the trees around the Energy Center will have grown to the extent that all of the Energy Center's components except for the HRSG top works and upper 60% of the stacks will be screened from view. Besides screening most elements of the Energy Center, the trees will create a tree line that is consistent with the prevailing patterns in this landscape.

The development of the Energy Center will change this view in that it will add large industrial forms into a landscape that is now more open and less intensively developed in character. The character of this scene will be changed, but the overall visual quality of this view, which is now moderately low will not be substantially degraded. This conclusion is especially valid for the area within and to the south of the SCE 500 kV transmission corridor, where the existing view is substantially affected by the 500 kV transmission line and the parallel combined 115 kV and local distribution line. The project facilities will have an orderly appearance, and except for the tops of the stacks and the tops of the cooling tower fan stacks, will be visually absorbed by the mountains in the background. Although some views of the distant landscape will be blocked, enough of the view toward the mountain backdrop will be retained to maintain a sense of spatial depth to the view. Over time, the significant tree plantings around the site's perimeter will screen the project's lower elements, visually integrate the Energy Center into the overall landscape composition, and provide a new element of visual interest.

KOP 3—Ethanac Road near Tyler Avenue

Figure 5.10-7b is a simulated view of the Energy Center as it would appear from KOP 3 at the start of operation. Figure 5.10-7c is the same view as it would appear 20 years after construction and reflects the appearance of the landscape as it nears maturity. As Figure 5.10-7b indicates, at the time the Energy Center starts operation, the plant's stacks, HRSG units, cooling tower, warehouse/office structure, and recycled water storage tank will all be clearly visible from this viewpoint, and will become important but not dominant elements in the middleground of the view. The Energy Center will change the existing view to some degree in that it will add large, rectangular industrial structures into a scene where they

do not now exist. Except for the HRSG stacks, all of the Energy Center's structures will appear to be lower in height than the existing 500 kV transmission towers. Although the HRSG structures will, for the most part be backdropped by the mountains in the distance, the stacks and the tops of the turbine stacks will be seen against the sky. However, because the tops of the cooling tower stacks are close to the horizon line, the salience of this skylining is minimal. Only the tops of the HRSG stacks will be skylined to any degree.

Figure 5.10-5c illustrates how the appearance of the Energy Center will change over time as the planned landscaping becomes established and gains height and mass. As this simulation indicates, at 20 years after construction, the trees around the Energy Center will have grown to the extent that all of the project's components except for the tops of the HRSGs and the upper 60% of the stacks will be screened from view.

The development of the Energy Center will change this view to some degree in that it will add large built forms into a landscape where they do not now exist. Because of the visual prominence of the 500 kV transmission towers and the heavy equipment storage area that currently exist in the far foreground, this view already has a highly utilitarian landscape character. The presence of the Energy Center will intensify but will not change the scene's utilitarian character. The overall visual quality of this view, which is now moderately low will not be substantially degraded. Over time, the significant tree plantings around the site's perimeter will screen much of the Energy Center from view and visually integrate the Energy Center into the overall landscape composition, and provide a new element of visual interest. It should also be noted that now-open area in the foreground of the view has been designated under the Menifee North Specific Plan for industrial use, and it can be anticipated that over time it will be developed with industrial facilities that will block views toward the IEEC.

KOP 4—Spring Winds Drive at North Winds Drive

Figure 5.10-8b is a simulated view of the Energy Center as it would appear from KOP 4 at the time the IEEC is placed into service. Figure 5.10-8c is the same view as it would appear 20 years after construction and reflects the appearance of the Energy Center as its landscaping nears maturity. As indicted by Figure 5.10-8b, at the time the Energy Center starts operation, the plant's stacks and HRSG units will be clearly visible from this viewpoint, and will become important elements in the far foreground of the view. The Energy Center will change the existing view in that it will add a substantial new industrial feature adjacent to the existing asphalt plant. The generating facility's features will be somewhat larger and bulkier than the asphalt plant, but will appear to be less tall than the utility poles and antennas located in the area in front of it. The Energy Center's features will, for the most part, be silhouetted against the sky, and will block the glimpse that the existing view provides of distant mountains.

Figure 5.10-8c illustrates how the appearance of the Energy Center will change over time as the planned landscaping becomes established and gains height and mass. At 20 years after construction, the trees around the Energy Center will have grown to the extent that much of the HRSGs and the lower portions of the stacks will be screened from view.

The development of the Energy Center will add several large industrial forms into a view that already includes a significant industrial structure. As a consequence, the industrial character of this view will be intensified. The visual quality of this view is already low. Because of the large scale of the Energy Center's facilities when seen at this distance and the visibility of the tanks and valves on the top of the HRSGs, which at this close viewing range have an industrial and somewhat cluttered appearance, the visual quality of this view would be further degraded by the Energy Center in the period before the landscaping grows to its full height. To mitigate the Energy Center's impacts on this close and sensitive residential view, further mitigation is recommended. This mitigation would consist of planting of street trees along the Highway 74 corridor in this area. Planting of large, fast-growing street trees in this area would provide fairly quick screening of the Energy Center's structures in view from this area. As the vegetation visible growing behind the shed and carport at the left side of the photo suggests, trees planted along the road in the area immediately behind these residences have the potential to readily screen the HRSGs and HRSG topworks, and much of the stacks as well.

KOP 5—Highway 74 at Exit From Post Office Parking Lot

Figure 5.10-9b is a simulated view of the IEEC as it would appear from KOP 5 at the time the Energy Center goes into operation, and Figure 5.10-9c is the same view as it would appear 20 years after construction and reflects the appearance of the landscaping on the Energy Center site as it nears maturity. As indicated by Figure 5.10-9b, in the period immediately following construction, before the planned landscaping grows to any extent, the Energy Center's switchyard, transmission takeoff tower, combustion turbine air inlet filters, HRSGs and stacks will all be clearly visible from this viewpoint, and will become important elements in the middleground of the view. In addition, a new tower that will be added to the existing SCE 500 kV line, and a new lattice steel tower and steel pole towers associated with the project's transmission link will be visible at the left side of the view. The Energy Center will change the existing view in that it will fill a large portion of the view's near middleground, blocking the existing views across the open plain and toward the distant mountains. The project's structures will add substantial built elements into a view that has relatively few built elements at present. The tops of the switchyard equipment, air intake vents, and HRSGs will all appear to be lower in height than the utility poles and transmission towers that are already visible in the view. All of these elements will, for the most part, be backdropped by the distant mountains. Only the tops of the stacks and of two of the new transmission towers will be silhouetted against the sky.

Figure 5.10-9c illustrates how the appearance of the Energy Center will be changed over time as the planned landscaping becomes established and gains height and mass. As this simulation indicates, at 20 years after construction, the trees around the Energy Center will have grown to the point where nearly all of the Energy Center's components except for the upper 60% of the stacks and the tops of two of the new transmission structures and the transmission takeoff structure will be screened from view.

The development of the Energy Center will change this view in that it will add a large electrical switchyard and the industrial-appearing forms of the Energy Center into a landscape that is now relatively open appearing. The presence of the plant will change the character of this scene and will, to some degree, degrade its level of visual quality, which is now moderate to moderately high. In assessing the Energy Center's overall effect on the visual quality of views from this area, it is important to keep in mind that the view used as the basis for the simulation of the Energy Center's appearance as seen from this KOP was carefully framed to exclude the billboards, roadside businesses, and other visually discordant elements that exist along this segment of Highway 74. When the full viewing context in this area is taken into account, the Energy Center's degree of impact on views from this area is not as substantial as the image presented in Figure 5.10-9c might suggest. The landscaping proposed around the perimeter of the site reduces the visual impacts of the Energy Center to level that is less than significant. As further mitigation for potential impacts on this view and on views from KOP 4, a recommendation is being made that as a part of the project, provisions be made to plant street trees along the northern and southern edges of Highway 74 in this area. Because of their closeness to viewers using the highway and the parking lot of the commercial strip in which the post office is located, the trees will quickly screen views toward the project. In addition, establishment of orderly rows of trees on both sides of the highway in this area will create a sense of visual unity that does not now exist, and will make a positive contribution to the appearance of this entry into the Romoland community.

KOP 6—View Toward Gas Compressor Station Site from Menifee Road

Figure 5.10-10b is a simulated view from KOP 6 along Menifee Road of the compressor station associated with Alternative A Menifee Road natural gas pipeline. This figure represents the compressor station as it would appear at the time it goes into operation. Figure 5.10-10c is the same view as it would appear 20 years after construction and reflects the appearance of the facility's landscaping at a point when it is nearing maturity. As Figure 5.10-10b indicates, in the period immediately after construction and before the planned landscaping gains any height, the compressor structure and outdoor components would be fully visible. However, these project elements would be in scale with the existing features of the landscape setting and would be backdropped by the fields and hills behind them. Review of Figure 5.10-10c suggests that as the landscaping begins to get established, it will effectively screen all of the compressor station's elements from view and will blend the facility into the overall landscape pattern. Although the presence of the compressor station will change the character of this view to some degree, the overall level of visual quality will not be substantially altered.

Light and Glare

The IEEC's effects on visual conditions during hours of darkness will be very limited. As indicated previously, some night lighting will be required for operational safety and security. High illumination areas not occupied on a regular basis will be provided with switches or motion detectors to light these areas only when occupied. At times when lights are turned on, the lighting will not be highly visible offsite and will not produce offsite glare effects. The

offsite visibility and potential glare of the lighting will be restricted by specification of non-glare fixtures, and placement of lights to direct illumination into only those areas where it is needed. The sound wall that will extend across the southern portion of the site and the landscape screening to be installed around the site will further reduce the visibility of facility's night lighting, particularly in views from areas located close by.

Water Vapor Plumes

It is anticipated, based on analyses of similar generation projects in the same region, that visible cooling tower and HRSG stack plumes will occur less than ten percent of the time during daylight, non-fog, non-rain hours over the course of the year. Because of the measures that will be taken to reduce lighting at the Energy Center, any plumes that are created will not be highly visible during the nighttime hours. It is also important to note that the plumes will tend to form in the winter months and during early morning hours when the temperature is low and the humidity is relatively high. This is also the time when fog tends to form, and if fog is present, the plumes will tend to blend into the fog. The fog will not prevent the formation of visible water-vapor plumes, however, it will make it more difficult, if not impossible, for the plumes to be distinguished from the fog. Because of the relatively low frequency with which daytime plumes will be created, and because the viewsheds within which the plumes would be seen are, for the most-part, less than pristine the presence of these plumes will not constitute a significant adverse impact on visual resources.

5.10.2.5 Construction Laydown Area

During the construction period, parking for construction workers and laydown of equipment will take place on the portions of the Energy Center property located to the north and south of the 25-acre area that the completed Energy Center will occupy. The asphalt production facility located to the north of the project site, with its tall structures and its landscape buffer consisting of a berm and tall trees will screen views of the laydown area and construction activities in views from the north. Views of the laydown areas from the north and northwest will be screened to a large degree by the large heavy equipment storage yard located on the west side of Antelope Road. Views of the laydown area from the east and northeast will be partially screened by the piles of recycled asphalt located south of Matthews Road. To provide further screening of views of the laydown area, particularly from the south, at the beginning of the construction period, a temporary screening fence will be constructed around the western, southern, and eastern boundaries of the southern laydown area, and along the eastern boundary of the northern laydown area. Because of relatively low level of of visual change that the laydown area will make in this landscape context where a heavy equipment storage area and an asphalt plant are already major elements in the view, the limited time period during which the laydown areas will be present, and the installation of screening fencing, it can be concluded that the project's use of the two construction laydown areas will not create significant adverse visual impacts.

5.10.2.6 Impact Significance

Any visual effects of the Energy Center that will be significant under CEQA are identified below. The identification of these impacts has been structured by applying the criteria set forth in Appendix G of the State CEQA Guidelines. The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of historic or aesthetic significance (14 CCR, § 15382)." The five questions related to aesthetics that are posed for lead agencies and the answers to them for the IEEC are:

1. *Would the project have a substantial adverse effect on a scenic vista?*

No - The only designated scenic road in this area is the portion of Menifee Road that extends from McCall Boulevard north to Highway 74. At present, there are no specific regulations that regulate the appearance of development in the viewshed of this roadway. The only project component that would be visible in proximity to Menifee Road would be the gas compressor station associated with Alternative A Menifee Road natural gas pipeline. Because of its relatively modest scale, compatible colors, and screening landscaping, this facility will not have a significant adverse effect on the visual quality of views from Menifee Road.

2. *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

This question does not apply to the IEEC project because none of the project facilities fall within the boundaries of a state scenic highway or other important scenic resource.

3. *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

Since the Energy Center site itself does not contain any special aesthetic resources and does not have a high level of visual quality, and because the Energy Center will be carefully designed and landscaped, the changes brought about by the Energy Center will not degrade the existing character and quality of the site.

Since the site is located in the midst of a corridor that has been explicitly dedicated to industrial use and which already has a high degree of utilitarian development, the Energy Center will not have a substantial effect on the visual quality and character of most views from streets and properties in the area around it.

Without mitigation, the Energy Center has the potential to create significant adverse visual impacts on views from KOPs 4, and 5. With the additional mitigation that has been recommended, the project's impacts would be less than significant.

Energy Center plumes would not create significant impacts.

4. *Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?*

As described in Section 5.10.2.3, project light fixtures will be restricted to areas required for safety, security, and operations; lighting will be directed onsite; lighting will be shielded from public view; and non-glare fixtures and use of switches, sensors, and timers to minimize the time that lights not needed for safety and security are on will be specified. These measures should substantially reduce the offsite visibility of project lighting. Offsite visibility of lighting will be further reduced by the landscape plantings that will provide additional screening of any lighting associated with the project's lower elements. With these measures, lighting associated with the project will not pose a hazard or adversely affect day or nighttime views toward the site. As a consequence, the impacts of the project's visual effects related to lighting will be less than significant.

5. *Would the project conflict with any applicable land use plan, policy, or regulation (including, but not limited to a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an aesthetic effect?*

As documented in the LORS analysis in Section 5.10.5, the Energy Center will be in conformance with most of the applicable implementing policies, ordinances, or other regulations specifically related to visual resources identified in the provisions of the local plans and zoning ordinances that pertain to various features of the project.

A height variance will be needed for the 195-foot high stack to exceed the maximum 105-foot height limit permitted under the County Zoning of Riverside ordinance. The Applicant has met with the County and discussed the projects needed for a Conditional Use Permit and height variance, and how to best address County concerns. The County has agreed that the Conditional Use Permit combined with a stack height variance would satisfy all County concerns. Furthermore, the County represented that they are agreeable to working within the CEC process and use the Final Staff Assessment as the CEQA document to assure both permits can be issued to support IEEC's schedule.

There may also be a conflict with the design policies in the Menifee North Specific Area Plan which calls for mechanical equipment to be screened.

5.10.3 Cumulative Impacts

As indicated in the Land Use analysis (Section 5.7) and in the LORs discussion of this analysis (Section 5.10-5), Riverside County has adopted plans and zoning regulations for the area around the IEEC project site that foresee and permit the area's transformation into a more highly urbanized area with a mix of residential, commercial, and industrial development. The Energy Center will be part of the transformation taking place in the project area over the next decade, but this is a landscape change that has been approved by the County and is being facilitated by the Menifee North Specific Plan. The project will be just be one small element of the overall changes that implementation of the Menifee North Specific Plan and the County Comprehensive General Plan will produce. Although the power plant in combination with the other planned land uses will change the appearance of this area, these changes will not

adversely affect identified scenic resources or protected scenic corridors and will not necessarily degrade the area's current level of visual quality. In fact, given the design guidelines and requirements for extensive street landscaping in the Menifee North Specific Plan, implementation of this plan is likely to improve the level of visual quality in the project area.

5.10.4 Proposed Mitigation Measures

5.10.4.1 IEEC Site and Compressor Station

The following mitigation measures have been included in the IEEC's design to reduce the project's impacts on visual resources:

- The project's major structures have been located so as to provide generous setbacks from surrounding roads.
- Placement of the one-story warehouse/administration/water treatment building, water tanks, and other smaller structures on the western edge of the IEEC site to create a transition in scale between the corridor along Antelope Road and the plant's taller features.
- Planting of street trees and a line of taller screening trees along the edges of the IEEC site bordering Antelope Road to create visual continuity with the landscape pattern along other streets in the Menifee North industrial area, and to screen near views into the site and toward the site's taller elements.
- Placement of a border of trees consisting of informal groupings of fast-growing broadleaf evergreen trees along all sides of the Energy Center and compressor station sites to provide partial screening of views toward the site from nearby areas and more distant locations.
- Use of neutral gray and gray-taupe colors for the structures in the Energy Center, switchyard, and compressor station to visually integrate them into their landscape backdrops.
- Color treatment of fences to blend with the surrounding environment.
- Minimal signage and construction of project signs using non-glare materials and unobtrusive colors. The design of any signs required by safety regulations will need to conform to the criteria established by those regulations.
- Minimization of lighting to areas required for safety, security, or operations, and shielding of lighting from public view to the extent possible. Timers and sensors will be used to minimize the time that lights are on in areas where lighting is not normally needed for safety, security, or operation.
- Direction and shielding of lighting to reduce light scatter and glare. Highly directional light fixtures will be used.
- Design and installation of temporary screening fencing around the laydown area to reduce the visibility of construction period activities.

- Additional mitigation measures that are recommended to eliminate potential significant adverse impacts of the Energy Center and switchyard on views from KOPs 4 and 5.
- Establishment of provisions to provide trees to the County to plant street trees along both sides of Highway 74 between Antelope and Junipero Roads in their right-of-way.

5.10.4.2 Switchyard and Transmission Line

The following mitigation measures for the IEEC Switchyard and transmission line have been included in the project design:

- The switchyard will make use of low profile equipment to minimize its visibility beyond the tree rows that will be planted around it.
- The towers will be constructed of tubular steel to create a trim profile.
- The towers will be treated with a neutral gray finish to maximize their visual integration into the backdrop.
- Non-specular conductors will be used.
- Insulators will be non-reflective and non-refractive.

5.10.4.3 Pipelines

The following mitigation measures have been included as a part of the Energy Center proposal to reduce the visual impacts of the wastewater Alternatives A and B natural gas pipelines:

- After construction, ground surfaces will be restored to their original condition, and any vegetation or paving that had been removed during the construction process will be replaced.
- Equipment in the gas metering and raw water pump stations will be painted earth-tone colors selected to maximize their visual integration into their backdrops.

5.10.5 Laws, Ordinances, Regulations, and Standards

This section describes the laws, ordinances, regulations, or standards relevant to the visual resource issues associated with the IEEC project. No federal, state, or regional LORS are known that would apply to the project's visual resource issues. However, visual resource and urban design concerns germane to the project are addressed in a number of the county and municipal general plans, community plans, specific plans, and zoning ordinances that apply to the Energy Center and switchyard site, the gas compressor site and the linear features associated with the project. Figure 5.7-1 in the land use section is a map that shows the project features and the boundaries of the areas of jurisdiction of the local plans that are relevant to the project. Table 5.10-3 provides a list of the plans and ordinances that pertain to the areas within which the project's elements are located. The table includes a brief characterization of the plan or ordinance and indicates the project features that lie within the area to which the plan or ordinance applies. The specific provisions of each plan or ordinance that have potential relevance to the project are identified in Sections 5.10.5.1 through 5.10.5. For each

Table 5.10-3 Laws, Ordinances, Regulations, and Standards Applicable to IEEC Visual Resources

Document	Applicability	AFC Section	Agency/Contact
Riverside County Comprehensive General Plan	The primary statement of goals and policies for implementing development and conservation proposals for the unincorporated lands under county jurisdiction. Applies to all project facilities except for the short segment of the wastewater pipeline that falls within the City of Perris and the 2.5-mile segment of natural gas pipeline Alternative A that falls within the City of Moreno Valley.	5.10.5.1	Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501 Staff (909) 955-3200
Menifee North Specific Plan	A specific area plan that applies to unincorporated lands in a 1,636-acre area to the south and east of Romoland. Provides for a mix of intensive residential, commercial, and industrial activities. Establishes a set of very detailed guidelines for the development of infrastructure and for project design. The proposed Energy Center site, and portions of the water lines, gas line, and transmission line serving the Energy Center are located within the area under the jurisdiction of this plan.	5.10.5.2	Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501 Staff (909) 955-3200
Sun City/Menifee Valley Community Plan	A community plan that applies to 27,857 acres in and around the unincorporated community of Sun City. The plan designates land uses and provides policies for the orderly development of the area. The portion of the wastewater pipeline from MP 1.2 to MP 4.9, several miles of natural gas line Alternative B and the compressor station associated with it are included in the area under the jurisdiction of this plan.	5.10.5.3	Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501 Staff (909) 955-3200
Lakeview/Nuevo Community Plan	A community plan that applies to 47 square miles in central Riverside County. The plan designates land uses and provides policies for the protection of natural resources and for the area's orderly development. A 1.5-mile portion of natural gas pipeline Alternative A passes through the area to which this plan applies.	5.10.5.4	Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501 Staff (909) 955-3200

Table 5.10-3 Laws, Ordinances, Regulations, and Standards Applicable to IEEC Visual Resources (Continued)

Document	Applicability	AFC Section	Agency/Contact
Riverside County Zoning Ordinance	Establishes classes of zoning districts governing the use of land and placement of buildings and improvements. Includes setback and landscaping requirements. Applies to all project facilities that lie within unincorporated county territory.	5.10.5.5	Riverside County Transportation and Land Management Department 4080 Lemon Street, 7th Floor Riverside, CA 92501 Staff (909) 955-3200
City of Perris General Plan	Sets out policies for land use, circulation, community facilities, and environmental resource management for the city. Applies to a 0.4-mile segment of the wastewater pipeline that would be installed within the right-of-way of McLaughlin Road.	5.10.5.6	City of Perris Department of Planning and Community Development 101N.D Street Perris, CA 92570-2200 Diane Sbardellati (909) 943-3293
City of Perris Zoning Ordinance	Establishes classes of zoning districts governing the use of land and placement of buildings and improvements. Applies to a 0.4-mile segment of the wastewater pipeline that would be installed within the right-of-way of McLaughlin Road.	5.10.5.6	City of Perris Department of Planning and Community Development 101N.D Street Perris, CA 92570-2200 Diane Sbardellati (909) 943-3293
Moreno Highlands Specific Plan	A special area plan for a portion of the City of Moreno Valley. Policies oriented toward the development of a master planned community with required infrastructure and protection of natural resources. Applies to a 2.5-mile segment of natural gas pipeline Alternative A.	5.10.5.7	City of Moreno Valley, Public Works-Land Development Department P.O. Box 88005 Moreno Valley, CA 92552 Cathy Davis (909) 413-3206
City of Moreno Valley Zoning Ordinance	Establishes classes of zoning districts governing the use of land and placement of buildings and improvements. Includes setback and landscaping requirements. Applies to a 2.5 mile segment of natural gas pipeline Alternative A.	5.10.5.7	City of Moreno Valley, Public Works-Land Development Department P.O. Box 88005 Moreno Valley, CA 92552 Cathy Davis (909) 413-3206

provision that might apply to the project, a brief assessment is made of the project's consistency with it.

5.10.5.1 Riverside County Comprehensive General Plan

Riverside County incorporates three levels of planning into its long-term strategy for county development. The Riverside County Comprehensive General Plan is the primary statement of goals and policies for implementing development and conservation proposals for the unincorporated lands under County jurisdiction. Community plans have been developed to provide land use goals and policies that are tailored to the concerns within each of the community planning areas into which the county has been divided. Specific plans have been developed for many smaller, localized areas to provide detailed guidance for land use development and environmental protection.

Because the County Comprehensive General Plan's policies are essentially guiding policies that apply to all unincorporated lands, they apply to all project facilities except for the short segment of the non-reclaimable wastewater pipeline that falls within the City of Perris and the 2.5-mile segment of Alternative B Moreno Valley natural gas pipeline that falls within the City of Moreno Valley.

The only portion of the County Comprehensive General Plan that specifically addresses visual resource issues is the section on Scenic Highways. This section consists of the county's Scenic Highways Element, which had originally been adopted in 1975. The section makes mention of the road segments in the County that have been made a part of the Official State Scenic Highway system and lists the road segments that have been nominated as eligible for inclusion in the system. It also identifies road segments that it nominates as candidates for designation as Official County Scenic Highways. In the project area, the segment of State Highway 74 from Grand Avenue in Perris to the western boundary of the San Bernadino National Forest has been nominated as eligible for inclusion the State Scenic Highway system. Although a portion of State Highway 74 further to the east in the San Bernadino National Forest has been added to the State Scenic Highway system, the steps for completion of the inclusion process for the portion of State Highway 74 passing through the project area have not been completed. The segment of Menifee Road from McCall Boulevard north to Highway 74, which passes through the project area has been determined to be an Eligible County Highway. Because the design standards the plan specifies for scenic highways apply only to Official State Highways, and because there are no Official State Highways in the project area, these standards do not apply to any of the elements of the IEEC.

5.10.5.2 Menifee North Specific Plan

The proposed Energy Center site, and portions of the non-reclaimable wastewater pipeline, natural gas pipeline, and electrical transmission line serving the Energy Center are located within the area under the jurisdiction of this plan. This plan sets out a detailed blueprint for the development of this area and provides an elaborate set of design guidelines for landscaping and buildings. The provisions of the plan applicable to the Energy Center and switchyard site are summarized and evaluated in Table 5.10-4.

Table 5.10-4 Consistency of the Energy Center and Switchyard with the Menifee North Specific Plan

Provision	Consistency
Planning Area 3: Industrial Park **c. Planning Standards**	
Primary access into Planning Area 3 shall be provided from Antelope Road and McLaughlin Road. A minor intersection monumentation treatment shall be established at the intersection of Antelope Road and the planning area access point. Roadway landscape treatments shall be incorporated along Antelope Road and McLaughlin Road as depicted on Figures Iv-17 and 18 respectively.	Because the planning area access point, the intersection of Antelope and Mclaughlin Roads, is not adjacent to the project property, the monumentation treatment the planning standards call for would be the responsibility of others. The project's site and landscape plan assumes a widening of Antelope Road to the specifications set out in the plan, includes the planting of trees along the road's edge in conformance with the plan's directions.
IV. Design Guidelines **C. Community Elements** **Signage** The guidelines set out a detailed set of rules regarding signs, emphasizing minimal use of signage and when signs are necessary, use of tasteful, high quality design and materials.	Signage at the project site would be consistent with these guidelines. Signage would be restricted to a single, well designed identification sign at the project's entry gate and signs required for safety and health.
IV. C. **Lighting** The level of onsite lighting as well as lighting fixtures, shall comply with any and all applicable requirements and policies of the County of Riverside. Energy conservation, safety and security should be emphasized when designing lighting systems. It is recommended that all primary streets be adequately illuminated to provide for the safety and comfort of vehicular and pedestrian movement. Appropriate lighting will encourage nighttime use of community facilities. Landscape lighting may be used for accentuating the following conditions: shrub masses, focal elements, and trees (up-lights) if properly camouflaged from view and placed at ground level without attaching to plant materials. All lighting shall be designed and located in a manner that is compatible with scenic values and other public interests throughout the community. General lighting shall not cast any glare onto adjacent lots and streets in such a manner as to decrease the ambience of adjacent areas or the safety of pedestrian and vehicular movement. Indirect wall lighting and "wall washing" overhead down lighted or interior illumination that spills outside is encouraged.	The nighttime lighting provided for operational safety and security at the Energy Center and switchyard and at the Alternative A Menifee Road natural gas pipeline compressor station will be in conformance with these lighting guidelines. Lighting at these facilities will be restricted to areas required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed onsite so that significant offsite light or glare will not be created. Fixtures of a non-glare type will be specified. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits or motion detectors will be provided, thus allowing these areas to remain unilluminated at most times, minimizing the amount of lighting potentially visible offsite. In addition, fences, walls, and landscaping around the site perimeters will provide further screening of the facility's required night lighting, particularly in views from areas located close by.

Table 5.10-4 Consistency of the Energy Center and Switchyard with the Menifee North Specific Plan (Continued)

Provision	Consistency
Pedestrian lighting shall provide area illumination for entryways, courtyards and other such areas. Lighting fixtures shall be complimentary to the architectural concepts.	
IV. D. Landscape Architectural Guidelines and Standards **2. Menifee North Plant Palette** The guidelines counsel that projects in the area should use a limited selection of plant materials in simple, significant compositions. A list of recommended plant materials is provided. These materials have been selected for their adaptability to the local soil and climate conditions, cost-effective maintenance, and contribution to the planning area's design theme.	The proposed planting plan adheres to the landscape design principles presented in the guidelines and uses plant materials from the list of recommended species.
IV.E. Architectural Guidelines **22. Commercial, Business Park, and Industrial Criteria** The non-residential buildings of Menifee North are expected to blend with the overall community in regard to the design guidelines discussed thus far. However, because of their size and varied uses, they should appear distinct from the houses. When considering massing, the buildings should be stepped, both horizontally and vertically, when possible. Trim lines, detailing and color accents should complement the horizontal nature of the project in general. The use of loggias, balconies, stairways and other details outlines elsewhere in the document, are encouraged to provide variety in the building massing. Towers or other vertical elements can be used as a focal point. Mechanical equipment must be screened, and the screening or building parapets used to do this must be an integral design with the main building mass. This screening will be required wherever the mechanical equipment could be seen from adjacent roads, highways, residential areas, and/or adjacent pedestrian areas. Flat roofs are acceptable, but pitched roofs for all or a portion of the buildings are also acceptable. Signage and lighting must be consistently integrates with the building facade, and should be of uniform shape and materials. Retail commercial building exterior design should anticipate signage location, size and coloration so the eventual tenants can provide adequately sized as well as integrated signage. Multi-tenant projects should develop comprehensive sign programs.	Many of these guidelines pertain to buildings that would be found in commercial and business parks rather than to the kinds of industrial structures that would be found in industrial districts like the one in which the IEEC will be located. For example, the requirement that mechanical equipment be screened appears to be oriented toward screening of the mechanical equipment often located adjacent to or on the roofs of commercial, office and warehouse structures and does not appear to be oriented toward the functional and aesthetic issues relevant for manufacturing or processing facilities that are not normally enclosed in buildings. The design of the Energy Center, switchyard, and compressor station will be consistent with the guidelines that are relevant for non-building industrial facilities.

Table 5.10-4 Consistency of the Energy Center and Switchyard with the Menifee North Specific Plan (Continued)

Provision	Consistency
There should be adequate separation between parking and the buildings to allow pedestrian flow to be comfortable. Sheltered/shaded pedestrian paths and entries are encouraged. Loading zones should avoid visual exposure to adjacent streets and residential zones. Walls and landscaping can be used to facilitate this screening.	
Parking areas should be landscaped, with shading a major consideration. See the landscape guidelines section of the Specific Plan for further requirements. Where it is possible, it is encouraged that service and delivery circulation be separated from the public parking areas.	
Reflective glass skins on non-residential buildings should not be used where it will adversely impact the adjacent buildings, especially if the adjacent buildings are residential. In general, large amounts of reflective glass are not in keeping with the overall tone the community is attempting to maintain.	

Source: Menifee North Specific Plan No. 260, 1994

5.10.5.3 Sun City/Menifee Valley Community Plan

The portion of the non-reclaimable wastewater pipeline from MP 1.2 to MP 4.9, Alternative A Menifee Road natural gas pipeline Alternative B, and the compressor station associated with it, are included in the area under the jurisdiction of this plan. The provisions of the plan applicable to the Alternative A compressor station are summarized and evaluated in Table 5.10-5.

The only policy in this plan that would be directly or indirectly related to the visual resource issues associated with the Alternative A Menifee Road natural gas pipeline underground line would be Land Use Policies A2.c and e, which call for the maintenance and conservation of established trees and native trees and vegetation. As indicated in the analysis of biological resource effects in Section 5.3, the construction of the pipeline would not have an adverse effect on mature trees in this area, and surface vegetation disturbed during construction would be restored.

5.10.5.4 Lakeview/Nuevo Community Plan

Several miles of natural gas pipeline Alternative A passes through the area to which this plan applies. Because the plan contains no provisions that pertain to the specific visual resource issues associated with underground pipelines the project will not conflict with the plan's visual resources policies.

Table 5.10-5 Consistency of the Alternative A Menifee Road Natural Gas Line Alternative B Compressor Station with the Sun City/Menifee Valley Community Plan

Provision	Consistency
Land Use Policies	
A. Land Use Policies – General	
2. General Design Considerations	
a. Development review along major arterials and highways shall include plans for architecture, landscaping, setbacks, and elements such as screening of mechanical equipment, trash enclosures, and placement of utilities underground.	Because the project is not located along a major arterial or highway, the development review described here will not be required.
b. Proposed land uses will be reviewed for compatibility in light of existing and approved land uses with the surrounding area. Additional factors that will enter into the review for compatibility include the intensity of use, hazards, nuisances, aesthetics, and design.	The compressor station will fare well in this review because the facility's generous setbacks and landscaping and use of appropriate colors amply address design and aesthetic concerns.
c. The maintenance and conservation of native trees and vegetation shall be promoted wherever feasible.	There is no native vegetation on the site.
d. Drought tolerant plant materials shall generally be utilized for street trees and landscaping.	The plantings specified are drought tolerant species.
3. Visually Sensitive Road Corridors	None of the plan's policies related to visually sensitive road corridors are applicable to the project because none of the project's features are located along or cross any of the designated visually sensitive roads.
B. Mapped Land Use Categories and Related Policies	The compressor station site lies within an area the plan designates for General manufacturing and is thus subject to the policies established for this zone.
10. Industrial and Manufacturing	
(2) Industrial development shall be compatible with adjacent land uses. Protective measures may include, but not be limited to, landscaping and design review procedures with respect to noise, dust, odors, vibration and glare.	The compressor station's setbacks, landscaping, and neutral colors will make it compatible with surrounding land uses.
d. Night lighting shall be provided in industrial areas for security and shall be directed away from adjacent properties.	The night lighting used will be the minimal required for operations and safety, and measures will be taken to reduce the amount of time lights are on and to provide hooding and shielding that will minimize off-site light impacts.

Source: Riverside County Comprehensive General Plan: Sun City/Menifee Valley Community Plan (SMVP) Land Use Policies, 1992

5.10.5.5 Riverside County Zoning Ordinance

The IEEC site lies within an area designated by the Riverside County Zoning Ordinance as the M-H Zone (Manufacturing-Heavy). This zone has been established to "(1) promote and attract industrial and manufacturing activities which will provide jobs to local residents and strengthen the county's economic base, (2) provide the necessary improvements to support industrial growth, (3) insure new industry is compatible with uses on adjacent lands, and (4) protect industrial areas from encroachment by incompatible uses that may jeopardize industry." (Riverside County Planning Department 1999, p. 135) The district specifies an extensive list of permitted uses and includes provisions for conditional approval of uses not specifically enumerated. The provisions of the ordinance relevant to the visual resource issues associated with the Energy Center and switchyard and the gas compressor station are summarized in Table 5.10-6 and a description is provided of the conformance or these facilities with them.

Table 5.10-6 Consistency of the Project with the Riverside County Zoning Ordinance

Provision	Consistency
Section 12.4b. Setbacks	
(1) Where the front, side or rear yard adjoins a lot zoned for any category of residential use, a minimum setback of 25 feet from the property line is required. (2) Where the front, side, or rear yard adjoins a lot with any other type of zoning classification, there is no minimum setback. (3) Where the front, side, or rear yard adjoins a street, the minimum setback is 25 feet.	Because the project's structures will be set back more than 25 feet from all property lines and from all streets, the Energy Center and switchyard and the compressor station are consistent with the setback requirements.
Section 12.4c. Height Requirements	
The height of structures, including buildings, should be as follow: (1) Structures shall not exceed 40 feet at the yard setback line.	The 195-foot high HRSG stacks will exceed the 105-foot height limit these requirements provide for. A variance from these requirements will be necessary.
(2) Buildings shall not exceed 50 feet unless a height up to 75 feet is approved pursuant to Section 18.34 of the ordinance. (3) Structures other than buildings shall not exceed 50 feet unless a height up to 105 feet is approved pursuant to Section 18.34 of the ordinance.	All of the features of the compressor station will be 25 feet or less in height and will thus be well within these height limits.
Section 12.4d. Masonry Wall	
Prior to occupancy of any industrial use permitted in this article, a six-foot high solid masonry wall or combination landscaped earthen berm and masonry wall shall be constructed on each property line that adjoins any parcel specifically zoned for residential use, unless otherwise approved by the hearing officer or body.	This provision does not apply because none of the property lines of the Energy Center and switchyard site or the compressor station site adjoin residentially zoned lands.

Table 5.10-6 Consistency of the Project with the Riverside County Zoning Ordinance (Continued)

Provision	Consistency
Section 12.4e. Landscaping	
(1) A minimum of 10% of the site proposed for development shall be landscaped and irrigated.	A minimum of 10% of the site will be devoted to landscaping.
(2) A minimum ten-foot strip adjacent to street right-of-way lines shall be appropriately landscaped and maintained, except for designated pedestrian and vehicular accessways. Said landscaping strip shall not include landscaping located within the street right-of-way.	The zone along the street right-of-way lines that will be devoted to landscaping will be more than 10 feet in width.
(3) A minimum 20-foot strip adjacent to lots zoned for residential uses, or separated by a street for a lot with residential zoning, shall be landscaped and maintained, unless a tree screen or other buffer treatment is approved by the hearing officer or body. However, in no case shall said landscaping be less than ten feet wide excluding curbing.	The southeasternmost corner of the Energy Center and switchyard site and the southern boundary of the compressor station site lie across the street from lands zoned for residential use. In these areas, a tree screen in a landscape buffer strip 10 feet or more in width will be provided in compliance with this requirement
Section 12.4.g Trash Collection Areas	
Trash collection areas shall be screened by landscaping or architectural features in such a manner as not to be visible from a public street or from any adjacent residential area.	Trash collection areas on the Energy Center and switchyard site and on the compressor station site will be screened by the perimeter landscaping.
Section 12.4.h Outside Storage and Service Areas	
Outside storage and service areas may be required to be screened by structures or landscaping.	Outside storage and service areas on the Energy Center and switchyard site and on the compressor station site will be screened by the perimeter landscaping
Section 12.4.i Utilities	
Utilities shall be installed underground except electrical lines rated at 33kV or greater.	Electric distribution lines on the Energy Center and switchyard site and on the compressor station site will be installed underground.
Section 12.4.j Mechanical Equipment	
Mechanical equipment used in the manufacturing process may be required to be enclosed in a building, and roof-mounted accessory equipment may be required to be screened from view.	Although much of the equipment on the Energy Center and switchyard site and on the compressor station site will be in enclosures, because of the nature of the facilities, some equipment will have to be left unenclosed. On the compressor station site, this equipment will be entirely screened from view by the proposed landscaping. On the Energy Center and switchyard site, much of the equipment will eventually be screened by the proposed landscaping, but tanks, vents, and other topwork elements on top the HRSGs may remain visible in many views.

Table 5.10-6 Consistency of the Project with the Riverside County Zoning Ordinance (Continued)

Provision	Consistency
Section 12.4.k Lighting	
All lighting fixtures, including spot lights, electrical reflectors and other means of illumination for signs, structures, landscaping, parking, loading, unloading and similar areas, shall be focused, directed and arranged to prevent glare or direct illumination on streets or adjoining property.	The nighttime lighting at the Energy Center and switchyard and at the compressor station will be in conformance with these requirements. Lighting will be restricted to areas required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed onsite so that significant offsite light or glare will not be created. Fixtures of a non-glare type will be specified. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits or motion detectors will be provided, thus allowing these areas to remain unilluminated at most times, minimizing the amount of lighting potentially visible offsite. In addition, fences, walls, and landscaping around the site perimeters will further prevent glare or illumination on streets or adjoining property.

Source: County of Riverside Planning Department Ordinance 348, Amended October 21, 1999

5.10.5.6 City of Perris General Plan and Zoning Ordinance

A 0.4-mile segment of the non-reclaimable wastewater pipeline that would be installed within the right-of-way of McLaughlin Road lies within the city limits of the City of Perris, and will thus be subject to the provisions of the Perris General Plan and Zoning Ordinance. Because the plan and zoning ordinance contain no provisions that specifically pertain to the visual resource issues associated with underground pipelines the Energy Center will not conflict with the plan or ordinance.

5.10.5.7 Moreno Highlands Specific Plan and City of Moreno Valley Zoning Ordinance

A 2.5-mile segment of Alternative B Moreno Valley natural gas pipeline lies within the City of Moreno Valley and is thus subject to the provisions of the City's Moreno Highlands Specific Plan and the City's Zoning Ordinance. Because the plan and zoning ordinance do not contain any provisions that are specific to the visual resource issues associated with underground pipelines, the Energy Center will not conflict with the plan or ordinance.

5.10.6 Permits Required and Permit Schedule

No permits are required that are specific to visual resources.

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5.11 TRAFFIC AND TRANSPORTATION

This section addresses potential impacts of the Inland Empire Energy Center (IEEC or Energy Center) on traffic and transportation systems in the project area. The analysis considers regional and local roadways, access to the project site, and construction- and operation-related traffic.

5.11.1 Affected Environment

5.11.1.1 Regional Setting

Figure 5.11-1 (Regional Transportation Setting) illustrates the major roads, highways, and railways in the project vicinity. Regional transportation plans that include the project area are described below.

Regional Transportation Plan

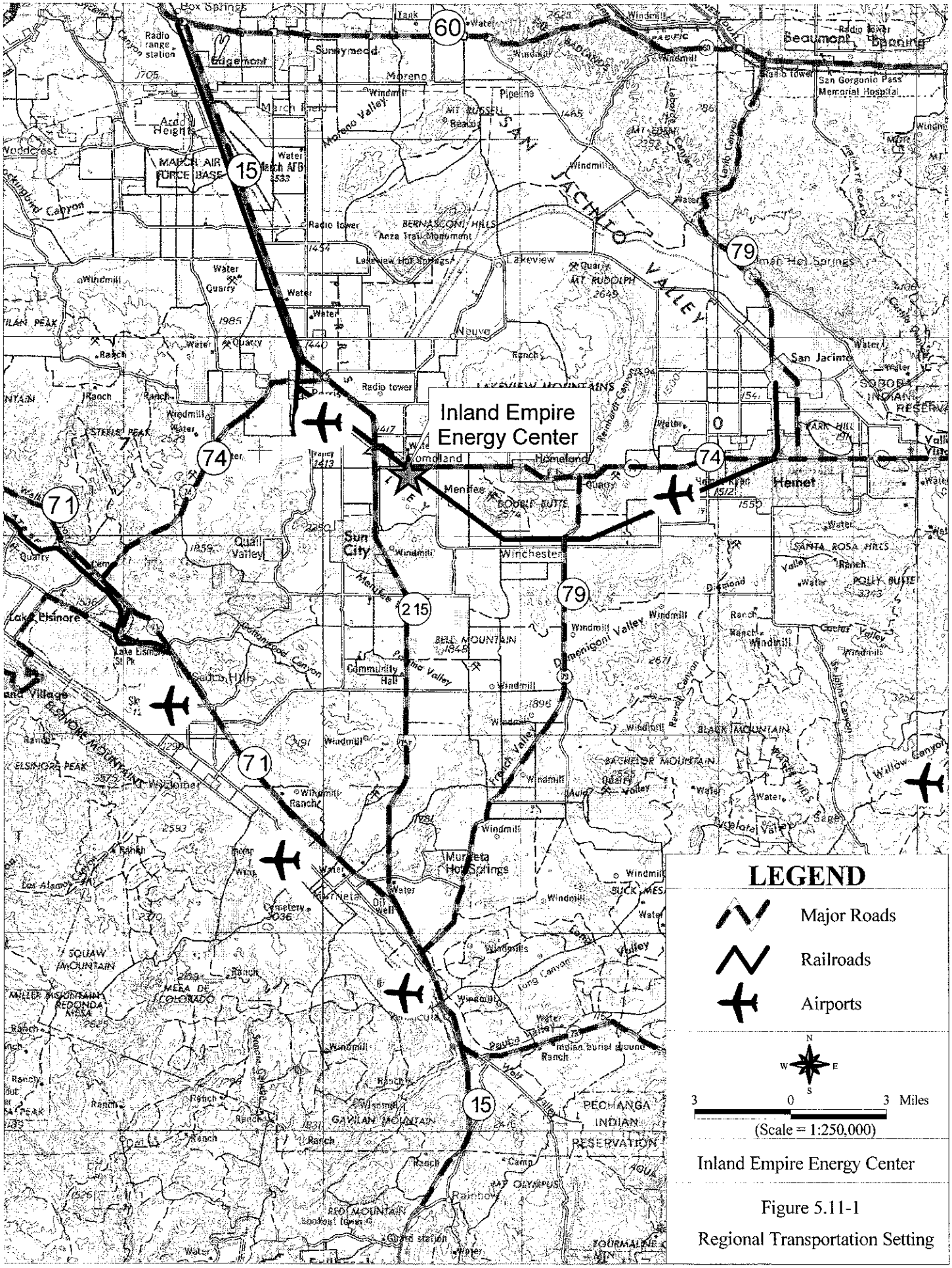
The Southern California Association of Governments (SCAG) has implemented the 2001 Regional Transportation Plan (RTP), which includes the counties of Riverside, Orange, San Bernardino, and Imperial. The RTP implemented by SCAG presents an assessment of the overall growth and economic trends in the SCAG region for the years 2000-2025 and provides direction for transportation investments for the period (SCAG, 2001). The current RTP includes approximately $30 billion in committed transportation improvements through the year 2006. The RTP is updated every three years (Villanueva, 2001). The RTP must also demonstrate that the respective policies, programs, and projects are consistent with and conform to the applicable State Implementation Plan's (SIP) goals and objectives for air quality (SCAG, 2001).

Regional Transportation Improvement Plan

The Regional Transportation Improvement Plan (RTIP) is SCAG's recommendation to the State of California on the projects that should be funded through the state's transportation funding program. The approved RTIP contains over $35 billion in transportation funds for Riverside County for specific projects over the next several years (SCAG, 2001). The RTIP lists transportation-related projects requiring federal funding or other approval by the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA). The RTIP also lists non-federal, regionally significant projects for information and air quality emissions modeling purposes. The RTIP indicates the County's short-term plan for use of federal dollars and other resources for the maintenance, operation, and improvement of the transportation system and the achievement of federal air quality standards.

Riverside County General Plan – Circulation Element

The Circulation Element of the Riverside County General Plan sets up county goals and guidance policies for transportation improvements. It includes planning tools for achieving the local transportation goals and policies.



Inland Empire Energy Center

Figure 5.11-1

Regional Transportation Setting

Menifee North Specific Plan – Public Facilities and Services Element

The Public Facilities and Services Element of the Menifee North Specific Plan addresses highways and streets within the Romoland area and surrounding communities. This document contains policies and planning strategies for both short- and long-term transportation planning for these communities. The conditions of the following nearby roadways are described in the Specific Plan as follows:

Interstate 215 Freeway. Interstate 215 (I-215) is a significant north-south roadway facility in the western portion of the project area. Within the project vicinity, I-215 is a four-lane facility that joins I-15 in the City of Murrieta. I-215 extends north of the area through the City of Perris and north through the City of San Bernardino. I-215 provides north-south access to the greater Riverside area to the north and San Diego area to the south. In the area, this freeway receives traffic from the surrounding communities of Sun City, Romoland, Winchester, and Homeland. I-215 also receives traffic from the cities of Perris and Hemet via State Route (SR) 74 and SR 79, respectively. Freeway interchanges near the area include those at SR 74, McCall Boulevard, and Newport Road.

State Route 74. This roadway is a primary thoroughfare in the project area that carries traffic generally in an east-west direction. SR 74 is currently a four-lane facility that merges with SR 79 east of the project area near the City of Hemet. North of the project site, SR 74 parallels Matthews Road until it merges with, and temporarily becomes, I-215 (see Figure 5.11-1). Continuing north, SR 74 diverges from I-215 at the 4th Street exit and continues west through the City of Perris. Within the project vicinity, SR 74 provides the primary east-west thoroughfare for traffic traveling through the project area from the cities of Hemet and Perris. East of its intersection with Ethanac Road, SR 74 is also known as Pinacate Road (see Figure 5.11-1). The portion of Pinacate Road located within the project study area is referred to as SR 74 throughout the remainder of this report. No access is available directly from Ethanac Road north to SR 74.

Menifee Road. Menifee Road is a north-south, two-lane improved roadway east of the project area. Menifee Road crosses the Burlington Northern and Santa Fe (BNSF) Railroad and Matthews Road south of McLaughlin Road. Menifee Road provides access to SR 74 for traffic traveling north along the roadway from the communities of Winchester and Menifee. This roadway provides access to SR 74 for southbound traffic originating near the community of Nuevo. Menifee Road turns east and becomes Simpson Road – a major east-west roadway providing access to the community of Winchester – near the community of Menifee. North of SR 74, Menifee Road terminates at its intersection with Nuevo Road.

Antelope Road. Antelope Road is primarily an unimproved road oriented in a north-south direction. Approximately 200-300 feet of Antelope Road is paved south of Ethanac Road; the remainder of the roadway south of Ethanac Road is unimproved (i.e., dirt). North of SR 74, Antelope Road is a two-lane, improved (i.e., paved) facility. According to the Circulation Element of Riverside County's General Plan, Antelope Road is designated as a Major

highway (100-foot-wide right-of-way). At the present time however, Antelope Road functions as a local collector road.

5.11.1.2 Site Location and Road Access

The IEEC project site is located in an unincorporated portion of Riverside County near the communities of Romoland and Sun City, and generally south of the intersection of Ethanac Road and Antelope Road (Figure 5.11-1). More specifically, Ethanac Road is north of the project site, Antelope Road borders the site to the west, and McLaughlin Road borders the site to the south. The roads in this area are generally two lanes, with collector roads having little or no shoulder and arterials having shoulders 6 to 8 feet wide. Lane widths vary from 10 to12 feet.

Normal access to the IEEC site will be from a 24-foot-wide, 1,000-foot-long extension of Antelope Road from its current terminus south of Ethanac Road. A 20-foot-wide loop road will provide internal circulation within the IEEC site.

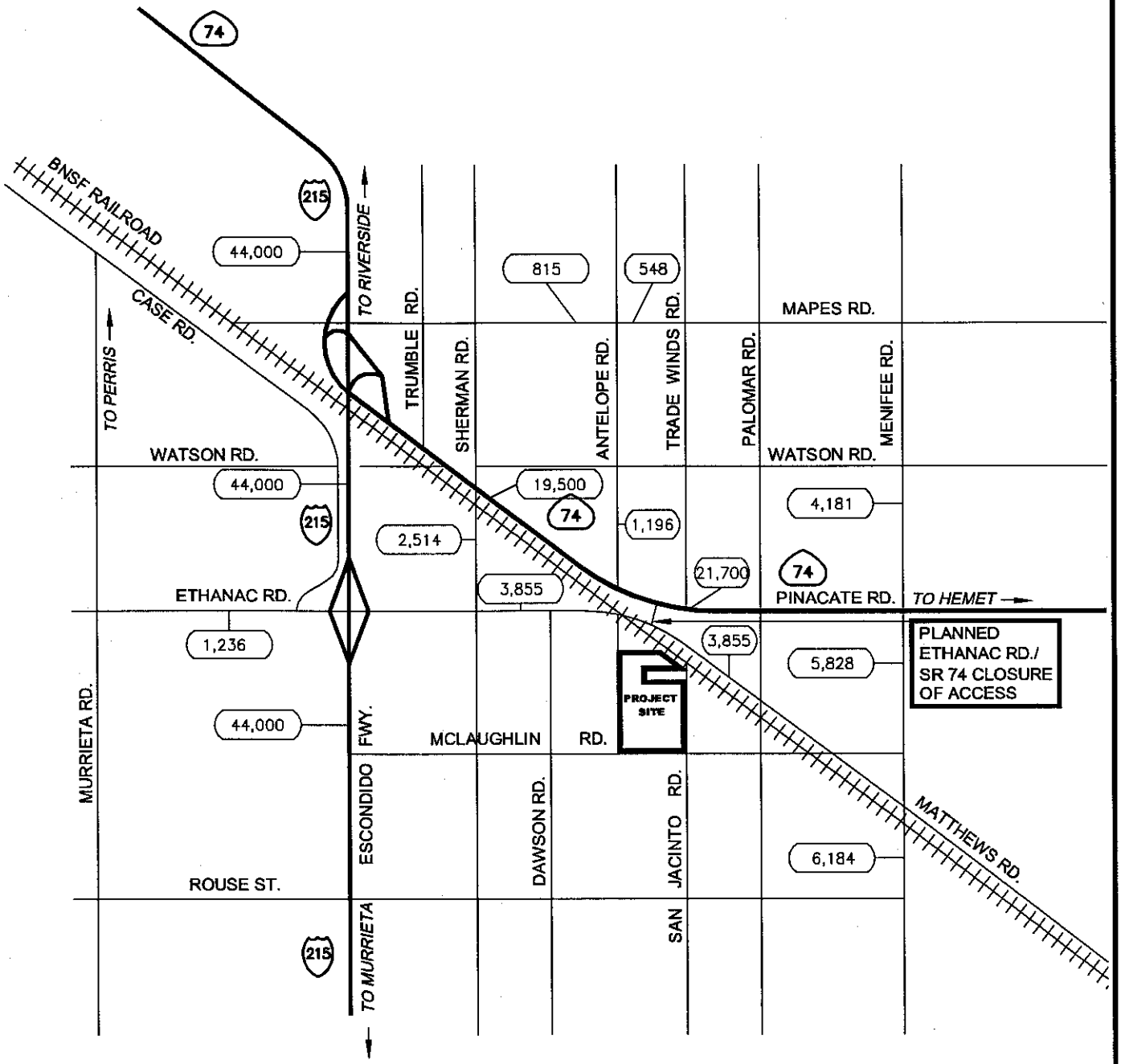
5.11.1.3 Regional Access

Regional access to the site is provided by I-215 from the north and south, and SR 74 from the east and west (Figure 5.11-1). I-215 provides access to the Moreno Valley and the greater Riverside area north of the project site. SR 74 provides access to the City of Hemet east of the project site, and the City of Perris located west of the site.

I-215 is a controlled access freeway south of the project area between Ethanac Road and Newport Road. I-215 consists of two travel lanes in each direction – north and south. North of Ethanac Road, I-215 is a limited access freeway with two lanes in each direction. I-215 north and south of Ethanac Road has an annual average daily traffic (AADT) of 44,000 vehicles per day (Caltrans, 1999). Figure 5.11-2 illustrates the AADT volumes for local and regional roadways (Riverside County, 2000). Within the region, SR 74 is a four-lane, east-west expressway that serves the cities of Hemet and San Jacinto east of the project site. SR 74 typically consists of two twelve-foot-wide travel lanes in each direction and six- to eight-foot-wide shoulders. A continuous left turn lane also exists along SR 74 within the vicinity of the project. West of the project site, SR 74 merges with I-215 to a point where it diverges from the interstate at 4th Street and then continues west through the City of Perris and on to the City of Lake Elsinore. AADT volumes along SR 74 west of Ethanac Road are 19,500 vehicles per day, and 21,700 vehicles per day east of Ethanac Road (Caltrans, 1999).

5.11.1.4 Local Street System

As illustrated in Figure 5.11-1, Ethanac Road is the primary east-west road providing access to the project site. Ethanac Road's easternmost extent occurs at its intersection with SR 74, approximately 300-400 feet east of Antelope Road. Ethanac Road consists of two twelve-foot-wide travel lanes (one lane in each direction), and typically four- to six-foot-wide shoulders. Ethanac Road provides access to I-215, the community of Sun City, and the City of Perris west of the project site. AADT volumes along Ethanac Road west of SR 74 are 3,855 vehicles per



LEGEND

74,000 — Average Daily Traffic (in Vehicles)

* — Road Count not Taken In Recent Years

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Figure 5.11-2
Existing Traffic Volumes

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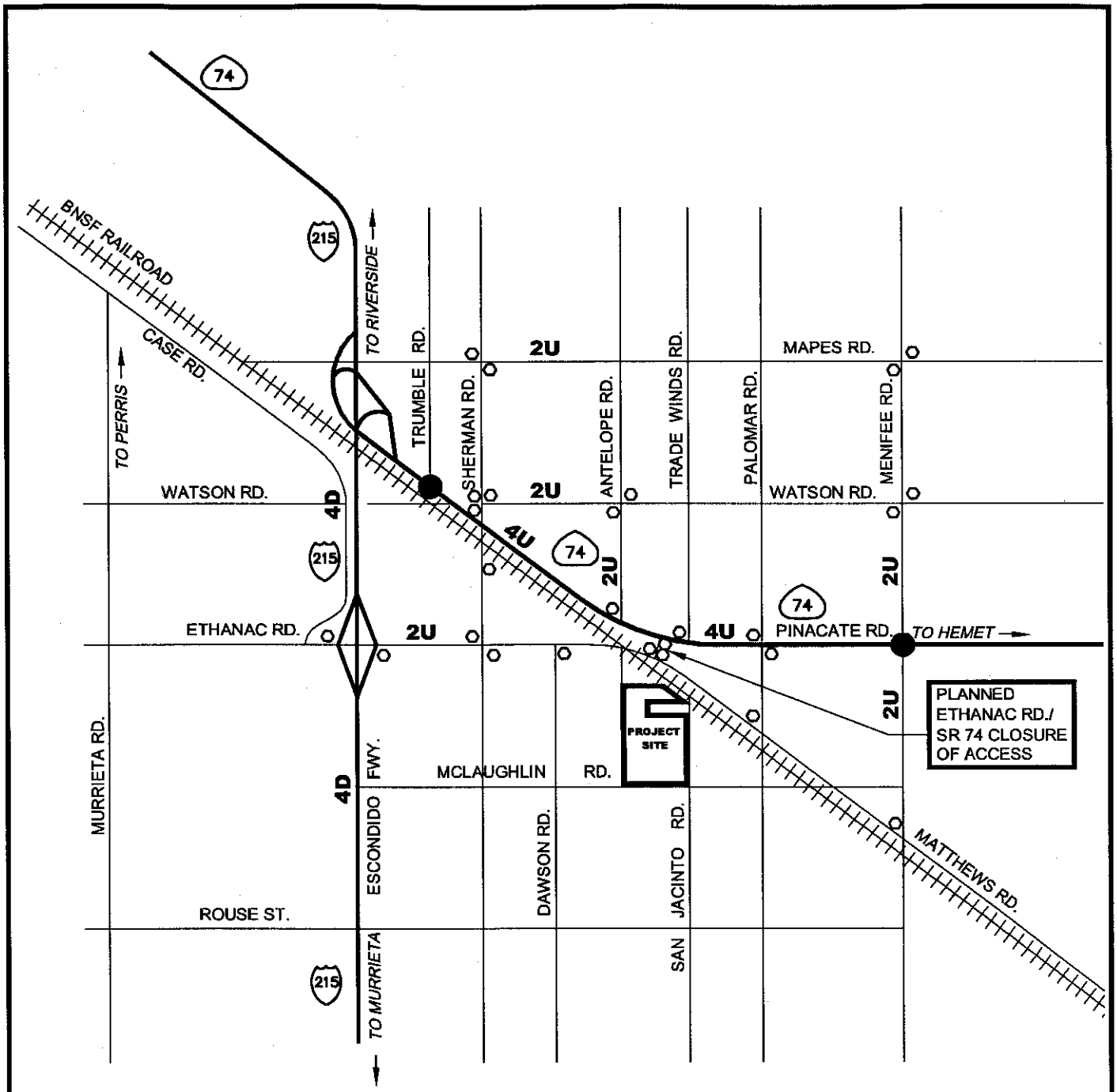
day. Immediately north of the project site, Ethanac Road crosses the BNSF railroad; no traffic control signal system currently exists where Ethanac Road intersects the railroad. Conversations with BNSF revealed that the number of train trips made within the vicinity of the study area is approximately 2 to 3 trips per week (Russeau, 2001). Trains traveling through the project vicinity travel at approximately 10 miles per hour (Russeau, 2001). No railroad-crossing signal exists at the Ethanac Road/BNSF intersection, and Riverside County Transportation Commission (RCTC) reports that there are no plans to install a signalization system at this particular location (Chase, 2001).

Motorists traveling east on Ethanac Road can access SR 74 shortly after crossing the BNSF railroad. Or, motorists traveling east on Ethanac Road can turn southeast shortly after crossing the BNSF railroad and access Matthews Road. This particular roadway continues in a northwest-southeast direction paralleling the east side of the BNSF railroad. Matthews Road is a two-lane (one lane in each direction) collector with approximately 10-foot-wide travel lanes and typically one- to three-foot-wide shoulders.

The RCTC (Chase, 2001) and Riverside County Economic Development Agency (Holland, 2001) indicate that the County, in coordination with the California Department of Transportation (Caltrans), is planning to close access from Ethanac Road to SR 74 (and vice versa) (see Figure 5.11-3 for general location of planned closure of access). Construction of this closure project is planned to begin in the fall of 2001 (Holland, 2001). The project will involve installing guardrail at the intersection/interconnection of Ethanac Road and SR 74, thereby redirecting vehicular traffic in a southeasterly direction along Matthews Road to the intersection of Palomar Road. From Palomar Road, traffic will turn north to access SR 74. A new traffic signal will be installed at the intersection of SR 74 and Palomar Road prior to the closure of access from Ethanac Road to SR 74 (Holland, 2001). For purposes of analysis, it is assumed that this road closure and traffic realignment project will be complete prior to the construction and operation of the proposed IEEC project.

Traffic control systems for all nearby intersections are illustrated in Figure 5.11-3. At I-215, traffic on Ethanac Road is controlled by stop signs. There are no stop signs or traffic signals along Ethanac Road between I-215 and Antelope Road. Access to Ethanac Road from north-south collectors (i.e., Sherman and Dawson Roads) between I-215 and Antelope Road are controlled by one-way stop signs. Traffic traveling eastbound along Ethanac Road is able to turn left (north) onto the SR 74 interconnection without stopping; all other movements are controlled by stop signs. A stop sign controls eastbound access onto SR 74 from the Ethanac Road interconnection.

Ethanac Road turns into Matthews Road immediately after the interconnection between SR 74 and Ethanac Road. Matthews Road parallels the BNSF railroad that borders the northeast boundary of the project site in a northwest-southeast direction. Matthews Road is a two-lane collector with approximately ten-foot-wide lanes and one- to three-foot-wide shoulders. A stop sign controls traffic at its intersection with Palomar Road. Approximately 1,500 feet after its



LEGEND

- Traffic Signal
- Stop on Minor Streets
- **4D** Four-Lane Divided Road
- **2U** Two-Lane Undivided Road
- **4U** Four-Lane Undivided Road

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Figure 5.11-3
Traffic Control System
Local Intersections

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intersection with Palomar Road, Matthews Road is an unimproved, two-lane facility. Traveling southeasterly, a one-way stop exists at the intersection of Matthews Road and Menifee Road. Matthews Road continues until it reaches its terminus in the community of Winchester.

The other east-west collector roads south of the IEEC site are McLaughlin Road and Rouse Street. Both of these roads are unimproved roads with no direct access to I-215 to the west; however, they do provide access to Menifee Road to the east. These particular roads are narrow, with little or no shoulder.

East-west collector roads north of the project site and SR 74 include Watson and Mapes Roads; one-way stops occur at various locations where these roads intersect local north-south roads (see Figure 5.11-3). No direct access to I-215 is provided by Mapes or Watson Roads.

SR 74 is a four-lane expressway approximately ¼ mile north of the IEEC site. SR 74 traverses the area in a northwest-southeast direction, but turns to an east-west direction immediately north and east of the project site. An all-way stop traffic signal exists at SR 74's intersection with Menifee Road to the east, and also northwest of the project site at its intersection with Trumble Road. Access from north-south collectors – including Palomar Road, Trade Winds Road, Antelope Road, and Sherman Road – to SR 74 north of the project site is controlled by one-way (southbound) stop signs.

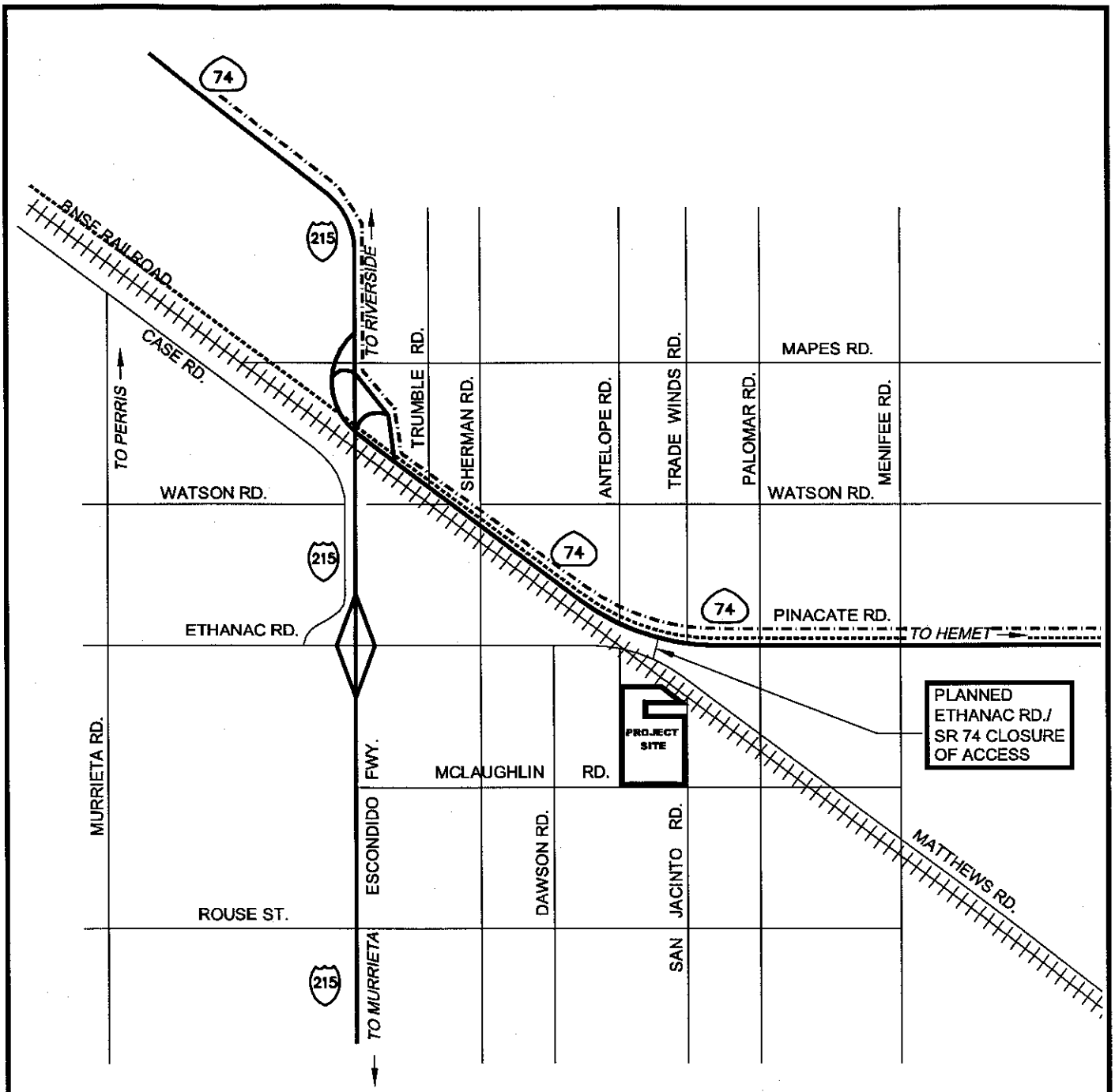
Palomar Road is generally a two-lane local collector controlled by a stop sign at Matthews Road. South of its intersection with Matthews Road and the BNSF railroad, Palomar Road is an unimproved facility that accommodates one lane of travel in each direction (north and south) with relatively little or no shoulder. Palomar Road continues south as an unimproved facility until it reaches it terminus at its intersection with McCall Boulevard within the vicinity of northern Sun City.

Menifee Road is a north-south, two-lane collector with twelve-foot-wide travel lanes and approximately 4- to 6-foot-wide roadway shoulders. An all-way stop traffic signal exists at its intersection with SR 74. South of SR 74, there is a stop sign controlling eastbound travel at Matthews Road. North of SR 74, there are stop signs controlling eastbound and westbound travel at Watson and Mapes Roads.

The San Jacinto Branch of the BNSF railroad crosses Ethanac Road approximately 500 feet north of the project site (see Figure 5.11-1). The railroad right-of-way is owned by RCTC, whereas BNSF maintains and operates the rail line (Chase, 2001).

5.11.1.5 Public Transportation

Public transportation in the area is provided by Riverside Transit Agency (RTA) Route 27; Figure 5.11-4 shows the route within the project area (RTA, 2001). There are several bus stops within the vicinity of the project site. The closest stop to the site is approximately ¼ mile north of the site at SR 74 and 4th Street (RTA, 2001). Route 27 generally runs one bus per 1.5 hours in each direction Monday through Friday, providing access to the communities of Hemet, Perris, Sun City, Moreno Valley, and Mead Valley (RTA, 2001).



LEGEND

- Designated Bike Route
- RTA Bus Route

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Figure 5.11-4
Public Transportation Facilities

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No park-and-ride lots for carpooling were identified within 3 miles of the project site (SCAG, 2001).

5.11.1.6 Pedestrian and Bicycle Facilities

A majority of the roads in the area are narrow, with little or no shoulder and few sidewalks. Within the project area, SR 74 is a designated Class II bikeway under the Circulation Element of Riverside County's General Plan (see Figure 5.11-4). During field reconnaissance, a few bicyclists were observed using roadway shoulders as traveling lanes. Also, an off-road bicycle trail exists along the BNSF Railroad right-of-way southeast of the project site, generally between Ethanac and Menifee Roads.

5.11.1.7 Weight and Load Restrictions

The Riverside County General Plan, Transportation Element, does not specifically detail size and weight/load limits for any roadways in the county. Therefore, all applicable regulations are found in California Vehicle Code. The following requirements are as follows:

- The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds;
- The maximum wheel load is the lesser of the following: (a) the load limit established by the tire manufacturer, or (b) a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.
- The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds; maximum allowable gross combination weight is 80,000 pounds (State of California Vehicle Code, Section 35550-35559).
- The maximum allowable vehicle height is 14 feet (State of California Vehicle Code, Section 35250-35252).
- The maximum allowable vehicle width is 102 inches (State of California Vehicle Code, Section 35100-35111).
- Maximum allowable length for single vehicle is 40 feet.
- Maximum allowable length for combination of vehicles is 65 feet.
- Maximum allowable length for combination of vehicles consisting of a truck tractor and two trailers is 75 feet, provided each individual trailer length does not exceed 28 feet 6 inches (State of California Vehicle Code, Section 35400-35414).

As stated in the Vehicle Code, these provisions would not apply if the city permitted the operation and transport of vehicles and loads on city roadways in excess of the maximum gross limits specified in the Vehicle Code (State of California Vehicle Code, Section 35780-35796).

5.11.1.8 Hazardous Materials

The Riverside County General Plan does not specifically address hazardous materials transportation and permits. However, IEEC will obtain the applicable permits required by the State of California for transportation of hazardous materials and wastes associated with the construction and operation of the proposed project. More discussion regarding the types and handling of such materials is provided in Section 5.12. The most direct route will be used for the transport of the hazardous materials and wastes to and from the project site.

During plant operations, trucks will periodically deliver/pickup replacement parts, lubricants, liquid fuels, aqueous ammonia, sulfuric acid, trash and other consumables. On average, there would be ten truck deliveries to the project site per day. Table 5.11-1 provides a summary of hazardous materials transportation frequencies.

As stated in Section 31303 of the California State Vehicle Code, the transportation of hazardous materials shall occur on state or interstate highways offering the shortest possible overall transit time. Also, the transporter shall avoid, whenever practicable, congested thoroughfares, places where crowds are assembled, and residential districts (State of California 2000b). The California State Vehicle Code 3200.5 also requires transporters of hazardous materials to contact the California Highway Patrol and apply for a Hazardous Material Transportation License (State of California 2000c). Upon receipt of this license, the shipper will obtain a handbook specifying the routes approved to ship such materials. All transporters of hazardous materials to the project site will be required to have a Hazardous Materials Transportation License.

5.11.1.9 Level of Service Analysis – Current Conditions

The existing transportation and circulation system has been described in previous sections, in terms of geometry and existing traffic volumes. In order to establish a threshold for evaluating the potential effect of project-related traffic on the street system, the existing traffic conditions must be determined by calculating "Level of Service" (LOS) measures (Table 5.11-2) (Transportation Research Board, 1985). These measures are calculated for both street system intersections and street segments. The LOS calculations are generally based on the relationship of the traffic volume to the capacity of the street system to accommodate the traffic flow. The LOS measures range from LOS "A" (free flow) through LOS "F" (grid locked) traffic conditions. A common threshold for determining impacts of significance is if a LOS value falls below a measure of "C" (stable operation) on any roadway segment. A LOS below "C" would be considered a deficient operating condition requiring mitigation (Transportation Research Board, 1985).

Table 5.11-1 Transportation of Hazardous Materials and Waste to and from the Project Site

Type of Material or Waste	No. Truck Trips And Frequency	Quantity Shipped	Anticipated Route
Construction – Hazardous Waste			
Waste Oil Filters	2 per month	200 pounds	I-215 to Ethanac Road to Antelope Road
Waste Oil	2 per month	500 gallons	Same as above
Waste Paint	1 at end of construction	50 gallons	Same as above
Waste Solvents	1 per month	50 gallons	Same as above
Spent Welding Materials	1 per month	200 pounds	Same as above
Operation – Hazardous Waste			
Waste Crankcase Oil	1 every 3 months	325 gallons	I-215 to Ethanac Road to Antelope Road
Oily Rags and Absorbent	1 every 3 months	200 pounds	Same as above
Spent Catalyst	1 every 3 months	70,000 pounds	Same as above
HRSG Cleaning Wastewater	1 every 6 months	500 gallons	Same as above
Construction – Hazardous Materials			
Gasoline	1 per day	5000 gallons	I-215 to Ethanac Road to Antelope Road
Diesel Fuel	1 per day	5000 gallons	Same as above
Oil & Lubricants	1 per day	200 gallons	Same as above
Paints	1 per week	50 gallons	Same as above
Solvents	1 per week	200 gallons	Same as above
Operation – Hazardous Materials			
Aqueous Ammonia	1 every 3 weeks	8,000 gallons	I-215 to Ethanac Road to Antelope Road
Organic Phosphate Inhibitor	1 every 3 weeks	3,000 gallons	Same as above
Sodium Hypochlorite	1 every 3 weeks	1,875 gallons	Same as above
Sulfuric Acid	1 every 3 weeks	5,625 gallons	Same as above
Sodium Hydroxide	1 every 3 weeks	5,625 gallons	Same as above
Oxygen Scavenger	1 every 3 weeks	180 gallons	Same as above
Alkaline Solution	1 every 3 weeks	180 gallons	Same as above
Di-and Tri-sodium Phosphate	1 every 3 weeks	750 gallons	Same as above
Hydrochloric Acid	Infrequent	As needed	Same as above
Ammonium Bifluoride	Infrequent	As needed	Same as above
Citric Acid	Infrequent	As needed	Same as above
EDTA Chelant	Infrequent	As needed	Same as above
Sodium Nitrite	Infrequent	As needed	Same as above
Diesel Fuel Oil	1 every 3 weeks	75 gallons	Same as above
Sulfuric Acid	1 every 3 weeks	2,250 gallons	Same as above
Hydrogen	1 every 2 months	96,000 cu ft	Same as above

Table 5.11-2 Level of Service Criteria

Levels of Service		
LOS	**Description**	**Average Vehicle/ Capacity Ratio**
A	Free flow; insignificant delays	0.0 - 0.59
B	Stable operation; minimal delays	0.6 - 0.69
C	Stable operation; acceptable delays	0.7 - 0.79
D	Approaching unstable; queues develop rapidly but no excessive delays	0.8 - 0.89
E	Unstable operation; significant delays	0.9 - 0.99
F	Forced flow; jammed conditions	N/A

Source: Transportation Research board, 1985.

The capacities used to evaluate street segments are based on review of the functional classification and standards of local cities, and the general application of the 1985 Highway Capacity Manual criteria (Transportation Research Board, 1985). The maximum design AADT capacity and peak hour lane capacities represent LOS E conditions. Table 5.11-3 describes classifications and capacities used in this evaluation.

Table 5.11-3 Road Classifications and Capacity

Classifications	Capacities	
	AADT	**Peak Hour**
4-Lane Urban Freeway	80,000	2,000/lane
4-Lane Expressway	40,000	1,800/Lane
2-Lane Rural Highway	15,000	1,700/Lane
2-Lane Collector	12,000	1,700/Lane
2-Lane Rural Collector	10,000	1,500/Lane

Source: Transportation Research board, 1985.

Existing traffic volumes, capacity, and characteristics are summarized in Table 5.11-4. Existing truck volumes are available based on 1998 Caltrans data for I-215 and SR 74. In 1998 I-215 had an AADT of 44,000 at the back leg (south) of the south junction of SR 74 of which 2,590 were trucks. The AADT for the ahead leg (north) of the south junction of SR 74 was 58,000 of which 6,844 were trucks. The 1998 data for SR 74 indicate an AADT of 15,700 at the back leg (west) of I-215 of which 1,836 were trucks. The ahead leg (east) of I-215 had an AADT of 18,500 of which 1,710 were trucks.

Caltrans reports that I-215 had an accident rate of 0.54 accidents per million vehicle-miles traveled, whereas SR 74 had an accident rate of 1.90 accidents per million vehicle-miles traveled (Griffin, 2001). In 1999, countywide average accident rates for freeways were 0.78, whereas the average accident rate for conventional multilane facilities was 1.85 (Caltrans, 2000). These relatively low accident rates generally reflect the LOS A conditions of the nearby roadways.

Table 5.11-4 Existing Traffic Characteristics of Local Highways and Roads in the Project Area

Road or Highway	Existing Traffic		Capacities		V/C (LOS)	
	AADT[1]	Peak Hour Traffic[2]	AADT	Peak Hour Traffic	AADT	Peak Hour Traffic
I-215 (4-lane urban freeway)						
North of Mapes Road	44,000[3]	4,300[3]	80,000	8,000	0.55 (A)	0.54 (A)
Mapes Road to Ethanac Road	44,000[3]	4,300[3]	80,000	8,000	0.55 (A)	0.54 (A)
South of Ethanac Road	44,000[3]	4,200[3]	80,000	8,000	0.55 (A)	0.53 (A)
SR 74 (4-lane expressway)						
West of Antelope Road	19,500[3]	1,600[3]	40,000	7,200	0.49 (A)	0.22 (A)
Ethanac Road to Palomar Road	21,700[3]	1,750[3]	40,000	7,200	0.54 (A)	0.24 (A)
Palomar Road to Menifee Road	21,700[3]	1,750[3]	40,000	7,200	0.54 (A)	0.24 (A)
Ethanac Road (2-lane collector)						
Murrieta Road to I-215	1,236	124	12,000	3,400	0.10 (A)	0.04 (A)
I-215 to SR 74/BNSF Railroad	3,855	386	12,000	3,400	0.32 (A)	0.11 (A)
Matthews Road (2-lane collector)						
Ethanac Road to Palomar Road[4]	3,855	386	12,000	3,400	0.32 (A)	0.11 (A)
Palomar Road (2-lane collector)						
Matthews Road SR 74[4]	3,855	386	12,000	3,400	0.32 (A)	0.11 (A)
Menifee Road (2-lane collector)						
SR 74 to Watson Road	4,181	418	12,000	3,400	0.35 (A)	0.12 (A)
Matthews Road to Rouse Street	6,184	618	12,000	3,400	0.51 (A)	0.18 (A)

(1) Source: County of Riverside Transportation Department (Riverside County 2000).

(2) Based on 10% of ADT, or as noted.

(3) Source: Caltrans (1999).

(4) Assumes that AADT will be the same for these road segments as is reported for Ethanac Road once the planned closure of access from Ethanac Road to SR 74 is implemented.

5.11.2 Environmental Impacts

The significance criteria have been developed using guidance provided in the California Environmental Quality Act (CEQA), Appendix G (Title 14 California Code of Regulations 15000 et seq.) and relevant local policies. Impacts of the proposed project to transportation and circulation will be considered significant if the following criteria are met:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- Substantially increase hazards due to a design feature or incompatible uses
- Result in inadequate emergency access
- Result in inadequate parking capacity
- Conflict with adopted policies, plans, or programs supporting alternative transportation

5.11.2.1 Construction Phase Impacts

No significant traffic impacts are expected as a result of project construction.

Table 3.7-3 provides an estimate of the average and peak construction workforce vehicles and number of truck deliveries expected during project construction. Based on these estimates, Table 5.11-5 presents a summary of the round trip generation for the project construction phase. For traffic impact analysis purposes, the truck trips have been converted to Passenger Car Equivalent (PCE) trips by applying a factor of 2.0 to reflect the additional impact that large trucks have on street system operations beyond that of a normal passenger car. This factor is recommended by the appropriate tables in the 1985 Highway Capacity Manual based on terrain and roadway geometrics. For a scheduled peak month (for example, December 2003) of construction activity, the proposed project will generate a total of 780 actual one-way vehicle trips per day and approximately 860 PCE one-way trips per day as a measure of combined truck and passenger vehicle impact on the street system (Table 5.11-5).

Table 5.11-5 Trip Generation Summary – Construction Phase

	Vehicle Daily Round Trips		Vehicle Daily One-Way Trips		PCE[1] Daily One-Way Trips		PCE Peak Hour[4]	
Traffic Source	**Average**	**Peak[2]**	**Average**	**Peak[2]**	**Average**	**Peak[2]**	**Average**	**Peak[2]**
Workers[3]	166	326[3]	332	652	332	652	132	260
Delivery Trucks	15	40	30	80	60	160	3	8
Total	181	366	362	732	392	817	135	268

(1) A passenger car equivalent (PCE) factor of 2.0 was applied to delivery trucks and heavy trucks.

(2) "Peak" refers to scheduled peak quarter of construction activity (4th quarter 2003).

(3) Assumes 1/3 of workers carpool (1.5 persons per vehicle).

(4) Assumes 80% of workers and 10% of deliveries arrive or depart during peak traffic hour.

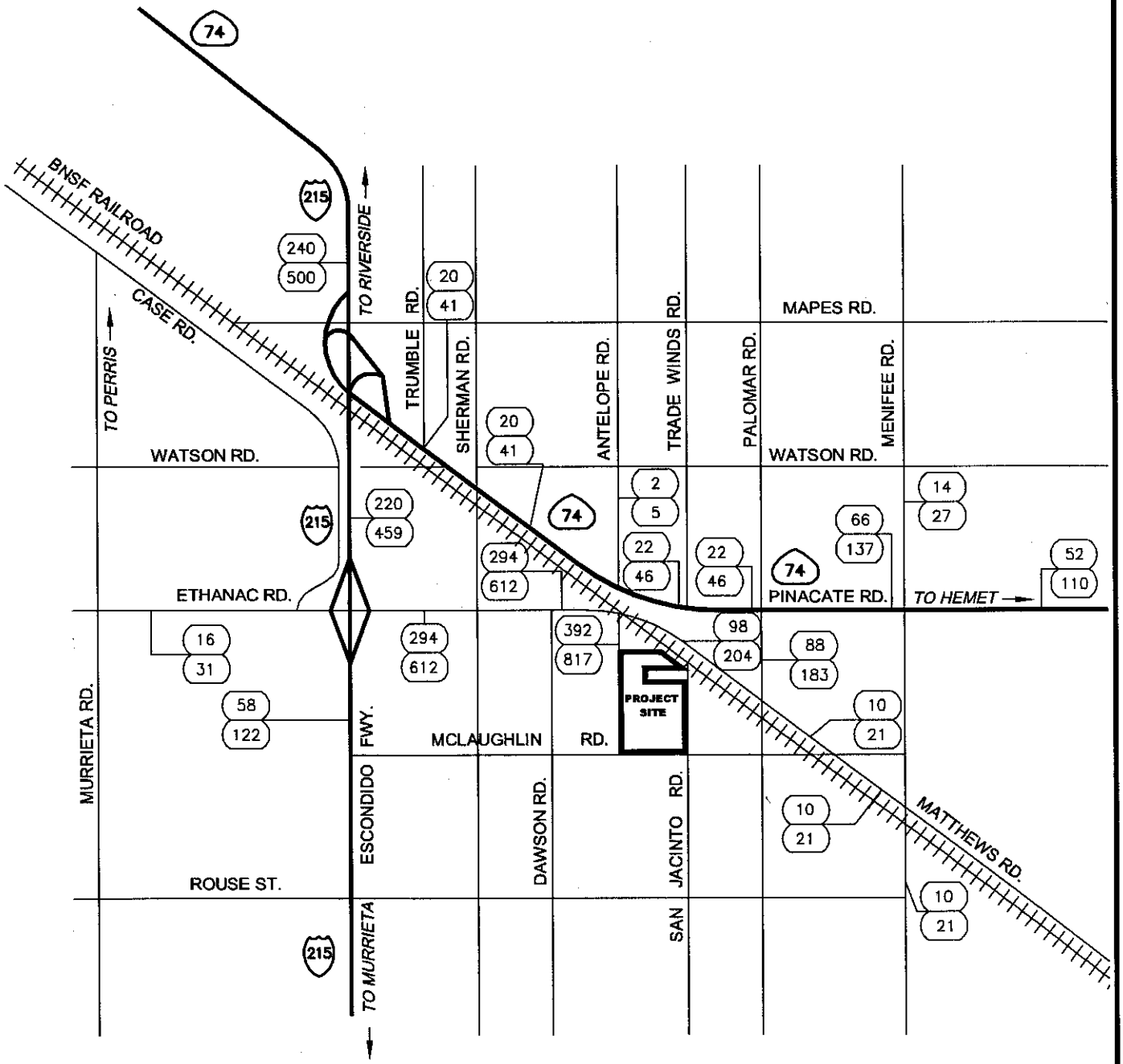
Construction traffic impacts to local and regional roads will be determined by the routes used by construction workers and delivery trucks when arriving and departing from the project site. Most workers and deliveries of building supplies and equipment will come from the greater Riverside area. More specifically, for purposes of analysis, the primary route to the site will be south on I-215, east on Ethanac Road, and south on Antelope Road to the site. For the purposes of this analysis, the following assumptions were made:

- When entering or leaving the site at Antelope Road, approximately 75% of the traffic will travel west of the site on Ethanac Road, and the remaining 25% will go east on Matthews Road.
- Most of the traffic using Ethanac Road west of the site will originate from the Riverside Area; it is assumed that 75% will be from the north (Riverside area), 20% will be from the south (San Diego County area), and the remaining 5% will be from the east (Hemet and San Jacinto area).
- Approximately 80% of the construction workers will arrive or depart during peak traffic hours; 10% of delivery trucks will arrive or depart during peak traffic hours.
- Access to SR 74 from Ethanac Road (and vice versa) will be closed prior to construction of the Energy Center, as planned by Riverside County.

Based on these assumptions, the traffic generated by project construction would be distributed on local roads as illustrated in Figure 5.11-5. For determination of impacts to LOS, the traffic generated by the project was added to the existing traffic levels on roads in the project area as shown in Table 5.11-6. Project construction traffic will not cause a change to the LOS of A for any project area roads or highways for average or peak hour conditions.

Traffic analyses conducted as part of the Menifee North Specific Plan reveal that it is reasonable to expect that approximately 7.0 vehicle trips per day would be generated per 1,000 square feet of land within the Light Industrial classification (see page V-100 of the Menifee North Specific Plan). The proposed 35-acre Energy Center site is designated as Industrial. However, the Menifee North Specific Plan does not provide estimated vehicle trips for the Industrial classification. Thus, rates for the Light Industrial classification are used for purposes of this analysis. Based on the Plan's suggested rates (i.e., 7.0 vehicle daily trips), one could expect that approximately 1,525 daily trips would be generated by the proposed Energy Center project. This rate is well above the number of PCE trips (i.e., 817) that are expected to be generated during construction of the proposed Energy Center. Thus, the amount of traffic generated during construction of the proposed project would not exceed the values estimated under the Menifee North Specific Plan.

During plant construction, a traffic control plan will be developed and enacted so that traffic flow and access on local roads and intersections will not seriously degrade existing traffic patterns. The traffic control plan will outline what measures will need to be taken on a month-to-month basis based on the expected construction traffic volumes.



LEGEND

382 Average Vehicle Daily Trips

650 Peak Month Average Daily Trips

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Figure 5.11-5
Project Construction Traffic

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Table 5.11-6 Construction Phase – Existing Plus Project-Generated Traffic During Peak Construction Month[1]

Road or Highway	Existing Plus Project Traffic		Capacities		V/C (LOS)	
	AADT[2,3]	Peak Hour Traffic[4]	AADT	Peak Hour Traffic	AADT	Peak Hour Traffic
I-215 (4-lane urban freeway)						
North of Mapes Road	44,500	4,463	80,000	8,000	0.56 (A)	0.56 (A)
Mapes Road to Ethanac Road	44,459	4,450	80,000	8,000	0.56 (A)	0.56 (A)
South of Ethanac Road	44,122	4,241	80,000	8,000	0.55 (A)	0.53 (A)
SR 74 (4-lane expressway)						
West of Antelope Road	19,541	1,613	40,000	7,200	0.49 (A)	0.22 (A)
Antelope Road to Palomar Road	21,746	1,765	40,000	7,200	0.54 (A)	0.25 (A)
Palomar Road to Menifee Road	21,837	1,795	40,000	7,200	0.55 (A)	0.25 (A)
Ethanac Road (2-lane collector)						
Murrieta Road to I-215	1,267	134	12,000	3,400	0.11 (A)	0.04 (A)
I-215 to SR 74/BNSF Railroad	4,467	587	12,000	3,400	0.37 (A)	0.17 (A)
Matthews Road (2-lane collector)						
Ethanac Road to Palomar Road[4]	4,059	453	12,000	3,400	0.34 (A)	0.13 (A)
Palomar Road (2-lane collector)						
Matthews Road SR 74[4]	4,038	446	12,000	3,400	0.34 (A)	0.13 (A)
Menifee Road (2-lane collector)						
SR 74 to Watson Road	4,4208	427	12,000	3,400	0.35 (A)	0.12 (A)
Matthews Road to Rouse Street	6,205	625	12,000	3,400	0.52 (A)	0.19 (A)

(1) Scheduled peak construction quarter is 4th quarter 2003 (December used as example).

(2) Existing traffic from Table 5.11-3.

(3) Based on PCE daily one-way trips shown in Table 5.11-4.

(4) Based on PCE for peak hour shown in Table 5.11-4.

The construction Contractor will be required to prepare a construction traffic control plan and implementation program that addresses timing of heavy equipment and building materials deliveries; an employee trip reduction plan; and signing, lighting and traffic control device placement.

The following specific best management practices will be incorporated into the construction traffic control plan:

- Truck loads will not exceed legal limits.
- Loads will be covered with full tarp if wind is a problem.
- Trucks and trailers will be swept, clean or hosed after loading and before entering highway.
- Mufflers, brakes, and all loose items on trucks will be maintained to minimize noise and ensure safe operation.
- Truck operations will be kept to quietest operating speeds. Drivers will be advised of downshifting and vehicle operations through residential communities.
- Traffic control will be coordinated with BNSF to ensure motorists are aware of any railroad trips during construction.

Alternative A – Menifee Road Natural Gas Pipeline

Construction of this 0.9 mile long natural gas pipeline route is anticipated to take 1 to 2 months. A peak monthly workforce of approximately 14 employees will be required for pipeline construction. An average workforce of 10 is estimated over the duration of the pipeline construction.

Pipeline construction requires the use of heavy equipment, including dozers, excavators (backhoe, loader, motor grader, and trencher), cranes, water trucks, and fuel trucks. An estimated 6 pieces of heavy equipment will be used during the short construction period.

In addition to the deliveries of heavy equipment, construction materials and supplies, piping, concrete and rebar, miscellaneous consumables, and other construction equipment will be delivered to the pipeline route by truck.

The pipeline route is approximately 0.9 miles long and the entire route is adjacent to unpaved roads with low existing traffic volumes. Given the short construction period, the limited construction at any one location, the small number of truck deliveries, and their distribution along the route, traffic impacts associated with construction equipment and materials deliveries for the Alternative A Menifee Road natural gas pipeline will be insignificant.

Alternative B – Moreno Valley Natural Gas Pipeline

Construction of this natural gas pipeline route is anticipated to take 4 to 6 months. A peak monthly workforce of approximately 14 employees will be required during the 2nd through the 5th months of pipeline construction (see Table 3.7-2). An average monthly workforce of 10 is estimated over the duration of the pipeline construction.

Construction of the natural gas pipeline requires the use of heavy equipment, including dozers, excavators (backhoe, loader, motor grader, and trencher), cranes, water trucks, and fuel trucks. An estimated 10 pieces of heavy equipment will be used during the natural gas pipeline peak construction period (the 2nd through the 5th months of pipeline construction).

In addition to the deliveries of heavy equipment, construction materials and supplies, piping, concrete and rebar, miscellaneous consumables, and other construction equipment will be delivered to the pipeline route by truck.

The pipeline route is approximately 14.8 miles long and most of the route is adjacent to paved rural roads with very low existing traffic volume. Except for road crossings, construction vehicles will not be on paved local roads but will be on agricultural field access roads that parallel the paved roads. Given the short construction period, the limited construction at any one location, the small number of truck deliveries, and their distribution along the 14.8-mile-long route, traffic impacts associated with construction equipment and materials deliveries for the natural gas pipeline will be insignificant.

Non-Reclaimable Wastewater Pipeline

Construction of the non-reclaimable wastewater pipeline is anticipated to take 5 months. A peak monthly workforce of approximately 17 employees will be required during the 2nd through 4th months of pipeline construction (see Table 3.7-2). An average monthly workforce of 11 is estimated over the duration of the pipeline construction.

Construction of the non-reclaimable wastewater pipeline requires the use of heavy equipment, including dozers, excavators (backhoe, loader, motor grader, and trencher), cranes, water trucks, and fuel trucks. An estimated 18 pieces of heavy equipment will be used during the natural gas pipeline peak construction period (the 2nd through 4th months of pipeline construction).

In addition to the deliveries of heavy equipment, construction materials and supplies, piping, concrete and rebar, miscellaneous consumables, and other construction equipment will be delivered to the pipeline route by truck.

The pipeline route is approximately 4.7 miles long and most of the route is adjacent to a combination of paved and unpaved rural roads with low to very low existing traffic volumes. Except for road crossings, construction vehicles will not be on paved local roads but will be on agricultural field access roads that parallel the paved roads. Given the short construction period, the limited construction at any one location, the small number of truck deliveries, and their distribution along the 4.7-mile-long route, traffic impacts associated with construction equipment and materials deliveries for the natural gas pipeline will be insignificant.

Transmission Interconnection

A new 0.9-mile 500 kV transmission line will be constructed to connect the project switchyard at IEEC to the Southern California Edison (SCE) Valley substation, approximately one mile east of the project site. Construction of the transmission interconnection (see

Section 3.6.3) will take approximately four months. Because construction will be limited both in duration and scope, and will occur in industrial and agricultural areas with very low traffic volumes on nearby roadways, no significant impacts to traffic and circulation are expected.

5.11.2.2 Operation Phase Impacts

No significant long-term traffic impacts are expected as a result of the facility's operational workforce and delivery of materials to the site.

Operation of the Energy Center will require a labor force of approximately 23 full-time employees (see Table 3.8-1) with a maximum of 15 employees during the day shift. Sixteen parking spaces will be available for employee and visitor vehicles on a paved lot adjacent to the administration building. It is assumed that the majority of the permanent workforce will reside in the greater Riverside area, and that their preferred route to work will be south on I-215, and east on Ethanac Road to the project site. This travel route will easily accommodate the operations related traffic.

During project operation, materials will be delivered by truck to the plant site on a regular, but infrequent, basis. Overall, the number of truck deliveries to the site is estimated to be approximately two per day. The anticipated travel routes for materials delivery will be south on I-215 from the greater Riverside area, then east on Ethanac Road to the project site.

Table 5.11-7 summarizes the number of vehicle trips generated by project operations. The employee-based trips were estimated by using a rate of 2.5 trips per employee. This rate provides for lunchtime trips, service trips, and basic housekeeping functions related to plant operations. Employees will work in either 8-hour or 12-hour shifts, thus spreading employee trips over 24 hours. For worst-case estimates, it was assumed that 10 of the 15 employees working on the day shift travel during the AM or PM peak traffic hours. Again, the truck trips are PCE trips calculated by multiplying actual truck trips by a factor of 2.0.

Table 5.11-7 Trip Generation Summary – Operation Phase

Site Operations	One-Way Daily Trips	Peak Hour Trips
Employee Vehicles	47(1)	10(2)
Trucks	8(3)	1(4)
Total	**55**	**11**

(1) Employee trips calculated based on number of employees x 2.5.

(2) Ten day-shift employees are assumed to arrive and depart during peak traffic hour (only PM peak hour shown)

(3) Actual number of truck trips x 2.0 to determine PCEs.

(4) Equals 10% of truck trips.

When compared to the existing LOS for roads in the project area (Table 5.11-4), the addition of 55 vehicle trips per day and 11 vehicle trips during the peak hour will not cause a change in the LOS of A for any nearby roads or have a significant impact on traffic. Operation of the proposed project: 1) will not generate substantial vehicular movement; 2) will not alter present patterns of

circulation; 3) will not alter waterborne, rail, or air traffic; 4) will not substantially increase traffic hazards to motor vehicles, bicyclists, or pedestrians; 5) will not violate adopted LOS standards; 6) will not generate traffic for which impacted routes are not suitable; and 7) will not create demand for new parking that cannot be accommodated by the project design. Therefore, operation of the proposed project is not expected to result in significant impacts on the local transportation system.

5.11.3 Mitigation Measures

No significant impacts to traffic and transportation are likely to be caused by construction or operation of the project, even with the use of a PCE factor to evaluate the impact of heavy trucks on the street system. Therefore, with the exception of implementing a traffic control plan, no additional mitigation measures are proposed for project construction or operation.

5.11.4 Cumulative Impacts

As described above, traffic generated by the project during construction and operation was added to existing traffic on area roads to determine if the project would result in a significant cumulative impact. The results of this analysis (see Section 5.11.2.1 and 5.11.2.2) indicate that although there will be an incremental increase in traffic on area roads, the increase will not be substantial in relation to existing traffic and will not lead to a change in the LOS of area roads. The project will not contribute to a significant cumulative impact to traffic.

5.11.5 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction, and operation of the proposed project including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS applicable to traffic and transportation.

The following LORS are applicable to the control of traffic and transportation as it relates to the proposed IEEC.

5.11.5.1 Federal Authorities and Administering Agencies

49 CFR. Chapter 11, Subchapter C; and Chapter 111, Subchapter B. These authorities establish national standards for the transportation of hazardous materials (Chapter 11, Subchapter C), and national safety standards for the transport of goods and materials and substances over public highways (Chapter 111, Subchapter B, Parts 171-173, 177-178).

The administering agency for the above authority is CalTrans.

5.11.5.2 State Authorities and Administering Agencies

California Vehicle Code § 35780; California Streets & Highways Code §§ 117 and 660-711; 21 CCR 4§ 1411.1-1411.6. These codes state permit requirements for "overload" approvals (transportation permits) for transportation over state highways.

The administering agency is CalTrans.

California Streets and Highways Code § 117, 660-711. This code requires permits for any construction, maintenance or repair involving encroachment on state highway rights-of-way.

The administering agency is Caltrans.

California Vehicle Code § 31300 *et seq*. The code includes provisions for the transportation of hazardous materials on state highways.

The administering agency is CalTrans.

California Vehicle Code § 31030. This Section identifies commercial shipping routes for specified waste streams.

The administrating agency is CalTrans.

California Vehicle Code §§ 31600-31620. These sections provide regulations for the transport of explosive materials.

The administrating agency is CalTrans.

California Vehicle Code §§ 32100-32109. These sections establish requirements for the transportation of inhalation hazards and poisonous gases.

The administering agency is CalTrans.

California Vehicle Code §§ 34000-34121. This law establishes requirements for the transportation of flammable and combustible liquids over public roads and highways.

The administering agency is Caltrans.

5.11.5.3 Local Authorities and Administering Agencies

Regional Transportation Plan. The RTP establishes regional transportation goals, policies, objectives, and actions for various modes of transportation, including intermodal and multinodal transportation activities. The RTP is implemented through the County TIP.

The administering agency is the Southern California Association of Governments.

Traffic Congestion Relief Program. The Traffic Congestion Relief Plan establishes guidelines for development of a balanced transportation system, relating population and traffic growth, land use decisions, LOS performance standards, and air quality improvement.

The administering agency is the Southern California Association of Governments.

Riverside County General Plan. The County's General Plan establishes goals and policies, and identifies implementation measures for County traffic and transportation systems.

The administering agency is the Riverside County Board of Supervisors.

Encroachment Permits. The County of Riverside Transportation Permits Department requires encroachment permits for pipelines on right-of-ways and for road improvements.

The administering agency is the Riverside County Transportation and Land Management Agency.

5.11.6 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to traffic and transportation for IEEC are provided in Table 5.11-8.

Table 5.11-8 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
County of Riverside Transportation Permits Department 4080 Lemon Street, 2nd Floor Riverside, CA 92501	Felicia Tyars (909) 955-6790	Encroachment Permit across County roadway rights-of-way
County of Riverside Transportation Department 4080 Lemon Street, 8th Floor Riverside, CA 92501	Staff (909) 955-6790	Approval of Traffic Control Plan
California Department of Transportation District 8 464 West 4th Street San Bernardino, CA 92407	Staff (909) 383-4561	Overload Limit Permit/Encroachment Permit for crossing of State roadway rights-of-way

5.11.7 Permits Required and Permit Schedule

Agency-required permits related to traffic and transportation is summarized below in Table 5.11-9. The listed agencies will be contacted to obtain the necessary permits.

Table 5.11-9 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Encroachment Permit for pipeline on rights-of-way and road improvements (County of Riverside Transportation Permits Department)	14 working days
Encroachment Permit for wastewater pipeline across I-215 right-of-way (Caltrans, District 8)	4-6 months
Traffic Control Plan (County of Riverside Transportation Department)	2-4 weeks
Overload Limit Permits (Caltrans, District 8)	Approximately 2 weeks prior to delivery.

5.11.8 References

Caltrans. 2000. Travel and Accident Summary Report for Riverside County. California Department of Transportation. San Bernardino, CA.

Caltrans. 1999. 1998 Traffic Volumes on the California State Highway System. California Department of Transportation. Sacramento, CA.

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Riverside Transit Agency (RTA). 2001. http://www.rrta.com.

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SECTION 5.12 HAZARDOUS MATERIALS HANDLING
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5.12 HAZARDOUS MATERIALS HANDLING

This section presents an evaluation of potential impacts to human health and the environment from the storage and use of hazardous materials in conjunction with the Inland Empire Energy Center (IEEC).

5.12.1 Affected Environment

IEEC is located in unincorporated Riverside County, near the city of Romoland (Figure 3.2-1). Land use surrounding the project area consists of a mix of agriculture, light industrial and scattered rural residences. Land use is discussed in detail in Section 5.7. There is one sensitive receptor (i.e., as schools, daycare facilities, convalescent centers, or hospitals), within a one-mile radius of the project site. An elementary school located at 25890 Antelope Road, approximately 0.3 miles north of the project site. The closest hospital is Menifee Valley Medical Center located at 28400 McCall Boulevard, approximately 2.0 miles south of the project site. Sensitive are shown in Figure 5.12-1 and is discussed further in Section 5.15, Public Health.

Hazardous and acutely hazardous materials will be stored at the project site during operation of the IEEC. Storage locations for chemicals are presented in Table 5.12-1, and in Figure 3.3-1.

5.12.1.1 Construction Phase

Acutely hazardous materials, as defined under California's La Follette Bill (California Health and Safety Code 25531 et seq.), will not be used during construction of the IEEC. Therefore, no discussion of acutely hazardous materials storage or handling is included in this section for the project site during construction.

Hazardous materials used during construction will include gasoline, diesel fuel, motor oil, hydraulic fluid, certain solvents, cleaners, sealant, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and the manufacturer's requirements for coating.

There is only minimal potential for environmental impacts from hazardous material incidents during construction. Small volumes of hazardous materials will be temporarily stored on-site inside fuel and lubrication service trucks. Paints and solvents will be stored in flammable materials cabinets. Maintenance and service personnel will be trained to handle these materials. Handling procedures for the hazardous materials to be used during construction are presented in Section 5.12.5.1.

The most likely incidents involving these hazardous materials would be associated with minor spills or drips. Impacts from such incidents will be mitigated by thoroughly cleaning up minor spills as soon as they occur. An accident involving a service or refueling truck release would present the worst-case scenario for release of hazardous materials. In the worst-case scenario of a large spill of hazardous material, contaminated soil would be excavated and stored in drums or roll-off bins for off-site disposal as a hazardous waste, or otherwise managed in accordance with applicable laws and regulations.

5.12.1.2 Operations Phase

Hazardous materials will be used and stored onsite during the operation of IEEC. Table 3.4-7 provides a list of hazardous materials that will be used on-site, quantities on-site, hazardous characteristics, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) Title III reportable quantities (RQ), La Follette Bill threshold planning quantities (TPQ), and Proposition 65 listing status. Proposition 65 chemicals are those known to be carcinogenic or cause reproductive problems in humans. In addition to the chemicals noted in Table 3.4-7, small quantities (less than 5 gallons) of paints, oils, solvents, pesticides, and cleaners, typical of those purchased at a retail hardware store, may also be used at the facility. Natural gas will be continuously delivered to the power plant site through a pressurized natural gas pipeline.

A variety of hazardous chemicals will be utilized to treat cooling water and boiler feedwater. These chemicals will be stored in either tanks or totes in accordance with applicable laws and regulations. The hazardous materials to be stored include such incompatible chemicals as hydrochloric acid and ammonia, and sodium hydroxide and sulfuric acid. Mixing of these chemicals has the potential to cause violent reactions or generate toxic gases. Measures to keep incompatible chemicals separated include separate storage and containment areas and/or berming, and appropriate signage and employee training.

The most likely incidents involving these hazardous materials would be associated with minor spills or drips. Impacts from such incidents will be mitigated by thoroughly cleaning up minor spills as soon as they occur. An accident involving the release of these products from a service truck during equipment maintenance or storage container loading is the worst-case scenario. The risk of such an occurrence will be mitigated through the use of bermed areas for chemical containment during hazardous material transfers, and an emergency response training program and procedures. In the case of a large spill of hazardous material, contaminated soil would be excavated and stored in drums or roll-off bins for offsite disposal as a hazardous waste, or otherwise managed in accordance with applicable laws and regulations. Details on hazardous waste disposal are contained in Section 5.13, Waste Management.

Fuel Gas Delivery

Natural gas will be delivered to the plant site via a 20-inch diameter pipeline following one of the two alternative pipeline routes. The pipeline will be buried in an area dominated by agricultural use and will not pose a risk to the public. Additionally, because no onsite storage of natural gas will occur at the facility, the risk of explosion or fire from natural gas at the facility is greatly reduced and is considered insignificant.

Compressed Gas Storage

Hydrogen will be used as a generator coolant. Hydrogen is a flammable gas and has a National Fire Protection Association (NFPA) hazard rating of 4 (NFPA, 1997). A maximum of 12,600 cubic feet of compressed hydrogen will be stored onsite at any one time. The compressed hydrogen gas will be stored in a tube trailer consisting of up to ten 1,260 scf tubes. This trailer

will be parked adjacent to the northern-most combustion turbine generator, away from electrical lines and other potential ignition sources as required by applicable building and fire codes. The hydrogen trailer will also be protected from vehicular impact by installation of crash posts. Construction of the hydrogen trailer in accordance with Department of Transportation (DOT) standards coupled with operations consistent with industry safety standards present a less than significant risk of explosion or fire.

Other compressed gases to be stored and used at the facility may include gases typically used for maintenance activities such as shop welding and emissions monitoring. These gases include acetylene, argon, carbon monoxide, nitrogen and oxygen. The potential impacts presented by the use of these gases at the facility do not appear to be significant based on the following facts:

- Small quantities of each gas will be stored at the facility (200 cu. ft. per gas cylinder).
- The compressed gases will be delivered and stored in DOT-approved safety cylinders and secured by chains to prevent tipping and physical damage.
- The compressed gases will be stored in an isolated storage area surrounded by crash posts to minimize potential for accidents or upset.
- Incompatible gases (e.g., flammable gases and oxidizers) will be stored in separate, isolated areas.

The compressed gases will be stored in standard portable cylinders, in contrast to a single larger cylinder, thus limiting the maximum quantity that could be released from an individual cylinder to 200 cubic feet or less in the unlikely event of a cylinder failure.

Regulated Substances

Aqueous ammonia is the only chemical that will be stored in amounts above regulated quantities at the IEEC, making it subject to the requirements of the California Accidental Release Prevention (CalARP) Program. Approximately 32,000 gallons of aqueous ammonia (28 percent solution) will be stored in aboveground storage tanks (two at 16,000 gallons, each) for use for emissions control at this site. Although hydrogen gas is also classified as a regulated substance above certain quantities, it is not considered a regulated substance in this setting because it does not exceed the threshold quantity under the CalARP Program.

The CalARP Program regulations were developed by the California Office of Emergency Services (CCR Title 19, Division 2, Chapter 4.5) to merge the federal and state programs for the prevention of accidental release of regulated toxic and flammable substances. The new CalARP Program, which became effective June 1997, is designed to streamline the permitting requirements for applicants and eliminate the need for two chemical risk management programs. The following is a summary of the federal and state regulated substances to be used at IEEC:

- CCR Title 19, Section 2770.5 – Tables 1 and 2 of Section 2770.5 list Federal Regulated Substances and threshold quantities for accidental release prevention,

including flammable substances. Aqueous ammonia and hydrogen are on the list; however, sulfuric acid is not. Aqueous ammonia is only listed for concentrations greater than or equal to 20 percent by weight. A 28 percent solution by weight is proposed at IEEC; therefore, aqueous ammonia is considered a regulated substance for which a Federal Risk Management Plan (RMP) is required. The proposed maximum quantity of hydrogen (approximately 665 pounds) does not exceed the threshold quantity pursuant to Table 2 (10,000 pounds); therefore a federal RMP is not required for hydrogen.

CCR Title 19, Section 2770.5 – Table 3 of Section 2770.5 lists State Regulated Substances and threshold quantities for accidental release prevention. Ammonia (anhydrous and aqueous forms) and sulfuric acid are included on this list. Hydrogen is not listed in Table 3. The maximum quantity of aqueous ammonia proposed for the IEEC facility (32,000 gallons or approximately 240,000 pounds) exceeds the threshold quantity on the list (500 pounds). There is no concentration level associated with ammonia threshold levels. However, ammonia in liquid form must have a vapor pressure at Standard Temperature and Pressure (STP) greater than 10 millimeters of mercury in order to exceed the threshold quantity. Aqueous ammonia at 28 percent concentration has a vapor pressure at STP greater than 10 millimeters of mercury; therefore, aqueous ammonia is considered a Regulated Substance for which a state RMP is required. Based on the proposed use and storage of sulfuric acid, it is not considered a Regulated Substance. Based on the above regulatory threshold planning quantities, an RMP is required only for the aqueous ammonia.

Ammonia gas is very soluble in water. Aqueous ammonia consists of a solution of ammonia and water. The aqueous ammonia concentration proposed for the IEEC is 19 to 30 percent ammonia by weight and 70 to 81 percent water by weight. If the aqueous ammonia is spilled or leaks, the ammonia in solution will evaporate as a gas into the atmosphere. At concentrations greater than 140 parts per million (ppm) the gas will cause detectable effects on lung function even for short time exposures (0.5 to 2 hours). At higher concentrations, in general, 700 to 1700 ppm, the gas will cause severe effects, with death at concentrations of 2,500 to 7,000 ppm. If a spill or leak occurs, ammonia gas could migrate off-site and potentially affect the health of humans at locations surrounding the facility.

At the IEEC, aqueous ammonia (32,000 gals) will be stored onsite in two 16,000-gallon tanks. As with bulk storage of other hazardous materials, the ammonia storage tanks will be surrounded by spill containment walls. The spill containment walls will be designed to contain the volume of a single tank plus an allowance for rainwater from a 25-year, 24-hour storm.

The aqueous ammonia storage and handling facilities will be equipped with continuous tank level monitors, and a steel-reinforced concrete containment structure surrounding the tanks. Only trained technicians will conduct system maintenance and repairs.

The aqueous ammonia will be delivered to the facility in 6,500-gallon tank trucks. Tank trucks will be unloaded in a tank truck unloading area paved with concrete and with sufficient berms

to provide secondary containment to hold the contents of the worst-case release scenario from an unloading accident.

Facility safety equipment, hazardous materials training, and emergency response planning will mitigate the hazard to facility workers for the acutely hazardous materials. A RMP as required under federal regulations (40 Code of Federal Regulations [CFR] 68) and the California Accidental Release Prevention Program pursuant to CCR Title 19 (2735.1-2785.1) will be developed to describe these and other requirements (see Section 5.12.5.4).

The toxicity characteristics and exposure level criteria for the acutely hazardous material, aqueous ammonia and hydrogen, are shown in Table 5.12-1. A summary of the characteristics of all chemicals that will be used in the operations phase is presented in Table 5.12-2. Table 5.12-3 provides locations of hazardous materials that will be used during project operation.

5.12.2 Off-Site Consequence Analysis

Because there is human activity in the vicinity of the proposed IEEC site, an Off-Site Consequence Analysis (OCA) will be performed during the Application for Certification (AFC) process to assess the risk to humans at various distances from the site if a spill or rupture of the aqueous ammonia storage tank were to occur. The protocol for the OCA will include simulation of a tank rupture using a dispersion model for hazardous materials. Potential models that may be used are SLAB, which was developed by the Lawrence Livermore Laboratory, or ALOHA, which was developed by NOAA.

The worst-case scenario that will be modeled will assume that a 5-inch diameter hole is punctured in one of the aqueous ammonia storage tanks, and that the tank will empty within 10 minutes. Pursuant to CCR Title 19, Section 2750.2-2750.3 the parameters that will be incorporated include an atmospheric stability classification of "F" and a wind speed of 1.5 meters/second. Concentric concentrations of ammonia will be plotted around the ruptured tank beginning at concentrations of 75, 200, 300, 500, 1,000, and 2,000 ppm in succession, provided that the results of the previous plot indicate that ammonia has migrated off-site.

Fire and Explosion Risk

As shown in Table 5.12-2, several of the hazardous materials are combustible. Aqueous ammonia, which constitutes the largest quantity of hazardous materials on-site (except for the mineral insulating oil in the transformers, as discussed below) can release ammonia vapor that is combustible within a very narrow range of concentration and is therefore not easy to burn. The lubrication oil and diesel are both combustible and will be handled in accordance with a Hazardous Materials Business Plan (HMBP). With proper storage and handling of flammable, combustible, and oxidizing materials in accordance with the HMBP, the risk of fire and explosion at the generating facility should be minimal.

Table 5.12-1 Acutely Hazardous Materials.

Name	Toxic Effects	Exposure Levels
Aqueous Ammonia 28% Solution	Contact with liquid or vapor causes eye, nose, and throat irritation, skin burns, and vesiculation. Ingestion or inhalation causes burning pain in mouth, throat, stomach, and thorax, constriction of thorax, and coughing followed by vomiting blood, breathing difficulties, convulsions, and shock. Other symptoms include dyspnea, bronchospasms, pulmonary edema, and pink frothy sputum. Contact or inhalation overexposure can cause burns of the skin and mucous membranes, and headache, salivation, nausea, and vomiting. Other symptoms include labored breathing, bloody mucous discharge, bronchitis, laryngitis, hemmoptysis, and pneumonitis. Damage to eyes may be permanent, including, ulceration of conjunctiva and cornea, and corneal and lenticular opacities.	Occupational Exposures PEL = 35 mg/m^3 OSHA TLV = 18 mg/m^3 ACGIH TWA = 25 mg/m^3 NIOSH STEL = 35 mg/m^3 Hazardous Concentrations IDLH = 300 ppm LD_{50} = 350 mg/kg - oral, rat Ingestion of 3 to 4 mls may be fatal Sensitive Receptors ERPG-1 = 25 ppm ERPG-2 = 200 ppm ERPG-3 = 1000 ppm
Hydrogen Gas	On loss of containment, the liquid evaporates quickly causing supersaturation of the air with serious risk of suffocation when in confined areas. The gas mixes well with air, forming explosive mixtures. Heating may cause violent combustion or explosion. Reacts violently with air, oxygen, chlorine, fluorine and strong oxidants causing a fire or explosion reaction	Occupational Exposures PEL = Not established TLV = Not established TWA = Not established STEL = Not established Hazardous Concentrations IDLH = Not established LD_{50} = Not established

PEL = OSHA Permissible Exposure Limit for 8-hr work-day

TLV = ACGIH Threshold Limit Value for 8-hr work-day

TWA = NIOSH time-weighted average for 8-hr work-day

STEL = Short term exposure limit, 15-min. exposure

IDLH = Immediately dangerous to life and health

LD_{50} = Dose lethal to 50 percent of those tested

LDLO = Lowest published lethal dose

OSHA = Occupational Safety and Health Administration

ERPG = Emergency Response Planning Guideline

TCLO = Lowest published toxic concentration

ERPG-1 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects

ERPG-2 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without developing irreversible or serious health effects

ERPG-3 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing life-threatening health effects

mg/m^3 = milligrams per cubic meter

mg/kg = milligrams per kilogram

ppm = parts per million

ACGIH = American Conference of Government Industrial Hygienists

NIOSH = National Institute of Occupational Safety and Health

Table 5.12-2 Characteristics of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Aqueous ammonia 28%	Colorless gas with pungent odor.	Corrosive. Irritation to permanent damage from inhalation, ingestion, and skin contact.	Acids, halogens, strong oxidizers, salts of silver and zinc.	Combustible, but difficult to burn.
Hydrogen gas	Odorless, colorless gas	Risk of suffocation in enclosed areas	Can react explosively if there is an ignition source	Extremely flammable
Stabilized bromine (e.g. NALCO STABREX ST70	Clear to hazy yellow to amber	Corrosive. Toxic. Strong irritant to all tissue and CNS depressant.	Reacts violently with combustible and reducing materials, oxidizers, metals, organic compounds, phosphorus, and aqueous ammonia	Not combustible
Sulfuric acid 93% (H_2SO_4)	Colorless, dense, oily liquid.	Strongly corrosive. Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Not combustible.
Sulfuric acid, 29.5%	Colorless, dense, oily liquid.	Strongly corrosive. Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Not combustible.
Hydrochloric acid	Colorless liquid	Corrosive. Irritation to permanent damage from inhalation, ingestion, and skin contact.	Reacts violently with bases and oxidants to form chlorine gas. Reacts with metals to form hydrogen gas.	Not combustible
Sodium bromide	White crystals, granules, or powder, odorless	Irritation to eyes, skin, and respiratory tract. Can cause damage to central nervous system if ingested.	Acids, alkaloidals and heavy metal salts, oxidizers, and bromine trifluoride	Non-flammable
Sodium hypochlorite (NaOCl)	Pale green, sweet disagreeable odor. Usually in water solution or sodium hydroxide.	Corrosive and Toxic: by ingestion. Strong irritant to tissue.	Ammonia and organic materials.	Fire risk when in contact with organic materials.
Tri-sodium phosphate, di-sodium phosphate, and sodium hexameta phosphate	Colorless crystals or white powder.	Corrosive and Toxic: by ingestion. Irritant to tissue.	None	Non-flammable.
Neutralizing amines NALCO 356, NALCO TRIACT 1800	Clear, colorless to light yellow/green liquid.	Corrosive: Irritation to eyes and skin. Can cause liver and/or kidney damage.	Strong oxidizers and acids. SO2 or acidic bisulfite products, inorganic nitrates, and nitrous oxide.	Flammable
Oxygen scavenger NALCO Elimin-OxELIMIN-OX	Colorless liquid.	Toxic: Slightly toxic, low human health hazard.	Mineral acids, nitrites, and strong oxidizers.	Non-flammable

Table 5.12-2 Characteristics of Hazardous and Acutely Hazardous Materials (Continued)

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Aluminum sulfate, sodium aluminate, or poly aluminum chloride	Liquid	Toxic: Moderately toxic by ingestion.	None	Non-flammable
Ferric chloride or ferric sulfate	Solid, greenish black, odorless. Solid, gray to white, Odorless.	Irritant to nose and throat. Dust can irritate eyes and skin due to prolonged contact.	Heat and evaporation. Cast iron, brass, 304ss, galvanized steel, aluminum, paints, enamels, and concrete.	Non-flammable
Coagulant aid polymer, (e.g., NALCO NALCOLYTE 8799)	Light yellow liquid.	May cause irritation to skin and eyes with prolonged contact.	Strong oxidizers.	Non-flammable.
Phosphonate Nalco 7385	Colorless liquid.	May cause irritation to skin or eyes with prolonged contact.	Strong alkalines (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfides, hypochlorites, and metals.	Non-flammable
Filter aid-cationic, anionic, or non-ionic polymer solution, Nalco Nalclear	Off-white, opaque liquid.	May cause irritation to skin and eyes with prolonged contact.	Water and strong oxidizers.	Non-flammable
Sulfur hexafluoride	Colorless gas with no odor.	Hazardous if inhaled.	Disilane	Non-flammable
Ammonium bifluoride	White solid	Corrosive	Acids, bases, and glass.	Not combustible
Citric acid	Colorless crystals	Corrosive. Irritation to eyes, skin, and lungs	Metals and bases	Combustible
Sodium carbonate (soda ash)	White crystals or powder	Corrosive and Toxic: Mildly toxic by ingestion. Irritation to skin and eyes.	Aluminum, phosphorus V oxide, sulfuric acid, fluorine, lithium, 246 trinitrotoluene	Non-flammable
Sodium nitrate	Colorless crystals	Toxic: Mildly toxic by ingestion.	Acetic anhydride, aluminum powder, antimony powder, barium thiocyanate, cyanides, bitumen, boron phosphate, magnesium, metal amidosulfates, organic matter, perosyformic acid, sodium hypophosphite, wood.	Non-flammable
Hydroxyacetic acid	Colorless crystals	Corrosive and Toxic: Toxic by inhalation, ingestion, and dermal contact. Irritant to skin and tissue.	Strong bases, strong reducing and oxidizing agent.	Combustion is possible at elevated temperatures or if in contact with an ignition source.
Formic acid	Colorless, fuming liquid	Corrosive: Irritant to skin and tissue.	Strong oxidizers, strong caustics, concentrated sulfuric acid.	Combustible

Table 5.12-2 Characteristics of Hazardous and Acutely Hazardous Materials (Continued)

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Various cleaning chemicals/detergents	Liquid	Refer to individual product or chemical labels	Refer to individual product or chemical labels	Refer to individual product to chemical labels
Sodium hydroxide	White solid with no odor	Strongly corrosive. Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Reacts violently with acid. Corrosive to metals and forms hydrogen gas upon interaction.	Not combustible
Sodium bisulfite or sodium sulfite	Yellow liquid	Corrosive. Irritation to eyes, skin, and lungs. May be harmful if digested.	Strong acids and oxidizers.	Not combustible
Non-oxidizing biocide (e.g., NALCO 7330)	Light green liquid	Corrosive. Strong irritant to tissue. Eye burns and permanent tissue damage	Strong oxidizers	Non - flammable
Ethylene / propylene glycol (anti-freeze)	Odorless, clear, syrupy, liquid	Toxic. Kidney and central nervous system (CNS) damage.	Strong bases and strong oxidizers.	Combustible.
Sodium nitrite	White to yellow solid.	Corrosive. Irritation to permanent damage from inhalation, ingestion, and skin contact.	Combustible / flammable materials and weak acids.	Not combustible
Various laboratory reagents	Various	Review individual MSDSs for chemical health hazards	Review individual MSDSs for chemical incompatibilities.	Review MSDS for flammability
Carbon dioxide, liquid	Odorless, colorless gas and liquid.	Risk of suffocation in enclosed areas in gaseous form. Contact with liquid may result in frostbite.	Reacts violently with strong bases and alkali metals.	Not combustible
Nitrogen	Odorless, color gas.	Risk of suffocation in enclosed areas.	None – inert gas.	Not combustible
Lubricating oil	Oily, dark liquid.	May be carcinogenic.	Strong oxidizers.	Combustible
Hydraulic oil	Oily, dark liquid.	May be carcinogenic.	Strong oxidizers.	Combustible
Mineral insulating oil	Oily, clear liquid.	May be carcinogenic.	Strong oxidizers.	May be combustible.
Diesel fuel	Oily, light liquid.	May be carcinogenic.	Strong oxidizers.	Combustible
Natural gas	Colorless gas	Asphyxiant, CNS depressant can cause cardiac arrhythmia. May be carcinogenic.	Oxidizing agents, halogens and acids.	Flammable

Table 5.12-3 Chemical Storage at Facilities Located near IEEC

Facility Name	Location	Chemicals Stored
Datatronics	Pinacate Rd.	Liquid carbon dioxide, acids, resins, solvents
Calmat	Pinacate Rd.	Asphalt, oils
Matthews Casting Co.	Pinacate Rd.	Acids, solvents
Block Graphics	Matthews Rd.	Inks, solvents
Orco Block	Palomar Rd.	Releasing agents, lime
Sannipoli	Palomar Rd.	Releasing agents, lime
Crematorium	Palomar Rd.	Propane
Family Auto	Ethanac Rd.	Oils, greases, fuel, welding gases
Chaney Auto	Ethanac Rd.	Oils, greases, fuel, welding gases
Secard Pools	Watson Rd.	Chlorine, acids
Proposed carbon recycling facility	Sherman Rd.	Unknown at this time

The natural gas fuel for the combustion turbines, duct firing, emergency generator, and auxiliary boiler is flammable and could leak from the supply line or from the natural gas pipeline. The risk of leakage is minimal. Proper design, construction, and maintenance of the supply line and pipeline will minimize leaks and the risk of fire or explosion.

5.12.3 Proposed Mitigation Measures

The following subsections present measures that Calpine plans to take during the construction phase and measures that the Applicant plans to take during the operation phase of the project to mitigate the risk in handling hazardous materials, particularly the risk of inadvertent spills or leaks that might pose a hazard to human health or the environment.

5.12.3.1 Construction Phase Mitigation Measures

During construction, hazardous materials stored on-site will be limited to small quantities of paint and thinner, solvents, cleaners, sealants, lubricants, welding materials, and 5-gallon emergency fuel containers. These hazardous materials will be stored in a flammable materials cabinet, handled per the manufacturer's directions, and replenished as needed. Non-hazardous paint will be used if possible. The emergency fuel containers will be DOT approved 5-gallon safety containers secured to the construction equipment. The emergency fuel will be used when regular vehicle fueling is unavailable.

Fuel, oil, and hydraulic fluids used in on site vehicles will be transferred directly from a service truck to construction equipment tanks and will not otherwise be stored on-site. Designated, trained service personnel will perform fueling either prior to the start of the workday or at completion of the workday. Service personnel and construction contractors will follow standard operating procedures (SOPs) for filling and servicing construction equipment

and vehicles. The SOPs are designed to reduce the potential for incidents involving the hazardous materials and include:

- Refueling and maintenance of vehicles and equipment will occur only in designated areas that are either bermed or covered with concrete or asphalt to control potential spills.
- Only authorized personnel will conduct vehicle and equipment service and maintenance.
- Refueling will only be conducted with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual liquids in the hose.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- When refueling is completed, the service truck will leave the project site.
- Service trucks will be provided with fire extinguishers and spill containment equipment, such as adsorbents.
- In the event a spill contaminates soil, the soil will be containerized and disposed of as a hazardous waste.

Small spills will be contained and cleaned up immediately by trained, on-site personnel. Larger spills will be reported via emergency phone numbers to obtain help from off-site containment and clean up crews, in accordance with applicable laws and regulations. All personnel working on the project during the construction phase will be trained in handling hazardous materials and the potential risks associated with hazardous materials.

An on-site health and safety person will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary. Material Safety Data Sheets (MSDS) for each on-site chemical will be maintained. Employees will be made aware of the chemicals and the location of MSDS sheets.

5.12.3.2 Operations Phase Mitigation Measures

A worker safety plan, in compliance with applicable regulations, will be implemented and will include training for both contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous materials systems, proper use of personal protective equipment, fire safety, and emergency communication and response procedures. Plant personnel will be trained in emergency procedures including plant evacuation and fire prevention. However, in the event of an emergency, plant personnel will defer to the Riverside County Hazardous Materials Team.

Hazardous materials will be stored and handled in accordance with all local, state and federal regulations and codes. A safety program will be implemented including safety-training programs for contractors and operations personnel, respectively. A Hazardous Materials Business Plan will be prepared for approval by the Riverside County Environmental Health Department.

Concrete spill containment berms or dikes will be constructed surrounding each of the bulk chemical storage tanks. The secondary containment dikes surrounding each tank will be designed to contain the tank volume plus rainfall from a 25-year, 24-hour storm in accordance with applicable requirements per 40 CFR 112. Sumps will be provided within the diked areas in order to easily remove collected rainwater and spilled chemicals. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

A fire protection system will be installed to detect, alarm, and suppress a fire, in accordance with the Laws, Ordinances, Regulations and Standards (LORS).

Table 5.12-2 describes the characteristics of acutely hazardous and hazardous materials. The only acutely hazardous material that will be present in amounts greater than the threshold quantity is aqueous ammonia. The following section describes the mitigation measures to be implemented for this acutely hazardous material.

Aqueous Ammonia

Aqueous ammonia is used in a selective catalytic reduction (SCR) process to control NO_x emissions created in the combustion chambers of the combustion turbines. The SCR system includes a reactor chamber, catalyst modules, ammonia storage system, and ammonia injection system. The ammonia will be stored as a liquid solution, re-gasified, and injected into the reactor chamber. The rate of injection will be controlled by a monitoring system that uses sensors to determine the correct quantity of ammonia to feed to the reactor chamber. The reactor chamber contains the catalyst modules and is located in a temperature zone of the HRSG where the catalyst will be most effective at the desired levels of plant operation.

The aqueous ammonia storage and handling facility will be equipped with continuous tank level monitors. Containment will be provided so that if there is an inadvertent release from the storage tank, the liquid will be contained within the secondary containment structure.

5.12.3.3 Transportation/Delivery of Hazardous Materials

Hazardous and acutely hazardous materials will be delivered periodically to the IECC. Transportation will comply with all DOT, U.S. Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and the California State Fire Marshal regulations for the transportation of hazardous materials. Under the California Vehicle Code, the CHP has authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery. The only acutely hazardous material posing

an inhalation hazard that will be delivered to the IEEC is aqueous ammonia. The Vehicle Code has special regulations for the transportation of hazardous materials that pose an inhalation hazard (Vehicle Code Section 32100.5). The IEEC will comply with these regulations.

Fuel will be delivered directly into equipment on site during construction. Fuel will not be stored in tanks with the exception of 5-gallon emergency fuel containers that will be affixed to each of the vehicles.

Aqueous ammonia will be delivered to the IEEC on a regular basis. A 6,500-gallon tank truck will be used to deliver ammonia to the site. Approximately 6,500 gallons will be delivered every 5 days.

5.12.3.4 Hazardous Materials Management Plans

Hazardous materials handling and storage, as well as training in the handling of hazardous materials will be set forth in more detail in hazardous materials plans that the applicant will develop. These plans are summarized as follows.

Hazardous Materials Business Plan

A Hazardous Materials Business Plan (HMBP) is required by the California Code of Regulations (Title 19) and the Health and Safety Code (Section 25504). The plan includes an inventory and location map of hazardous materials stored on-site and an emergency response plan for hazardous materials incidents. This plan will be submitted to and approved by the Riverside County Environmental Health Department prior to beginning construction. The topics to be covered in the plan are:

- Facility Identification
- Emergency Contacts
- Inventory Information (for every hazardous material)
- MSDS for every hazardous material
- Site Map
- Emergency Notification Data
- Procedures to Control Actual or Threatened Releases
- Emergency Response Procedures
- Training Procedures
- Certification

Risk Management Plan

According to CCR Title 19, Division 2, Chapter 4.5, the owner or operator of a facility that handles more than a threshold quantity of a Regulated Substance, shall submit a RMP that reflects all covered processes. The CalARP Program defines three program levels for a RMP

depending upon the complexity, accident history and potential impact of releases of regulated substances. Program Level 1 sources are generally those facilities which have had no accidental releases of a regulated substance in the preceding 5 year period and the distance to a toxic endpoint value is less than the distance for any identified public receptor. Program Level 3 sources are those which do not meet the requirements of Program Level 1, involve processes identified by specific SIC codes, or are covered by the OSHA Process Safety Management program per 29 CFR 1910.119, or sources which the administering agency has determined that the risk posed by the regulated substance in a process above the threshold quantity requires additional safety measures afforded by the Program 3 requirements. Program Level 2 sources are those that cannot be classified as either Level 1 or Level 3. For this project, the Applicant will prepare a Level 3 RMP that will include an ammonia hazard analysis, an off-site consequences analysis, a seismic assessment, an emergency response plan, and training procedures.

The RMP for handling aqueous ammonia at the energy center will be prepared before the start of operations. The RMP process will include identifying and proposing adequate mitigation measures to reduce the risk to the lowest possible level.

The RMP will be filed with and administered by the Certified Unified Program Agency (CUPA). The Riverside County Environmental Health Department is the CUPA. The RMP is in addition to the HMBP and covers acutely hazardous materials that can emit toxic fumes when released as a result of an accident or emergency. Included in the RMP is a hazard assessment to evaluate the potential effects of accidental releases, a program for preventing accidental releases, and a program for responding to accidental releases in order to protect human health and the environment. The basic elements of a RMP are:

- Description of the Facility
- Accident History of the Facility
- History of Equipment Used at the Facility
- Design and Operation of the Facility
- Site Map(s) of the Facility
- Piping and Instrument Diagrams for the Facility
- Seismic Analysis
- Hazard and Operability Study
- Prevention Program
- Off-site Consequence Analysis
- Emergency Response
- Auditing and Inspection
- Record Keeping
- Training
- Certification

Spill Prevention Control and Countermeasure Plan

Federal and State of California regulations require a Spill Prevention Control and Countermeasure (SPCC) plan if petroleum products above certain quantities are stored in aboveground storage tanks (ASTs). Both federal and state laws apply only to petroleum products that might be discharged to navigable waters. If quantities equal to or greater than 660 gallons for a single tank, or equal to or greater than 1,320 gallons total are stored, a SPCC must be prepared. The key elements of a SPCC are:

- The name, location, and telephone number of the facility
- The spill record of the facility and lessons learned
- Analysis of the facility, including:
  - A description of the facilities and engineering calculations
  - A map of the site
  - Storage tanks and containment areas
  - Fuel transfer and storage and facility drainage
  - Prediction and prevention of potential spills
- Spill response procedures
- Agency notification
- Personnel training and spill prevention

The IEEC will have 20,000 gallons of turbine lubricating oil and 100,000 gallons of mineral insulating oil on-site and will, prepare a SPCC plan. This plan will be submitted to the Riverside County Environmental Health Department.

Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986, commonly known as "Proposition 65" was enacted in November of 1986. The initiative statute contained two main provisions: (1) persons in the course of doing business who knowingly and intentionally expose any individual to a chemical "known to the state to cause cancer or reproductive toxicity" must first provide "clear and reasonable" warning of the exposure; and (2) knowing discharge of any detectable amount of such chemicals to potential sources of drinking water is prohibited. The law established a process for identifying chemicals as carcinogens or reproductive toxicants as well as guidance on what constitutes a "clear and reasonable" warning for consumer, environmental, and occupational exposures.

The regulations implementing Proposition 65 rely in part on existing regulatory programs. For instance, warnings that utilize the methods set forth in the OSHA Hazard Communication standards for carcinogens in the workplace satisfy the requirement of Proposition 65 that warnings be clear and reasonable. Discharges into treatment works that comply with state and federal regulations, including pretreatment standards, are not treated as a discharge or release into water or on to land. Similarly, chemical discharges from hazardous waste disposal sites or pesticide applications in compliance with requirements adopted to protect surface and

groundwater are presumed not to pass into sources of drinking water and are unaffected by Proposition 65.

IEEC will comply with all aspects of Proposition 65 through the implementation of the employee safety training program, contractor safety program, hazardous materials business plan, and the use of clear and reasonable warnings as required.

5.12.3.5 Monitoring

An extensive monitoring program will not be required because environmental effects during the construction and operation phases of the facility are expected to be minimal. However, sufficient monitoring will be performed during both phases to ensure that the proposed mitigation measures are complied with and that they are effective in mitigating any potential environmental effects.

5.12.4 Cumulative Impacts

The primary potential cumulative impact from the use and storage of hazardous materials would be a simultaneous release of hazardous materials from two or more sites which, when combined, pose a greater threat to the offsite population than a single release by any one site. The hazardous material that has the greatest potential to migrate off-site is ammonia. To determine the potential for cumulative impacts, other sites, referenced in CUPA records, in the vicinity that store and use ammonia or materials that could combine or interact with released ammonia have been identified. The majority of businesses in the vicinity of the IEEC are small companies that use small amounts of hazardous materials. No significant potential interactions between the ammonia that will be used at IEEC and chemicals used at other facilities were identified. Table 5.12-3 identifies the chemicals stored at nearby facilities according to CUPA records.

5.12.5 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials and acutely hazardous materials at the IEEC is governed by federal, State of California, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination and facility workers and the surrounding community from exposure to hazardous and acutely hazardous materials. The LORS are summarized in Table 5.12-4.

5.12.5.1 Federal

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 USC 9601 et seq. 40 CFR 302 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III). 42 USC § 11001 et seq.; 40 CFR Parts 350, 355 and 370. An amendment to CERCLA, the SARA of 1986, governs hazardous materials. The applicable part of SARA for the IEEC is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a

process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous materials present at facilities in local communities. The

Table 5.12-4 LORS Applicable to Hazardous Materials Management

LORS	Applicability	Conformance
Federal:		
CERCLA/SARA		
Section 302	Requires certain planning activities when EHS are present in excess of TPQs. IEEC will have ammonia in excess of its TPQ.	A RMP will be prepared which will describe planning activities.
Section 304	Requires notification when there is a release of hazardous material in excess of its RQ.	A HMBP will be prepared which will describe notification and reporting procedures.
Section 311	Requires MSDS for every hazardous material to be kept on-site and submitted to state emergency response committee (SERC), local emergency planning committee (LEPC), and the local fire department.	The HMBP that will be prepared will include MSDSs and procedures for submission to agencies.
Section 313	Requires annual reporting of releases of hazardous materials.	The HMBP that will be prepared will describe reporting procedures.
CAA	Requires a RMP if listed hazardous materials at or above a TQ are stored.	A RMP will be prepared.
CWA	Requires preparation of SPCC plan if oil is stored above certain quantities.	A SPCC will be prepared.
California:		
Waters Bill	Requires preparation of a HMBP if hazardous materials are handled or stored in excess of threshold quantities.	A HMBP will be prepared.
La Follette Bill	Requires registration with local CUPA or lead agency and preparation of a RMP if acutely hazardous materials handled or stored in excess of TPQs.	A RMP will be prepared which will describe procedures for registration with local authorities.
Aboveground Petroleum Storage Act	Requires entities that store petroleum in ASTs in excess of certain quantities to prepare a SPCC	A SPCC will be prepared.
Safe Drinking Water and Toxics Enforcement Act (Proposition 65)	Requires warning to persons exposed to list of carcinogenic and reproductive toxins and protection of drinking water from same toxins.	The site will be appropriately labeled for chemicals on the Proposition 65 list.

law primarily provides for planning, reporting and notification concerning hazardous materials. Key sections of the law are:

- Section 302—Requires that certain emergency planning activities be conducted when Extremely Hazardous Substances (EHS) are present in excess of their TPQs. EHSs and their TPQs are listed in Appendices A and B to 40 CFR Part 355.
- Section 304—When there is a release of a hazardous material in excess of its RQ, Section 304 requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response committee (SERC). If the release is of a RQ of a CERCLA-listed hazardous substance, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notification given to the local emergency response team or fire personnel.
- Section 311— Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and the local fire department.
- Section 313—Requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

The administering agencies for the above authority are the EPA, Region IX, the National Response Center, and Riverside County Environmental Health Department.

Clean Air Act (CAA); 40 CFR Part 68 et seq. Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a threshold quantity (TQ) or greater of listed hazardous materials to develop a RMP, including hazard assessments and response programs to prevent accidental releases of certain chemicals. Section 112(r)(5) of the CAA discusses the chemicals regulated. These chemicals are listed in 40 CFR 68.130 of the regulations. Aqueous ammonia (equal to or greater than 20% solution) is a listed substance and its Threshold Quantity is 20,000 pounds. The administering agency is the Riverside County Department of Environmental Health.

Clean Water Act (CWA); 40 CFR 112 et seq. The SPCC program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations under the CWA requires facilities to prepare a written SPCC plan if they have a single aboveground oil storage tank with a capacity greater than 660 gallons, total aboveground tank storage greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons, and pose a threat to navigable waters. The administering agency for this authority is the Regional Water Quality Control Board (Santa Ana-Region 8).

Occupational Safety and Health Act; 29 CFR Part 1910 et seq. and §1926 et seq. These sections contain requirements for equipment used to store and handle hazardous materials. This regulation also addresses requirements for equipment necessary to protect workers in emergencies. It is designed primarily to protect worker health, but also contains requirements that affect general facility safety. The administering agency for this authority is OSHA.

5.12.5.2 State of California

Hazardous Waste Control Act of 1972, as amended; California Health & Safety Code 25100 et seq.; 22 CCR § 66001 et seq. These code and regulation sections address the management of hazardous wastes. Because the IEEC activities will not include hazardous waste treatment and all hazardous waste will be transported offsite by a contractor, the requirements of principal concern are those governing the generation, storage and preparation for shipment of hazardous wastes. Potentially applicable requirements include the following:

- Determining waste characterization (22 CCR §§ 25100 et seq., 66305, 66471).
- Obtaining a waste identification number (22 CCR 66472).
- Certifying on waste shipment manifests that the applicant has a program to reduce the volume and toxicity of the waste to the degree that it has determined to be economically practicable, and reporting to DTSC, at least every two years, the changes in volume and toxicity of wastes achieved through waste reduction (42 USC § 6922(a) and (b); California Health & Safety Code § 25244).
- Complying with standards for the storage of hazardous wastes (California Health & Safety Code §§ 25123.3; 15117.12; 22 CCR §§ 66508, 25159 - 25159.5).
- Arranging proper transport and disposal or treatment of hazardous wastes (California Health & Safety Code §§ 25163, 25203; 22 CCR §§ 66472, 66480).
- Preparing a manifest for the transportation of hazardous wastes; providing DTSC with a biennial report regarding hazardous waste shipments (22 CCR §§ 66480 - 66484, 66493).
- Complying with packaging and labeling requirements for shipments of hazardous wastes [22 CCR §§ 66504 - incorporating DOT requirements at 49 CFR Parts 173, 178 and 179 (packaging), and Part 172 (labeling and marking)].
- Maintaining waste testing and disposal records for specified periods (22 § CCR 66492).
- Complying with financial responsibility requirements (California Health & Safety Code §§ 25245-25249; 22 CCR §§ 67001-67035).
- Complying with used oil management requirements, unless exempted (California Health & Safety Code § 25250-25250.25).
- Complying with emergency preparedness, prevention, and planning requirements (22 CCR §§ 67120-67126).
- Complying with monitoring requirements (22 CCR §§ 67180-67188).

The administering agencies for the above authority are the EPA, Region IX, the DTSC, and the Riverside County Environmental Health Department.

8 CCR § 339; § 3200 et seq., 5139 et seq. and 5160 et seq. 8 CCR § 339 lists hazardous chemicals relating to Hazardous Substances Information Safety Act; 8 CCR § 3200 et seq. and

5139 et seq. address control of hazardous substances; 8 CCR § 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances.

The administering agency for the above authorities is CalOSHA.

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2. Subchapter 5. Article 1. Appendix B. Parts (c) and (1). This authority provides for the inclusion of requirements in the CEC's decision relating to an Application for Certification that will assure protection during waste handling and control and water quality protection based on Health Risk Assessment Guidelines.

The administering agency for the above authority is the CEC.

California Health & Safety Code §§ 25500 - 25543.3 19 CCR § 2720-2734. These sections require the preparation of a HMBP by the Applicant. Such plans address in detail emergency planning and response actions to be taken in the event of a hazardous materials release at a facility. It may also require the preparation of a CalARP Risk Management Plan (§§ 25531 - 25543.3) where highly toxic or highly flammable regulated substances are used. This plan must be based on studies identifying potential hazards associated with the handling of these materials proposed for use at the facility.

The administering agency for the above authorities is the Riverside County Environmental Health Department. The Riverside County Environmental Health Department is a CUPA and is the administering agency for HMBP and Risk Management Plans.

CalARP, Cal. Health & Safety Code § 25531 et seq. This authority is designed to streamline the permitting requirements for applicants and eliminate the need for two chemical risk management programs.

The administering agency for the above authority is the Riverside County Environmental Health Department.

California Fire Code, Article 80 and others. The code includes provisions for storage and handling of hazardous materials. There is considerable overlap between this code and Chapter 6.95 of the California Health & Safety Code. The fire code does, however, contain independent provisions regarding fire protection and neutralization systems for emergency venting [see Section 80.303, D (compressed gases)]. Article 4 establishes hazardous materials storage thresholds above which a permit is required. Article 79 presents requirements for combustible and flammable liquids.

The administering agency for the above authority is the Riverside County Fire Department.

Aboveground Petroleum Storage Act; 19 CCR § 25270 to 25270.13

This law is intended to ensure compliance with the federal CWA. The law applies if a facility has an aboveground storage tank with capacity greater than 660 gallons or combined AST capacity greater than 1,320 gallons and there is a reasonable possibility that the tank(s) may

discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare a SPCC. The law does not cover AST design, engineering, construction and other technical requirements, which are usually determined by local fire departments.

The administering agency for the above authority is the Santa Ana Regional Water Quality Board.

Safe Drinking Water and Toxics Enforcement Act (Proposition 65)

This law identifies chemicals that cause cancer and reproductive toxicity, informs the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by the state Office of Environmental Health Hazard Assessment. Some of the chemicals intended for use at IEEC are on the cancer causing and reproductive toxicity lists of the Act.

The administering agency for the above authority is the Santa Ana Regional Water Quality Board.

5.12.5.3 Local

CUPAs usually have the responsibility for administering hazardous materials requirements and ensuring compliance with federal and state laws. The Riverside County Environmental Health Department is the CUPA for all hazardous material and hazardous waste programs. The Riverside County Environmental Health Department and the Santa Ana Regional Water Quality Control Board are the responsible authorities for all hazardous waste and material issues, plans, and permits.

5.12.5.4 Codes

The design, engineering, and construction of hazardous materials storage and dispensing systems will be in accordance with all applicable codes and standards, including:

- California Vehicle Code, 13 CCR Section 1160 et seq.—provides the California Highway Patrol authority to adopt regulations for the transportation of hazardous materials in California.
- The Uniform Fire Code, Article 80—Article 80 is the hazardous materials section of the Fire Code. Local fire agencies or departments enforce this code and can require that a Hazardous Materials Management Plan and a Hazardous Materials Inventory Statement be prepared. This requirement and the Waters Bill requirement for a Hazardous Materials Business Plan can be satisfied in a single combined document.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949—This code incorporates the Uniform Building Code, Uniform Fire Code, and Uniform Plumbing Code.

- The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII.
- The American National Standards Institute (ANSI) K61.1

5.12.6 Involved Agencies and Agency Contacts

There are a number of agencies that regulate hazardous waste that would be involved in regulation of the waste generated by the IEEC. At the federal level is the USEPA, and at the state level is the DTSC. The administration and enforcement of the hazardous materials laws, however, is primarily through a local agency. For the IEEC, the local agency is the Riverside County Environmental Health Department. Contacts are listed in Table 5.12-5.

Table 5.12-5 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reasons for Contract
Riverside County Environmental Health Department 800 S. Sanderson Avenue Hemet, CA 92545	Robert Lehmann Hazardous Material Management Supervisor (909) 766-6524	Consolidated Hazardous Materials Permit (covers hazardous materials, hazardous waste, compressed gases and tiered treatment), Hazardous Materials Business Plan, Risk Management Plan for Ammonia.
Riverside County Fire Department and Riverside County Environmental Health Department 210 W. San Jacinto Street Perris, CA 92570	Command Center (909) 940-6900	Hazardous Materials Inventory and Emergency Response Plan

5.12.7 Permits Required and Permit Schedule

A number of permits and plans are required prior to beginning construction and operation. Table 5.12-6 describes the various plans and permits, regulating agencies, and provides completion guidelines.

Table 5.12-6 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
California Accidental Release Prevention Program (Risk Management Plan)	30 days prior to start of operations.
Hazardous Materials Inventory and Emergency Business Plan	Within 60 days after operations have begun.
Tiered Treatment Permit	Within 60 days after operations have begun.
Consolidated Hazardous Materials Permit	Issued after operations begin, after operations are inspected by the County.
California Accidental Release Prevention Program (Risk Management Plan)	90 days prior to start of operations.

5.12.8 References

California Regional Water Quality Control Board, Santa Ana Region.

Kashak, Edward. 2001. Personal Communication, Associate Engineering Geologist, Santa Ana Regional Water Quality Board, Riverside, California, May 29, 2001.

Lewis, Richard J., Sr. 1993. Hawley's Condensed Chemical Dictionary. 12th Edition.

Likins, Lesley. 2001. Personal Communication. Principal Planner, Riverside County Waste Management Department, Riverside, California, May 29, 2001.

NFPA. 1997. Fire Protection Guide on Hazardous materials. Twelfth Edition. Quincy, MA.

Mitchell, Paul. 2001. Personal Communication, Inspector, Riverside Environmental Health Department, Hemet, California, May 29, 2001.

Pease, William S., et. al. Risk Assessment for Carcinogens Under California's Proposition 65, Risk Analysis Journal, Volume 10, No. 2, 1990.

U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health. 1990. NIOSH Pocket Guide to Chemical Hazards.

U.S. Environmental Protection Agency. Code of Federal Regulations, Title 40, July 2000.

SECTION 5.13 WASTE MANAGEMENT
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5.13 WASTE MANAGEMENT

This section presents an evaluation of potential effects on human health and the environment from non-hazardous and hazardous waste generated by the IEEC project. This section describes the current condition of the proposed site, wastes and waste streams expected to be generated, waste disposal sites for non-hazardous and hazardous wastes, and measures that will be employed to manage the generated wastes and mitigate potential impacts on the environment. In addition, this section discusses the applicable laws, ordinances, regulations, and standards that apply to the generated wastes, the agencies that have jurisdiction over the generated wastes, agency contacts, permits required, and the schedule for obtaining the required permits.

5.13.1 Affected Environment

In California, wastes are classified according to their physical nature (liquid or solid) and their degree of hazardous characteristics. The California Environmental Protection Agency (CAL/EPA), Department of Toxic Substances Control (DTSC) and the California State Water Resources Control Board (SWRCB) share the responsibility of classifying and regulating wastes in California. Wastes are classified according to regulations set forth in the California Code of Regulations (CCR), Titles 22 and 23. The classifications used by the DTSC reflect the mandate to protect public health and the environment, while the classifications established by the SWRCB are designed to protect the beneficial uses of water.

Nonhazardous waste is a waste that does not contain soluble pollutants in concentrations that would cause degradation of water quality. Nonhazardous wastes may be disposed of at Class III waste disposal facilities. According to the SWRCB, nonhazardous wastes are further divided into solid wastes that contain substantial quantities of degradable material (i.e., common municipal solid waste) and inert wastes, which do not contain degradable materials. Solid waste disposal is also regulated by the California Integrated Waste Management Board (CIWMB) and in the area of the IEEC site, by the Riverside County Environmental Health Department.

Hazardous waste is defined as waste whose hazardous nature exceeds criteria for toxicity, corrosivity, ignitability, or reactivity as established by the DTSC. Hazardous waste also includes specific listed wastes as identified in 22 CCR Section 66261. Most hazardous wastes may be disposed of only at Class I waste disposal sites approved by the DTSC. Certain hazardous wastes classified as restricted hazardous wastes are banned entirely from land disposal, because they pose a high threat to public health and the environment. Land disposal restrictions are provided in 22 CCR Section 66268.

Designated wastes are either: 1) a hazardous waste for which the generator has been granted a variance by the DTSC; or 2) a nonhazardous waste that contains pollutants that could be released into the environment in concentrations that could cause degradation of water quality. Designated waste may be disposed of only at Class I or Class II waste disposal facilities.

The following sections identify and discuss the available capacity of nearby disposal facilities for nonhazardous, and hazardous wastes to be generated by the IEEC. Specific wastes generated by the construction and operation of the facility are presented in Table 5.13-1 and discussed further in the following subsections. Facility closure is discussed in Section 3.9.

5.13.2 Environmental Condition of the Project Site

A Phase I Environmental Site Assessment (ESA) was conducted by Foster Wheeler Environmental Corporation in May 2001. The ESA was performed in accordance with American Society for Testing and Materials (ASTM) Standard E 1527-94, Standard Practice for Environmental Site Assessments. The purpose of the investigation was to identify recognized environmental conditions at the site resulting from present or past activities. The Phase I ESA is included as Appendix H.

No conditions of concern were identified based on the ESA. The site investigation indicated that the site has been vacant or used for agriculture since prior to 1953. There were no indications of past or present hazardous substance use, storage, or disposal on the property. Solid waste consisting of several old tires and concrete debris were present in the center of the east side of the property. This was discovered to be from an old irrigation system used approximately 30 years ago. The site was not identified on any of the databases searched and the search did not identify facilities within the search distances specified in the ASTM; Standard Practice for Environmental Site Assessments: Phase I Site Assessment Process: ASTM Designation E1527-00.

5.13.2.1 Nonhazardous Waste Disposal Sites (Class III)

Solid Waste Disposal Sites

The Riverside County Environmental Health Department regulates solid waste management in Riverside County.

Riverside County has an exclusive contract with Waste Management of the Inland Empire, Inc., to dispose of all municipal solid waste (MSW). Project MSW and recyclables that have not been segregated will be transported to the Robert A. Nelson Transfer Station, where recyclables will be removed, and the remaining residue will be placed in a landfill. The residue will most likely be placed in the Lamb Canyon Landfill, however two other landfills (El Sobrante and Badlands) are available for disposal, as they are needed. These landfills are described in Table 5.13-2. All three of these landfills are owned and managed by the Riverside County Waste Management Department. They are operated by Waste Management of the Inland Empire. The three Class III landfills listed in Table 5.13-2 accept nonhazardous wastes and inert solid wastes, including construction/demolition waste. Liquid wastes are not accepted at any of the three landfills listed. Non-hazardous wastewater will be discharged directly to EMWD's non-reclaimable wastewater pipeline at the southern border of the site along McLaughlin Road, and sanitary wastes will be discharged to the sewer system, which is also transmitted to Eastern Municipal Water District.

Table 5.13-1 Hazardous and Non Hazardous Wastes Generated During Construction and Operation

Waste	Hazard Category	Origin	Generation Period	Composition	Quantity	Disposal
Paper / Wood / Glass / Plastics	Nonhazardous	Packing materials	Construction	Paper / wood / glass / plastics	50 tons	Recycled where possible or disposed of in a Class III Landfill
Concrete	Nonhazardous	Construction excess	Construction	Concrete	10 tons	Recycled where possible or disposed of in a Class III Landfill
Metal	Nonhazardous	Packing materials, empty nonhazardous chemical containers, welding operations	Construction	Primarily steel	10 tons	Recycled
Paints / Solvents	Hazardous	Painting equipment and buildings	Construction / Operation	Volatile organic compounds	Small quantities of residual material	Disposed of in a Class 1 landfill
Welding materials	Hazardous	Welding operations	Construction / Operation	Volatile organic compounds / heavy metals	Small quantities of residual material	Disposed of in a Class 1 landfill
Oil Sorbents	Hazardous	Cleanup of small spills	Construction / Operation	Hydrocarbons	Approximately 200 pounds/year	Recycled or disposed of in a class I landfill.
Municipal solid waste	Nonhazardous	Daily site operations	Operation	Broken parts, defective materials, empty containers	45 cu.yds / year	Recycled where possible or disposed of in a Class III Landfill
Lubricating oil	Hazardous	Gas turbine lubricating oil system	Operation	Hydrocarbons	2575 gals per year	Disposed of by a certified oil recycler.
Lubricating oil filters	Hazardous	Gas turbine lubricating oil system	Operation	Paper, metal, and hydrocarbons	800 lbs per year	Disposed of in a Class I landfill
Turbine wash water	Hazardous	Turbines	Operation	Water, unburned carbon and other contaminants	9,480 gal per year	If hazardous, sent to a wastewater treatment facility. If non-hazardous, then offsite disposal by contractor.
SCR catalyst units	Hazardous	SCR system	Operation	Metal and heavy metals	70,000 lbs every 3 to 5 years	Recycled by manufacturer or disposed in a Class 1 Landfill.

Table 5.13-1 Hazardous and Non Hazardous Wastes Generated During Construction and Operation (Continued)

Waste	Hazard Category	Origin	Generation Period	Composition	Quantity	Disposal
Cooling tower sludge	May be hazardous, but usually not	Cooling tower basin	Operation	Dirt from air, cooling water treatment chemicals	100-200 lbs per year	Class II landfill if non-hazardous, Class I landfill if hazardous
Chemical cleaning wastes	Hazardous	HRSG cleaning	Operation	Alkaline and acidic solutions	140,000 gals initially and every 10 years	Offsite disposal by contractor
Spent batteries	Hazardous	Station batteries	Operation	Lead-acid batteries	Approximately 200 lbs per year	Battery recycler
Oily Rags	Hazardous	Maintenance	Operation	Hydrocarbons, cloth	Approximately 800 rags/year	Recycled or disposed in a class I landfill.

Table 5.13-2 Nonhazardous Solid Waste Disposal Sites (Class III)

Landfill Disposal Site Name	Location	Permitted Capacity (tons/day)	Current Operating Capacity (tons/day)	Remaining Capacity (cubic yards)	Anticipated Year of Closure
Lamb Canyon Landfill	Beaumont	1,900	470	5.5 million	2024
El Sobrante	Corona	4,000	3,000	2.2 million*	2035*
Badlands	Moreno Valley	4,000	1,700	4.2 million	2018
Robert A. Nelson Transfer Station	Riverside				

*An additional 100 million cubic yards has recently been permitted, making the anticipated date of closure 2035.

5.13.2.2 Hazardous Waste Disposal Sites

The closest commercial Treatment Storage and Disposal Facility (TSDF) is Safety Kleen Corporation located in Highland, California, approximately 38 miles from IEEC. IEEC wastes will be transferred to one of their other facilities for treatment or disposal in a Class I Landfill from the TSDF. Safety Kleen can also recycle used oil.

There are three major hazardous waste (Class I) landfills in California. These three landfills are:

- Safety-Kleen Buttonwillow Inc. (Kern County), on Lokern Road between State Highways 33 and 58. This is a treatment, storage and disposal facility that accepts Class I solid wastes, such as wastewater sludge, oil field waste, contaminated soil, and Class II liquid wastes. The permitted capacity of this landfill is 13.25 million cubic yards with a remaining capacity of 10.9 million cubic yards. This landfill has an estimated 50 years of operational life remaining. The EPA Identification Number for this facility is CAD980675276.
- Chemical Waste Management Landfill in Kettleman Hills (Kings County) on State Highway 41 about 2 miles west of Interstate 5. The Class I portion of this landfill has approximately 6.7 million cubic yards remaining capacity of a total permitted capacity of 10.7 million cubic yards. The remaining life of this landfill is approximately 25 years (Vasquez, 2000). The EPA Identification Number for this facility is CAD000646117.
- Safety-Kleen Superstition Hills Landfill in Imperial County. The estimated remaining capacity of this landfill is 2.4 million cubic yards with an operational life of 50 years. The EPA Identification Number for this facility is CAD000633164.

There is no shortage of hazardous waste landfill capacity in California. The deposit rate has decreased by about 50 percent in the last several years due to source reduction by generators and transfer of waste out of state that is considered hazardous under California's Hazardous Waste Control Law (HWCL), but not under RCRA. Therefore, over the anticipated 30-year life span of the project, hazardous waste disposal will not significantly affect the capacities of the hazardous waste landfills in California. Table 5.13-1 provides the expected quantities of wastes generated by the IEEC.

In addition to landfills, there are about 25 off-site commercial hazardous waste treatment and recycling facilities. These facilities have sufficient capacity to recycle and/or treat hazardous waste generated in California that does not go to landfills.

5.13.3 Environmental Impacts

Appendix G of CEQA addresses significance criteria with respect to waste management (Public Resources Code Sections 21000 et seq.). Waste management impacts would be considered significant if:

- The project could not be served by a landfill with sufficient permitted capacity to accommodate the project solid waste disposal need; or,
- The project would not comply with federal, state, and local statutes and regulations related to solid waste.

The following sections describe the types of waste that are expected to be generated during the construction and operation of the project, and how these wastes will be disposed. A list of all expected hazardous and nonhazardous wastestreams for both the construction and operation phases of the project is presented in Table 5.13-1.

5.13.3.1 Nonhazardous Solid Waste (Class III)

Construction

During construction of the power plant and associated linear facilities, up to 60 tons of nonhazardous solid waste will be generated. The types of nonhazardous wastes generated during construction include minor vegetation debris from site grading and excavation, excess concrete, lumber, scrap metal, insulation, packaging and empty nonhazardous chemical containers. Paper, wood, glass, and plastic waste will be generated from packing materials and excess lumber. Wastes will be placed in a covered dumpster and removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill.

Waste metal generated during construction may include steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers. Aluminum wastes from packing materials and electrical wiring waste will also be generated. Approximately 10 tons of metal waste will be generated. Metal wastes will be separated, where practical, for salvaging/recycling, and stored in roll-off bins. Non-recyclable metal waste will be disposed of at a Class III landfill.

During construction activities, soil will be excavated and compacted to accomplish final grade. It is assumed that the excavated materials will be suitable for backfill. Although it is not anticipated, if unsuitable backfill material is encountered it will be removed from the site and disposed of at an acceptable location. It is expected that this would be a Class III landfill, unless contamination is encountered. Based on the results of the Phase I ESA, it is not anticipated that contamination will be encountered.

The annual tonnage of construction wastes represents less than 0.003% of the annual capacity of either the El Sobrante or Badlands landfill. Therefore, solid wastes generated during construction will not have a significant impact on the available capacity of landfills or recycling or treatment facilities.

Operation

Nonhazardous solid wastes (Class III) generated during operation of the power plant will include routine maintenance solid waste, and office waste. Office paper, newsprint, aluminum cans, plastic, and glass containers and other nonhazardous solid waste material will be recycled to the extent practical. The remaining solid wastes will be removed on a regular basis by a permitted waste hauler for disposal at a Class III landfill.

Approximately 45 cubic yards of solid waste from routine maintenance and operation will be generated from the project on an annual basis. The Class III waste quantities from the project will not adversely impact available landfill capacity as described in Table 5.13-2.

5.13.3.2 Wastewater

Construction

During construction, wastewater generated at the construction sites will include sanitary wastes and may include storm water runoff, equipment wash water, water from excavation dewatering, and water used to pressure test the natural gas supply line after it is constructed.

Construction-related sanitary wastes, collected in portable self-contained chemical toilets, will be pumped periodically and transported by licensed hauler to a sanitary wastewater treatment facility.

Stormwater runoff will be managed in accordance with a stormwater pollution prevention plan that will be prepared under a General National Pollution Discharge Elimination System (NPDES) Stormwater Construction Permit approved by the Santa Ana Regional Water Quality Board (SARWQCB) prior to the start of construction (Section 8.14).

Equipment wash water will be generated at designated wash areas, containerized, and tested prior to discharging to the sewer.

The gas supply pipeline hydrostatic test water will be containerized and filtered to collect any sediment and welding fragments. Wastewater resulting from construction dewatering will also be containerized. Both wastestreams will be tested and, if not contaminated above applicable discharge standards, will be discharged to the local sewer in accordance with applicable regulatory requirements. If the water is contaminated above discharge standards, it will be transported to an appropriately permitted off-site treatment, storage, and disposal facility (TSDF).

Operation

There are two separate wastewater collection systems during operation of the IEEC. The first system will collect process wastewater from all of the plant equipment including the HRSGs, cooling tower, and water treatment equipment. Process wastewater wastewater will be reclaimed and reused, to the extent possible. Wastewater that is high in total dissolved solids (TDS) will be discharged to EMWDs wastewater treatment facility via a new 4.7-mile wastewater pipeline. The second system will collect sanitary wastewater from sinks, toilets, showers, and other sanitary facilities and discharge it to the EWMD through an existing sewer line on McLaughlin Road near the southern property boundary. Water usage and wastewater generation is described more fully in 5.4, Water Resources.

5.13.3.3 Hazardous Wastes

Site Preparation

Contaminated soil is not expected to be encountered during site preparation or grading activities. In the event that contaminated soil is encountered, the soil will be segregated, sampled, and tested in order to determine appropriate disposal/treatment options. If the soil is classified as hazardous (according to RCRA or CCR Title 22), the soil will be excavated and hauled to a Class I landfill or other appropriate soil treatment and/or recycling facility.

Construction

Small quantities of waste oil and miscellaneous hazardous wastes will likely be generated over the course of construction. These may include waste paint, spent solvents, and spent welding materials. All hazardous wastes generated during construction will be handled and disposed of in accordance with applicable LORS. Hazardous wastes will be either recycled or disposed of by a licensed hazardous waste treatment or disposal facility. Managed and disposed of properly, in accordance with applicable requirements, these wastes will not cause environmental or health and safety impacts.

IEEC, LLC will be considered the generator of waste oil and miscellaneous hazardous waste produced during facility construction. IEEC, LLC will obtain a permanent EPA ID number and will be ultimately responsible for compliance with applicable state and federal regulations regarding hazardous waste, including licensing, personnel training, accumulation limits, reporting requirements, and record keeping. Hazardous waste will be collected in hazardous waste accumulation containers near the point of generation. The accumulation containers, once full, will be transported to the less-than 90-day hazardous waste storage area pending disposal by a licensed hazardous waste disposal service.

Operation

The following hazardous wastes will be generated during operation:

- **Oily Wastes:** Used oil will be stored and maintained in a secured hazardous waste storage area with secondary containment. Used oil and other oily wastes will be recycled, whenever possible. Oily rags and oil absorbent (used to contain small spills,

leaks, and releases) will be generated as a normal part of maintenance activities. These wastes will be collected near the point of generation in a hazardous waste accumulation container. The oil absorbent will be collected and disposed of in a hazardous waste landfill. The oily rags may be sent to an authorized industrial cleaning service for recycling or disposed of in accordance with LORS.

- **Selective Catalytic Reduction (SCR) Units:** SCR units contain heavy metals. They will be returned to the manufacturer for metals reclamation and/or disposal.
- **Turbine Wash Water:** Wastewater will be generated periodically from cleaning the turbines. Approximately 4740 gallons of wash water per turbine would be generated every year of operation. The wastewater generated will be containerized, tested and disposed of with a licensed TSDF.

The hazardous waste quantities generated by the facility are expected to be minimal. The facility will likely be classified as a small quantity generator (less than 1,000 kg [2,205 lb] of waste during any month in the calendar year). An estimated 2575 gallons of used oil is expected to be generated by the plant annually and will be transported to existing oil petroleum recycling facilities in California, which have an estimated capacity of 187,263 tons per year (DTSC, 1993). Hazardous waste capacity assurance documents for California have not been prepared since 1993 because the DTSC and EPA believe that the hazardous waste treatment capacity in the state is more than sufficient for hazardous wastes generated within the state (Radimsky, 2001). Therefore, hazardous waste generated during operation of the power plant will not have significant impacts upon available hazardous waste treatment and disposal capacity.

5.13.4 Mitigation Measures

The handling and management of IEEC wastes will follow the hierarchical approach of source reduction, recycling, treatment and disposal. The first effort will therefore be to reduce the quantity of waste generated, if possible, then to recycle the waste generated for reuse, treatment so the waste is no longer hazardous and, finally, to properly dispose of residual waste that is not treatable or recyclable.

Generation of nonhazardous solid waste during the construction phase will be both temporary and minimal. Nonhazardous solid wastes from facility operations also will be minimal and will require no further mitigation. Nonhazardous solid wastes will either be recycled (paper, glass, metals, etc.) or disposed of at the local sanitary landfill. Hazardous waste generated during operation of the power plant will not have significant impacts upon available hazardous waste treatment and disposal capacity. No significant impacts are anticipated and no additional mitigations are necessary.

No significant unavoidable adverse impacts are anticipated from project construction or operation. If the IEEC were to require an extended or permanent shutdown, appropriate measures would be taken to secure or remove all hazardous materials and waste. Facility closure is discussed in detail in Section 3.9.

5.13.5 Cumulative Impacts

Wastes generated by construction and operation of the project will not cause or contribute to a significant cumulative impact.

The IEEC will generate non-hazardous solid waste that will add to the total waste generated in Riverside County and in California. However, there is adequate recycling and landfill capacity in Riverside County to recycle and dispose of the waste for the next 30 years, the expected life of the project. It is anticipated that disposal of 45 cubic yards per year of solid waste from the project will represent an insignificant increase relative to current disposal quantities at the Lamb Canyon Landfill. Therefore, the impact of the project on solid waste recycling and disposal capability is not significant.

Hazardous waste generated consists of used oils, oily rags, spent oil filters, SCR catalyst units, and water used to clean the turbines. The used oil will be recycled. Cleaning and flushing fluids will be removed and either treated to a non-hazardous condition or disposed of in a Class I landfill. Cleaning and flushing will occur only periodically. Hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, the effect of the IEEC on hazardous waste recycling, treatment, and disposal capability is not significant.

5.13.6 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the IEEC including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to waste management issues.

The following LORS are applicable or potentially applicable to the proposed project in the context of hazardous and non-hazardous waste management.

5.13.6.1 Federal Authorities and Administering Agencies

40 CFR Parts 260-272, 42 USC 6901 et seq. (RCRA). Subtitle C references the generation, transportation, treatment, storage, and disposal of hazardous waste through a comprehensive cradle-to-grave system of hazardous waste management techniques and requirements. The USEPA is responsible for implementing the law. In California the CAL/EPA through DTSC is responsible for implementing and overseeing the RCRA hazardous waste program in California.

40 CFR Part 120-124. The 1987 amendments to the federal Clean Water Act required EPA to establish a regulatory system to manage stormwater discharges. 40 CFR Part 120-124 are the regulations that contain therequirements for stormwater permits and Stormwater Pollution Prevention Plans The administering agency for these regulations is the SWRCB through the RWQCB's.

49 CFR Part 172, 173, and 179. The Code provides standards for labels, placards, and markings on hazardous waste shipments by truck (Part 172) and standards for packaging

hazardous wastes (Parts 173 and 179). The administering agency for this authority is the California Highway Patrol and the Federal Department of Transportation.

5.13.6.2 State Authorities and Administering Agencies

Hazardous Waste Control Law (HWCL); Health and Safety Code §25100-25249. The HWCL is the California hazardous waste law. In many areas, the California requirements exceed the federal requirements for hazardous waste management. Most notable is the designation of non-RCRA (or California Hazardous Wastes) wastes that include used oil. The administering agency for these regulations is the Department of Toxic Substances Control.

California Porter-Cologne Water Quality Control Act; California Water Code § 13260-13269; 23 CCR § 2510 Article 9 et seq. These code and regulation sections address waste discharge requirements of the Central Valley RWQCB and would apply to any storage or disposal of solid and liquid wastes by the IEEC to the extent that such action may affect the quality of the waters of the state.

The administering agencies for the above authority are the Santa Ana Regional Water Quality Board, and the State Water Resources Control Board.

California Integrated Waste Management Act (CIMWA); Public Resources Code §40000 et seq. These regulations provide an integrated statewide system of solid waste management and coordinates state and local efforts in source reduction, recycling, and land disposal safety. This law is enforced by the CIWMB and the Riverside County Environmental Health Department.

5.13.6.3 Local Authority and Administering Agency

Certified Uniform Program Agency (CUPA). Pursuant to 1993 legislation, a major transfer of environmental program administration and enforcement from the state agency to local governments has been implemented. The Riverside County Department of Environmental Health is the CUPA. This affects the IEEC to the extent that the HWCL will be administered by the CUPA at the site.

5.13.7 Involved Agencies and Agency Contacts

Contacts for agencies directly involved with regulatory requirements for the IEEC are presented in Table 5.13-3.

5.13.8 Permits Required and Permit Schedule

Permits required and permit schedule for matters dealing with hazardous waste for the Gilroy Power Project are provided in Table 5.13-4.

Table 5.13-3 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Sanitary Waste EMWD P.O. Box 8300 Perris, CA 92572	Joseph Makwinski Director of New Business Development 909-928-3777 (ext. 4404)	EMWD; discharges to sewers, industrial wastewater discharges
Municipal Solid Waste Waste Management of the Inland Empire PO Box 787 Corona, CA 92878	Customer Service 800-423-9986	Municipal Solid Waste Service
Hazardous Waste and Materials 800 S. Sanderson Avenue Hemet, CA 92545	Robert Lehmann Hazardous Materials Management Supervisor 909-766-6524	CUPA; Hazardous waste permit, generator requirements, review and acceptance of Hazardous Materials Business Plan, SPCC.
Hazardous Materials Emergency Response Team	Command Center 909-940-6900	Emergency responders to chemical emergencies.
Santa Ana Regional Water Quality Control Board 3737 Main Street Suite 500 Riverside, CA 92501	Milasol Gaslan Stormwater Section Chief Ed Kashak (AST) Associate Engineering Geologist	Storm Water Permit for General Construction and Industrial Activities; Stormwater Pollution Prevention Plans; AST statement and registration, SPCC.
Department of Toxic Substances Control 400 P Street P.O. Box 806 Sacramento, CA 95812-0806	EPA ID Center (916) 324-1781	Application for EPA Identification Number.

Table 5.13-4 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
NPDES Permit for Construction Activities	30 days prior to start of construction.
Obtain EPA ID No. and Register as a Hazardous Waste Generator	30 days prior to start of operations.
Hazardous Materials Inventory and Emergency Business Plan	30 days prior to start of operations.
NPDES Permit for Industrial Activities	60 days prior to start of operation.

5.13.9 References

Department of Toxic Substances Control (DTSC). 1993. Phase I Capacity Assurance Submittal to the United States Environmental Protection Agency. May 16.

Radimsky, J. 2001. Personal Communication, California Department of Toxic Substances Control (DTSC), May 31, 2001.

Vasquez, E. 2000. Chemical Waste Management. Personal communication with Edward Vasquez, Customer Service. November 7, 2000.

SECTION 5.14 WORKER HEALTH AND SAFETY
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5.14 WORKER HEALTH AND SAFETY

This section outlines plans and programs that would be implemented at the IEEC to protect worker health and safety during construction and operation. During construction, the project will provide short-term job opportunities for approximately 250 workers on average and approximately 490 workers at peak construction employment. During its operation, the IEEC is expected to employ approximately 23 people in full-time, on-site positions. The analysis presented in this section meets all requirements of the CEC and Cal-OSHA.

Due to the subject matter, this section follows a slightly different format than other sections in Chapter 5. Instead of a standard discussion of affected environment, followed by the project's environmental consequences and proposed mitigation measures for significant impacts, this section describes the plans and programs that are proposed to protect worker health and safety during construction and operation, then follows with lists of permits required for construction and operation and their issuing agencies. Implementing the programs outlined here will prevent impacts to worker health and safety. No additional mitigation measures will be required.

5.14.1 Workplace Description

Workers will potentially be exposed to hazards during construction and routine operation of the IEEC. Section 3.0 of this AFC contains detailed information regarding the power plant layout, conceptual design, and operation. Section 4.0 discusses facility safety design and reliability. These sections are also relevant to worker health and safety.

Table 5.14-1 provides a general hazard analysis that identifies the anticipated hazards that may be encountered during construction. This table also lists health and safety program components that will be implemented to control each hazard. The project's Health and Safety Officer can expand this hazard analysis to greater detail and implement appropriate hazard controls as each task is scheduled to be performed.

Table 5.14-2 provides a hazard analysis that identifies the anticipated hazards and hazard controls for the operation of the IEEC during normal operation following the construction period. While the types of hazards identified in this table are similar to those identified for construction (Table 5.14-1), workers may encounter these hazards under different situations during operation. There is considerable duplication between the tables for this reason. A major component of a safety program for normal operation is the development of standard operating procedures that incorporate the elements of the hazard analysis to assure that workers implement the safety measures.

5.14.2 Health and Safety Programs

During construction and operation of the IEEC, a number of programs designed specifically to mitigate hazards will be implemented to protect the safety and health of the workers. The following sections outline the content of these programs.

Table 5.14-1 Construction Hazard Analysis[1,2]

Activity	Hazard	Control
Heavy equipment use	Employee injury and property damage from collisions between people and equipment	Heavy Equipment Safety Program
Forklift operation	Same as heavy equipment	Forklift Operator Training
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Trenching and Excavation Safety Program Use of Excavation Permits per Cal-OSHA
Working at elevated locations	Falls from same level and elevated areas	100% Fall Protection Program Scaffolding Safety Program
Use of cranes or derricks	Property damage from falling loads Employee injuries from falling loads Injuries and property damage from contact with crane or derrick	Obtain crane permits as required per Cal-OSHA Hoisting and Rigging Safety Program
Working with flammable and combustible liquids	Fire	Flammable and Combustible Liquid Storage and Handling program Fire Prevention and Protection Plan Housekeeping Policy and Program
Working with hazardous materials and hazardous waste	Employee injury due to ingestion, inhalation, dermal contact	HAZWOPER[3] training
Hot work (including cutting and welding)	Employee injury and property damage from fire Exposure to fumes during cutting and welding Ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Permit Program Respiratory Protection Program Industrial Hygiene Monitoring Program Personal Protective Equipment (PPE) Program Housekeeping Policy and Program
Troubleshooting and maintenance of plant systems and general operation activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Hazardous Energy Control (Lockout/Tagout) Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program PPE Program Hazardous Energy Control (Lockout/Tagout) Program
Confined space entry	Employee injury from physical and chemical hazards	Permit Required Confined Space Entry Program
General construction activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program PPE Program

Table 5.14-1. Construction Hazard Analysis[1,2] (Continued)

Activity	Hazard	Control
General construction activities	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping Policy and Program
General construction activities	Employee overexposure to occupational noise	Hearing Conservation Program PPE Program
General construction activities	Employee injury from improper lifting and carrying Employee injury and property damage from unsafe driving	Safe Lifting Program - Provide adequate material handling equipment Safe Driving Program
General construction activities	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazardous Substances Program Respiratory Protection Program PPE Program Industrial Hygiene Exposure Monitoring
Construction, testing, troubleshooting, maintenance and repair of high pressure steam and air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Installation of proper relief valving and institution of a relief valve maintenance and testing program Proof testing of pressure system components Hazardous Energy Control (Lockout/Tagout) Program Line Breaking Safety Program

[1] All construction activities would be covered by an Injury and Illness Prevention Program and a written Construction Safety Program.

[2] The hazard and hazard controls provided are generic to operational activities. As the design and construction of the facility proceeds and routine operations are initiated, these analyses will be updated to reflect current conditions and knowledge.

[3] HAZWOPER = Hazardous Waste Operation Emergency Response

Table 5.14-2 Plant Operations Hazard Analysis[1,2]

Activity	Hazard	Control
Heavy equipment use	Employee injury and property damage from collisions between people and equipment	Heavy Equipment Safety Program
Working at elevated locations	Falls from same level and elevated areas	100% Fall Protection Program Scaffolding Safety Program
Use of cranes or derricks	Property damage from falling loads Employee injuries from falling loads Injuries and property damage from contact with crane or derrick	Use of crane permits as required per Cal-OSHA Hoisting and Rigging Safety Program
Working with flammable and combustible liquids	Fire	Flammable and Combustible Liquid Storage and Handling Program Fire Protection and Prevention Plan Housekeeping Policy and Program
Working with hazardous materials and hazardous waste	Employee injury due to ingestion, inhalation, dermal contact	HAZWOPER[3] training, portable self contained shower and eyewash systems
Hot work (including cutting and welding)	Employee injury and property damage from fire Exposure to fumes during cutting and welding Ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Permit Program Respiratory Protection Program Industrial Hygiene Monitoring Program PPE Program Housekeeping Policy and Program
Troubleshooting and maintenance of plant systems and general operation activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Hazardous Energy Control (Lockout/Tagout) Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program PPE Program Hazardous Energy Control (Lockout/Tagout) Program
Confined space entry	Employee injury from physical and chemical hazards	Permit Required Confined Space Entry Program
General operational activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program PPE Program
General operational activities	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping Policy and Program
General operational activities	Employee overexposure to occupational noise	Hearing Conservation Program PPE Program

Table 5.14-2. Plant Operations Hazard Analysis[1,2] (Continued)

Activity	Hazard	Control
General operational activities	Employee injury from improper lifting and carrying of materials and equipment	Safe Lifting Program Provision of adequate material handling equipment
General operational activities	Employee injury and property damage from unsafe driving	Safe Driving Program
General operational activities	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazardous Substances Program Respiratory Protection Program PPE Program Industrial Hygiene Exposure Monitoring
Operation, testing, troubleshooting, maintenance, and repair of high pressure air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Installation of proper relief valving and institution of a relief valve maintenance and testing program Proof testing of pressure system components Hazardous Energy Control (Lockout/Tagout) Program Line Breaking Safety Program

[1] All project operation activities would be covered by an Injury and Illness Prevention Program.

[2] The hazard and hazard controls provided are generic to operational activities. As the design and construction of the facility proceeds and routine operations are initiated, these analyses will be updated to reflect current conditions and knowledge.

[3] HAZWOPER = Hazardous Waste Operation Emergency Response

5.14.2.1 Construction Health and Safety Program

The key health and safety programs for project construction include:

- Injury and Illness Prevention Program
- Fire Protection and Prevention Plan
- Personal Protective Equipment Program
- Construction Safety Program

The following are brief outlines of these programs.

Injury and Illness Prevention Program

This program implements the requirements of the Cal-OSHA program, as specified in Title 8 CCR Section 1509, for construction and includes:

- Responsibility and authority for implementing the plan
- Safety and Health Policy
- Work rules and safe work practices

- Systems for ensuring that employees comply with safe work practices
- Employee communications protocols
- Identification and evaluation of workplace hazards
- Methods and/or procedures for correcting unsafe or unhealthy conditions, work practices and work procedures in a timely manner based on the severity of the hazards
- Specific safety procedures (e.g. fall protection, lockout/tagout, respiratory protection)
- Training and instruction

Fire Protection and Prevention Plan

This plan implements the requirements of the CAL-OSHA occupational health and safety program, as specified in Title 8 CCR Section 1920, and includes:

- General requirements
- Housekeeping requirements
- Employee alarm/communication system
- Portable fire extinguisher placement and operation
- Fixed fire fighting equipment placement and operation
- Fire control methods and techniques
- Hot work (welding, torches, cutting) safety procedures
- Flammable and combustible liquid storage methods
- Flammable and combustible liquids use procedures
- Techniques for dispensing and disposing of liquids
- Methods for servicing and refueling vehicles
- Fire prevention training programs and requirements

The permanent facility fire suppression system will be placed in service as early as practicable during construction. These fire suppression systems are described in Section 4.1. Project staff will pay special attention to operations involving open flames, such as welding, and the use of flammable liquids and gases. Project personnel will maintain a fire watch during hazardous or hot work operations, using the appropriate class of extinguishers or other equipment. Site personnel will not be expected to fight fires past the incipient stage.

The onsite construction fire suppression system will include portable and fixed fire-fighting equipment. Portable fire-fighting equipment will consist of fire extinguishers and small hose lines in conformance with Cal-OSHA and the national fire protection association (NFPA). The contractor's safety representative will conduct periodic fire prevention inspections. The safety representative will inspect fire extinguishers monthly and replace them immediately if defective or in need of recharge. All fire-fighting equipment will be located to allow for

unobstructed access to the equipment and will be conspicuously marked. Flammable materials will be stored in designated and approved storage areas and storage containers with adequate fire prevention systems available in these areas.

The California Department of Forestry and Fire Protection through the Riverside County Fire Department will provide offsite fire suppression support. The closest fire station to the IEEC is Sun City Fire Station No. 7 located approximately 3.8 miles away, at 27860 Bradley Rd. The Sun City Fire Station would be able to respond to any emergencies at the IEEC very rapidly from this location. The contractor's safety representative will contact the Sun City Fire Station prior to construction to brief the department on planned construction activities and to cooperatively review the project work plans.

Personal Protective Equipment Program

The IEEC's program to provide personal protective equipment to construction workers implements the requirements of Cal-OSHA title 8 CCR Section 1514-1522 and 3401-3411 and includes:

- Head protection equipment (hard hats, etc.)
- Eye and face protection equipment (such as safety glasses)
- Body protection equipment
- Ear plugs
- Hand protection equipment (gloves)
- Foot protection equipment (steel-toed boots)
- Sanitation equipment (hand washing, etc.)
- Safety harnesses and lifelines
- Electric shock protection equipment
- Medical services and first aid equipment
- Respiratory protection equipment (respirators, supplied air equipment)

Construction Safety Program

IEEC will make written Construction Safety Program procedures available to all workers and regulatory agencies during the life of the project. These written procedures include:

Organization, Communication, and Record Keeping Procedures:

- Employer and employee rights and responsibilities under the health and safety programs
- Hazard communication program including hazardous waste control, hazardous material handling, and California Proposition 65
- Recordkeeping procedures

- Injury and accident reporting and recording procedures
- "Toolbox/tailgate" safety meetings
- Supervisor safety and health orientations
- Communications and information programs
- First aid and medical services
- Smoking policy

Work Safety and Emergency Response Programs and Procedures:

- Confined space entry and rescue procedures
- Electrical equipment safety procedures
- Lockout/tagout procedures
- Hearing conservation and noise control programs
- Bloodborne pathogens program
- Emergency action plan, including evacuation procedure
- Fire prevention and protection plan
- Medical record access procedures
- Housekeeping, material handling and storage procedures
- Welding and cutting procedures
- Crane and hoist procedures
- Project safe work procedures and standard operating procedures
- Subcontractor safety programs
- Security programs
- Excavation and trenching program
- Fall protection
- Inspections
- Sign, tags, and barricades

Equipment and Equipment Use:

- Personal protective equipment
- Respiratory protection program including fit-testing procedures
- Work clothing
- Ventilation requirements
- Ergonomic precautions

- Compressed gas and air handling procedures
- Equipment inspection programs

5.14.2.2 Operation Health and Safety Program

After construction, the construction-phase safety and health program will transition into a program that is oriented towards routine project operation. Key health and safety programs for project operation are as follows, outlined below:

- Injury and Illness Prevention Program
- Fire Protection and Prevention Plan
- Personal Protective Equipment Program
- Emergency Action Plan

Injury and Illness Prevention Program

The Injury and Illness Prevention Program implements the requirements of the Cal-OSHA program as specified in Title 8 CCR Section 3203 for project operations and includes:

- Responsibility and authority for implementing the plan
- Safety and health Policy
- Work rules and safe work practices
- Systems for ensuring that employee comply with safe work practices
- Employee communication procedures
- Identification and evaluation of workplace hazards
- Methods and/or procedures for correcting unsafe or unhealthy conditions, work practices and work procedures based on the severity of the hazards
- Specific safety procedures (e.g. fall protection, lockout/tagout, respiratory protection)
- Training and instruction plans

Fire Protection and Prevention Plan

The fire protection and prevention plan implements the requirements of the Cal-OSHA program, as specified in Title 8 CCR Section 3221, and includes:

- General requirements
- Housekeeping requirements
- Employee alarm/communication system
- Portable fire extinguisher placement and operation
- Fixed fire fighting equipment placement and operation

- Fire control methods and techniques
- Hot work (welding, torches, cutting) safety procedures
- Flammable and combustible liquid storage methods
- Flammable and combustible liquids use procedures
- Techniques for dispensing and disposing of liquids
- Methods for servicing and refueling vehicles
- Fire prevention training programs and requirements

The onsite fire suppression system for project operation will include both portable and fixed fire-fighting equipment. Portable fire fighting equipment will consist of fire extinguishers and hose lines in conformance with Cal-OSHA and the NFPA. The contractor's safety representative will conduct periodic fire prevention inspections. The safety representative will inspect fire extinguishers monthly and replace them immediately if defective or in need of recharge. All fire-fighting equipment will be located strategically to allow for unobstructed access to the equipment and will be conspicuously marked. Flammable materials will be stored in designated and approved storage areas and storage containers with adequate fire prevention systems available in these areas. The two chemicals with the greatest fire potential are natural gas and hydrogen (Section 5.12).

Fixed fire suppression systems will include:

- Carbon dioxide fire protection systems that protect the combustion turbine, generator, and its accessory equipment compartments from fire. The system will have fire detection sensors in all appropriate compartments that warrant such protection.
- Deluge spray system that provides fire protection to the generator transformers (outdoor design), steam turbine oil system, and auxiliary power transformer in the event of fire.
- Fire hydrants and hose stations that will supplement the plant fire protection system.

The California Department of Forestry and Fire Protection through the Riverside County Fire Department will provide offsite fire suppression support. The closest fire station to the IEEC is Sun City Fire Station No. 7 located approximately 3.8 miles away, at 27860 Bradley Road The Sun City Fire Station would be able to respond to any emergencies at the IEEC very rapidly from this location.

Personal Protective Equipment Program

The IEEC's program to provide personal protective equipment to construction workers implements the requirements of Cal-OSHA Title 8 CCR Section 3401-3411 and includes:

- Head protection equipment (hard hats, etc.)
- Eye and face protection equipment (such as safety glasses)

- Body protection equipment
- Ear plugs
- Hand protection equipment (gloves)
- Foot protection equipment (steel-toed boots)
- Sanitation equipment (hand washing, etc.)
- Safety harnesses and lifelines
- Electric shock protection equipment
- Medical services and first aid equipment
- Respiratory protection equipment (respirators, supplied air equipment)

Emergency Action Plan

The Emergency Action Plan implements the requirements of Cal-OSHA Title 8 CCR Section 3220 and includes:

Organization of Emergency Response:

- Incident reaction responsibilities
- Incident Command System
- Position description assignments
- Response and notification plan (points of contact)
- Supervisor/Emergency Coordinator role
- Health and Safety Manager role

Communications:

- Documentation and recordkeeping procedures
- Public relations (news media, etc.) procedures
- Emergency notification list
- Emergency telephone number list
- Emergency equipment locations
- Plant plans and diagrams
- Accident reporting and investigation procedures
- Hazard communication procedures
- Spill containment and reporting procedures
- Releases into the environment and reporting

Hazard Characteristics:

- Hazardous waste or chemical spill
- Fire
- Earthquake

- Bomb threat
- Pressure vessel release

Emergency Response Procedures:

- Response procedures
- Site security measures
- Evacuation routes, assembly areas, and procedures
- Emergency plant shutdown procedures
- Fire response procedures
- Emergency medical treatment and first aid
- Reference procedures
- Decontamination procedures
- Evacuation plan
- Systems and shut down procedures
- Lockout/Tagout procedures
- Accidents involving serious injury and/or death

Standards and Requirements:

- Respiratory protection requirements
- Personal protective equipment requirements
- Sanitation requirements
- Inspection requirements

5.14.3 Safety Training Programs

For both construction and operation, IEEC will implement comprehensive training programs to ensure that employees recognize and understand how to protect themselves from hazards. Table 5.14-3 provides an overview of training programs that will be provided to personnel.

5.14.4 Laws, Ordinances, Regulations and Standards (LORS)

The construction and operation of the IEEC will be conducted in accordance with all LORS. Tables 5.14-4 through 5.14-7 provide an overview of those LORS relating to worker health and safety.

Table 5.14-3 Construction and Operation Training Program

Training Course	Target Employees
Injury and Illness Prevention Plan	All
Emergency Action Plan	All
PPE Program	All
Heavy Equipment Safety Program	Employees working on, near, or with heavy equipment
Forklift Operator Training	Employees working on, near, or with forklifts
Trenching and Excavation Safety Program Use of Excavation Permits per Cal-OSHA	Employees involved with the conduct of trenching or excavation
100% Fall Protection Program	Employees required to use fall protection
Scaffolding Safety Program	Employees required to erect or use scaffolding
Hoisting and Rigging Safety Program	Employees responsible for the oversight or conduct of hoisting and rigging
Crane Safety Program	Employees supervising or performing crane operations
Flammable and Combustible Liquid Storage and Handling	Employees responsible for the handling and storage of flammable or combustible liquids or gases
Hot Work Permits	Employees performing hot work
Hazardous Energy Control (Lockout/Tagout)	Employees performing lockout/tagout
Electrical Safety	Employees required to work on electrical systems and equipment
Permit Required Confined Space Entry	Employees required to supervise or perform confined space entry
Hand and Portable Power Tool Safety	All
Housekeeping Policy and Program	All
Hearing Conservation	All
Safe Lifting Program	All
Safe Driving Program	Employees supervising or driving motor vehicles
Hazardous Substances Program (Hazard Communication)	All
Pressure Safety	Employees supervising or working on pressurized systems or equipment
Line Breaking Safety	Employees performing general maintenance or working on pressurized systems or equipment
Relief Valve Maintenance and Testing	Employees performing maintenance or testing of relief valves
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Prevention Program	All
Fire Protection Program	All
HAZWOPER/First Responder	Employees working around hazardous materials or waste

Table 5.14-4 Applicable Federal LORS

LORS	Applicability
Title 29 Code of Federal Regulations (CFR) Part 1910[1]	Minimum occupational safety and health standards for general industry in the United States
Title 29 CFR Part 1926 [1]	Minimum occupational safety and health standards for the United States construction industry

1 Primary laws and regulations governing worker health and safety in California are provided in Table 5.14-6. These regulations are for reference and apply as referenced by California occupational safety and health regulations. Where a particular situation is not addressed by those regulations, the CFR will be consulted for guidance.

Table 5.14-5 Applicable National Consensus Standard

LORS	Applicability
Uniform Fire Code, Article 80	Addresses the prevention, control and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials and information needed by emergency response personnel
National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers	Requirements for the selection, placement, inspection, maintenance and employee training for portable fire extinguishers
NFPA 11, Standard for Low Expansion Foam and Combined Agent Systems	Requirements for installation and use of low expansion foam and combined agent systems
NFPA 11A, Standard for Medium and High Expansion Foam Systems	Requirements for the installation and use of medium and high expansion foam systems
NFPA 12, Standard on Carbon Dioxide Extinguishing Systems	Requirements for installation and use of carbon dioxide extinguishing systems
NFPA 13, Standard for Installation of Sprinkler Systems	Guidelines for the selection and installation of fire sprinkler systems
NFPA 13A, Recommended Practice for the Inspection, Testing and Maintenance of Sprinkler Systems	Guidance for the inspection, testing, and maintenance of sprinkler systems
NFPA 14, Standard for the Installation of Standpipe and Hose Systems	Guidelines for the selection and installation of standpipe and hose systems
NFPA 15, Standard for Water Spray Fixed Systems	Guidelines for the selection and installation of water spray fixed systems
NFPA 17, Standard for Dry Chemical Extinguishing Systems	Guidance for the selection and use of dry chemical extinguishing systems
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps	Guidance for the selection and installation of centrifugal fire pumps
NFPA 22, Standard for Water Tanks for Private Fire Protection	Requirements for water tanks for private fire protection
NFPA 24, Standard for the Installation of Private Fire Service Mains and their Appurtenances	Requirements for private fire service mains and their appurtenances
NFPA 26, Recommended Practice for the Supervision of Valves Controlling Water Supplies	Supervision guidance for valves controlling water supplies
NFPA 30, Flammable and Combustible Liquid Code	Requirements for the storage and use of flammable and combustible liquids
NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines	Fire protection requirements for the installation and use of combustion engines and gas turbines

Table 5.14-5 Applicable National Consensus Standard (Continued)

LORS	Applicability
NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites	Fire protection requirements for hydrogen systems
NFPA 54, National Fuel Gas Code	Fire protection requirements for the use of fuel gases
NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases	Requirements for the storage and handling of liquefied petroleum gases
NFPA 68, Guide for Explosion Venting	Guidance in the design of facilities for explosion venting
NFPA 70, National Electric Code	Guidance on the safe selection and design, installation, maintenance and construction of electrical systems
NFPA 70B, Recommended Practice for Electrical Equipment Maintenance	Guidance on electrical equipment maintenance
NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces	Employee safety requirements for working with electrical equipment
NFPA 71, Standard for the Installation, Maintenance, and Use of Central Station Signaling Systems	Requirements for the installation, maintenance, and use of central station signaling systems
NFPA 72A, Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems for Guard's Tour, Fire Alarm and Supervisory Service	Requirements for the installation, maintenance and use of local protective signaling systems
NFPA 72E, Standard on Automatic Fire Detection	Requirements for automatic fire detection
NFPA 72F, Standard for the Installation, Maintenance and Use of Emergency Voice/Alarm of Communication Systems	Requirements for the installation, maintenance, and use of emergency and alarm communications systems
NFPA 72H, Guide for Testing Procedures for Local, Auxiliary, Remote Station and Proprietary Protective Signaling Systems	Testing procedures for the types signaling systems anticipated to be used at the facility
NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment	Requirements for fire protection systems used to protect computer systems
NFPA 78, Lightning Protection Code	Lightning protection requirements
NFPA 80, Standard for Fire Doors and Windows	Requirements for fire doors and windows
NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems	Requirements for the installation of air conditioning and ventilating systems
NFPA 101, Code for Safety to Life from Fire in Buildings and Structures	Requirements for the design of means of exiting the facility
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants	Guidelines for the testing and marking of fire hydrants
NFPA 850, Recommended Practice for Fire Protection for Fossil Fuel Steam Electric Generating Plants	Requirements for fire protection in fossil fuel steam electric generating plants
NFPA 1961, Standard for Fire Hose	Specifications for fire hoses
NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles	Requirements for the care, maintenance, and use of fire hose
NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose connections	Specifications for fire hose connections

Table 5.14-5 Applicable National Consensus Standard (Continued)

LORS	Applicability
American National Standards Institute/American Society for Mechanical Engineers (ANSI/ASME), Boiler and Pressure Vessel Code	Specifications and requirements for pressure vessels
ANSI, B31.2, Fuel Gas Piping	Specifications and requirements for fuel gas piping

Table 5.14-6 Applicable State LORS

LORS	Applicability
California Occupational Safety and Health Act, 1970	The Act establishes minimum safety and health standards for construction and general industry operations in the State of California
8 California Code of Regulations (CCR) 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act
8 CCR 450	Addresses the hazards associated with pressurized vessels
8 CCR 750	Addresses hazards associated with high pressure steam
8 CCR 1509	Addresses the requirements for Construction, Accident, and Prevention plans
8 CCR 1509 et seq. and 1684 et seq.	Addresses construction hazards, including head, hand, foot injuries, noise, and electrical shock
8 CCR 1528 et seq. and 3380 et seq.	Requirements for personal protective equipment
8 CCR 1597 et seq. and 1590 et seq.	Requirements addressing the hazards associated with traffic accidents and earth moving
8 CCR 1604 et seq.	Requirements for construction hoist equipment
8 CCR 1620 et seq. and 1723 et seq.	Addresses miscellaneous hazards
8 CCR 1709 et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations
8 CCR 1920 et seq.	Requirements for fire protection systems
8 CCR 2300 et seq. and 2320 et seq.	Requirements for addressing low voltage electrical hazards
8 CCR 2395 et seq.	Addresses electrical installation requirements
8 CCR 2700 et seq.	Addresses high voltage electrical hazards
8 CCR 3200 et seq. and 5139 et seq.	Requirements for the control of hazardous substances
8 CCR 3203 et seq.	Requirements for operational accident prevention programs
8 CCR 3270 et seq. and 3209 et seq.	Requirements for evacuation plans and procedures
8 CCR 3301 et seq.	Requirements for addressing miscellaneous hazards including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or hazardous materials, rotation equipment, pipelines, and vehicle loading dock operations.
8 CCR 3360 et seq.	Addresses requirements for sanitary conditions
8 CCR 3511 et seq. and 3555 et seq.	Requirements for addressing hazards associated with stationary engines, compressors, portable, pneumatic, and electrically powered tools

Table 5.14-6 Applicable State LORS (Continued)

LORS	Applicability
8 CCR 3649 et seq. and 3700 et seq.	Requirements for addressing hazards associated with field vehicles
8 CCR 3940 et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment
8 CCR 5109 et seq.	Requirements address construction accident and prevention programs
8 CCR 5139 et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding and spray-coating
8 CCR 5150 et seq.	Requirements for confined space entry
8 CCR 5160 et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances
8 CCR 5192 et seq.	Requirements for conducting emergency response operations
8 CCR 5194 et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases
8 CCR 5405 et seq., 5426 et seq., 5465 et seq., 5500 et seq., 5521 et seq., 5545 et seq., 5554 et seq., 5565 et seq., 5583 et seq. and 5606 et seq.	Requirements for flammable liquids, gases and vapors
8 CCR 5583 et seq.	Requirements for the design, construction and installation of venting, diking, valving, and supports
8 CCR 6150 et seq., 6151 et seq., 6165 et seq., 6170 et seq. and 6175 et seq.	Provides fire protection requirements
24 CCR 3 et seq.	Incorporates current addition of Uniform Building Code
8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers
La Follette Bill (Health and Safety Code Section 25500 et seq.)	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed acutely hazardous materials prepare and maintain a Risk Management Plan
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan which details emergency response plans for a hazardous materials emergency at the facility

Table 5.14-7 Applicable Local LORS

LORS	Applicability
Required by the local CUPA:	
Specific hazardous material handling requirements	Provides response agencies with necessary information to address emergencies
Emergency Response Plan	Allows response agency to integrate IEEC emergency response activities into any response actions
Business Plan	Provides response agency with overview of IEEC purpose and operations
Risk Management Plan	Provides response agency with a detailed review of risks and hazards located at the IEEC and the mitigation implemented to control the risks or hazards

5.14.5 Permits Required and Permit Schedule

Table 5.14-8 provides a list of applicable permits related to the protection of worker health and safety for IEEC certification. This table lists the activities covered for each permit and application requirements to obtain the permit. Permits listed in Table 5.14-8 are supplied on an as needed basis by the nearest Cal-OSHA office. An annual excavation permit or single event permit for excavations requires submittal of health and safety program and procedures to Cal-OSHA for review. The permit application should be submitted at least two weeks before the first scheduled excavation. Subsequent excavations should be planned to provide at least five days notice to Cal-OSHA prior to excavation activities. Permits for scaffolds and cranes should be scheduled at least five days before planned activity. Permits for the operations of unfired or fired pressure vessels should be scheduled with the Cal-OSHA Pressure Vessel Unit at the time it is anticipated to place the vessel in operation.

Table 5.14-8 Permits Required and Permit Schedule

Permit	Schedule
Scaffolding Permit	30 days prior to start of construction.
Trenching and Excavation Permit	60 days prior to start of construction.
Permit-to-Erect Fixed Tower Crane	60 days prior to start of construction.
Construction Field Safety Plan and Injury and Illness Prevention Plan	60 days prior to start of construction.
Construction Fire Protection and Prevention Plan	60 days prior to start of construction.
Construction Permit	60 days prior to start of construction.
Pressure Vessel Permit	30 days prior to start of operations.
Operational Field Safety Plan and Injury and Illness Prevention Plan	90 days prior to start of operations.
Personal Protective Equipment Program	90 days prior to start of operations.
Operational Fire Protection and Prevention Plan	90 days prior to start of operations.

5.14.6 Involved Agencies and Agency Contacts

Agency contacts regarding worker health and safety at the IEEC are shown in Table 5.14-9.

Table 5.14-9 Agency Contacts

Agency/Address	Contact	Permits/Reason for Involvement
Cal-OSHA District Office 464 W. 4th St. Suite 332 San Bernardino, CA 92401	Andrew Morita District Manager 909-383-4321	Trenching and Excavation Permit. Permit-to-Erect Fixed Tower Crane. Construction Permit (for buildings/structures 36 feet or higher) Scaffolding Permit (for scaffolding 36 feet or higher) Construction Field Safety Plan and Injury and Illness Prevention Plan. Operational Field Safety Plan and Injury and Illness Prevention Plan. Personal Protective Equipment Program.
Pressure Vessel Unit District Office, Division of Occupational Safety and Health 2100 E. Katella Ave Suite 145 Anaheim, CA 92806	Richard Eleinko Senior Safety Engineer 714-939-0434	Pressure Vessel Permit
Riverside County Fire Department, Sun City, Station No. 7 27860 Bradley Rd. Sun City, CA 92586	Staff 909-679-3413	Construction Fire Protection and Prevention Plan. Operational Fire Protection and Prevention Plan.

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5.15 PUBLIC HEALTH

This section presents an assessment of potential risks to human health associated with operation of the proposed Inland Empire Energy Center (IEEC or Energy Center), focusing on chemical pollutants that could be emitted or released. Air pollutants for which California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS) have been established are also addressed in Section 5.2, Air Quality.

The principal public health concerns associated with emissions of chemical substances to the air during routine operation of the proposed facility. Chemicals substances in air that potentially pose risks to human health include byproducts from the combustion of natural gas. These chemical substances, which were addressed in a health risk assessment, included:

- Acetaldehyde
- Acrolein
- Benzene
- Formaldehyde
- Toluene
- Xylene

Combustion byproducts with established CAAQS or NAAQS, including oxides of nitrogen (NO_x), carbon monoxide and fine particulate matter are addressed in Section 5.2, Air Quality. However, discussion of the potential health risks associated with these substances is presented in this section. Human health risks potentially associated with accidental releases of stored acutely hazardous materials at the proposed facility (aqueous ammonia) are also discussed in this section.

5.15.1 Affected Environment

The proposed IEEC power plant site and ancillary facilities (e.g., transmission line, alternative natural gas pipeline routes and waste water pipelines) are located within portions of unincorporated areas of southwestern Riverside County near the community of Romoland (see Figure 3.2-1, Regional Location Map).

Riverside County has a land area of approximately 7,200 square miles. The County has traditionally had a strong agricultural component, which now accounts for only 2.9 percent of employment. Services account for 27.5 percent of total employment, with health service being the largest component of the services industry. Other significant employment sectors include retail trade at 20.3 percent and government at 17.9 percent [California Employment Development Department (EDD), 2001]. Important land uses include urban residential and commercial, government, recreation, transportation and military bases. Rapid growth of the Riverside County is currently occurring in the unincorporated portions of the County, including the project region.

As shown on Figure 5.7-3 (Section 5.7, Land Use), the IEEC site is currently used as cropland. Crops also occupy most of the land immediately to the east, south and west of the project site. An asphalt production facility is located immediately north of the proposed project site. Low-density residential uses are intermixed within the agricultural lands located south of the project site. High-density residential areas are generally concentrated north of the project site in the community of Romoland.

Per CEC requirements, terrain within a 10-mile radius of equal or greater elevation than the stack exhaust exit point (i.e., stack height plus grade elevation) is shown in Figure 5.15-1 (in pocket at back of section).

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Schools (public and private), day care facilities, convalescent homes, and hospitals are of particular concern. The sensitive receptors within 6 miles of the IEEC site are listed in Table 5.15-1 and shown in Figure 5.15-2 (in pocket at back of section).

Table 5.15-1 Sensitive Receptors Within 6 Miles of the Energy Center Site

Map ID#	Name	Type of Receptor	Direction from IEEC	Approximate Distance (miles)
1	Romoland Head Start	Daycare	SW	0.34
2	Romoland Elem. School	School	NNW	0.34
3	Harvest Valley Elem. School	School	ENE	1.84
4	Kirkpatrick Elem. School	School	SSE	4.1
5	Menifee School	School	SSW	4.42
6	Pinacate Middle School	School	WNW	4.2
7	Sanders Elem. School	School	NW	4.59
8	Saint James School	School	NW	4.71
9	Redeemer Lutheran Daycare	Daycare	NW	4.93
10	Redeemer Lutheran School	School	NW	4.93
11	Little Steps Child Dev. Center	Daycare	SSW	5.01
12	Perris High School	School	NW	5.19
13	Perris Valley Jr. High	School	NW	5.19
14	Perris Union High School	School	NW	5.36
15	Nuview Elem. School	School	NNE	5.4
16	NAACP Head StarYPreshool	Daycare	NW	5.36
17	Choice 2000 On-Line	School	NW	5.44
18	Bar V Ranch School	School	NE	5.57
19	Medical Art Conv. Hospital	Nursing Home	NW	5.7
20	Valley Plaza Drs. Hospital	Hospital	NNW	5.79
21	VVinchester Elem. School	School	SE	5.83
22	Nuview School	School	NNE	5.87
23	Valley View Elem, School	School	NE	5.91

Air quality and health risk data presented by CARB in the 2001 Almanac of Emissions and Air Quality for the South Coast Air Basin shows that during the period 1990 through 1999, the average concentrations and associated health risks for the top ten toxic air contaminants (TACs) have been substantially reduced, but the concentrations and associated health risks for

the air basin are still typically higher than the statewide averages. Data presented by the AQMD in the *Draft Final Multiple Air Toxics Exposure Study (Mates-II) in the South Coast Air Basin, 11-99,* indicates that cancer risks across the air basin have decreased significantly since 1990. Risk reductions at the six primary toxics monitoring stations have averaged approximately 52% since 1990. CARB estimated emissions inventory values for the top ten TACs for 2000 and ambient concentration and associated risk values for 1990-1999 in Riverside County are provided in Table 5.15-2.

Table 5.15-2 Top Ten Toxic Air Contaminants in Riverside County

Toxic Air Contaminant	Year 2000 tons/yr (1)	1990-1999 Data Averages	
		Concentration	Risk per Million
Acetaldehyde	261	1.83 ppb	8.9
Benzene	757	1.73 ppb	159.6
1,3 Butadiene	129	0.31 ppb	117.1
Carbon tetrachloride	0.02	0.113 ppb	29.8
Chromium 6	0.182	0.32 ng/m3	48.8
Para-Dichlorobenzene	56	0.137 ppb	8.8
Formaldehyde	699	2.70 ppb	19.9
Methylene Chloride	230	0.82 ppb	2.7
Perchloroethylene	336	0.21 ppb	8.43
Diesel PM	865	ND	--

(1) For portion of County in the Air Basin (Riverside-Rubidoux Station).

5.15.2 Environmental Impacts

Environmental consequences potentially associated with the project are potential human exposure to chemical substances emitted into the air. The human health risks potentially associated with these chemical substances were evaluated in a health risk assessment. The chemical substances potentially emitted to the air from the proposed facility include ammonia, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) from the combustion turbines, and ammonia from the cooling tower. These chemical substances are listed in Table 5.15-3.

5.15.2.1 Criteria Pollutants

Emissions of criteria pollutants will adhere to NAAQS or CAAQS as discussed in the Air Quality section (see Section 5.2). The proposed facility also will include emission control technologies necessary to meet the required emission standards specified for criteria pollutants under South Coast Air Quality Management District (SCAQMD) rules. Offsets will be required and obtained for emissions of criteria pollutants that exceed specified thresholds so that the project will not result in an increase in total emissions in the vicinity. Finally, air dispersion modeling results (see Section 5.2, Ambient Air Quality) show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general

public with a wide margin of safety. Therefore, the project is not anticipated to have a significant impact on public health from emissions of criteria pollutants.

Table 5.15-3 Chemical Substances Potentially Emitted to the Air from IEEC

Criteria Pollutants	Noncriteria Pollutants (Toxic Pollutants)
Carbon monoxide	Ammonia
Oxides of nitrogen	Acetaldehyde
Particulate matter	Acrolein
Oxides of sulfur	1,3-Butadiene
Volatile organic compounds	Benzene
	Ethylbenzene
	Formaldehyde
	Hexane
	Propylene
	Propylene oxide
	Toluene
	Xylene
	Polycyclic aromatic hydrocarbons (PAHs)
	Benzo(a)anthracene
	Benzo(a)pyrene
	Benzo(b)fluoranthene
	Benzo(k)fluoranthene
	Chrysene
	Dibenz(a,h)anthracene
	Indeno(1,2,3-cd)pyrene
	Naphthalene
	Arsenic
	Cadmium
	Chromium
	Copper
	Lead
	Mercury
	Nickel
	Silver
	Zinc

Source: CARB, 1992; EPA, 1998

5.15.2.2 Toxic Pollutants

Potential impacts associated with emissions of toxic pollutants to the air from the proposed facility were addressed in a screening health risk assessment, presented in Appendix K-9. The risk assessment was prepared using guidelines developed under the AB 2588 Air Toxics "Hot Spots" Information and Assessment Act (CAPCOA, 1993). Appendix K-2, K-3 and K-9 delineate the various sources associated with the construction and operation of the project, as well as the pollutants emitted and evaluated for each project phase.

Emissions of toxic pollutants potentially associated with the facility were estimated using emission factors approved by SCAQMD, CARB, and the U.S. Environmental Protection Agency (USEPA, 1998). Concentrations of these pollutants in air potentially associated with

the emissions were estimated using dispersion modeling. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a risk assessment, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels for noncancer health effects (for noncarcinogenic substances).

Health risks were evaluated for a hypothetical maximum exposed individual (MEI) located at the maximum impact receptor (MIR). The hypothetical MEI is an individual assumed to be located at the point where the highest concentrations of air pollutants associated with facility emissions are predicted to occur (the MIR), based on air dispersion modeling. Human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any location in the vicinity of the facility.

Health risks potentially associated with concentrations of carcinogenic pollutants in air were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in air over a 70-year lifetime. Evaluation of potential noncancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations in air with reference exposure levels (RELs). A REL is a concentration in air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential noncancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is referred to as a hazard quotient. The unit risk values and RELs used to characterize health risks associated with modeled concentrations in air were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB, 2000), and are presented in Table 5.15-4.

Toxic Air Pollutant Risks

The excess lifetime cancer risk associated with concentrations in air estimated for the MIR location is estimated to be 0.28×10^{-6}. Excess lifetime cancer risks less than 1×10^{-6} are unlikely to represent significant public health impacts that require additional controls of facility emissions. Risks higher than 1×10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population and toxicity of the risk-driving chemicals. Risks associated with pollutants potentially emitted from the IEEC sources are presented by exposure pathway in Table 5.15-5. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix K-9. As described previously,

human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Table 5.15-4 Toxicity Values Used to Characterize Health Risks

Compound	Unit Risk Factor $(\mu g/m^3)^{-1}$	Chronic Reference Exposure Level $(\mu g/m^3)$	Acute Reference Exposure Level $(\mu g/m^3)$
Acetaldehyde	2.7E-06	9.00E+00	--
Acrolein	--	2.00E-02	1.90E-01
Ammonia	--	2.00E+02	3.2E+03
Arsenic	3.3E-03	5.10E-01	1.9E-01
Benzene	2.9E-05	6.0E+01	1.3E+03
1,3-Butadiene	1.7E-04	--	--
Cadmium	4.2E-03	3.50E+00	--
Chromium	1.5E-01	2.00E-03	--
Copper	--	2.40E+00	1.0E+02
Ethylbenzene	--	2.0E+03	--
Formaldehyde	6.0E-06	3.0E+00	9.4E+01
Hexane	--	--	--
Lead	1.2E-05	--	--
Mercury(inorganic)	--	9.0E-02	1.8E+00
Naphthalene	--	9.0E+00	--
Nickel	2.6E-04	5.0E-02	6.0E+00
Polycyclic aromatic hydrocarbons	5.6E-03	--	--
Propylene	--	3.0E+03	--
Propylene oxide	3.7E-06	3.00E+01	3.1E+03
Silver	--	--	--
Toluene	--	3.00E+02	3.7E+04
Xylene	--	7.00E+02	2.2E+04
Zinc	--	3.50E+01	--

Source: CARB, 2000

Table 5.15-5 Summary of Excess Lifetime Cancer Risks for the Maximum Impact Receptor (MIR)

Emission Source	Increased Lifetime Cancer Risk by Exposure Pathway				
	Inhalation of Ambient Air	Soil Ingestion	Dermal Contact with Soil	Ingestion of Garden Fruits and Vegetables	Infant Ingestion of Mother's Milk
Total Pathway Risk (Combustion Sources and Cooling Tower[1])	1.91E-07	7.09E-08	1.68E-08	0.00E-00	0.00E-00
Total Risk	**0.28 in one million (70 year exposure)**				

Note:

(1) Combustion sources include turbines and duct burners.

Cancer risks potentially associated with facility emissions also were assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the facility. Cancer burden is calculated as the product of excess lifetime cancer risk and the number of individuals at that risk level. A worst-case estimate of cancer burden was calculated. The MIR concentration was applied to all affected portions of identified census tracts within the 6 mile radius area of the site. A detailed listing and map of affected census tracts and adjusted 1999 population estimates are provided in Appendix K-11. This procedure results in a conservatively high, i.e., worst case estimate of cancer burden.

As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. Therefore, the risks for all of these individuals would be lower (and in most cases, substantially lower) than 0.28×10^{-6}. The estimated cancer burden was 0.0196, indicating that emissions from the facility would not be associated with any increase in cancer cases in the previously defined population. As stated previously, the methods used in this calculation considerably overstate the potential cancer burden, further suggesting that facility emissions are unlikely to represent a significant public health impact in terms of cancer risk.

The chronic noncancer hazard quotients, i.e., the long-term non-cancer effects index, associated with concentrations in air estimated for the MIR location were well below one for all target organs. A noncancer hazard quotient less than one is unlikely to represent a significant impact to public health. Chronic noncancer hazard quotients associated with inhalation of pollutants potentially emitted from the facility are presented in Table 5.15-6. The chemicals providing the largest contribution to noncancer risks associated with facility emissions are acrolein and ammonia, from combustion sources. The chronic noncancer hazard indices associated with non-inhalation exposure pathways are well below one for all target organs. Chronic noncancer hazard indices for non-inhalation exposure pathways are presented in Table 5.15-7. An REL is not available for lead. However, lead exposures are well below typical estimates of average daily exposures estimated for lead (ATSDR, 1996).

The acute noncancer hazard quotients, i.e., short-term noncancer inhalation effects index, associated with concentrations in air are shown in Table 5.15-8. The noncancer hazard quotients for all target organs fall below one. The chemicals providing the largest contribution to acute noncancer health risks are ammonia and acrolein. As described previously, a hazard quotient less than one is unlikely to represent significant impact to public health. Further description of the methodology used to calculate health risks associated with emissions to the air is presented in Appendix K-11. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Table 5.15-6 Summary of Chronic Noncancer Hazard Quotients (Inhalation Exposure Pathway) for the Maximum Impact Receptor (MIR)

Emission Source	Target Organ[1]							
	Resp	CV/BL	CNS	Skin	Repro	Kidn	GI/LV	Immun
Combustion Sources[2] and Cooling Tower	0.0278	0.0003	0.0001	0.0199	<0.0001	<0.0001	<0.0001	--
Total, All Pathways	<0.048							

Notes:
(1) Resp = respiratory
(2) Combustion sources include turbines and duct burners
CV/BL = cardiovascular/blood
CNS = central nervous system
Repro = reproductive system
Kidn = renal system
GI/LV = gastrointestinal/liver
Immun = immunological system

Table 5.15-7 Summary of Chronic Noncancer Hazard Quotients (Non-Inhalation Exposure Pathway) for the Maximum Impact Receptor (MIR)

Chemical	Total Dose from Non-Inhalation Exposure Pathways (mg/kg-d)	REL[a] (mg/kg-d)	Hazard Quotient (Total Dose/REL)
	Combustion Sources and Cooling Tower		
Naphthalene	4.76E-08		
Arsenic	3.11E-08	3.00E-04	1.04E-04
Beryllium	6.66E-09	2.00E-03	3.33E-06
Cadmium	6.80E-09	1.00E-03	6.8E-06
Lead	3.33E-08	--	--
Mercury	1.32E-09	3.00E-04	4.39E-06
Nickel	--	5.00E-02	--
PAH (Total)	5.27E-09	--	--

Notes:
[a]REL - noncancer Reference Exposure Level

Table 5.15-8 Summary of Acute Noncancer Hazard Quotients for the Maximum Impact Receptor

Emission Source	Target Organ[1]							
	Resp	CV/BL	CNS	Eye	Repro	Kidn	GI/LV	Immun
Combustion Sources[2] and Cooling Tower	0.0609	<0.0001	<0.0001	0.0608	0.0018	--	--	0.0038
Total Acute Hazard Quotient	<0.1275							

Notes:
(1) Resp = respiratory
(2) Combustion sources include turbines and auxiliary boiler
CV/BL = cardiovascular/blood
CNS = central nervous system
Repro = reproductive system
Kidn = renal system
GI/LV = gastrointestinal/liver
Immun = immunological system

Characterization of Risks from Toxic Air Pollutants

The estimates of excess lifetime cancer risks, and noncancer risks associated with chronic or acute exposures, fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have used to extrapolate from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that man is as sensitive as the most sensitive animal species). Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero (USEPA, 1986; USEPA, 1996).

An excess lifetime cancer risk of 1×10^{-6} is typically used as a threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1×10^{-6} which has historically been judged to be an acceptable risk originates from efforts by the Food and Drug Administration (FDA) to use quantitative risk assessment for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a "virtually safe dose" (VSD) has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a recent study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1×10^{-6} (one-in-one million), which are called *de minimis* risks. *De minimis* risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4×10^{-3} (four-in-ten thousand), called *de manifestis* risks, were consistently regulated. *De manifestis* risks are typically risks of

regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis *et al.*, 1987).

As explained above and shown in Appendix K-9, the IEEC estimated lifetime cancer risks to the maximally exposed individual located at the MIR are less than 1×10^{-6}, and the aggregated cancer burden associated this risk level is less than one excess cancer case. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the facility emissions should consider that the conservatism in the assumptions and methods used in risk estimation considerably overstate the risks from facility emissions. Based on the results of this risk assessment, there are no significant public health impacts anticipated from emissions of toxic pollutant to the air from the proposed facility.

5.15.2.3 Hazardous Materials

Hazardous materials will be used and stored at the facility. The hazardous materials stored in significant quantities on-site and descriptions of their uses are presented in Section 5.12, Hazardous Materials Handling. Use of chemicals at the proposed facility will be in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials, therefore, will not pose significant impacts to public health. While mitigation measures will be in place to prevent releases, accidental releases that migrate offsite could result in potential impacts to the public.

The California Health and Safety Code Sections 25531 to 25541 and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of an acutely hazardous material (AHM). AHMs to be used at the facility include aqueous ammonia as discussed in Section 5.12, Hazardous Materials handling. Aqueous ammonia may generate hazardous gases that could migrate offsite when released.

A vulnerability analysis will be performed during the Application for Certification (AFC) process to assess potential risks to humans at various distances from the site if a spill or rupture of the aqueous ammonia storage tank were to occur.

5.15.2.4 Operation Odors

Small amounts of ammonia used to control oxides of nitrogen (NO_x) emissions may escape up the exhaust stack but would not produce objectionable odors. The expected exhaust gas ammonia concentration, known as ammonia "slip," will be limited to 10 parts per million (ppm). After mixing with the atmosphere, the concentration at ground level will be far below the detectable odor threshold of 5 ppm that the Compressed Gas Association has determined to be acceptable. Therefore, potential ammonia emissions are not expected to create objectionable odors. Other combustion contaminants are not present at concentrations that could produce objectionable odors.

5.15.3 Mitigation Measures

5.15.3.1 Criteria Pollutants

Emissions of criteria pollutants will be minimized by applying Best Available Control Technology (BACT) to the facility. BACT for the combustion turbine includes the combustion of natural gas.

The proposed project location is in an area that is designated by the state and federal governments as nonattainment for ozone, particulate matter (PM), and carbon monoxide (CO). Therefore, all increases in emissions of NO_x, volatile organic compound (VOC), particulate matter with an aerodynamic diameter less than a nominal 10 micrometers (PM_{10}), carbon monoxide (CO), and sulfur oxides (SO_x) must be fully offset pursuant to the provisions of Regulation XIII (NSR) and/or Regulation XX (Reclaim). The combination of using BACT and providing emission offsets as needed will result in no net increase in criteria pollutants. Therefore, further mitigation of criteria pollutants emissions is not required to protect public health.

5.15.3.2 Toxic Pollutants

Emissions of toxic pollutants to the air will be minimized through the use of natural gas as the only fuel at the proposed facility. Emissions from tanks storing liquid organic chemicals will be minimized through the use of one or a combination of the following:

- Use of small capacity fixed roof tanks
- Use of low vapor pressure organic substances
- Use of exempt compounds
- Use of vapor balance and/or vapor recovery systems on a case-by-case basis as deemed appropriate

5.15.3.3 Hazardous Materials

Mitigation measures for hazardous materials are presented below and discussed in more detail in Section 5.12, Hazardous materials Handling. Potential public health impacts from the use of hazardous materials are only expected to occur as a result of an accidental release. The plant has many safety features designed to prevent and minimize impacts from the use and accidental release of hazardous materials. The IEEC plant site will include the following design features:

- Curbs, berms, and/or concrete pits will be provided where accidental release of chemicals may occur.
- A fire protection system will be included to detect, alarm, and suppress a fire, in accordance with the applicable laws, ordinances, regulations, and standards (LORS).
- Construction of the aqueous ammonia storage system will be in accordance with applicable LORS.

A Risk Management Plan (RMP) for the IEEC facility will be prepared prior to commencement of facility operations. The RMP will estimate the risk presented by handling ammonia at the facility. The RMP will include a hazard analysis, off-site consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process will accurately identify and propose adequate mitigation measures to reduce the risk to the lowest possible level.

A safety program will be implemented and will include safety training programs for contractors and operations personnel, including instructions on 1) the proper use of personal protective equipment, 2) safety operating procedures, 3) fire safety, and 4) emergency response actions. The safety program will also include programs on safely operating and maintaining systems that use hazardous materials. Emergency procedures for IEEC personnel include power plant evacuation, hazardous material spill cleanup, fire prevention, and emergency response.

Areas subject to potential leaks of hazardous materials will be paved and bermed. Incompatible materials will be stored in separate containment areas. Containment areas will be drained to either an oily waste collection sump or to the wastewater neutralization tank. Also, piping and tanks exposed to potential traffic hazards will be additionally protected by traffic barriers.

5.15.4 Laws, Ordinances, Regulations, and Standards

An overview of the regulatory process for public health issues is presented in this section. The relevant LORS that affect public health and are applicable to this project are identified in Table 5.15-9. Table 5.15-9 also summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the selection locations within this report where each of these issues is addressed. Points of contact with the primary agencies responsible for public health are identified in Table 5.15-10.

Table 5.15-9 Summary of Primary Regulatory Jurisdiction for Public Health

LORS	Public Health Concern	Primary Regulatory Agency	Project Conformance
Clean Air Act	Public exposure to air pollutants	USEPA Region IX CARB South Coast AQMD	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed acceptable levels. (see Section 5.15.2.2) Emissions of criteria pollutants will be minimized by applying BACT to the facility. Increases in emissions of criteria pollutants will be fully offset. (Section 5.15.3.1)
Health and Safety Code 25249.5 *et seq.* (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	Office of Environmental Health and Hazard Assessment (OEHHA)	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed thresholds that require exposure warnings. (see Section 5.15.2.2)
40 CFR Part 68 (Risk Management Plan)	Public exposure to acutely hazardous materials	USEPA Region IX Riverside County Department of Health Services Riverside County Fire Department	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank. (See Section 5.15.2.3) An RMP will be prepared prior to commencement of facility operations. (See Section 5.15.3.3)
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	Riverside County Department of Health Services CARB South Coast AQMD	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank. (See Section 5.15.2.3)
Health and Safety Code Sections 44360 to 44366 (Air Toxics "Hot Spots" Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB South Coast AQMD	Based on results of risk assessment as per CAPCOA guidelines, toxic contaminants do not exceed acceptable levels. (see Section 5.15.2.2)

Table 5.15-10 Summary of Agency Contacts for Public Health

Public Health Concern	Primary Regulatory Agency	Regulatory Contact
Public exposure to air pollutants	USEPA Region IX	David Howekamp, (916) 744-1219
	CARB	Mike Tollstrup, (916) 322-6026
	South Coast AQMD	John Yee, (909) 396-2000
Public exposure to chemicals known to cause cancer or reproductive toxicity	Office of Environmental Health and Hazard Assessment (OEHHA)	Cynthia Oshita or Susan Long, (916) 445-6900
Public exposure to acutely hazardous materials	USEPA Region IX" Riverside County Department of Health Services	David Howekamp, (916) 744-1219 Robert Lehmann, (909) 766-6524

5.15.5 References

ATSDR. 1996. *Toxicological Profile for Lead. Update.* Agency for Toxic Substances and Disease Registry.

California Employment Development Department (EDD). 2001. (http://www.edd.cahwnet.gov/).

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Travis, C.C., E.A.C. Crouch, R. Wilson and E.D. Klema. 1987. Cancer risk management: a review of 132 federal regulatory cases. *Environ. Sci. Technol.* 21:415-420.

U.S. Environmental Protection Agency (USEPA). 1986. Guidelines for carcinogen risk assessment. *Federal Register.* 51:33992. September 24, 1986.

USEPA. 1998. *Compilation of Air Pollutant Emission Factors.* Section 1.4 (Natural Gas), Section 1.3 (Fuel Oil).

USEPA. 1996. *Proposed Guidelines for Carcinogen Risk Assessment.* Office of Health and Environmental Assessment. EPA/600/P-92/003C. April 1996.

Figure 5.15-1	Terrain Above Stack Height Within 10 Miles of the Energy Center

Figure 5.15-2	Sensitive Receptors Within 6 Miles of the Energy Center

IN POCKET

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5.16 CULTURAL RESOURCES

Cultural resources include historic and prehistoric archaeological sites, historic architectural and engineering features and structures, and resources of traditional cultural significance to Native Americans and other groups. This section analyzes the Energy Center (IEEC or Energy Center) project's potential effects to cultural resources within the Energy Center site of Potential Effect (APE). For the purposes of this analysis, the IEEC project APE is defined as an area 0.25 miles around the Energy Center site and 100 feet to either side of the project linear features. Background information is provided for a broader area. The analysis presented in this section meets all requirements of the CEC (CEC, 1999) and incorporates standard measures for mitigating effects to cultural resources, as necessary.

The cultural resource evaluation for the Energy Center includes the following project features:

- The Energy Center site, approximately 45.8-acres
- Two natural gas pipeline alternatives:
  - Alternative A Menifee Road natural gas pipeline, approximately 0.9 mile in length. This alternative natural gas pipeline route also includes a compressor station on a 2.6 acre site within a 6.6 acre parcel.
  - Alternative B Moreno Valley natural gas pipeline, approximately 14.8 miles in length will connect to a main Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station.
- A non-reclaimable wastewater pipeline approximately 4.7 miles in length.
- A transmission line, approximately 0.9 mile in length.

Section 5.16.1 discusses the affected environment, including the natural setting, prehistoric background, ethnographic background, and historic background. Section 5.16.1 also discusses methods and results of archival research and a pedestrian field survey and discusses the cultural resources documented within the Energy Center area. Section 5.16.2 discusses the effects that construction and subsequent operation of the IEEC project may have on cultural resources. Section 5.16.3 evaluates any potential cumulative impacts to cultural resources in the Energy Center vicinity. Section 5.16.4 includes any proposed mitigation measures during construction and operation. Section 5.16.5 presents applicable laws, ordinances, regulations, and standards (LORS). Section 5.16.6 presents agency contacts, and Section 5.16.7 presents permit requirements and schedules. Section 8.16.8 contains references.

5.16.1 Affected Environment

Cultural resources are the traces of human occupation and activity that, in southern California, extend back in time for at least 11,500 years. Archaeologists have reconstructed general trends of prehistory. Written historical sources tell the story of the past 200 years. A cultural resources inventory of the area has located 12 prehistoric and 8 historic cultural resources within the project APE. The field survey located two additional historic sites and a prehistoric isolate. All of these resources are located along the Alternative B Moreno Valley natural gas

pipeline route. Contact with the Native American Heritage Commission (NAHC) did not result in identification of traditional cultural properties in the project area.

The project site, including the Energy Center and associated linear facilities are located in Perris Valley, which lies in the northern portion of the Peninsular Ranges Physiographic Province of California

The climatic history of the region is as follows: during the Late Pleistocene (22,000 to 11,000 years before present [BP]), the region was characterized by cooler and wetter conditions supporting Pinyon-Juniper Woodlands, expansive deep lakes, and Savannah grasslands at low elevations. During the Early Holocene (10,000 to 8,000 BP), there were gradual warming and drying conditions resulting in shrinking lakes and replacement of woodlands by creosote scrub communities at lower levels. In Middle to Late Holocene times (8,000 to present), warm and dry conditions continued, dominated by summer monsoons in the desert southwest, and winter storms along the Pacific Coast. Lakes in low-lying basins completely dried up or became ephemeral in nature. Locally specific fluctuations in temperature and aridity produced ecological variation of no greater magnitude than known from historical records.

A significant environmental change that occurred in the Late Holocene period was the formation of ancient Lake Cahuilla in the Salton Trough. An immense shoreline developed, which generated marshes and minor embayments that supported shellfish, fish, waterfowl, cattail, crustaceans, clams, large and small mammals, reptiles and amphibians, and other economically useful resources (Wilke 1976, 1978). Lake Cahuilla attracted Indians from the Colorado River, the Mojave Desert, and the Peninsular Range. The lake first arose about 2000 years ago and its level depended on inflow from the Colorado River. There were long periods of wet as well as dry cycles, as demonstrated by successive beach line levels. The last high stand was about 400 years ago; then the waters evaporated rapidly after the Colorado River opened its former channel into the gulf. Within fifty years, the lacustrine bed became part of the desert floor once again (Wilke 1978). Recent evidence suggests a fifth infilling between 1600 and 1700 AD (Schaeffer 1994). When Lake Cahuilla dried up, the loss of this resource-rich environment probably created an economic crisis that required local Native peoples to adapt to rapidly changing conditions.

5.16.1.1 Prehistoric Background

This section discusses general trends in California prehistory. Section 5.16.1.2 discusses the history of archaeological research in west–central California. Section 5.16.1.3 presents the results of archival research and archaeological field surveys conducted for this project.

Early Holocene Cultures (10,500-7200 BP)

Early cultures and peoples were adapted to the post-Pleistocene environment in which megafauna had largely disappeared and the hotter, drier climate had forced groups to settle near reliable water sources. As defined by Warren (1967), San Dieguito was a hunting culture with a flaked stone industry that included large flake and core scrapers, choppers, hammerstones, drill, and gravers. While plant processing artifacts were nearly absent from the

assemblage Warren described, there is now little doubt that these cultures used plant resources when available (Basgall and Hall 1993:18-20). Archaeologists are still not sure about the origin of the San Dieguito culture and its transition to later periods. Erlandson and Colton (1991:5) suggested three models: (1) in situ development from earlier groups, (2) desert groups migrating to the coast to avoid Altithermal conditions, and (3) coastal migration from the north. The second model is the most widely accepted explanation for early coastal groups. As coastal settlement is pushed back further in time, however, the third model seems more likely (Grenda 1997:18).

Early Middle Holocene Cultures

Malcolm Rogers (1939, 1945) was the first to describe the San Dieguito and La Jolla cultures, but he failed to explain the transition from one to the other. Warren et al. (1961) and Warren (1963) proposed that the La Jolla culture began around 7500 BP, when desert foragers moved west to avoid unfavorable Altithermal climates. It is suggested that the movement coincided with the diffusion of agave to the coast, and that the primary function of the scraper assemblage was to process agave and yucca. Moriarity (1966, 1967), found continuity between the San Dieguito and La Jolla culture and claimed the La Jolla developed from the earlier San Dieguito. Some (Bull 1987 and Ezell 1987) believe the two cultures were functional variants of the same culture, while others (Moriarty 1987, Smith 1987) believe them to be distinct cultures. Moratto (1984:151) combined some of these models.

Climatic warming after circa 6000 B.C. may have stimulated movements to the coast of desert peoples who then borrowed littoral adaptations from older groups while sharing them with their millingstone and scraper-plane technologies and seed- and agave-processing skills.

Another popular theory is coastal migration (Fladmark 1967). Chartkoff and Chartkoff (1984) claim that as coastal settlement is pushed further back in time, the more likely it is that the settlers were not related to the Pleistocene hunters of the interior deserts. Meighan (1989) sees similarities between California and British Columbia/Alaska assemblages, while Erlandson and Colten (1991) see more close resemblance to interior desert assemblages. As Grenda (1997:18) explained, the major obstacle to resolving this controversy is that about 17,000 square kilometers of land have been inundated since the end of the last glacial (Carbone 1991), effectively drowning most coastal sites. If Meighan (1989) is correct, there should be evidence of a coastal migration route at inundated offshore sites along the coast, and larger habitation sites with a material culture reflecting the Transitional period.

Scholars believe that subsistence patterns showed marked changes starting around 8500 BP, probably in response to Altithermal climatic conditions and the changing flora and fauna (Erlandson and Colten 1991). These changes are seen as reduced numbers of projectile points, scrapers, and choppers, and an increase in ground stone artifacts. While hunting and fishing were not replaced by hard seed processing, the reliance on animals and fish decreased and the diet became more diversified, and diversity of adaptation was apparently the norm for middle Holocene cultures.

Middle Holocene Cultures (7200 to 3440 BP)

Middle Holocene cultures are commonly referred to as Milling Stone cultures – the La Jolla culture was the coastal region's representative from this period (Wallace 1978, Warren 1967). La Jolla sites were usually located near the coast, especially around lagoons and bays, suggesting an ecological adaptation to shellfish and other coastal resources. Inland sites from the same time period are typically described as belonging to the Pauma culture; these sites had a similar material culture but were more sedentary and lacked shellfish (Meighan 1954, True 1958, Warren and True 1961). Farther inland, the Sayles culture was a mixture of the Pinto culture and the Milling Stone groups of the coastal region (Grenda 1997:19).

La Jolla Culture. La Jolla culture peoples exploited the coastal regions of Orange and San Diego Counties and La Jolla culture sites are recognized by ground stone assemblages in shell middens, usually on terraces around lagoons or bays. Harding (1951) divided the La Jolla into two phases, La Jolla I and II. The latter phase was defined by the presence of cemeteries, trade with the Channel Islands, and an improved lithic technology. The technology at La Jollan sites indicates a mixture of coastal and desert traits, as both scraper-plane and ground stone artifacts are found. La Jollan sites include shell middens, fire hearths, ground stone, flexed burials, and a very basic lithic assemblage. It appears that La Jollan assemblages represent a traditional phase from San Dieguito to Late Prehistoric cultures rather than a culture with distinct spatial and temporal boundaries (Grenda 1997:19).

Pauma Culture. Pauma sites are distinguished from La Jollan sites solely on their location. Pauma sites are generally found in inland valleys and sheltered canyons, out of reach of marine resources, whereas La Jollan sites hug the coastline and dot lagoon edges. True (1958), Warren et al. (1961), and Meighan (1954) describe Pauma sites as those that display a relatively more sedentary lifestyle and a greater reliance on gathering when compared to the San Dieguito culture. Pauma sites also contain many ground stone artifacts and a greater tool variety and lack shellfish remains. Artifact assemblages are similar to La Jollan sites, but subsistence practices are apparently more focused on terrestrial resources. Grenda (1997:20) summarizes:

> The difference between La Jollan and Pauma sites is primarily based on functional differences in the artifact assemblage. A greater tool variety indicates a greater reliance on terrestrial resources than La Jollan sites. This adaptation is most likely the result of terrestrial resource availability in the settlement area than cultural differences. It appears that any "close relationship" between the two could be explained by viewing the two cultures as functional variants of the same culture.

Sayles Culture. Between the Mojave Desert (exploited by the Pinto Basin culture) and the coast (exploited by the La Jollan and Pauma cultures) was a culture that apparently used resources from both the desert and coastal regions. The Sayles culture sites exhibit ground stone assemblages that also include percussion-flaked scraper planes, cores, planoconvex scrapers, choppers, and hammerstones (Kowta 1969). Moratto (1984:152-153) views this

culture as one that blended traits of the Pinto Basin culture of the Mojave Desert and the Milling Stone cultures of southern California. Sayles culture subsistence patterns were based on opportunistic hunting of deer, rabbit, and other small game animals, as well as floral resources such as juniper berries and hard seeds (Basgall and True 1985). While investigations suggest that resources were available on a year-round basis, a limited variety of tools within artifact assemblages suggest a more seasonal use of sites. From what little is known about the Sayles culture, it probably represented the Transitional period between the early hunting and later gathering cultures (Grenda 1997:20).

Late Holocene Cultures (3440 to 168 years BP)

While Milling Stone cultures survived into the late Holocene in many areas of southern California, some clear changes took place around A.D. 500. Late Prehistoric cultures in the region reflected both in situ cultural adaptations in response to environmental changes and outside influences from the Shoshonean (Takic) intruders of the desert regions (Moratto 1984). As with earlier periods, cultural distinctions are often subtle. The Late Prehistoric period in the project area is represented by the San Luis Rey (SLR) culture and has been equated with the historically known Luiseno (True 1966). The SLR has been divided into two phases, San Luis Rey I (A.D. 1400-1750) based on the absence of ceramics, cremations and rock paintings, and San Luis Rey II (A.D. 1750-1850), which included use of ceramics, cremations and rock paintings. The SLR culture's subsistence pattern probably consisted of small game hunting and the gathering of seeds and nuts, especially acorns. As summarized by Grenda (1997:21), three relatively distinct settlement patterns occurred during the SLR period:

> The first pattern was characterized by scattered temporary sites, suggesting a relatively mobile population. A shift to more sedentary settlements located where streams emerged from canyons took place in the late SLR I or early SLR II period. True (1982:36) propose that, accompanying this shift, a formalized winter-summer seasonal round became established. Finally, during late prehistoric or protohistoric times, the "one village per drainage" pattern shifted to a more complex consolidated village pattern. This last shift was probably stimulated by contact with missionaries and other settlers, and other factors such as drought and resource competition. At that time, the subsistence patterns of the San Luis Rey culture began to incorporate nonnative plants and animals and focus less on coastal resources (Bean and Shipek 1978; Moratto 1984). Based on ethnographic and ethnohistoric accounts of early contacts with the culture, the settlement pattern was similar to the later Luiseno rancherias. Small settlements were located from the river basin to the higher mountain slopes and were occupied on a seasonal basis depending on resource availability.

5.16.1.2 Archaeology and Archaeological Sensitivity of the Project Area

The Perris Valley is a poorly watered region punctuated by small rocky hills. Prehistoric sites in the project area are generally confined to these hills. The plains have been intensively cultivated and leveled for the past 120 years. In Late Prehistoric times the vegetation consisted

of at least three plant communities: Coastal Sage Scrub, Valley Grassland, and Freshwater Marsh. Each of these plant communities offered numerous plant resources that were utilized by the Native Americans. The climate of the region is classified as Mediterranean or "summer-dry subtropical" and is characterized by long, hot, dry, summers and mild, relatively wet winters. Annual precipitation is winter-dominant and normally averages between 50 and 65 cm (McCarthy 1987). The area was generally considered unappealing to European settlers until advances in dry land farming techniques, well drilling, and irrigation were made in the late Nineteenth Century. Although there was some gold mining activity in the hills, permanent European settlements did not occur until the 1880's.

Prehistoric sites in the area, including some well-known petroglyphs, are generally confined to the rocky hills. Extensive surveys in the area were conducted for the Metropolitan Water District (MWD) Inland Feeder and Reservoirs projects, and the Domenigoni Reservoir projects.

5.16.1.3 Ethnographic Background

The project area is located between the territories of two tribes, the Luiseno and the Cahuilla (Figure 5.16-1). Luiseno territory included southwestern Riverside County, while the Cahuilla extended from the Perris Plain eastward across the San Jacinto mountains. The two groups, while definitely separate socio-political entities, have linguistic similarities and in aboriginal times shared settlement/subsistence systems that were identical in many ways (McCarthy 1987).

The Luiseno Indians are those California aboriginal peoples and their descendants who were brought under the jurisdiction of Mission San Luis Rey de Francia, which is located near Oceanside, California, with a subsidiary mission located near the current town of Pala. The Luiseno Indians are part of the Takic branch of the Uto-Aztekan language family (Bean and Shipek 1978:550). Kroeber suggested that they were part of the Shoshonean drift that originated in the Great Basin, and migrated into the southern California coastal region at least 1500 years ago (Kroeber 1925:468, 574-580). The Luiseno cultural territory covers about 1500 square miles and includes parts of San Diego and Riverside Counties. According to Bean and Shipek (1978), Luiseno territory extended from Agua Hediona Creek northwest to Aliso Creek along the coast, then east to Santiago Peak and south through the Lake Elsinore area to just south of Mount Palomar.

The Luiseno, through complex social organizations and mechanisms, such as clan-governed districts and seasonal movements of populations throughout the region, followed a planned program of resource use to exploit the abundant plants and animals and support a large population. Seasonal exploitation of acorns and small game was combined with the exploitation of coastal resources during the balance of the year.

The terrestrial biomes indigenous to the Luiseno territory included Montane Forests, Riparian Woodland, and Chaparral. The Montane Forests are located at elevations between 2000 and 8000 feet. The principle trees utilized by the Luiseno Indians in this environment were members of the oak family. Acorns were the most important food resource for the Luiseno

and Cahuilla Indians. Riparian Woodland areas are located along waterways streams, and perennial rivers. Plants indigenous to this area are deciduous trees, shrubs, and herbaceous plants. Many of these plants are also important sources of food and medicine for Indians in the region. Chaparral includes those grasses, shrubs, and low vegetation typical of the dry, hot southern California lowlands. The Luiseno and Cahuilla utilized the grasses and desert plants typical of this area for both food and medicines (Bean and Shipek 1978:551). Early explorers to the region noted that the area had more locally available water than it does today, and they provided descriptions of lush vegetation and numerous mentions of water pools.

The Luiseno and Cahuilla Indians, while predominantly sedentary, also traveled within their territories for seasonal harvests. For food, they utilized a wide range of both plant and animal life. Acorns, various seeds, cactus, fruits, plant leaves, stems and roots were all processed for food. Animals utilized as food were deer, rabbit, wood rats, ground squirrels, mice and grasshoppers.

Villages were usually located in defendable canyons or coves along the slopes near good water supplies (Bean and Shipek 1978). Village populations ranged between 50 and 200, with the larger ones spawning nearby satellite villages. It is estimated ancient Luiseno population to be around 4,000; in 1925, their population was less than 500. White (1963) estimated Luiseno population to have been 10,000 (based on 50 villages with an average of 200 people in each). Cook (1976) estimated the aboriginal population of California to be 310,000, or 3 people per habitable square mile – the Luiseno population would have been around 4,500.

Geography is an important factor in predicting the location of archaeological sites. It is known that the Mediterranean type climate provided a diverse ecological niche that these prehistoric people exploited to lead a predominately sedentary lifestyle without agriculture. The all-important acorns were only a day's walk from the villages. Grasses, fruits, deer, rabbit and a variety of other plants and animals used by the Luiseno and Cahuilla were all locally available. The geologic aspect of the geography also played an important role in the Luiseno lifestyle because the landscape was scattered with outcrops of granite bedrock. The mortar holes used in food processing are found throughout the vicinity in these outcroppings. An analysis of their pottery has revealed that the Luiseno used locally available clays and rock in their ceramic production. Manos, metates, projectile points, knives, scrapers and other stone implements were also fashioned from locally available quartzite, quartz crystals, and basalt. It is surmised that the Luiseno and Cahuilla traded with their neighbors to the north and south by sourcing the obsidian (volcanic glass) found at the site. Obsidian source analysis indicates that obsidian was traded with people from sources near the Salton Sea to the south, and from the Coso range to the north.

The Spanish government established a series of missions to pacify and Christianize the Indians, ideally to convert them to stable, tax-paying citizens of New Spain. For the most part, however, the Luiseno maintained their previous settlement patterns and political leadership. The success of the mission started to decline in 1833, when a decree of emancipation of the

Indians was passed, and in 1835 the missions were confiscated by the Mexican government. Mission lands were then granted to individuals.

A number of factors led to the decline of the Native American lifeways, including the Gold Rush and the grant of statehood to California (and the great numbers of Euroamericans who came to settle). Additional stress to the Luiseno and Cahuilla lifeways came with the secularization of the mission and the split-up of the lands to private individuals.

5.16.1.4 Historical Background

Hispanic Period

The project area was somewhat marginal to human occupation after the first Spanish contact in the 1500s. The climate was entering another dry period, evidenced by the disappearance of Lake Cahuilla. The Energy Center area, like other parts of southern California, went through three historic phases of Euro-American development: Spanish imperialism and missionization (1540-1821), Mexican and American frontier development (1821-1881), and post-railroad modernization (1880-present). Significant settlement did not occur throughout the project area until the period of Mexican and American frontier development.

As explained by Grenda (1997:22-23), the Spanish were interested in establishing a mission between San Diego and San Juan Capistrano and were drawn to the San Luis Rey River valley because of its water supply, abundant vegetation and large native Luiseno Indian population. Many Luiseno were brought to the mission, where they were taught the Christian faith, the Spanish language, and crafts (Shipek and Bean 1978). A subsidiary Mission was established at San Antonio de la Pala, approximately 40 miles south of the project area, which is still in existence, and a mission rancho was located in Temecula. The San Gabriel mission established a subsidiary mission or "assistencia" west of the current city of Redlands, 30 miles north of the project area. The success of the mission started to decline in 1833, when a decree of emancipation of the Indians was passed, and in 1835 the mission was confiscated by the Mexican government. Mission lands were then granted to private citizens by the Mexican Government throughout California, primarily, but not exclusively, to "Californios" (second generation, native-born descendants of early soldiers and civil servants under Spanish and then Mexican rule). Near the project area, grants were made in Temecula and what would become Riverside. The portion of the Alternative B Moreno Valley natural gas pipeline route north of San Jacinto Avenue was part of the San Jacinto Nuevo y Potrero grant made to Miguel Pedrorena on January 14, 1846, while other areas in the Perris Valley were part of the Sobrante de San Jacinto, granted to Maria del Rosario and Estudillo de Aguirre on May 9, 1846.

American Period

Following the Mexican War of 1848, the project area came under the control of the United States government, however most human activity and settlement continued to take place in the wetter valleys north and south of the Perris Valley. The Perris Valley was described as "a great treeless desert", "A barren plain with rocky hills,...barely fit for a sheep pasture...where

nothing but a jackrabbit could live" (Holmes 1912). Gold mining was active on a small scale through the hills, and the valley was suitable for dry farming in a good year.

It was the arrival of the railroad that brought permanent American settlements to the Perris Valley area in the 1880s, by way of Riverside. By 1881 the California Southern established a station named Pinacate, which, being translated, means "stink bug". This station served the nearby gold mines with service to San Diego. The town of Perris developed nearby, named after the Chief Engineer and Surveyor of the Railroad. The next year the tracks were extended to Riverside. With easy access by rail and improvements in irrigation technology that had been used with stunning success in the Riverside area, towns sprouted throughout the valley.

A scheme to bring water to the Moreno area from the Bear Valley reservoir was begun in 1890, and water began to flow into the valley by 1891. The progenitor of this scheme was F.E. Brown, who had been one of the founders of Redlands, another town whose existence depended upon irrigation. Grateful citizens had hoped to name their new town after Mr. Brown, but he was a modest man and declined the honor. So the settlement became known as Moreno, which means "brown" in Spanish. Many acres were planted to citrus and the area prospered. A series of drought years in the late 1890s, however, led to a serious drop in the level of the Bear Valley reservoir, and a series of court decisions granted what water was available to users who had established earlier claims. Without irrigation, the citrus groves were unable to survive the long dry summers, and the brief period of prosperity was over. European newspapers reported the Perris Valley as "A Valley on Wheels" as farms was abandoned and the newly built houses jacked up and moved to the more reliably watered Riverside area (Holmes 1912). Dry land farmers remained in the area, and successfully experimented with drilling wells for irrigation and growing high value forage crops such as alfalfa, regional land use continued to be mainly dry-land farming. Irrigation has been important to the development of the area, and remnants of increasingly efficient systems can be seen, from unlined ditches to culvert-and-standpipe to modern portable aluminum pipe systems. Water from the Colorado River became available and, after World War II, the area became an important potato growing center. Rising water costs and a potato blight put an end to this enterprise in the 1960s. Concurrently, with the inception of the Del Webb Sun City development, land use steadily became oriented toward residential and retail/commercial development. Crop land continues to be developed for housing to this day.

5.16.1.5 Resources Inventory Methods

Inventory methods for the IEEC project consisted of archival research, an intensive pedestrian survey, architectural reconnaissance, and Native American consultation.

Archival Research Methods

Foster Wheeler Environmental conducted a records search at the Eastern Center of the California Historical Resources Information System (CHRIS) at University of California, Riverside in Riverside, California, on June 20, 2001. The search determined that portions of the APE had been previously surveyed for cultural resources, and several surveys had been performed in immediately adjacent areas.

In addition to reviewing available survey reports, lists of historic properties (e.g. the National Register of Historic Places, California Inventory of Historic Resources, California Points of Historic Interest, and California Landmark files were reviewed to locate historic archaeological sites within the project area. Project Staff studied USGS topographic maps and other historical maps to determine where unrecorded historic structures and features were located.

Field Survey Methods

Andrew Gorman, Jenna Farrell, and David Nelson conducted a pedestrian field survey for the IEEC project. Mr. Gorman has a Bachelors degree in Archaeology and nine years of archaeological experience. Ms. Farrell and Mr. Nelson have Bachelors degrees in archaeology and four years of field experience. The proposed Energy Center site, natural gas pipeline routes, compressor station and transmission line were surveyed on June 18 through 23, 2001. Open fields were surveyed at 20 meter transects, while road right-of-ways were more intensively surveyed, generally two transects per side. Opportunistic use was made of any adjacent agricultural ground or bare spots. Where vegetation reduced surface visibility below 20 percent, shovel scrapes were made at 20 meter intervals on transect. No artifacts were collected in the course of the survey.

Architectural Reconnaissance Methods

Historic buildings and structures older than 45 years are potentially significant historic resources in the project area. The project team conducted a drive by architectural reconnaissance to determine whether potentially significant historic architecture is located within the APE, and, if so, whether the project could significantly affect the structures.

Native American Consultation

Foster Wheeler Environmental staff contacted the Native American Heritage Commission (NAHC) on June 8, 2001, requesting information regarding traditional cultural properties and sacred places, such as Native American cemeteries, in the project area. The NAHC responded that a search of the sacred lands file did not indicate the presence of Native American cultural resources in the immediate project area. A list of Native American groups or individuals that may have knowledge regarding traditional cultural properties and sacred places in the project area was provided, and these individuals were contacted by letter July 3, 2001. No responses have yet been received. Copies of the letters are included in Appendix L.

5.16.1.6 Results-Archival Research and Field Survey

The IEEC APE for cultural resources consists of the footprint of the power plant site and 100 feet on either side of the alternative natural gas pipeline routes, compressor station, wastewater pipeline, and transmission line. The literature search included an area 0.25 miles on either side of the linear centerlines. Two new archaeological sites and one prehistoric isolate, all in the Davis Road area of the Alternative B Moreno Valley natural gas pipeline route, were found within the project APE during the IEEC survey.

A total of five historic and five prehistoric sites are located within the project APE (Table 5.16-1). All of these are located along the proposed Alternative B Moreno Valley natural gas pipeline route, and most of these in the Davis Road/ Mt. Russell area. None of the previously recorded sites have been evaluated as to National or State Register eligibility.

5.16.1.6.1 Energy Center Site

The proposed Energy Center site is an approximately 46-acre parcel of agricultural land located near the town of Romoland. According to the landowner, the field was irrigated until about 30 years ago, but is now used for dry land farming. The parcel appears to have been artificially leveled. There is a shallow, meandering ditch running roughly east to west near the south edge of the parcel. A pedestrian survey at 20 meter transects was made on June 23, 2001 by Andrew Gorman, Jenna Farrell and Dave Nelson of Foster Wheeler Environmental. Ground cover was a late standing crop of drilled wheat, giving surface visibility of 20 to 60 percent. Opportunistic use was made of tire tracks and narrow areas that had not been planted. No artifacts were observed in the course of the survey.

Table 5.16-1 Summary of Sites within the Project APE and Within 0.25 mile of the Project APE

Site Number	Site Type	Distance from Centerline (feet)	Mitigation Required?
Sites Within the Project APE			
Site A	Historic Scatter	On Centerline	Monitor or additional testing
Site B	Historic Farmstead	On Centerline	Monitor or additional testing
CA-RIV-6086	Historic Scatter	On Centerline	Monitor or additional testing
CA-RIV-4211	Lithic Scatter	30	Monitor or additional testing
CA-RIV-4212	Lithic Scatter	On Centerline	Monitor or additional testing
CA-RIV-4461	Historic Ditch Feature	On Centerline	Monitor or additional testing
CA-RIV-6068	Buried Scatter	On Centerline	Monitor or additional testing
CA-RIV-6084	Buried Scatter	On Centerline	Monitor or additional testing
CA-RIV-8170	Buried Scatter	On Centerline	Monitor or additional testing
CA-RIV-7498	Historic House	75	Avoided by Project Design
Sites Within 0.25 Mile of the APE			
CA-RIV-11	Same as CA-RIV-202	1000	Avoided by Project Design
CA-RIV-21	Petroglyph	1300	Avoided by Project Design
CA-RIV-202	Prehistoric scatter, milling stations, Rock Art	1000	Avoided by Project Design
CA-RIV-2969	Split Boulder/Yoni	800	Avoided by Project Design
CA-RIV-2995	Grinding slicks, Mortar, Rock Alignment	1000	Avoided by Project Design
CA-RIV-3340	Lithic Scatter	800	Avoided by Project Design
CA-RIV-4204-H	Historic Foundation/Scatter	300	Avoided by Project Design
CA-RIV-4205-H	Historic Cistern	400	Avoided by Project Design
CA-RIV-4209-H	Concrete irrigation system. Likely less than 45 years old	300	Avoided by Project Design
CA-RIV-4632	Historic foundation/scatter	350	Avoided by Project Design
CA-RIV-5130	Historic Farmstead	800	Avoided by Project Design

5.16.1.6.2 Alternative A Menifee Road Natural Gas Pipeline Route and Compressor Station

Alternative A Menifee Road natural gas pipeline, a new 0.9 mile, 20-inch pipeline may connect to the Sempra Energy existing gas transmission line that runs along Menifee Road, less than 1 mile east of the Energy Center site. Alternative A includes construction of a compressor station near the corner of Rouse and Menifee roads to maintain the required pipeline pressure south of the IEEC.

The pipeline route is within road ROW along existing dirt roads. Both sides of the road were surveyed. Vegetation in the ROW was a thin weedy cover giving 20 to 80 percent visibility. Although there were numerous concentrations of modern trash, no artifacts older than 45 years were observed.

The proposed location for the compressor station is currently used as an agricultural field. The entire 6.6-acre site was surveyed. A crop of wheat had recently been harvested, giving a surface visibility of 30 to 80 percent. No artifacts were observed in the course of the survey.

5.16.1.6.3 Alternative B Moreno Valley Natural Gas Pipeline

Alternative B Moreno Valley natural gas pipeline, a new 14.8 mile, 20-inch pipeline will connect to a main Southern California gas transmission pipeline at Sempra's Moreno Valley compressor station. The pipeline route passes through crop ground, residential streets, and country roads. Each type of land required slightly different survey methods. Two previously unrecorded historic sites and one prehistoric isolate were located in the course of the survey.

Energy Center Site to Nuevo Road

This section of the proposed pipeline route will run within the ROW of unpaved rural residential streets. Many areas are currently fallow crop land that is being subdivided for housing. This section was surveyed by Jenna Farrell and David Nelson of Foster Wheeler Environmental on June 20 and 21, 2001. The survey was confined to the ROW in residential areas, while two 15 meter transects were made in adjacent unfenced crop ground. Opportunistic use was made of any accessible bare areas, and shovel scrapes were made at 20-meter intervals where surface visibility was less than 20 percent. Remnants of an abandoned flood irrigation system with pre-cast concrete risers and valve boxes were visible along the agricultural sections of the route, similar to those seen along McLaughlin Road. The fields appeared to have been artificially leveled, which is required for an effective flood irrigation system. According to a local contact, these systems had been abandoned due to rising water costs in the 1970's (E. Kroencke, 2001). No artifacts were observed in the course of the survey.

The following cultural resource site was identified in the project APE.

- CA-RIV-7498. This site is an historic house built ca. 1915, located at the corner of Pico Avenue and San Jacinto Avenue. The house is set back approximately 100 feet from the edge of the natural gas pipeline ROW and will remain unaffected by construction.

Following construction Pico Road will revert to its original rural residential character. There will be no project-related impacts.

Nuevo Road to Davis Road

For approximately four miles, the proposed pipeline route runs through active cropland. Most of this area appears to have been artificially leveled, and several land planes were observed, stored on farm access roads. Landowner permission for access has not yet been received for all of this land, but access was possible along public dirt roads throughout the area. The route follows Chase Avenue, an un-marked dirt road to 13th Street. This stretch was thoroughly surveyed, and a representative sample of the proposed route was surveyed in the ROW and vicinity where the running line crossed 9th, 10th, 11th, and 12th streets. A county-owned, approximately 6-acre parcel south of Ramona Expressway was thoroughly surveyed. Marvin Road, an unmarked dirt road west of Davis Road, was also thoroughly surveyed. Visibility ranged from 100 to 20 percent. Two previously recorded sites were relocated in the course of the survey. CA-RIV-4209-H is an abandoned line of standpipes for a flood irrigation system. It appears to be in good condition and of relatively recent construction. CA-RIV-6086 is an historic scatter of early to mid-twentieth century artifacts.

Site B, a previously unrecorded 20th century scatter was located during this survey. No evidence of foundations or subsurface features was observed. A formal site record will be submitted to the California Historical Records Information System Eastern Information Center, University of California Riverside.

The following cultural resource site was identified in the project APE.

- CA-RIV-6086. This site, an early- to mid-twentieth century refuse scatter, is located on the centerline of the proposed gas pipeline. This site was relocated during the gas pipeline survey. Fragments of milk glass, Fiesta Ware, pressed glass, panel bottles, porcelain and manganese glass was observed. There was no evidence of any intact or remnant foundations or features visible. Artifacts observed on site indicate an occupation between 1900 and 1940. The site is in an agricultural field and has been repeatedly tilled. The site is less than 100 years old and does not appear to possess stratigraphic integrity but there is a possibility of intact subsurface features. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.

The following cultural resource sites were identified outside of the project APE, but within one-quarter mile.

- CA-RIV-4209-H. This site is a relatively modern flood irrigation system consisting of a line of pre-cast concrete standpipes with outflow regulators extending southwest-northeast across a crop field, approximately 300 feet from the proposed pipeline centerline. The system does not appear to be 45 years old or older. Standpipes are set at approximately 7-meter intervals for 200 or so meters. A field Visit by Andrew Gorman on June 21, 2001 confirmed that these standpipes are still present, although apparently inactive. An aluminum pipe sprinkler irrigation system was in use on the field. The

pipeline will run through agricultural fields, and following construction the fields will revert to agricultural use. There will be no project-related impacts.

- CA-RIV-5130. This site is a currently operating farmstead, located at the edge of the gas pipeline APE. This site was revisited during the gas pipeline survey and appears to be substantially as originally recorded in 1993. The pipeline will run through agricultural fields approximately 800 feet away from the boundaries of the site, and the fields will revert to agricultural uses after installation. There will be no project-related impacts.

Davis Road

Davis Road runs along the base of Mount Russell in the valley of the San Jacinto River. It is the area of highest sensitivity for cultural resources, but the area of the road ROW has been repeatedly disturbed by road construction, maintenance, and utility installation. Most recently, the MWD Inland Feeder aqueduct was installed in the Davis Road ROW by the EMWD. There are 18 previously recorded sites within the project APE through this section, but only four are shown that included any of the ROW area. Most of the adjoining land is the San Jacinto Wildlife area. The area was surveyed by Jenna Farrell and David Nelson of Foster Wheeler Environmental on June 21 and 22, 2001. The ROW was intensively surveyed, and two 15 meter transects were made outside the ROW on both sides of the road. No additional sites were located, but a single prehistoric isolate was found and left in the field. Construction will be confined to the ROW, and there will be no impact on sites outside the ROW. There will thus be no significant impact to the sites within the ROW.

The following cultural resource sites were identified in the project APE.

- CA-RIV-4211. Consists of two grinding slicks, debitage, grinding stones, and historic brownware. The site is located along a road near Mount Russell. The site record shows the site boundaries within 100 feet of the project centerline. Site integrity is describes as "fair" in the record form. The entire site has been plowed, and an earthen dike has been constructed at the northwest boundary of the site. This site was relocated during the gas pipeline survey. Project-related construction will be confined to the road ROW, but the possibility exists that the site extends into the construction zone. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.
- CA-RIV-4212. This site is a light lithic scatter adjacent to a road near Mount Russell. Two hammerstones, four pieces of basalt debitage, and a mano fragment were observed when the site was recorded in 1990. Site condition at the time was described as "poor", and it was suggested that the site might consist of materials redeposited from CA-Riv-11/202. This site was relocated during the gas pipeline survey. A mano or hammerstone fragment was observed near a telephone pole. Project-related construction will be confined to the road ROW, but the possibility exists that the site extends into the construction zone. Archaeological monitoring during the construction phase, or additional pre-construction testing will be required to ensure that there will be no significant impacts.

- CA-RIV-4461. This site is an irrigation ditch and associated fenceline. This site was relocated during the gas pipeline survey. Although the ditch line crosses Davis Road, all traces of it within the ROW have been obliterated by previous road construction, maintenance, and utility installation. It does not appear to meet CEQA significance requirements. The proposed gas pipeline route passes through the recorded boundaries of the site, but by following the mitigation measures no significant impact will result from project activities.
- CA-RIV-6068. This site is a buried prehistoric site. It is recorded as covering both sides of the road for approximately 120 meters, although no testing was conducted on the west side. Nine pieces of debitage, a hammerstone, a mano, a ground stone fragment and 7 pieces of mammal bone were recovered from alluvial fan deposits 120 to 270 cm BGS in an exploratory trench. At the time it was recorded (1998) the site appeared to have been impacted by the construction of the road and ongoing tillage activities. No features were noted. This site was revisited during the current survey and no artifacts were visible on the surface. The proposed gas pipeline route passes through the recorded boundaries of the scatter. Project-related construction will be confined to the road ROW, but the possibility exists that the site extends into the construction zone. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.
- CA-RIV-6084. A buried lithic scatter located along a road near Mount Russell. Five pieces of debitage, one groundstone fragment and 7 pieces of mammal bone were recovered from a total of 7 trenches. Exact provenance of the artifacts is not described in the site report. The proposed natural gas pipeline route runs along the Davis Road ROW, which is shown as the centerline of this site. Project-related construction will be confined to the road ROW, but the possibility exists that the site extends into the construction zone. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.
- CA-RIV-8170. This site is a buried prehistoric site. It is recorded as covering both sides of the road for approximately 120 meters, although no testing was conducted on the west side. Ten pieces of quartzite debitage were recovered from alluvial deposits 60-120 cm BGS in an exploratory trench. At the time it was recorded (1998) the site appeared to have been impacted by the construction of the road and ongoing tillage activities. No features were noted. This site was revisited during the current survey and no artifacts were visible on the surface. The proposed pipeline route passes through the recorded boundaries of this site. Project-related construction will be confined to the road ROW, but the possibility exists that the site extends into the construction zone. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.
- Site A. This site is a light scatter of mid-20th century material observed on the proposed gas pipeline route north of a skeet range. Artifacts included battery carbons; glass containers, Fiesta Ware, Jadite glass and earthenware shards, and a porcelain handle marked "MAGIC FLOW PAT. PENDING". These artifacts suggest an occupation in the 1930's. No evidence of foundations or buried features was observed, and no structure is shown in this location on historic quad maps. It is possible that the

site is a trash dump. The site will be impacted by construction of the gas pipeline, but does not appear to meet CEQA significance requirements. The site is less than 100 years old and does not appear to possess stratigraphic integrity but there is a possibility of intact subsurface features. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts. A formal site record will be submitted to the California Historical Records Information System Eastern Information Center, University of California Riverside.

- Isolate 1. A single secondary reduction flake of fine-grained basalt was found outside the road ROW, about 75 feet from the project centerline. The flake may be indicative of a buried site in the vicinity. Archaeological monitoring during the construction phase or additional pre-construction testing is recommended to ensure that there will be no significant impacts. A formal site record will be submitted to the California Historical Records Information System Eastern Information Center, University of California Riverside.

The following cultural resource sites were identified outside of the project APE, but within one-quarter mile.

- CA-RIV-11. Originally recorded in 1941, this site could not be relocated as originally described during a 1980 survey, however it appears to be located in the same area as CA-RIV-202, which places it approximately one thousand feet from the project centerline, well beyond the Davis Road ROW. There will be no impact from project related activities.
- CA-RIV-21. This is a well-known rock-art site located approximately one-quarter mile from the gas pipeline centerline. The "Moreno Maze" has been widely known since at least the publication of "Petroglyphs of California and Adjoining States" by Julian Steward in 1929 (Steward 1929). The site was revisited in the course of this survey and its condition is as recorded. No construction will take place near this site, and no impacts will result.
- CA-RIV-202. Prehistoric milling features and rock art located approximately one thousand feet from the project centerline. Site condition was described as fair to poor in 1989. The site is located outside the Davis Road ROW and no impacts will result from project activities.
- CA-RIV-2969. A naturally split boulder recorded as a Yoni, "(a) naturally occurring, possibly enhanced, rock feature that Indians recognized, in theory, as female genitalia" in 1984. No construction will take place near this site, and no impacts will result.
- CA-RIV-2995. A small complex consisting of a rock alignment, 1 mortar, 2 possible basins, 9 grinding slicks, and a natural rock shelter. This site is located approximately one thousand feet from the project centerline. No construction will take place near this site, and no impacts will result.

- CA-RIV-3340. A sparse lithic scatter in crop ground approximately 800 feet from the project centerline, described as being in "highly disturbed condition" when recorded in 1987. It is located outside the Davis Road ROW and will remain unaffected by construction. No impact will result.
- CA-RIV-4204-H. An historic brick foundation remnant. It is located outside of the Davis Road ROW, 300 feet from the gas pipeline centerline and will remain unaffected by construction. No impact will result.
- CA-RIV-4205-H. This site is an historic open cistern. It is located on a hill four hundred feet from the project centerline, outside the Davis Road ROW. It will remain unaffected by construction within the ROW. No impact will result.
- CA-RIV-4632. Consists of a light historic scatter, concrete foundation remains, and a small grove of olive trees. A structure appears on the site on the 1901 USGS Elsinore quad map. The site has been impacted by the construction of an earthen pond dam and modern trash dumping. It is located approximately three hundred and fifty feet from the project centerline, outside the Davis Road ROW. There will be no project-related impacts.

Air Forbes Avenue and Virginia Street

The final portion of the gas pipeline turns east off of Davis Road at Air Forbes Avenue, an unmarked dirt road. This takes the route away from the base of Mount Russell and back into crop ground. Ground cover was standing wheat in the crop fields, giving 20 to 60 percent visibility, and a thin weedy cover in the ROW with 20 to 80 percent visibility. The ROW was intensively surveyed, and two 15-meter transects were made in accessible adjacent cropland. No artifacts were observed in the course of the survey. Site B, a previously unrecorded farmstead, was located. Several structures are still standing, although in ruinous condition. Other structures on the site have either collapsed or burned. Much modern trash was visible, but no period domestic debris or artifacts were observed. A formal site record will be submitted to the California Historical Records Information System Eastern Information Center, University of California Riverside.

The following cultural resource site was identified in the project APE.

- Site B. This site is a post-WWII farmstead or commercial agriculture complex consisting of (originally) 4 large wooden grain storage bins, a large concrete floored shop building, an apparent well, office or house, two small outbuildings and a drive-on truck scale. Two of the grain bins are still standing, although in ruinous condition. The other buildings have either burned or collapsed. A large quantity of modern trash has been, and continues to be dumped on the site. No period domestic debris was observed during pedestrian surveys of the site, which strengthens the case for this being an ag-commercial site. A single structure is shown on the site on the 1901 Elsinore USGS quad map, but no 19th century diagnostics were seen during this survey. Several structures are visible, but the large grain bins are not shown on the 1941 Perris quad map. The site is shown substantially as it is today on the 1954 El Casco map. All of the structures used concrete footings, wire nails, and dimensioned lumber. The proposed

gas pipeline will run along Air Forbes Avenue and Virginia Street, which run through the center of the site. The site appears to be more than 45 years old, and the possibility exists that it contains intact subsurface features. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.

5.16.1.6.4 Non-Reclaimable Wastewater Pipeline

The non-reclaimable wastewater pipeline will be constructed to carry non-reclaimable wastewater to the EMWD water treatment plant in Sun City. The route runs west from the plant site along McLaughlin Road to Murrieta Road, where it turns south to connect with existing lines in Sun City. Construction will be within the ROW of McLaughlin and Murrieta roads. The route was surveyed on June 19 and 20, 2001. Ground cover was a mix of plowed agricultural fields, sparsely vegetated ditches and residential front yards. No artifacts were observed. Concentrations of modern trash were common, and risers/breathers for an abandoned irrigation supply line were visible along McLaughlin Road. The line was abandoned in the early 1970's (E. Kroencke, 2001).

5.16.1.6.5 Electrical Transmission Line

The IEEC will use an existing Southern California Edison (SCE) ROW to construct a 0.9 mile long, 500 kV transmission line to connect to the (SCE) substation on Menifee Road. An existing line of wooden poles will be removed and a set of steel towers constructed. The proposed route was surveyed on June 19, 2001. Ground cover varied between standing wheat and a thin, weedy vegetative cover. Surface visibility ranged from 20 to 40 percent. There were several concentrations of modern trash, but no artifacts were observed. Risers/breathers for an abandoned irrigation supply line were visible along McLaughlin Road. The line was abandoned in the early 1970's (E. Kroencke, 2001).

5.16.2 Environmental Impacts

5.16.2.1 Significance Criteria

Appendix G, Environmental Checklist Form, of CEQA addresses significance criteria with respect to cultural resources (Public Resources Code Sections 21000 et seq.). Appendix G (V)(a,b,d) indicates that an impact would be significant if the project will:

- Cause a substantial adverse change in the significance of a historical resource.
- Cause a substantial adverse change in the significance of an archaeological resource.
- Disturb any human remains, including those interred outside of formal cemeteries.

5.16.2.2 Construction Impacts

Energy Center Site

No archaeological sites or historic resources have been located within the APE of the proposed Energy Center site, either through archival research or pedestrian surveys for the IEEC project.

Non-Reclaimable Wastewater Pipeline

No archaeological sites or historic resources have been located within the APE of the proposed non-reclaimable wastewater pipeline, either through archival research or pedestrian surveys for the IEEC project.

Transmission Line

No archaeological sites or historic resources have been located within the APE of the proposed transmission line, either through archival research or pedestrian surveys for the IEEC project.

Alternative A Menifee Road Natural Gas Pipeline Route and Compressor Station

No archaeological sites or historic resources have been located within the APE of the proposed Alternative A Menifee Road natural gas pipeline route and associated compressor station, either through archival research or pedestrian surveys for the IEEC project.

Alternative B Moreno Valley Natural Gas Pipeline

There are 12 previously known prehistoric and 8 previously recorded historic cultural resources within the APE of the proposed gas pipeline, with the majority of them along Davis Road at the base of Mount Russell. Surveys for the current project identified two additional historic sites and one prehistoric isolate in the Davis Road area. The proposed pipeline lies within the ROW of Davis Road, which has been previously disturbed by road construction, maintenance, utility installation and by the construction of the MWD Inland Feeder aqueduct. However, it is possible that sites within the construction zone contain intact subsurface features. Archaeological monitoring during the construction phase or additional pre-construction testing will be required to ensure that there will be no significant impacts.

5.16.2.3 Operation Impacts

No ground disturbance would be required during project operation, therefore impacts to cultural resources are not anticipated during operation of the proposed facility. Maintenance of the transmission line, natural gas and compressor station, and wastewater pipeline will not cause any effects outside of the initial construction area of impact.

5.16.3 Cumulative Impacts

The proposed project may affect known cultural resources, but it would not be likely to cause significant cumulative impacts. If the project were to encounter a buried prehistoric site, the possibility of cumulative impacts would arise because such sites may be highly significant and those that have been recorded in the project area have been partly damaged or destroyed by agricultural activity and other development. Compliance with the mitigation measures will ensure that there will be no significant impacts.

5.16.4 Mitigation Measures

The Applicant proposes the following mitigation measures to prevent impacts to cultural resources during project construction, with an emphasis on the avoidance of recorded sites.

Project Archaeologist and Cultural Resource Monitoring And Mitigation Plan. Prior to the start of project construction, the Applicant will designate a cultural resource specialist as Project Archaeologist who will develop and implement a cultural resource monitoring and mitigation plan. In accordance with the Menifee North Specific Plan, the archaeologist will be available in the event that archaeological materials are discovered during grading activities.

Construction Worker Education. Before construction begins, the Project Archaeologist will conduct a worker education session for the construction crew and supervisory personnel to explain the importance of and legal basis for the protection of significant archaeological resources. Construction crews will be briefed regarding identification of suspected new sites, reporting, and preservation of existing and suspected new sites.

Archaeological Monitoring During Construction. An Archaeological Monitor will be present at the construction sites along the natural gas pipeline corridors for Alternative B at times when excavation (subsurface disturbance) is taking place in areas of high cultural sensitivity along the Davis Road portion of the route. These areas will be identified by the Project Archaeologist.

Mitigation for Resources Discovered During Construction. If a new cultural resources site is discovered during construction, and determined to be significant, the Project Archaeologist will notify and implement a mitigation plan in accordance with state regulations on private lands.

Site Recording, Evaluation and Curation. The Project Archaeologist will arrange for the curation at a qualified curation facility of any archaeological materials collected during the construction monitoring and mitigation program.

Following these mitigation measures would reduce any potential Energy Center construction effects on cultural resources below the threshold of significance.

5.16.5 Laws, Ordinances, Regulations, and Standards (LORS)

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of the California Environmental Quality Act (CEQA) (Public Resources Code 15000 *et seq.*) with respect to cultural resources. CEQA and its implementing regulations state that "Public agencies should seek to avoid damaging effects on an archaeological resource whenever feasible."

The California Environmental Quality Act (CEQA) also requires review to determine if a project will have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group listed or eligible for inclusion on the California

Register of Historic Resources. CEQA Section 15065.5 (Title 15) states that an important, or significant, archaeological resource is one that:

- Is associated with an event or person of:
  - Recognized significance in California or American history; or
  - Recognized scientific importance in history.
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;
- Has a special or particular quality, such as oldest, best example, largest, or last surviving example of its kind;
- Is at least 100 years old and possesses substantial stratigraphic integrity; or
- Involves important research questions that historical research has shown can be answered only with archaeological methods.

Other state-level requirements for cultural resources management are written into the California Public Resources Code, Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the state or a state agency. These laws require that state agencies undertake surveys, excavations, or other operations as necessary on state lands to preserve or record archaeological and historic resources. The laws also specify that state agencies shall not interfere with the practice of Native American religion on state lands or cause damage to any Native American cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property. These laws apply to lands owned by a state agency within the project APE.

If a county coroner were to determine that human remains discovered on project lands were Native American, Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code would apply. These laws require that the county coroner notify the NAHC when a Native American grave is found. The NAHC would then identify a most likely descendant to inspect the burial site and make recommendations for treatment or disposal.

5.16.6 Involved Agencies and Agency Contacts

Table 5.16-2 lists the state agencies involved in cultural resources management for the project and lists a contact person at each agency.

Table 5.16-2 Agency Contacts

	Contact	Issue
Native American Heritage Commission	Ms. Debbie Pilas-Treadway Associate Government Program Analyst (916) 653-4038	Native American traditional cultural properties
California Office of Historic Preservation	Dr. Knox Mellon State Historic Preservation Officer (916) 653-6624	Federal agency NHPA Section 106 compliance

5.16.7 Permits Required and Schedule

This project does not require federal, state, or local permits, other than the CEC site certification, for cultural resources management.

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SECTION 5.17 PALEONTOLOGICAL RESOURCES
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5.17 PALEONTOLOGICAL RESOURCES

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. This section assesses the potential that the proposed Inland Empire Energy Center (IEEC or Energy Center) would impact scientifically important fossil remains. This section includes a review of the affected environment, an evaluation of potential impacts of construction and operation of the Energy Center, and presents mitigation measures designed to reduce or eliminate potential impacts.

The analysis presented in this section meets the requirements of the California Energy Commission (CEC 1997, 2000) and incorporates the Society of Vertebrate Paleontology (SVP 1995, 1996) standard measures for mitigating adverse construction-related environmental impacts on paleontological resources.

5.17.1 Affected Environment

5.17.1.1 Geographic Location and Physiographic Environment

The project site is located in western Riverside County, west and southwest of the San Jacinto Mountains. The site lies primarily within alluviated valleys between the San Jacinto Mountains and the Perris upland, to the north of the Santa Ana Mountains and within the Peninsular Ranges physiographic province (Dudley 1936; Dibblee 1981a, b; Sharp 1994) (see Figure 5.5-2, Regional Geology Map).

The project area is located primarily within U.S. Geological Survey (USGS) Perris, Romoland, Lake View, Sunnymead, and El Casco quadrangles (1:24,000).

5.17.1.2 Geologic Setting and Formations

The IEEC site and its ancillary facilities are located on map units gr-m (Pre-Cenozoic granitic and metamorphic rocks), grt (Mesozoic granitic rocks, tonalite and diorite), and Qa (Quaternary alluvium) (Rogers 1966; Dibblee 1981b). These units are described below.

Pre-Cenozoic Granitic and Metamorphic Rocks and Mesozoic Granitic Rocks

These rocks are intrusive igneous rocks that form the cores of the mountain ranges in the area. These rocks were formed deep in the earth's interior and have been exposed by uplift, weathering, and erosion (Dibblee 1981a). This weathering and erosion is evident in the exposed rocks that are separated by joints into spheroidally weathered blocks of varying sizes. Additionally, weathering has separated the individual mineral grains so that sand- and silt-sized grains are eroded from these uplands and shed into the adjacent alluvial lowlands (Dudley 1936). A notable feature is the various erosion surfaces that have been etched into the Perris block. These erosion surfaces have been variously termed the Perris erosion surface (Rogers 1966) and the Perris Upland (Sharp 1994). Dudley (1936) described three separate erosion surfaces. These various granitic rocks are not fossiliferous.

Quaternary Alluvium

Streams from the mountains to the north, south, east and west of the project site drain into a series of valleys, several separated by smaller bedrock remnants between the major mountains. Small streams also drain from these isolated bedrock remnants into the adjacent valleys (e.g., Menifee, Moreno, Perris, and San Jacinto valleys). Most prominent of these streams is the San Jacinto River. Over time, the result of this drainage is that the various valleys are filled with stream sediments (alluvium). Because of this essentially internal drainage, in the main valleys older sediments are generally buried by progressively younger alluvium. Consequently, most of the immediate surficial deposits in the area are probably a few hundred to several thousands of years old (Dibblee 1981b; Reynolds and Reynolds 1991). Reynolds and Reynolds (1991) report Pleistocene age (i.e., greater than 10,000 years old) sediments at about 15 feet depth to the west of Lakeview. Dibblee (1981b) does map some older Quaternary alluvium on surfaces within larger valleys within the granitic remnants. No formation names have been formally applied to the Quaternary alluvium.

5.17.1.3 Paleontological Resource Inventory Methods

A stratigraphic inventory and paleontological resource inventory were completed to develop a baseline paleontological resource inventory of the project site and surrounding area by rock unit, and to assess the potential paleontological productivity of each rock unit. Inventory methods included a review of published and unpublished literature and a field survey.

Stratigraphic Inventory

Geological maps and reports covering the geology of the project site and area were reviewed to determine the exposed rock units and to delineate their respective areal distributions in the project area.

Paleontological Resource Inventory

Published and unpublished geological and paleontological literature were reviewed to document the number and locations of previously recorded fossil sites from rock units exposed in and near the project site and surrounding area and the types of fossil remains each rock unit has produced. The literature review was supplemented by an archival search conducted at the University of California Museum of Paleontology in Berkeley, California and the San Bernardino County Museum. Two Quaternary fossil sites were located within 1 mile of the project site. These sites are described in confidential Appendix O.

Field Survey

The field reconnaissance was conducted on June 26, 2001, to document the presence of any previously unrecorded fossil sites and of strata that might contain fossil remains. The field survey was conducted by Tom Stewart, Ph.D., a qualified paleontologist with several publications in refereed scientific journals addressing fossils and paleoenvironmental analysis. Reconnaissance was limited to inspection of visible ground surface at the site as well as the alternative natural gas pipeline routes, transmission line, and wastewater pipeline route. No exposures of potentially fossiliferous strata were observed at the project site or along the

project linear features. Examination of adjacent exposures and landforms verified the geologic mapping in the area. Pedestrian surveys were conducted within the area of potential effect for paleontological resources except where there was a lack of natural exposures in the alluvium.

Paleontological Resource Assessment Criteria

The potential paleontological importance of the project area can be assessed by identifying the paleontological importance of exposed rock units within the project area. A paleontologically important rock unit is one that: (1) has a high potential paleontological productivity rating, and (2) is known to have produced unique, scientifically important fossils. The potential paleontological productivity rating of a rock unit exposed at the project site refers to the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near the project site. Exposures of a specific rock unit at the project site are most likely to yield fossil remains representing particular species in quantities or densities similar to those previously recorded from the unit in and near the project site. However, well-documented fossil-bearing formations are less likely to yield a unique paleontological resource.

An individual vertebrate fossil specimen may be considered unique or significant if it meets the following criteria: it is 1) identifiable, 2) complete, 3) well preserved, 4) age diagnostic, 5) useful in paleoenvironmental reconstruction, 6) a type or topotypic specimen, 7) a member of a rare species, 8) a species that is part of a diverse assemblage, and/or 9) a skeletal element different from, or a specimen more complete than, those now available for its species. For example, identifiable and complete vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. The value or importance of different fossil groups varies, depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, how complete the skeleton is, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions such as part of a research project. Individual portions of a vertebrate skeleton, e.g., an individual vertebrate, would generally not be considered a unique paleontological resource. Marine invertebrates are generally common and well documented. They would generally not be considered a unique paleontological resource.

The following tasks were completed to establish the paleontological importance of each rock unit exposed at or near the project site:

- The potential paleontological productivity of each rock unit exposed at the project site was assessed, based on the density of fossil remains previously documented within the rock unit.
- The potential for a rock unit exposed at the project site to contain a unique paleontological resource was considered.

5.17.1.4 Resource Inventory Results

Geologic mapping of the project site and vicinity (1:62,500 or 1:250,000 scale) is provided by Dibblee (1981b). Broader scale information on late Cenozoic land mammal and other fossils of the region are found in Jefferson (1991a, 1991b).

Literature Review

The project area has two major rock units:

- Pre-Cenozoic Granitic and Metamorphic Rocks and Mesozoic Granitic Rocks. The various intrusive igneous rocks of the project area are not fossiliferous.
- Quaternary Alluvium. Two fossil localities have been reported from the Quaternary alluvium in the vicinity of the natural gas pipeline along the San Jacinto River near Lakeview Hot Springs west of Lakeview. The first (San Bernardino County Museum identification number 5.3.14.3) is a Pleistocene bison humerus collected at 30 feet depth from an aqueduct tunnel. The second site (identification number 5.3.151) is reported by Reynolds and Reynolds (1991) from a 60-foot trench. This deep excavation yielded two Holocene vertebrates and at least 13 Pleistocene vertebrates. Based on radiocarbon dates, Reynolds and Reynolds (1991) estimate that the Pleistocene age sediments begin at approximately 15 feet below the surface in this area. County of Riverside (1994) reports that older alluvium has yielded remains of a Pleistocene horse (*Equus*) at Railroad Reservoir approximately 7 miles to the southwest of the project area and mammoth (*Mammuthus*) and camel (*Camelops*) at Skinner Reservoir approximately 12 miles to the southeast of the project area. In addition, recent mitigation work in the San Jacinto Valley to the east of the Alternative B Moreno Valley natural gas pipeline northern terminus has also produced Holocene and Pleistocene vertebrate fossils (K. Springer, San Bernardino County Museum, personal communication, June 27, 2001). Quaternary fossils have also been reported in Quaternary alluvium and other Quaternary deposits approximately eight miles south of the project area in the Domenigoni Valley (Springer and Scott 1994; Springer et al. 1999).

The San Timoteo badlands immediately to the north of the San Jacinto Valley are highly fossiliferous. Recent work by Albright (1999, 2000) presents detailed biostratigraphic, magnetostratigraphic, and taxonomic information on the Tertiary Eden and San Timoteo formations and reviews the older paleontologic literature on the area. The northern portion of the Alternative B Moreno Valley natural gas pipeline is approximately two miles from these formations. Besides that physical distance, these formations are separated from the terminus of the natural gas pipeline by the San Jacinto fault (Rogers 1966; Dibblee 1981a, b); consequently, these older formations would not be encountered by the natural gas pipeline.

The Energy Center site is located within a 1,200-acre area evaluated as part of the Menifee North Specific Plan (County of Riverside 1994). Paleontological studies conducted as part of an Environmental Impact Report for the Menifee North Specific Plan (County of Riverside 1994) indicated the sediments underlying the Menifee North Specific Plan area are composed of alluvium and granodiorite. The area is covered by topsoil developed in place from underlying alluvial sediments. The topsoil varies from approximately one to two feet in thickness. Based on an evaluation of records and a site survey, the report concluded the potential for encountering paleontological resources on the site during development was as follows:

- Cretaceous Granodiorite

  Paleontologic Sensitivity: None

  Due to the mode of origin of these rocks, there is no possibility that paleontological remains will be present in them.

- Quaternary Older Alluvium

  Paleontologic Sensitivity: Low

  Fossils are not known from these sediments in the Romoland area, although some have been found in older alluvium outside the area. It is unlikely, but there is a possibility, that fossils may be discovered in the alluvial sediments on the study property during earthmoving.

- Quaternary Younger Alluvium

  Paleontologic Sensitivity: Very Low

  No fossils or sub-fossils have been recorded from these sediments in the region. Although paleontological remains may occur in these sediments, as they may in any other sediment, the likelihood of any being recovered from the study property is minimal.

Field Surveys

IEEC Power Plant Site. The 45.8-acre proposed power plant site is situated on Quaternary alluvium. The surface has been in agricultural use and tilled for many years. No paleontological resources were observed at the power plant site.

Alternative A – Menifee Road Natural Gas Pipeline Route and Associated Compressor Station. The 0.9-mile pipeline is entirely on Quaternary alluvium adjacent to McLaughlin Road and the BNSF Railway right of way. No paleontological resources were observed along this section of the route.

The 6.6-acre proposed compressor station site is situated on Quaternary alluvium. The surface has been in agricultural use and tilled for many years. No paleontological resources were observed at the proposed compressor station site.

Alternative B – Moreno Valley Natural Gas Pipeline. The 14.8-mile pipeline is entirely on Quaternary alluvium, although it is in proximity to non-fossiliferous granitic and metamorphic rocks from approximately milepost (MP) 9.8 to MP 13.3, as illustrated in Figure 5.5-3C, Geologic Area Types. No paleontological resources were observed along this natural gas pipeline route.

The Quaternary alluvium of the pipeline route is in rural residential areas from MP 0.0 to MP 6.0 and tilled agricultural lands from MP 6.0 to MP 9.2. From MP 9.2 to MP 13.3 the pipeline route is within the right-of-way of Davis Road that has been highly disturbed by the recent construction of the Metropolitan Water District Inland Feeder Project. The Inland Feeder, along Davis Road, consisted of a 14-foot diameter pipeline, buried in a 25-foot deep trench, approximately 14 feet wide at the bottom and 68 feet wide at the surface. No paleontological resources were encountered during the construction of the Inland Feeder on Davis Road, and

none were observed during the IEEC field survey of this section of the Alternative B natural gas pipeline route.

From MP 13.3 to 14.8, the natural gas pipeline route is within tilled agricultural fields. No paleontological resources were observed along this section of the route.

Wastewater Pipeline. From MP 0.0 to 2.2, the wastewater pipeline route is within the right-of-way of an unpaved section of McLaughlin Road, and adjacent to tilled agricultural fields. No paleontological resources were observed along this section of the route. From MP 2.2 to the end of the route at MP 4.7, the pipeline is within the paved right-of-way of Murietta Road and adjacent to urban areas. No direct observations of native soils were possible along this section of the route.

Transmission Line Route. The 0.9 mile transmission line is adjacent to McLaughlin Road and within an area of relatively thick vegetation with poor soil exposure. No paleontological resources were observed along this section of the route.

5.17.2 Environmental Impacts

The potential environmental effects from construction and operation of the IEEC on paleontological resources are presented in the following subsections.

5.17.2.1 Significance Criteria

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been previously found are considered to have a high sensitivity and a high potential to produce fossils. In areas of high sensitivity that are likely to yield unique paleontological resources, full-time monitoring is typically recommended during any project ground disturbance. Areas that are not sedimentary in origin and that have not been known to produce fossils in the past, typically are considered to have low sensitivity and monitoring is usually not needed during project construction. Areas that have not had any previous paleontological resource surveys or fossil finds are considered undetermined until surveys and mapping are done to determine their sensitivity. After reconnaissance surveys, observation of exposed cuts, and possibly sub-surface testing, a qualified paleontologist can determine whether the area should be categorized as having high, low, or undetermined sensitivity. In keeping with the criteria of the SVP (1995), all vertebrate fossils are categorized as being of potentially significant scientific value.

As discussed in Section 5.17.1.4, the County of Riverside (1994) determined that the surface alluvium in the area covered bye the Menifee North Specific Plan had a very low sensitivity, the older alluvium had a low sensitivity, and the granitic rocks had no sensitivity with respect to paleontologic resources.

Appendix G, Environmental Checklist Form, of CEQA provides guidance for determining significance criteria with respect to paleontological resources (Public Resources Code Sections 21000 et seq.). Appendix G (V)(c) indicates that an impact could be significant if the

project will "directly or indirectly destroy a unique paleontological resource or site or unique geologic feature."

Using the CEQA criteria, guided by the sensitivity levels defined by SVP (1995), the significance of the potential adverse impacts of earth moving on the paleontological resources of each stratigraphic unit exposed in the project site construction zone was assessed. This assessment reflects the paleontological importance and impact sensitivity of the stratigraphic unit.

5.17.2.2 Construction

This section presents the potential impacts on the paleontological resources resulting from construction of each portion of the IEEC.

Energy Center Site

Construction-related impacts to paleontological resources primarily involve ground disturbance. The proposed IEEC site is situated on younger Quaternary alluvium underlain by older alluvium. As indicated in the EIR for the Menifee North Specific Plan (County of Riverside 1994) these deposits are considered to have very low and low paleontologic sensitivity, respectively. Although these areas are of low sensitivity, there is a possibility that excavation and grading may encounter vertebrate fossils during project construction if these activities occur in older alluvium, which the plan considered to be at greater than 10 feet depth (County of Riverside 1994).

Alternative A – Menifee Road Natural Gas Pipeline Route and Compressor Station

These project components are also within the Menifee North Specific Plan area and, similar to the power plant site, deposits in this area are considered to have low and very low paleontologic sensitivity. Although these areas are of low sensitivity, there is a possibility that excavation and grading may encounter vertebrate fossils during project construction if these activities occur in older alluvium.

Alternative B – Moreno Valley Natural Gas Pipeline

Excavation for and installation of this natural gas pipeline will be less than 10 feet deep and involve ground-disturbing activities in sediments of the younger Quaternary alluvium underlain by older alluvium. As in the Menifee North Specific Plan area, these deposits are considered to have low and very low paleontologic sensitivity. Although these areas are of low sensitivity, there is a possibility that excavation and grading may encounter vertebrate fossils during project construction if these activities occur in older alluvium. In the Davis Road portion of the route the pipeline will be placed within a disturbed zone resulting from construction of the Inland Feeder. In this portion of the route it is unlikely that fossils could be encountered because of the previous disturbance.

Non-Reclaimable Wastewater Pipeline

Excavation for and installation of the non-reclaimable wastewater pipeline will be less than 10 feet deep and involve ground-disturbing activities in sediments of the younger Quaternary

alluvium underlain by older alluvium. As in the Menifee North Specific Plan area, these deposits are considered to have low and very low paleontologic sensitivity. Although these areas are of low sensitivity, there is a possibility that excavation and grading may encounter vertebrate fossils during project construction if these activities occur in older alluvium.

Electric Transmission Line

Construction of the transmission tower bases for the proposed electrical transmission lines will involve ground-disturbing activities in sediments of the younger Quaternary alluvium underlain by older alluvium. The transmission line is within the Menifee North Specific Plan area and these deposits are considered to have low and very low paleontologic sensitivity. Although these areas are of low sensitivity, there is a possibility that excavation and grading may encounter vertebrate fossils during project construction if these activities occur in older alluvium.

5.17.2.3 Operation

Project operation will not cause additional ground disturbance, and therefore will not affect paleontological resources.

5.17.3 Cumulative Impacts

If paleontological resources were encountered during the IEEC-related ground disturbance, the potential cumulative effect on paleontological resources would be low, as long as the mitigation measures proposed below in Section 5.17.4 are implemented to recover the resources. When properly implemented, these mitigation measures would effectively recover the scientific value of significant fossils encountered during IEEC construction. Thus, the proposed IEEC will not cause or contribute to significant cumulative impacts to paleontological resources.

5.17.4 Mitigation Measures

This section describes measures that the Applicant proposes to reduce or mitigate potential project-related adverse impacts to significant paleontological resources. These mitigation measures are consistent with those of the Menifee North Specific Plan (County of Riverside 1994).

- **Paleontological Mitigation Plan**— Prior to construction, the Applicant will retain a qualified Project Paleontologist to design and implement a mitigation program during project-related earth-moving activities. The paleontological resource mitigation program, in accordance with the mitigation measures included in the Menifee North Specific Plan, will include the preparation of a mitigation and monitoring plan for construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage coordination for any specimen and data recovered; pre-construction coordination; and reporting.
- **Construction Personnel Education**—Prior to the start of construction, construction personnel involved with earth-moving activities will be informed of the possibility of encountering fossils, how to identify fossils, and proper notification procedures. This worker training will be prepared and presented by a qualified paleontologist. A construction contractor superintendent will be identified and provided with contact

information for notifying the Project Paleontologist if any potential paleontological resources are encountered during construction.

- **Construction Monitoring** –Grading and excavation within old alluvium or earthmoving at depths greater than 10 feet should be monitored by a qualified paleontologist, along with older alluvium which occur as depths less than 10 feet. The portion of the Alternative B Moreno Valley natural gas pipeline route along the Inland Feeder along Davis Road will not require a monitor even if excavations greater than 10 feet will occur because of the previous disturbance of the route during installation of the Inland Feeder.

Implementation of these mitigation measures will reduce any potentially significant environmental impacts of project earth-moving activities on paleontological resources to an insignificant level. If resources are encountered, these measures will allow for the recovery of fossil remains and associated specimen data and corresponding geologic and geographic site data that otherwise might have been destroyed by construction.

5.17.5 Laws, Ordinances, Regulations, and Standards (LORS)

Paleontological resources are classified as non-renewable scientific resources and are protected by several federal and State statutes, most notably by the 1906 Federal Antiquities Act and other subsequent federal legislation and policies and by the state of California's environmental regulations (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological resources have been established for vertebrate fossils by the SVP (1995, 1996). Design, construction, and operation of the IEEC, including transmission lines, pipelines, and ancillary facilities, will be conducted in accordance with all LORS applicable to paleontological resources. A summary of the applicable LORS is presented in Table 5.17-1 and described below.

Table 5.17-1 Applicable LORS Regarding Paleontological Resources.

LORS	Applicability	AFC Reference	Project Conformity
Antiquities Act of 1906	Protects objects of antiquity from vandalism and unauthorized collecting on federal lands (currently no federal land)	Section 5.17.5	yes
CEQA, Appendix G	Fossil remains may be encountered by earth-moving activities	Section 5.17.4, Section 5.17.5	yes
Public Resources Code, Sections 5097.5/5097.9	Applies where Alternative B gas pipeline crosses Caltrans right-of-way at two locations	Section 5.17.5	yes

5.17.5.1 Federal LORS

Federal protection for significant paleontological resources would apply to the IEEC if any construction or other related project impacts were to take place on federally owned or managed lands. Federal legislative protection for paleontological resources stems from the

Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of antiquity on federal land. The project does not cross such lands.

5.17.5.2 State LORS

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of CEQA (Public Resources Code Sections 15000 et seq.) with respect to paleontological resources. CEQA's Appendix G (V)(c), Environmental Checklist Form (Public Resources Code Sections 21000 et seq.) provides guidance on determining significance, whether a project will "directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." Completion of the CEC environmental review process will complete the environmental analysis otherwise required by CEQA.

Other State requirements for paleontological resource management are in Public Resources Code Chapter 1.7, Section 5097.5, *Archaeological, Paleontological, and Historical Sites*. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. The Alternative B Moreno Valley natural gas pipeline route crosses Caltrans right of way at two locations. The project will comply with these requirements.

5.17.5.3 County LORS

Riverside County does not have mitigation requirements that specifically address potential adverse impacts to paleontological resources.

The Menifee North Specific Plan (County of Riverside 1994) provides specific mitigation measures for impacts to paleontological resources. These measures are included as the Applicant's proposed mitigation measures in Section 5.17.4.

5.17.5.4 Professional Standards

The Society of Vertebrate Paleontology (SVP 1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the SVP's assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines. The analysis performed for this project complies with these professional standards.

5.17.6 Involved Agencies and Agency Contacts

The lead agency for the protection of paleontological resources for this project would be the lead agency under the Warren-Alquist Act and CEQA, which in this case is the CEC.

5.17.7 Permits Required and Permit Schedule

No state or county agency requires a paleontological collecting permit to recover fossil remains discovered by construction-related earth moving on either state or private land in the project site.

5.17.8 References

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SECTION 6.0 LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) CONTENTS

6.0 LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) 6-1

6.1 INTRODUCTION 6-1

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Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance.....6-2

6.0 LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

6.1 INTRODUCTION

Table 6.1-1 provides a listing and summary of the laws, ordinances, regulations, and standards (LORS) that are or may be applicable to the Inland Empire Energy Center (IEEC). The LORS are presented by topic and organized into federal, state, local, and industry codes/standards where applicable. Table 6.1-1 includes the corresponding AFC section where compliance with each of the LORS is discussed.

Table 6.1-1 is arranged in five discrete subsubsections as follows:

Section		AFC Sections
6.1	Introduction	1.0
6.2	Need for Facility	2.0
6.3	Project Siting and Construction	5.1 through 5.17, and Appendices
6.4	Project Design and Operation	3.0 through 5.0, and Appendices
6.5	Environmental Information	5.1 through 5.17, and Appendices

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.1 Introduction	Section 1.0: Executive Summary	--	--	--	--
6.2 Need for Facility	Section 2.0: Project Objective and Need p. 2-1.	State	California Public Resources Code § § 25523(f), 25524 and, 20 California Code of Regulations (CCR) § 1741(b)(1).	California Energy Commission (CEC)	Inland Empire Power Project (IEEC) meets all demand conformance requirements.
6.3 Project Siting and Construction					
6.3.1 Engineering Geology	Appendix A: Foundations and Civil Engineering Design; Pages A1-A2, Appendix B: Structural and Seismic Engineering Design Criteria, p. B1-B8; Section 5.14.2 through 5.14.3, p. 5.14-1 through 5.14-12: Worker Safety.	Federal and State	29 United States Code (USC) § 651 et seq.; 29 Code of Federal Regulations (CFR) §§1901.1-1910, 1500; 29 CFR, Part 1926. Cal Occupational Safety and Health Administration (OSHA) (per 29 CFR § §1952.70-1952.175)	Federal OSHA	Specific occupational safety and health standards. IEEC will meet all standards.
	Appendices A and B; Section 5.4.5.1: Water Resources, Section 5.4.2.5, through Section 5.4.3 on p. 5.4-2, Table 5.4-8, p.5.4-2.	State	33 USC §1342 et. seq.	Santa Ana Regional Water Quality Control Board (SARWQCB) Region 8	Requires permits for specified discharges into waters of the United States. IEEC will provide notice of intent to SARWQCB to operate under and will comply with all General Industrial Activity Storm Water Permit requirements. Also Construction Permit.
	Appendices A and B, all, Appendix G, Geotechnical.	State	California Business and Professions Code §6700 et. seq., 6730, 6736, 6736	Board for Professional Engineers and Land Surveyors	Requires state registration to practice as a civil or structural engineer in California and that all plans, specifications, reports, or documents be prepared by or under the direction of a registered engineer. IEEC will comply with all requirements.
	Appendices A and B; Section 5.14: Worker Safety; Tables 5.14-6 and 5.14-8, p. 5.14-6 through 5.14-18.	State	California Labor Code §6500 et. seq.	California Occupational Safety and Health Administration (Cal OSHA)	Requires a permit for construction of trenches or excavation 5 feet or deeper into which personnel have to descend. IEEC will obtain necessary permits.
	Appendices A and B; Section 5.5.3: Geologic Hazards & Resources; p. 5.5-22 and 5.5-23.	Local	California Building Code (CBC) {latest edition available}	CEC, Riverside County Building Department	Sets building standards and requirements. IEEC will comply with all CBC requirements.
	Appendices A and B; Section 5.14: Worker Safety; Table 5.14-6, p. 5.14-16; Section 5.14-4, p. 5.14-12 through 5.14-17.	State	California Labor Code §6300 et. seq.; 8 CCR 1500 et. seq., 2300 et. seq., §3200 et seq.	Cal OSHA	Prescribes construction safety orders, industrial safety orders and work safety requirements. IEEC will comply with all safety requirements.
	Section 5.11.1.7, p. 5.14-16, Section 5.14-4, p. 5.14-12 through 5.14-17: Traffic and Transportation, p. 5-10.	Local	California Vehicle Code §35780 et. seq.	Department of Transportation, Riverside County	Requires a permit for transportation of oversize or overweight vehicles over state highways. IEEC will obtain all necessary permits.
	Appendices A and B; Section 5.5: Geologic Hazards & Resources; Table 5.5-5 through 5.5-24.	Local	Riverside County Code of Building Regulations.	CEC, Riverside County Building Department	Sets building standards and requirements for Riverside County. IEEC will comply with all applicable building standards and requirements.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Appendices A and B; Section 5.5: Geologic Hazards & Resources; Table 5.5-5, p. 5.5-24.	Local	Riverside County Flood Control and Water Conservation Hydrology Manual (County Hydrology Manual).	CEC, Riverside County Building Department	Specifies drainage and grading requirements. IEEC will comply with all drainage and grading requirements.
6.3.2 Civil and Structural Engineering	Appendices A and B; Section 5.14: Worker Safety; Tables 5.14-3,p. 5.14-13, Section 5.14.3, p. 5.14-12.	Federal and State	29 USC § 651 et seq.; 29 CFR §§1901.1-1910, 1500; 29 CFR, Part 1926.	OSHA; Cal. OSHA (per 29 CFR § §1952.70-1952.175)	Specific occupational safety and health standards. IEEC will meet all standards.
	Section 5.4: Water Resources; Table 5.4-2, p. 5.4-13.	State	33 USC §1342 et. seq.	SARWQCB	Requires permits for specified discharges into waters of the United States. IEEC will provide notice of intent to SARWQCB to operate under and will comply with all General Industrial Activity Storm Water Permit requirements. Also Construction Permit.
	Appendices A and B.	State	California Business and Professions Code §6700 et. seq., §§ 6730, 6736 6736	Board for Professional Engineers and Land Surveyors	Requires state registration practice as a civil or structural engineer in California and that all plans, specifications, reports, or documents must be prepared by or under the direction of a registered engineer. IEEC will comply with all requirements.
	Appendices A and B; Section 5.14: Worker Safety; Table 5.14-8, p. 5.14-18.	State	California Labor Code §6500 et. seq.	Cal OSHA	Requires a permit for construction of trenches or excavation 5 feet or deeper into which personnel have to descend. IEEC will obtain necessary permits.
	Appendices A and B; Section 5.14: Worker Safety; Table 5.14-7.	Local	California Building Code (CBC)	CEC, Riverside County Building Department.	Sets building standards and requirements. IEEC will comply with all CBC requirements.
	Appendices A and B; Section 5.14: Worker Safety.	State	California Labor Code §6300 et. seq.; 8 CCR 1500 et. seq., 2300 et. seq., §3200 et seq.	Cal OSHA	Prescribes construction safety orders, industrial safety orders and work safety requirements. IEEC will comply with all safety requirements.
	Section 5.11.7, Table 5.11-9, p. 5.11-2.	Local	California Vehicle Code §35780 et. seq.	Department of Transportation, Riverside County	Requires a permit for transportation of oversize or overweight vehicles over state highways. IEEC will obtain all necessary permits.
	Appendices A and B; Section 5.5: Geologic Hazards and Resources; Table 5.5-5, p. 5.5-24.	Local	Riverside County Code of Building Regulations.	CEC, Riverside County Building Department.	Sets building standards and requirements for the county. IEEC will comply with all applicable building standards and requirements.
	Appendices A and B; Section 5.5: Geologic Hazards and Resources: Table 5.5-5, p. 5.5-24.	Local	County Hydrology Manual	CEC, Riverside County Building Department.	Specifies drainage and grading requirements. IEEC will comply with all drainage and grading requirements.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.3.3 Mechanical Engineering	Appendices C and D; Section 5.14.2.1: Worker Safety, p. 5.14-5 through 5.14-12; Table 5.14-3, p. 5.14-13.	Federal and State	29 USC § 651 et seq.; 29 CFR §§ 1901.1-1910, 1500; 29 CFR, Part 1926	Federal OSHA; Cal. OSHA (per 29 CFR §§ 1952.70-1952.175	Specific occupational safety and health standards. IEEC will meet all standards.
	Appendices C and D; Section 5.5: Geologic Hazards and Resources.	State	CBC; California Plumbing Code	CEC	Sets building standards and requirements. IEEC will comply with all CBC requirements.
	Appendices C and D; Section 5.14.2.1: Worker Safety; Section 5.14.2.1, p. 5.14-5 through 5.14-12.	State	California Labor Code § 6300 et. seq.; 8 CCR 1500 et. seq., 2300 et. seq., §3200 et seq.	Cal OSHA	Prescribes construction safety orders, industrial safety orders and work safety requirements. IEEC will comply with all safety requirements.
	Appendices C and D; Section 5.12: Hazardous Materials Handling; Table 5.12-4, p. 5.12-8.	State	8 CCR Chapters 4-7	Cal OSHA	Prescribes requirements for flammable liquids, gases, and vapors. IEEC will comply with all requirements.
	Appendices C and D.	State	California Business and Professions Code § 6700 et. seq., 6730, 6735 & 6736	Board of Professional Engineers and Land Surveyors	Requires state registration to practice as a mechanical engineer and that all plans, specifications, reports, or documents be prepared by a registered engineer. IEEC will use registered engineers.
6.3.4 Electrical Engineering	Appendices D and E; Section 5.14: Worker Safety; Table 5.14-3,p. 5.14-13, Section 5.14.2.1, p. 5.14-5 through 5.14-12	Federal and State	29 USC § 651 et seq.; 29 CFR §§ 1901.1-1910, 1500; 29 CFR, Part 1926.	Federal OSHA; Cal. OSHA (per 29 CFR §§ 1952.70-1952.175)	Specific occupational safety and health standards. IEEC will meet all standards.
	Appendices D and E; Section 5.5.3: Geologic Hazards and Resources; p. 5.5-22 and 5.5-23.	State	CBC; California electrical Code	CEC	Sets building standards and requirements. IEEC will comply with all CBC requirements.
	Appendices D and E; Section 5.14: Worker Safety.	State	Labor Code §6300 et. seq.; 8 CCR 1500 et. seq., § 2300 et. seq., § 3200 et seq.	Cal OSHA	Prescribes construction safety orders, industrial safety orders and work safety requirements. IEEC will comply with all safety requirements.
	Appendices D and E; Section 5.12: Hazardous Materials Handling; Table 5.12-4.	State	8 CCR Chapters 4-7	Cal OSHA	Prescribes requirements for hot, flammable, poisonous, corrosive, and irritant substances. IEEC will comply with all requirements.
	Appendices D and E.	State	Business and Professions Code § 6700 et. seq., 6730, 6735 & 6736	Board of Professional Engineers and Land Surveyors	Requires state registration to practice as an electrical engineer and also requires all plans, specifications, reports, or documents be prepared by a registered engineer. IEEC will use registered engineers.
	Appendices D and E; Section 5.5: Geologic Hazards and Resources.	Local	Riverside County Code of Building Regulations	CEC	Sets building standards and requirements for Riverside County. IEEC will comply with all applicable engineering standards and requirements.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.4 Project Design and Operation					
6.4.1 Energy Center Reliability	Appendix E; Section 4.0: Safety and Reliability, Section 4.4, p. 4-10.	Industry	EPRI, NERC	Electric Power Research Institute, North American Electric Reliability Council	EPRI and NERC trade association standards will be followed.
6.4.2 Public Health / Worker Safety Protection	Section 5.14: Worker Safety, Section 5.14-3, 5.14-12, Section 5.14.2 through 5.14.2.2, p. 5.14-1 through 5.14-9.	Federal	OSHA, 29 USC 651 et seq.; 29 CFR 1910 et seq.; and 29 CFR 1926 et seq.	Fed-OSHA and Cal-OSHA	Project will meet employee health and safety standards for employer-employee communications, electrical operations, and chemical exposures.
	Section 5.14: Worker Safety, Section 5.14.2.1, p. 5.14-5.	Federal and State	Department of Labor, Safety and Health Regulations for Construction promulgated under Section 333 of the Contract Work Hours and Safety Standards Act, 40 USC 327 et seq.	Fed-OSHA and Cal-OSHA	Project will meet employee health and safety standards for construction activities. Requirements addressed by CCR Title 8, General Construction Safety Orders.
	Section 5.12: Hazardous Materials Handling; Table 5.12-4, p. 5.12-18.	Federal and Local	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 USC § 9601 et. seq.; 40 CFR Part 302.	National Response Center, Environmental Protection Agency, Region IX, and the Riverside County Environmental Health Department.	Prescribes requirements for notification of any specific release of hazardous substance, notification of potential injured parties, and demonstration of financial responsibility. In the event of a specified release, IEEC will follow all specified requirements.
	Section 5.12: Hazardous Materials Handling; Section 5.12.3.4, p. 5.12-14 and 5.12-15.	State and Local	Emergency Planning and Community Right-to-Know, 42 CFR 11001 et. seq.	Office of Emergency Services and the Riverside County Environmental Health Department.	IEEC will meet all requirements of Cal. Health and Safety §§25500 to 25541; 19 CCR §§ 2720-2734 which implement the requirements of 42 CFR 11001 et. seq.
	Section 5.12: Hazardous Materials, Section 5.12.3, p. 5.14-14 and 5.14-15; Section 5.14: Worker Safety.	Local	California Uniform Fire Code, Article 80 and others.	CEC; Riverside County Fire Department	Project will meet requirements for the storage and handling of hazardous materials (Article 80), flammable and combustible liquids (Article 79), and for obtaining permits (Article 4).
	Section 3.0: Facility Description Section 3.4.13, p. 3-38; Section 4.0: Safety and Reliability; Sections 4.1.2, p. 4.1-1 and 4.1-2; Section 5.14: Worker Safety; Table 5.14-5.	Industry and Local	National Fire Protection Association standards.	Riverside County Fire Department	Project will meet standards necessary to establish a reasonable level of safety and property protection from the hazards created by fire and explosion.
	Section 5.14: Worker Safety, Table 5.14-6, p. 5.14-16 and 5.14-17.	State	Cal. Labor Code Div. 5, Parts 1, 3, 6 & 7; 8 CCR.	Cal OSHA	Project will meet requirements for a safe and hazard-free working environment. Categories of requirements include General Industry Safety Orders, General Construction Safety Orders, and Electrical Safety Orders.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 5.15: Public Health; Table 5.15-7, Appendix K-9.	State	California Public Resources Code § 25523(a); California Health & Safety Code, Part 6, § 44300 et seq., and Division 2, Chapter 5, Article 1, Appendix B, Part (I),	CEC	Project will follow Health Risk Assessment Guidelines and will prepare a quantitative Health Risk Assessment.
	Section 5.12: Hazardous Materials Handling; Table 5.12-4.	State and Local	California Health and Safety Code § 25500 to 25543.3; 19 CCR §§ 2720-2734.	Office of Emergency Services and the Riverside County Environmental Health Department	IEEC will follow code, which establishes inventory, reporting, business, and area planning requirements with respect to hazardous and acutely hazardous materials in accordance with the federal Emergency Planning and Community Right-to-Know Act of 1986.
	Section 5.15: Public Health; Table 5.15-7; Section 5.2: Air Quality; Table 5.2-36, Table 5.2-38.	State	California Health & Safety Code, Part 6, § 44300 et seq.	South Coast Air Quality Management District (SCAQMD)	A Health Risk Assessment has been performed for toxic air pollutants. The Authority to Construct permit will limit energy center emissions. IEEC will comply with permit requirements.
	Section 5.12: Hazardous Materials Handling; Section 5.12.1.2, p. 5.12-3 through 5.12-6, Section 5.12.3.4, p. 5.12-14 and 5.12-15.	State and Local	Cal. Health & Safety Code § 25500 to 25543.3; 19 CCR Division 2, Chapter 4.5	California Office of Emergency Services (OES) and Riverside County Environmental Health Department	Project will follow CalARP regulations, which merge federal and state programs for the prevention of accidental releases.
	Section 3.4-1; Section 5.7.5.2; Land Use; p. 5.7-39.	Local	Riverside County Zoning Ordinance.	Riverside County Transportation and Land Management Agency	Project will provide safety setbacks as required by Riverside County Fire Department.
	Appendices A-E; Section 5.14: Worker Safety.	Industry	See Appendices A-E.	See Appendices A-E	As stated in Appendices A-E and Section 5.14, IEEC will comply with industry standards regarding worker safety and health protection.
	Section 3.0: Facility Description, 3.4-10; Section 4.0: Safety and Reliability, Sections 4.1.2 and 4.1.3.	Local	National Fire Protection Association standards.	Riverside County Fire Department	Project will meet standards necessary to establish a reasonable level of safety and property protection from the hazards created by fire and explosion.
6.4.3 Transmission Line Safety and Nuisance	Section 4.2.1; p. 4-2 and 4-3.	Federal	49 USC § 1348; 14 CFR Part 77, "Objects Affecting Navigable Airspace."	Federal Aviation Administration (FAA)	"Notice of Proposed Construction or Alteration" (NCPA), FAA Form 7460-1H, need not be submitted since transmission poles and HRSG stacks do not meet height and proximity to landing strip criteria.
	Section 4.2, p. 4-2 through 4-6.	Federal	47 USC § 15.25, "Operating Requirements, Incidental Radiation."	FAA	Project will be designed to minimize communications interference.
	Sections 3.6, 3-43 through 3-48.	State	Cal. Pub. Res. Code, § 25000 et. seq., Warren-Alquist Act, § 25520 Subdivision (g).	CEC	Description of transmission line, including the right of way, will be provided.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 4.2.3, p. 4-5.	State	General Order 52(GO-52) CPUC, "Construction and Operation of Power and Communication Lines."	California Public Utility Commission (CPUC)	Project will be designed to minimize inductive interference.
	Appendix E.	State	General Order 95 (GO-95) CPUC, "Rules for Overhead Electric Line Construction."	CPUC and CEC	Design and construction of transmission line will be in compliance with GO-95.
	Sections 5.7.5.2 and 5.7.2.2.	Local	Riverside County General Plan - Energy Element.	Riverside County Transportation and Land Management Agency	Project will be designed and constructed in compliance with policies on transmission lines.
	Section 4.2.3, p. 4-5.	Industry	Radio & Television Interference (RI/TVI) Criteria.	CEC	Project will be designed to minimize radio and television interference and will comply with RI/TVI criteria..
6.5 Environmental Information					
6.5.1 Introduction	--	--	--	--	--
6.5.2 Air Quality	Section 5.2: Air Quality (all); Appendix K.	Federal, State and Local	Federal Clean Air Act (FCAA), as amended, 42 USC §§7470-7491, 7411, 7412, 7470, 7491, 7501 *et. seq.* 7651& 7661.	EPA, Region IX, California Air Resources Board (CARB) and SCAQMD (as delegated)	Requires review of specified new and modified stationary sources. Project will comply with all pertinent sections of the FCAA. Most sections are implemented at the state and local level (see below).
	Section 5.2.6.1, p. 5.2-59 through 5.2-62.	Federal	40 CFR 52.21	EPA Region IX	Applicant will apply for PSD permit and project will satisfy all PSD requirements.
	Section 5.2.6.1, p. 5.2-59 through 5.2-62.	Federal and State	40 CFR § 60 Subparts A, Db, and GG, SCAQMD Regulation IX.	SCAQMD	Project's controlled emissions will satisfy NSPS for stationary gas turbines. NO_x emissions will be less than NSPS limits. Natural gas will satisfy NSPS fuel requirements for SO_2.
	Section 5.2.6.1, p. 5.2-59 through 5.2-62.	Federal and State	FCAA Title V, 40 CFR 70 SCAQMD Regulation XXX.	SCAQMD	Establishes comprehensive permit program for major stationary sources. Applicant will file an application **prior to construction**, as required, to obtain a Title V Permit to Operate.
	Section 5.2.6.1, p. 5.2-59 through 5.2-62.	Federal	FCAA Title IV, 40 CFR 72, 73 and 75, SCAQMD Regulation XXXI and Rules 218, 281.1.	EPA, Region IX	Requires reduction in adverse effects or acid rain through redirections in emissions. SO_2 allowances will be acquired by Applicant. Required SO_2 and CO emissions will be calculated. If applicable, monitoring plans will be prepared and emissions will be monitored for acid rain programs.
	Section 5.12.3.4, p. 5.12-14 through 5.12-15.	Federal and Local	FCAA 40 CFR 68 et seq.; 19 CCR Div.2, Chap. 4.5.	EPA, CARB, CEC, and the Riverside County Department of Environmental Health	Provides requirements for Risk Management Plan/Accidental Release Programs. IEEC will comply with applicable requirements.
	Section 5.2: Air Quality (all).	State	California Clean Air Act of 1988 (CCAA); California Health & Safety Code § 42300.	SCAQMD with CARB oversight	Project will comply with CCAA requirements through compliance with all applicable SCAQMD rules.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 5.2.3.2.5, p. 5.2-58 and Section 5.2.6.1, p. 5.2-60.	State	California Health and Safety Code, § 44360-44366.	SCAQMD with CARB oversight.	Applicant will file Air Toxics "Hot Spots" information, as required, after start of operation. Applicant has prepared a Health Risk Assessment for air toxics, see Section 5.15.
	Section 5.2: Air Quality (all); Section 5.2.6.2, p. 5.2-63 and 5.2-64.	State	California Public Resources Code §25523(a); 20 CCR §§ 1752, 1752.5, 2300-2309 & Div.2, Chap. 5, Art.1, Appendix B, Part (k).	CEC	Requires analysis of air quality impacts. IEEC will prepare analysis.
	Section 5.2 (all), Appendix K.	State	California Health & Safety Code §§ 42300 and 42301, CCR § 17455; and SCAQMD Regulation XIII and XVII (NSR, PSD). Title 2, 1744.5	SCAQMD with CARB oversight	New source permitting requirements will be satisfied via SCAQMD's review and issuance of a Determination of Compliance and Certification by CEC. Furthermore, project will apply BACT and emissions will be offset by valid ERCs, as required. Project will not cause a violation of state or federal AAQS.
	Section 5.2.6, p. 5.2-59 through 5.2-72; Appendix K.	Local	SCAQMD Rules 218, 218.1.	SCAQMD	Requires continuous monitoring. IEEC will utilize continuous emissions monitoring equipment.
	Section 5.2.6, p. 5.2-59 through 5.2-72; Appendix K.	Local	SCAQMD Rules 204, 217.	SCAQMD	Establishes APCO authority to require source testing. IEEC will comply with source testing requirements.
	Section 5.2.6, p. 5.2-59 through 5.2-72; Appendix K.	Local	SCAQMD Regulation II (Rules 201-222) Regulation XIII-NSR, and XVII-PSD.	SCAQMD	Review of new stationary sources. IEEC will submit a permit to construct application.
	Section 5.2.6, p. 5.2-59 through 5.2-72; Appendix K.	State and Local	SCAQMD Regulation XXX.	SCAQMD	IEEC will obtain a Title V permit.
	Section 5.2.6, p. 5.2-59 through 5.2-72; Appendix K.	State	SCAQMD Regulation XXXI 40 CFR 72, 73, and 75.	SCAQMD	IEEC will comply with federal acid rain requirements.
	Section 5.2.6.3, p. 5.2-64; Appendix K.	State	SCAQMD Regulation IX .	SCAQMD	IEEC will comply with NSPS requirements.
	Section 5.2.6.3, p. 5.2-64; Appendix K.	State	SCAQMD Regulation IV, Rule 402.	SCAQMD	IEEC emissions will not cause a nuisance.
	Section 5.2.6.3, p. 5.2-64; Appendix K.	Local	SCAQMD Regulation IV, Rules 404, 405.	SCAQMD	Particulate matter emission shall not exceed 0.1 grains/dscf or Process Weight provisions.
	Section 5.2.6.3, p. 5.2-64; Appendix K.	Local	SCAQMD Regulation IV, Rules 403, 403.1.	SCAQMD	IEEC will comply with fugitive dust suppression requirements.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.5.3 Biological Resources	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	Federal	Endangered Species Act of 1973; 16 USC § 1531 et seq.; 50 CFR 17.1 et. seq.	US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)	Project will provide mitigation for the protection and management of federally-listed threatened or endangered plants and animals and their habitats, and will obtain necessary authorizations and approvals.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	Federal	Fish and Wildlife Coordination Act (Section 7); 16 USC §§ 742 et seq., 16 USC 1531 et seq., and 50 CFR 17.	USFWS	Requires consultation with USFWS if project may jeopardize a listed species. Project will comply by submitting biological assessment for the project impacting federal lands.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	Federal	Migratory Bird Treaty Act; 16 USC §§ 703-711; 50 CFR Subchapter B.	USFWS	Project will provide protection as necessary for migratory birds.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	State	California Endangered Species Act of 1984; California Fish & Game Code §§ 2050-2098. Title 14 CCR § 15000 et seq.	California Department of Fish and Game (CDFG)	Project will provide mitigation for the protection and management of state-listed species. CDFG consultation requirements will be met by submitting biological assessment and by obtaining a Section 2081 permit.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	State	Native Plant Protection Act of 1977; Cal. Fish & Game Code § 1900 et seq.	CDFG	Project will provide analysis and mitigation for all rare and endangered plants.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	State	California Fish & Game Code § 3511, 4700, 5050, 5515.	CDFG	Prohibits the taking of fully protected birds, mammals, reptiles and amphibians, and fishes. Project will provide mitigation for any negative effects to these species.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	State	California Fish & Game Code § 16003.	CEC	Project will submit Streambed Alteration Agreement for any streambeds disturbed in the project area.
	Section 5.3-7, p. 5.3-39 through 5.3-41, Table 5.3-12 and Table 5.3-13, p. 5.3-42, Appendix J.	State	California Public Resources Code § 25523(a); 20 CCR §§ 1752.5, 2300 - 2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i).	CEC (with comment by the CDFG)	IEEC will provide measures to assure protection of rare or endangered species.
	Section 5.3.5, p. 5.3-37 through 5.3-39.	Federal and State	Endangered Species Acts.	Riverside County Transportation and Land Management Agency	Project will be compatible with any threatened or endangered species habitat. Mitigation measures have been proposed by applicant and will be refined through consultation with state and federal agencies.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.5.4 Water Resources	Section 5.4.5.1, p. 5.4-25 through 5.4-26, Table 5.4-8, p. 5.4-27.	Federal and State	Clean Water Act § 402, 33 USC § 1342; 40 CFR Parts 122 – 136.	SARWQCB, and the EPA, Region IX	Project will comply with the Clean Water Act and obtain a general storm water discharge permit for construction and operation. If applicable, IEEC will obtain a § 404 permit.
	Section 5.4.5.2 ; Section 5.4.1.3.8 ; Section 5.4.2.5, p. 5.4-23 through 5.4-24.	State	Cal Water Code §§ 461; California Constitution, Article 10 § 2	State Water Resources Control Board	Project will avoid the waste or unreasonable uses of water, and comply with all regulations governing methods of use and methods of water diversion.
	Section 5.4.2.1, p. 5.4-17 through 5.4-18 ; Section 5.4.2.2, p. 5.4-19 through 5.4-20 ; Section 5.4.2.3, p. 5.4-20 through 5.4-22 ; Section 5.4.2.4, p. 5.4-22 through 5.4-23 ; Section 5.4.2.5, p. 5.4-23.	State	State Water Resources Control Board, Resolution 75 – 58 (June 18, 1975)	State Water Resources Control Board and the CEC	Project complies with policy on the use and disposal of inland water used for energy center cooling.
	Section 5.4: Water Resources (all).	State	Cal. Pub. Res. Code § 25523(a); 20 CCF §§ 1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1).	CEC	Requires information concerning proposed water resources and water quality protection. All materials fulfilling this requirement are found in Section 5.4.
	Section 5.4-5, p. 5.4-25.	Local	Regulations for Discharge and Sewer Use	Eastern Municipal Water District.	Direct Permit to the Nonreclaimable Waste Line, Eastern Municipal Water District
6.5.5 Geological Resources and Hazards	*Addressed in Section 6.3.1 of this table*				
6.5.6 Agriculture and Soils	Section 5.6.3, p. 5.6-17 through 5.6-19.	Federal and State	Clean Water Act of 1977 (including 1987 amendments) 33 USC § 1342	SARWQCB.	Project will implement erosion control measures such that it will meet discharge requirements relative to sediment due to accelerated erosion.
	Section 5.6: Agriculture and Soils (all).	State	Cal. Pub. Res. Code § 25523(a); CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (I)	CEC	Project will submit information to the CEC concerning potential environmental impacts, including impacts to agriculture and soils.
	Section 5.6.2, p. 5.6-12 through 5.6-17; Section 5.6.3, p. 5.6-17 through 5.6-19.	State	California Environmental Quality Act, California Public Resources Code § 21000 *et seq.*; Guidelines for Implementation of the California Environmental Quality Act of 1970, 14 CCR § 15000 - 15387, Appendix G	CEC	IEEC will not cause substantial flooding, erosion or siltation and, therefore, will not have a significant impact.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 5.6.2, p. 5.6-12 through 5.6-17; Section 5.6.3, p. 5.6-17 through 5.6-19.	State	California Porter-Cologne Water Quality Control Act of 1972; Cal. Water Code, § 13260 – 13269, 23 CCR Chapter 9	CEC, the SARWQCB and the State Water Resources Control Board (SWRCB)	Project will provide adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls; it will also fulfill waste discharge requirements concerning potential surface water pollution from project area runoff (Storm Water Pollution Prevention Plan).
	Section 5.6.5.5, p. 5.6-22; Section 5.6.7, p. 5.6-22.	Local	Riverside County General Plan – Conservation Element	Riverside County Transportation and Land Management Agency	Project will comply with General Plan.
	Section 5.6.7, p. 5.6-22.	Local	Riverside County Hydrology Manual	Riverside County Transportation and Land Management Agency	IEEC will grade and design drainage system to meet criteria.
	Section 5.6.7, p. 5.6-22.	Local	Riverside County Code of Building Regulation Grading Ordinance	Riverside County Transportation and Land Management Agency	IEEC will comply with grading code chapter 17.28.
	Section 5.6.2, p. 5.6-12 through 5.6-17 ; Section 5.6.3, p. 5.6-17 through 5.6-19.	Industry	Soil Conservation Service (SCS), *National Engineering Handbook* (1983), Sections 2 and 3	U.S. Department of Agriculture (Natural Resources Conservation Service) and California Department of Conservation	Project will implement standards for the planning, design, soil conservation practices and protection of prime agricultural land.
6.5.7 Land Use	Section 5.7: Land Use (all).	State	Cal. Pub. Res. Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300-2309 and Chapter 2, Subchapter 5, Appendix B, Part (1)(3) and (4).	CEC	IEEC will evaluate compatibility of the proposed project with relevant land use plans.
	Section 5.7.5.1, Table 5.7-6, p. 5.7-42.	State	Cal. Streets and Highway Code § 670.	CalTrans	Project will obtain any applicable Encroachment Permit(s).
	Section 5.7.2.2, p. 5.7-32.	Local	Riverside County General Plan and Menifee North Specific Plan (MNSP).	Riverside County Transportation and Land Management Agency	IEEC is consistent with all relevant provisions of the general and specific plans.
	Section 5.7.1.3; p. 5.7-25 through 5.7-28 ; Section 5.7.2.2, p. 5.7-32.	Local	Riverside County Zoning Ordinance	Riverside County Transportation and Land Management Agency	IEEC is consistent with zoning with a Conditional Use Permit and minimum lot sizes and height variance.
6.5.8 Socioeconomics	Section 5.8.3, p. 5.8-10.	Federal	Executive Order 12898 (Environmental Justice)	EPA for Executive Branch.	Project will have no minority-based or income-based environmental justice issues.
	Section 5.8.2; p. 5.8-4 to 5.8-9.	State	Cal. Pub. Res. Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Appendix B, Part (I); 14 CCR § 15131	CEC	Inclusion of economic or social effects analysis in AFC.
	Section 5.8.2.1, p. 5.8-7.	Local	Cal. Ed. Code § 17620; Cal. Gov. Code § 65995.	Riverside County Superintendent of Schools	Project will comply by providing school impact fees for development projects within school districts, as required.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
6.5.9 Noise	Section 59.2, p. 5.9-4 through 5.9-12, Figure 5.9-6.	Federal	Noise Control Act of 1972; 42 USC § 4901; 40 CFR Parts 201-211; EPA 1974 Noise Guidelines	EPA	Project noise (Ldn) at the nearest residence will be well below 55 dBA.
	Section 5.9.4: Worker Safety, p. 5.9-25; Section 5.14.2, p. 5.14-1 through 5.14-11.	Federal	OSHA (29 CFR § 1910 et seq.)	Fed/OSHA	Project will comply with worker noise exposure standards. High noise areas will be posted and a hearing conservation program implemented.
	Section 5.9.4: Worker Safety, p. 5.9-25; Section 5.14.2, p. 5.14-1 through 5.14-11.	State	Cal/OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, § 5095, et seq.)	Cal/OSHA	Project will comply with worker noise exposure standards. High noise areas will be posted and a hearing conservation program implemented.
	Section 5.9.3.2 and 5.9.3.3, p. 5.9-14 through 5.9-24.	State and Local	California Vehicle Code, Sections 23130 and 23130.5	California Highway Patrol and the Riverside County Sheriff's Office	Construction of the IEEC will not require vehicles that exceed the allowable vehicular noise levels.
	Section 5.9, all; Section 5.9.6.4, p. 5.9-30.	Local	Riverside County General Plan – Noise Element, 1989 and MNSP.	Riverside County Transportation and Land Management Agency	Project is within allowable noise standards.
6.5.10 Visual Resources	Section 5.10.1 through 5.10.7, p. 5.10-30 through 5.10-37; Table 5.10-3, p. 5.10-28 and 5.10-29.	Local	Multiple Planning and Local Agencies	Riverside County Transportation and Land Management Agency	Project is consistent with local land use policies, setbacks, and landscaping.
6.5.11 Traffic and Transportation	Section 5.12.3.3, p. 5.12-13.	Federal and State	49 CFR, Chapter II, Subchapter C; and Chapter III, Subchapter B	Federal Department of Transportation and California Department of Transportation (CalTrans).	IEEC will meet standards for the transportation of hazardous materials.
	Section 5.11.17, Table 5.11-9, p. 5.11-24.	State	Cal. Vehicle Code, § 35780; Cal. Streets & Highways Code §§ 660-711; 21 CCR §§ 1411.1-1411.6	CalTrans	IEEC will obtain transportation permits for all overload vehicles transporting over state highways.
	Section 5.11.7, Tables 5.11-8 and 5.11-9, p. 5.11-24.	State	Cal. Streets and Highways code §§ 117, 660-711	CalTrans	IEEC will obtain encroachment permits.
	Section 5.11.7, Tables 5.11-8 and 5.11-9, p. 5.11-24.	State	Cal. Vehicle Code § 31300 et seq.	CalTrans	IEEC will comply with all requirements regarding transportation of hazardous materials on state highways.
	Section 5.11.1.8, p. 5.11-11, Table 5.11-1, p. 5.11-12.	State	Cal. Veh. Code § 31030	CalTrans	IEEC will comply with all specified commercial shipping routes.
	Section 5.11.5, p. 5.11-22.	Local	Riverside County General Plan, Transportation and Circulation Element	Riverside County Transportation and Land Management Agency	Sets forth goals and policies for County transportation and traffic systems. IEEC will be consistent with applicable goals and policies.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 5.11.5, p. 5.11-12.	Local	Regional Transportation Plan	South Coast Association of Governments (SCAG)	The Regional Transportation Plan (RTP) establishes regional transportation goals, policies, objectives, and actions for various modes of transportation, including intermodal and multimodal transportation activities. The RTP is implemented through the County Transportation Improvement Program (TIP). IEEC will comply with applicable goals, policies and objectives.
6.5.12 Hazardous Materials Handling and Hazardous Waste Management	Section 5.13.6, p. 5.3.10.	Federal	RCRA; 42 USC § 9601 et seq.; 40 CFR Parts 260-272	EPA (Region IX) and Cal-EPA, Department of Toxic Substances Control (DTSC)	Project will comply with all waste management guidelines established through RCRA.
	Section 5.13.6, p. 5.3.10.	Federal	CERCLA ("Superfund'), 42 USC 9601 et seq. As amended by SARA, Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III), 42 USC § 11001 et seq.; 40 CFR Parts 350, 355 and 370	EPA, Region IX, National Response Center, and Riverside County Environmental Health Department	Project will comply with CERCLA - release notification requirements; SARA Title III - reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely toxic substances.
	Section 5.13.6, p. 5.3.10.	Federal	29 USC § 651, 29 CFR § 1910 et seq. and § 1926 et seq.	EPA (Region IX) and FED/OSHA	Project will meet requirements for equipment used to store and handle hazardous materials necessary to protect workers.
	Section 5.13.6, p. 5.3.10.	State	49 CFR, Parts 172, 173, and 179	California Highway Patrol (CHP) and Federal Department of Transportation	Standards for labels, placards, and markings on hazardous waste shipments are the responsibility of the transporters.
	Section 5.13.6, p. 5.3.10.	State	Hazardous Waste Control Act of 1972, as amended; Cal. Health & Safety Code 25100 et seq.; 22 CCR 66001 et seq.	EPA, Region IX; the DTSC; and the Riverside County Environmental Health Department	Project will meet all requirements for the management of hazardous wastes dictated by the HWCA.
	Section 5.12, all.	State	8 CCR § 339, § 3200 et seq., 5139 et seq., and 5160 et seq.	Cal/OSHA	Address control of hazardous substances.
	Section 5.15, Public Health (All); Appendix K-9.	State	California Public Resource Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Division 2, Chapter 5, Article 1, Appendix B, Parts (!).	CEC	Project will follow Health Risk Assessment Guidelines and will prepare a quantitative health risk assessment.
	Section 5.12.3.4, p. 5.12-14.	Local	Cal. Health & Safety Code §§ 25500 – 25543.3. 19 CCR § 2720-2734	Riverside County Environmental Health Department and the Riverside County Fire Department	Hazardous Materials Business Plan (HMBP) will be submitted 30 days prior to start of operations.

Table 6.1-1 Inland Empire Energy Center Project Summary of LORS and Compliance (Continued)

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
	Section 5.12.5.2, Section 5.12.3.4, p. 5.12-14.	Local and State	California Accidental Release Program (CalARP), Cal. Health & Safety Code § 25531 et seq.	Riverside County Fire Department and Environmental Health Department	A Risk Management Program is needed and will be prepared.
	Section 5.12, all	Local and State	California Fire Code, Article 80 and others	Riverside County Fire Department	Project will meet requirements for the storage and handling of hazardous materials (Article 80), flammable and combustible liquids (Article 79), and for obtaining permits (Article 4).
6.5.14 Worker Safety	*Addressed in Section 6.4.2 above*	--	--	--	--
6.5.15 Public Health	*Addressed in Section 6.4.2 above*	--	--	--	--
6.5.16 Cultural Resources	*Addressed in Section 6.5.17 below*	--	--	--	--
6.5.17 Cultural and Paleontological Resources	Section 5.16.4, p. 5.16-21; Section 5.16.5, p. 5.16-21 and 5.16-22; Section 5.16.6, p. 5.16-22 through 5.16-28; Section 5.16.7, p. 5.16-23.	Federal and State	National Historic Preservation Act of 1966 (NHPA), as amended; 16 USC § 470 et. seq.; Section 106; 36 CFR 800	State Historic Preservation Officer (SHPO) and the federal lead agency Western	If project is subject to NHPA, project-related findings will be prepared in consultation with the SHPO and the Advisory Council on Historic Preservation. As necessary, IEEC it will implement procedures for dealing with cultural resources discovered during construction.
	Section 5.16.1.5, p. 5.16-14; Section 5.16.2, p. 5.16-15 through 5.16-20; Section 5.16.4, p. 5.16-21.	Federal	Archaeological Resources Protection Act of 1979 16 USC 470aa *et. seq.*	Western	Any archeological work will not destroy, damage, or removal cultural resources on Federal lands.
	Section 5.16.1.5, p. 5.16-10 and 5.16-11.	Federal	Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001)	Western	Project will follow guidelines that establish mechanism for right of Indian tribes to claim ownership of certain cultural items as necessary.
	Section 5.17: Paleontological Resources (all)	State	California Environmental Quality Act (California Public Resources Code § 15000 et seq.)	CEC	Project will follow formal guidelines related to avoiding damages, determination of significance, and evaluating impacts, and mitigation for cultural and paleontological resources.
	Section 5.16.5, p. 5.16-21 and 5.16-22.	State and Local	California Public Resources Code § 5097.98; California Health & Safety Code §7050.5	County Coroner	Project will allow for the determination of origin of human remains by the coroner and subsequent coordination with NAHC.

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