COSUMNES POWER PLANT PROJECT

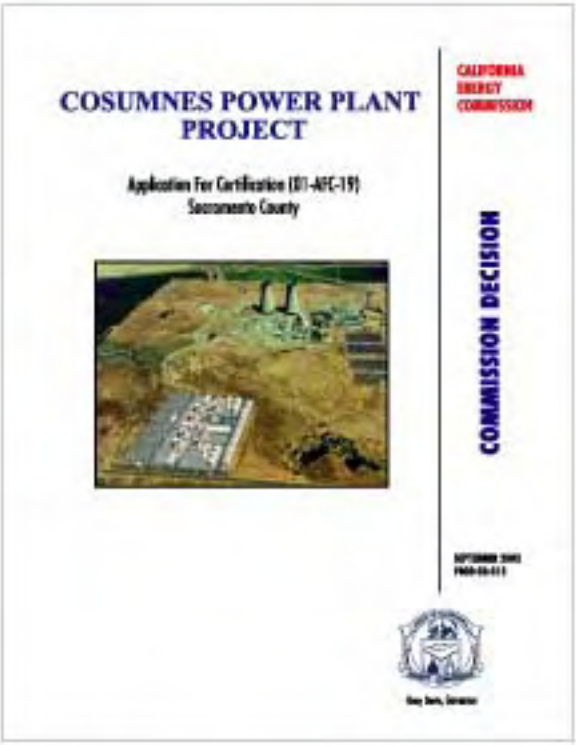
Application For Certification (01-AFC-19)
Sacramento County

CALIFORNIA ENERGY COMMISSION

COMMISSION DECISION

SEPTEMBER 2003
P800-03-013

Gray Davis, Governor



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EXECUTIVE SUMMARY:

The Energy Commission approves Phase 1 of the Cosumnes Power Plant project, proposed in two 500 MW phases, adjacent to its Rancho Seco Nuclear Power Plant, near Herald, California, together with the following highlighted measures to mitigate potential environmental and community impacts:

ENERGY RESOURCES:	✓ The combined cycle project will provide needed generating capacity for SMUD customers.
AIR QUALITY:	✓ The power plant will use state-of-the-art Best Available Control Technology to minimize emissions. ✓ Complete offsets will be used to compensate for any pollutant for which the Sacramento Metropolitan Air Quality Management District is non-attainment.
WATER RESOURCES:	✓ SMUD will use Zero Liquid Discharge to reduce use of potable water from the Folsom South Canal. For Phase 2, SMUD will use treated wastewater if reasonably available.
LAND USE:	✓ Use of the existing Rancho Seco site, plus its existing transmission lines, will use existing infrastructure and reduce land use impacts.
SOCIOECONOMICS	✓ Project capital cost is $595 million. ✓ Construction will create 381 peak construction jobs and a total payroll of $60 million. ✓ Operation requires 20 new positions.
TRAFFIC & TRANSPORTATION	✓ Safety measures, including signage, to protect children in the school bus zone.

In the event SMUD files an Application for Certification of Phase 2 (500 MW) of the Cosumnes Power Plant, the Energy Commission's review shall be limited to Air Quality, Water Resources (including the use of recycled water for cooling based upon the stipulation between SMUD and Commission staff), and Transmission System Engineering, unless any of the circumstances identified in the CEQA Guidelines, section 15162 (a)(1)-(3) regarding substantive changes or new information have occurred or there have been changes to applicable law.

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PROJECT DESCRIPTION

On September 13, 2001 the Sacramento Municipal Utility District (SMUD or "applicant") filed an Application for Certification (AFC) with the California Energy Commission for the construction and operation of the Cosumnes Power Plant (CPP), a proposed nominal 1,000-megawatt (MW) natural gas-fired, combined-cycle electric generating facility.

The proposed site would be located approximately 25 miles southeast of the City of Sacramento, in Sacramento County. The project would be located on approximately 30-acres of an overall 2,480-acre area owned by SMUD. The project site is generally bounded by the Rancho Seco Nuclear Plant (currently being decommissioned) to the north, Rancho Seco Reservoir to the east, State Route 104 (also known as Twin Cities Road) to the west, and Clay East Road to the south.

Land immediately surrounding the site is owned by SMUD. The nearest residence (a trailer) was relocated farther southwest of the site. The nearest permanent residences are located approximately 1.1 miles southwest of the site on Kirkwood Road.

SMUD is proposing to build the project in two 500 MW phases, with the first phase commencing construction in 2003 and commercial operation in 2005. SMUD will decide in 2003 whether to proceed with Phase 2 or to defer seeking approval for and the construction of Phase 2 to a future date. Although both phases will be examined in this proceeding, only the first 500 MW will actually be considered for licensing.

SMUD customers would be the first in line to receive electricity produced from the project.

Project Components

The following are the major components of both phases of the power plant:

- Four General Electric 7FA combustion turbine generators (CTGs) equipped with dry, low oxides of nitrogen (NOx) combustors;
- Four heat recovery steam generators (HRSGs) (without duct burners);
- Two condensing steam turbine generators (STGs);
- Deaerating surface condensers;
- Two 9-cell mechanical-draft evaporative cooling towers; and
- A zero-liquid discharge system.

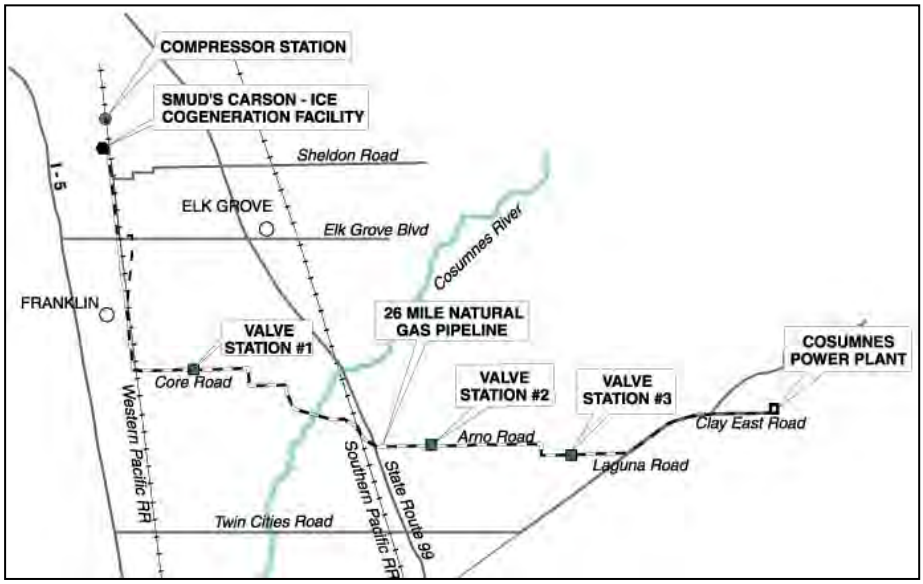
Each phase would have two combustion turbines, two HRSG, and one condensing steam turbine, and would utilize mechanical–draft cooling towers and a zero-liquid discharge system.

Natural Gas Pipeline

Natural gas for the first 500 MW (Phase 1) of the project would be supplied to the project site by extending a natural gas pipeline 26 miles that would originate at the Carson Ice-Gen cogeneration Facility, in Sacramento County. In general, the natural gas pipeline alignment follows the Union Pacific Railroad right-of-way south, jogging at Elk Grove Boulevard and continuing south on Franklin Boulevard to Core Road. Then the alignment travels eastward along Core Road, continuing east and southeast through agricultural land to Eschinger Road. The pipeline would then cross the Cosumnes River and State Route 99 to Arno Road. The alignment would continue east along Arno Road to Valensin Road, Twin Cities Road (State Route 104), and Clay East Road to the CPP site. SMUD revised its initial route for approximately one mile to avoid impacts to sensitive habitat within the Laguna Stone Lake Wetland Preserve.

Gas pipeline installation methods include trenching (e.g., open-cut or soil excavation), boring (e.g., a boring machine with an auger or ramming device to “jack” the pipe into place), and horizontal direction drilling (HDD) (e.g., a pilot hole is drilled and the pipe is pulled through the hole). Construction would be limited to a designated construction corridor, generally 75 feet in width or less (AFC, §8.2.5.2).

Two new natural gas compressor stations would be required to fuel Phase 2 of the project. One compressor station would be located at the existing connection of SMUD's pipeline to Pacific Gas & Electric's backbone pipeline 400/401 on County Road 29 near County Road 88 in Yolo County. The compressor station would be surrounded on four sides by an acoustical wall or in an acoustical enclosure for noise attenuation



The other compressor station would be located near SMUD's existing Valve 190 station in Elk Grove, within the buffer area of the Sacramento Regional Wastewater Treatment Plant.

One new natural gas pipeline interconnection station and three new gas pipeline valve stations are also required for the project. All mainline valves would be below ground at these stations. The only items anticipated to be above ground would be the high head extensions for the valves (about 3.5 feet above the ground surface), a blow off stack (about 8 feet above the ground surface and 10 inches in diameter), and a remote terminal unit (to send and receive information regarding natural gas flow rates, pressures, temperatures, valve positions, station entry, etc.). Each remote terminal unit would be enclosed in a 5-foot x 8-foot x 8-foot high structure. A slatted 6-foot cyclone fence topped with barbed wire would enclose each valve station. (AFC, §1.1.2)

SMUD proposes to use approximately 5,300 acre-feet (af) of water per year to meet both phases of the project's cooling and process water requirements. SMUD has an existing water service contract with the U.S. Bureau of Reclamation that expires in 2012 for delivery of a maximum of 75,000 af per year via the Folsom-South Canal (which originates at Lake Natoma, which is located approximately 25 miles north of the site on the American River). Of this amount, 15,000 af is water that was originally assigned to SMUD by the city of Sacramento and the remaining 60,000 af is Central Valley Project (CVP) water.

The point of delivery of the CVP water is through an existing turnout located approximately 700 feet upstream from the Laguna Creek siphon, on the Folsom-South Canal. Water from the turnout is pumped west through a 66-inch diameter pipeline to the Rancho Seco Plant. Water for the project would be diverted through an approximate 0.5-mile long, 12-inch diameter water pipeline to be located between the existing booster pump station (that pumps water to Rancho Seco Reservoir) and the site. The reservoir pipeline can also use gravity flow to provide water from the reservoir to the project if the water supply pump station at Folsom-South Canal is not operational. (AFC §7.1.)

An onsite water treatment system would treat and condition the incoming raw water for use in the cooling towers, potable domestic water, plant service water, and to produce demineralized water for fogging combustion turbine inlet air and HRSG makeup water.

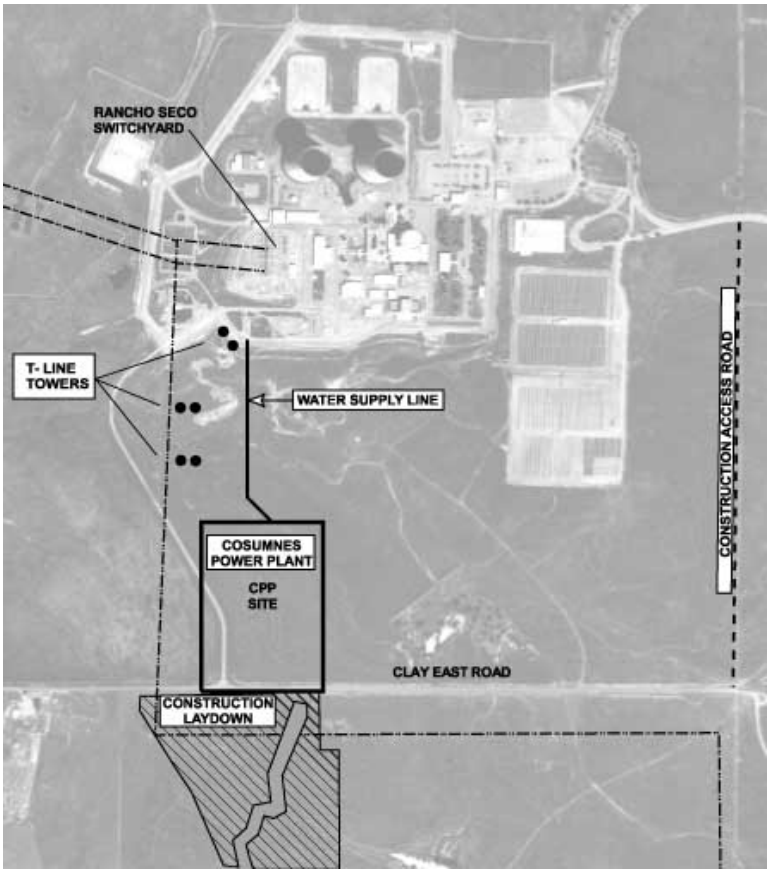
Water Discharge

As a project revision, SMUD has proposed the use of a zero-liquid discharge (ZLD) system to process all plant cooling water, resulting in no cooling water discharge to local waterways. Compared to SMUD's initial discharge proposal, the ZLD system reduces the consumption of water. The circulating water system blowdown, including water from the Folsom-South Canal, various process waste streams, and residues of anti-scalants and anti-biofouling chemicals would be processed by a brine concentrator and crystallizer to produce a dry salt cake product. The salt cake would be hauled offsite to an appropriate landfill facility.

Stormwater runoff from the project would discharge into Clay Creek.

Transmission Line

Output from the project generators would be connected to the existing Rancho Seco Plant switchyard by means of three overhead 230-kV circuits, extending approximately 0.5 mile north from the facility to the Rancho Seco Plant switchyard. Two circuits would be carried on one set of double circuit steel pole structures and one circuit would be carried on a single-circuit single pole structure, resulting in a total of two sets of transmission line towers (six towers in all). All three lines would be constructed as part of Phase 1.



Construction Access Road

To lessen construction traffic on residential roads, SMUD has proposed the development of a construction access road along the east side of the Rancho Seco Plant. Construction workers and equipment would be brought to the site by traveling east along Twin Cities Road, then turning south into the joint entrance of the Rancho Seco Plant and Rancho Seco Park. Vehicles would then follow the road to Rancho Seco Park for a short distance. Once past the park's entrance gate, vehicles would then turn south and follow a road that would be constructed from the gatehouse due south to Clay East Road. The new construction road would be two lanes, 24 feet wide (12 feet per lane), composed of asphaltic concrete on a raised gravel base, and with several

drainages to accommodate the naturally occurring seasonal flows. The road would be designed to accommodate heavy loads needed for construction of the plant. Vehicles would then travel west on Clay East Road to the site entrance.

Construction Laydown Area

An approximate 20-acre construction laydown and parking, located south of the proposed site, south of Clay East Road is proposed by SMUD. Drainages in the laydown area are being protected from contaminated runoff; and the western drainage is being diverted to the detention basin for treatment, if necessary, before discharge to Clay Creek. SMUD proposes to revegetate the laydown area after construction is complete.

Construction Schedule

The first 500 MW (Phase 1) is expected to be on-line by 2005. SMUD will determine whether to build the second 500 MW (Phase 2) or to defer construction. Construction of Phase 1 is anticipated to take 24 months to complete and Phase 2 to take 18 months.

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AIR QUALITY

AIR QUALITY – GENERAL

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the planned construction and operation of the project. Criteria air pollutants are defined as those for which a state or federal ambient air quality standard has been established to protect public health. They include nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O3), precursor organic compounds (POCs) and particulate matter, either less than 10 microns in diameter (PM_{10}) or less than 2.5 microns ($PM_{2.5}$).

In carrying out this analysis, the California Energy Commission evaluated the following major points:

- whether the project conforms with applicable Federal, State and District air quality laws, ordinances, regulations and standards;
- whether the project will cause significant air quality impacts, including a new violation of ambient air quality standards or contribution to existing violations of those standards;
- whether the mitigation proposed for the project is adequate to lessen the potential impacts to a level of insignificance; and
- whether there are potential cumulative impacts.

The Sacramento Metropolitan Air Quality Management District (SMAQMD or District), in preparing its Determination of Compliance, is processing the project in separate applications since SMUD is proposing two project phases of 500 MW each. As to air quality, the District and Energy Commission evaluated ***only*** Phase 1. If SMUD proposes Phase 2, separate, further proceedings at the District and Energy Commission would be necessary.

Project equipment for each phase includes two natural gas fired General Electric model 7241FA combustion turbine generators with dry (no water injection) low NOx burners; an heat recovery steam generator (HRSG) without a supplemental duct burner firing system; and a selective catalytic reduction (SCR) system and, if needed, a CO oxidizing catalyst system.

Construction Equipment/Fugitive Dust

The power plant construction requires the use of large earth moving equipment, which generate considerable combustion emissions themselves, along with creating fugitive dust emissions during grading, site preparation, foundations, underground utility installation, and building erection.

SMUD performed a modeling analysis of the potential construction impacts at the project site, showing that construction would cause a violation of the state 1-hour NO_2 standard and further exacerbate the existing violation of the state 24-hour PM_{10} standard.

However, the Energy Commission staff found that SMUD's modeling overestimated both project emissions and ambient background. Compensating for these overestimates, the project's contribution would be about 70 percent of the NO_2 standard and, thus, not cause a violation.

Although construction of the project and ancillary facilities will result in unavoidable short-term impacts, the project's location will prevent the general public from being exposed to the construction impacts associated with the project. Nevertheless, Staff believes that the impact from the construction of the project could have a significant and unavoidable impact on the PM_{10} ambient air quality standards, and should be avoided or mitigated, to the extent feasible. Consequently, the Conditions of Certification focus on reducing fugitive dust and diesel construction equipment emissions.

SMUD proposed to mitigate these construction impacts with standardized Best Available Control Measures to dust control measures, plus limitations on diesel emissions, largely through the use of ultra-low sulfur fuel.

Staff proposes the added employment of an on-site air quality construction mitigation manager who is responsible for maintaining compliance with applicable conditions. Among other things, this construction mitigation manager will assure that ground disturbing construction activities do not permit dust clouds to go beyond the project's fenced property boundary or more than 200 feet beyond the centerline of the construction of linear facilities.

The project will undertake one or more of the following measures to reduce emissions during construction activities:

To control exhaust emissions from heavy diesel construction equipment:

- Limit engine idle time and shutdown equipment when not in use.
- Perform regular preventve maintenance to reduce engine problems.
- Use CARB ultra-low Sulfur fuel for all heavy construction equipment.
- Ensure that all heavy construction equipment complies with EPA or CARB 1996 Diesel standards.
- Use diesel particulate exhaust filters, unless incompatible with a particular piece of equipment.

To control fugitive dust emissions:

- Use water application or chemical dust suppressant on unpaved travel surfaces and parking areas.
- Wetting or covering of stored earth materials on site.
- Require all trucks hauling loose material to either cover or maintain a minimum freeboard.
- Use gravel pads and wheel washers as needed.
- Use wind breaks and chemical dust suppressant or water application to control wind erosion from disturbed areas.

SMUD and Staff disagree on the Staff's proposed fugitive dust control condition (AQ-SC3(n)), regarding cessation of construction activities which could cause excessive dust. Staff proposes that dust-producing construction activities cease when winds exceed 15 miles per hour. SMUD proposes 25 miles per hour. Prior siting cases have used both wind speeds.

Both SMUD and Staff seem to miss the Commission's objective and means of controlling construction dust. In AQ-SC4, the Commission has prohibited construction activities that cause dust from leaving the fenceline of the power plant site and from exceeding 20 percent opacity within the construction site. For linear facilities, such as pipelines, dust cannot extend 200 feet beyond the centerline.

The Commission prefers a prescriptive, rather than a proscriptive, approach to these dust control conditions. Thus, a wind speed criterion, alone, is too proscriptive, particularly since just the wind speed would cause the cessation of construction activities on any given day. Since the Commission has already suggested wetting disturbed soils as dust mitigation, project owners should be allowed to continue construction activities, even to the point of having a water truck follow the graders on windy days, so long as the dust control objectives of AQ-SC4 are met. If available dust suppression methods do not control fugitive dust as required by AQ-SC4, then dust-producing construction activities must be halted.

Similarly, Staff's proposed condition AQ-SC3(a) requiring wetting every four hours is a proscriptive approach meeting the Commission's dust control objectives. Therefore, the Commission adopts SMUD's version of AQ-SC(a) which ties the wetting requirements to the dust control objectives of AQ-SC4. Moreover, since AQ-SC4 contains a prohibition against construction activities which exceed the dust control objectives, neither SMUD's nor Staff's version of AQ-SC3(n) is needed.

SMUD and Staff also disagree about the use of catalyzed diesel particulate filters (soot filters) in Staff's proposed condition AQ-SC3(q). SMUD urges less stringent soot filter requirements from several prior Commission proceedings. Staff's proposed version, however, has been adopted in more recent Commission proceedings. The Commission will continue requiring the more recently adopted version due to the benefits to air quality from the soot filter requirements. The Commission notes that the condition allows for flexibility when a particular piece of diesel equipment is incompatible with the use of a soot filter.

With the implementation of these mitigation measures, the construction air quality impacts will be mitigated to the extent feasible and, when combined with the temporary nature of this construction, will be insignificant. (SA Air Quality, pp. 4.1-16-17)

MITIGATION:

- ☑ The Project Owner shall retain an on-site air quality construction mitigation manager, who shall prepare a Mitigation Plan to implement the Conditions of Certification. Conditions: **AQ-SC1 & AQ-SC2**.
- ☑ The Project Owner or its contractors shall mitigate diesel emissions by use of catalyzed diesel particulate filers, use of ultra-low sulfur diesel fuel, and use of EPA and CARB 1996 certified diesel engines. Condition **AQ-SC3**.

- ☑ The Project Owner shall not engage in construction activities which cause dust clouds beyond the project's fenced property boundary or more than 200 feet from the centerline of linear facilities. Condition **AQ-SC4**.

Ozone

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted air pollutants. Nitrogen oxides (NOx) and hydrocarbons (Precursor Organic Compounds (POCs)) interact in the presence of sunlight to form ozone. The SMAQMD is designated non-attainment for the state and federal 1-hour ozone standard. Controlling the ozone precursors, NO2 and POC, is typically the strategy for attaining the federal ozone ambient air quality standards.

Ozone reduction requires reducing NOx and POC emissions. To reduce NOx emissions, SMUD proposes to use dry low NOx combustors in the combustion turbines and a post-combustion Selective Catalytic Reduction (SCR) system with an ammonia injection grid. To reduce POC (and CO) emissions, SMUD proposes to use a combination of good combustion and maintenance practices, and, if necessary, an oxidizing catalyst located in the HRSG.

Low-NOx Combustors

Over the last 20 years, combustion turbine manufacturers have focused their attention on limiting the NOx formed during combustion. Due the expense and efficiency losses due to the use of steam or water injection in the combustor cans to reduce combustion temperatures and the formation of NO_x, manufacturers are presently choosing to limit NO_x formation through the use of dry low-NO_x technologies. In this process, firing temperatures remain somewhat low, thus minimizing NO_x formation, while thermal efficiencies remain high.

Selective Catalytic Reduction (SCR)

To further reduce the emissions from the combustion turbines before they are exhausted into the atmosphere, flue gas controls, primarily catalyst systems, will be installed in the HRSG. Selective catalytic reduction refers to a process that chemically reduces NOx by injecting ammonia into the flue gas stream over a catalyst in the presence of oxygen. The process is termed "selective" because the ammonia reducing agent preferentially reacts with NOx rather than oxygen, producing inert nitrogen and water vapor. The performance and effectiveness of SCR systems are dependent upon the size of the catalyst, the amount of ammonia injected, and operating temperatures,.

SMUD is proposing to use dry low-NOx combustors and SCR with ammonia injection to control NOx emission levels to below 2.0 ppm on a 1-hour average, which is considered best available control technology (BACT). The concentration of the NOx emissions will be continuously monitored in the stack. (FDOC, pp. 2 & 11)

Even with the power plant using BACT, the NOx and POC emissions will contribute to ongoing exceedences of the ozone standards. Therefore, the District requires SMUD to provide offsets for NO_x and POC. SMUD has purchased emission reduction credits, in the form of District issued banking certificates, from sources of offsets located in Sacramento, Placer, and Yolo counties to mitigate the project's emission impacts. (FDOC Condition 20.)

MITIGATION:

- ☑ The Project Owner shall control NOx (as NO2) by using SCR to meet BACT emission limitations of 2.0 ppm (1-hour average). Condition: **AQ-20.**
- ☑ The Project Owner shall install a continuous emissions monitoring system for NOx and report emissions. Condition: **AQ-31.**
- ☑ The Project Owner shall obtain NOx and POC offsets. Condition: **AQ-37.**

Nitrogen Dioxide

Nitrogen dioxide (NO2) can be emitted directly as a result of combustion or formed from nitric oxide (NO) and oxygen. NO is typically emitted from combustion sources and readily reacts with oxygen or ozone to form NO2. The NO reaction with ozone can occur within minutes and is typically referred to as ozone scavenging. By contrast, the NO reaction with oxygen is on the order of hours under the proper conditions. The District is designated attainment for both the state and federal NO2 ambient air quality standards.

As discussed above for ozone, the SMUD proposes to reduce NOx emissions to meet BACT of 2.0 ppm level by using dry low NOx combustors in the combustion turbines and a post-combustion Selective Catalytic Reduction system with an ammonia injection grid.

The District reviewed two other technologies (SCONOX & XONON) capable of controlling NOx emission from combustion turbines to 2 ppm or below. According to the District, current SCONOX applications reveal difficulties in scaling up to combustion turbines comparable to those used for this project, thus making SCONOX infeasible for this project. At the current time, XONON is also not technically feasible for applications the size of this project. Dry low NOx combustors combined with SCR represents BACT for this project. (FDOC p. 12)

Even with BACT, SMUD must obtain NOx offsets avoid significant ozone impacts.

Using a concept called inter-pollutant trading, SMUD proposes to surrender POC emission reduction credits to offset project NO_x emissions. Since both POC and NO_x are precursors to ozone, reductions of one air contaminant can offset the increase of the other. To demonstrate that the inter-pollutant trading, i.e., POC for NO_x, would compensate for project impacts on the ambient ozone air quality concentration, the District has provided a number of different analyses. The District has determined that an inter-pollutant trade-off ratio of 3.9 pounds of POC for every pound of NO_x emissions (3.9:1) would ensure that the project's emissions would not cause or contribute to an ozone violation.

SMUD has purchased excess, or surplus, POC credits, which would be used as inter-pollutant trade for the project's shortfall in meeting NO_x offsets requirements. The use of POC emission reductions to offset the NO_x emission increases is possible because:

a. Both POC and NO_x are precursors to ozone and particulate matter,
b. The applicant has not been able to find sufficient NO_x emission reduction credits in the area,

c. The project NO_x emissions are not expected to cause a new violation or make worse any existing violation of the NO_2 air quality standards.
d. The District has required the applicant to consider several modeling analyses to determine the appropriate inter-pollutant trading ratio. Ultimately, only the Urban Airshed Model (UAM) method was used.

As a result of the modeling analysis, the District is requiring 2.6 pounds of POC emission reduction credits for each pound of NO_x emission increase. However, since the District NSR Rule already requires that a distance ratio of 1.5:1 be applied to the available emission reduction credits, the actual trading ratio is 3.9:1.

Energy Commission staff's own analysis of measured POC, ozone, and NO_x levels from the Elk Grove monitoring station indicated a POC to NO_x ratio as high as 6:1, and a default, or theoretical, ratio of approximately 6:1. Ultimately, staff accepted the District's ratio in this case because it is in the range of ratios calculated by the various methods. All POC and NO_x emission reduction credits satisfy the District requirements. No significant impact from NO2 emissions is expected. (FDOC, p. 17.)

Carbon Monoxide

Carbon monoxide (CO) is a directly emitted air pollutant as a result of combustion. The District is designated attainment for the state and federal 1-hour and 8-hour CO ambient air quality standards. Staff performed a modeling analysis using the EPA-approved ISCST3 model, which confirmed that the project does not cause a new violation of the CO standards.

However, project CO emissions are sufficient to trigger BACT of 4.0 ppm. No offsets are required. (FDOC pp. 14 & 18.)

Oxidizing Catalyst
SMUD initial proposal is to meet BACT by state-of-the-art combustion technology. However, SMUD also proposes to provide space in the HRSG for a high-temperature oxidation catalyst system if the project cannot meet the BACT CO emission limit of 4.0 ppm.

MITIGATION:

- ☑ The Project Owner shall meet a CO BACT emission limitation of 4.0 ppm. Conditions: **AQ-21**
- ☑ The Project Owner shall install a continuous emissions monitoring system for CO and report emissions. Conditions: **AQ-31**

Particulate Matter – PM_{10}

For air quality purposes, particulate matter is a fine particle suspended in air, either PM_{10} (10 microns) or $PM_{2.5}$ (2.5 microns). Particulate matter can be directly emitted from a combustion source (primary PM_{10} or $PM_{2.5}$), soil disturbance (fugitive dust) or it can form downwind

(secondary particulates) from some of the constituents of combustion exhaust (NOx, SOx and ammonia).

In addition to existing standards for PM_{10}, the federal EPA has recently promulgated a 65µg/m^3 24-hour $PM_{2.5}$ standard and a 15 µg/m^3 annual $PM_{2.5}$ standard. The EPA has not determined the attainment status of any district.

The California ARB recently adopted a new annual $PM_{2.5}$ standard of 12 µg/m^3, but has not determined the attainment status of any district. The ARB also considered adopting a new 24-hour $PM_{2.5}$, but deferred the adoption of such standard until a later date. Given the debate on the proposed 24-hour standard of 25 µg/m^3, it is difficult to predict where a California 24-hour PM2.5 standard might fall other than between 25 and 65 µg/m^3. (SA Air Quality, p. 4.1-7)

Emissions of primary PM_{10} are reduced by the use of natural gas as the power plant fuel. Natural gas contains very little noncombustible gas or solid residue.

The SMAQMD evaluated project PM_{10} emissions and found them sufficient to trigger BACT of 9.0 lbs/hr. The project's PM_{10} emissions will contribute to an existing violation of the state 24-hour PM_{10} standard. Thus, SMUD must mitigate these new emissions by obtaining PM_{10} offsets. (FDOC pp. 16 & 18)

Due the unavailability of sufficient emission reduction credits to directly offset the project PM_{10} and $PM_{2.5}$ emissions, SMUD has proposed, and the District has approved, the use of surplus SO_x emission reduction credits for inter-pollutant trading. (FDOC Condition 40) The use of SO_x emission reductions to offset the project particulate matter emission increases is possible because:

a. SO_x are precursors to particulate matter,
b. The applicant has not been able to secure any additional PM_{10} or $PM_{2.5}$ emission reduction credits in the area, and
c. The District has performed an analysis to determine the appropriate inter-pollutant trading ratio.

Also, Staff performed a modeling analysis using the EPA-approved ISCST3 model to estimate the impacts of the project's PM_{10} emissions, finding that the project would contribute to an existing violation of the state 24-hour PM_{10} standards.

In addition, because most PM_{10} emissions from the turbines are in the form of $PM_{2.5}$, and the area's $PM_{2.5}$ concentrations show an increasing trend, Staff concludes the project's $PM_{2.5}$ emission impacts would contribute to the area's violations of the new federal 24-hour ambient $PM_{2.5}$ standards. Staff considers this a significant impact. (SA Air Quality, p. 4.1-14)

<u>Ammonia Slip</u>
Staff believes that the project's ammonia, SO_x and NO_x emissions have a potential to contribute to ammonium sulfate and ammonium nitrate formations, which may worsen the violations of the state 24-hour PM_{10} and pending $PM_{2.5}$ standards.

Staff further believes that ammonia has a potential to significantly contribute to nitrate and sulfate particulate formation. Thus, Staff proposes a condition (AQ-SC7) reducing the project's proposed 10 ppm ammonia slip level, which is approved by the SMAQMD, to 5 ppm in order to minimize ammonia's potential contribution to secondary particulate formation.

Staff would normally recommend mitigation, in the form of emission reduction credits, be provided to mitigate the $PM_{2.5}$ impacts from ammonia. However, due of the uncertainty in the actual conversion of ammonia, Staff only go as far as recommending reducing ammonia slip to minimize ammonia emissions. (Staff still recommends that SO_x offsets, in the form of emission reductions, be provided to lessen the project's contribution of SO_x to PM_{10} violations.) (SA Air Quality, p. 4.1-16)

Intervenor Peasha presented evidence of worsening trends in ambient particulate matter. After questioning a SMAQMD representative regarding ammonia slip, Ms. Peasha supports the Staff's call for lowering ammonia slip to 5 ppm. Intervenor Peasha also requests re-imposition of Staff's withdrawn proposed condition requiring a wood stove retrofit program in the local, particulate impacted area.

Intervenor Roskey testified similarly about pollution trends and suggested that the fine particulate matter contribution of the project would directly increase local mortality. (See discussion of Dr. Roskey's testimony in **PUBLIC HEALTH**.)

SMUD opposes the imposition of a requirement limiting ammonia slip to 5 ppm, since the SMAQMD determined that a 10 ppm level is appropriate at this time and that a reduction of ammonia slip would not likely change ambient PM_{10} and $PM_{2.5}$ levels, largely due to the ammonia rich nature of the District. (3/13 RT 49-50, 64)

By some past siting decisions, the Commission has determined that 5 ppm ammonia slip is appropriate to not add to the potential for particulate formation. What becomes less clear scientifically is the significance of the contribution to particulate formation of 10 ppm ammonia slip in an already ammonia rich setting. Under such circumstances and mindful of CEQA's requirement for a substantial or potentially substantial impact, the mere technical feasibility of lowering ammonia slip to 5 ppm does not require its imposition.

In other past siting decisions, the Commission finds that in already ammonia rich setting, such as the Cosumnes Project, an ammonia slip limit of 10 ppm is appropriate. The Commission also notes that in actual use the SCR catalyst will initially produce far less ammonia slip, on the order of 1-2 ppm. Over a few years time, the efficiency of the catalyst degrades to a maximum of 10 ppm, leading to its replacement and a repetition of this cycle of catalyst efficiency. Moreover, the project is designed so that if District rules later require a lower ammonia slip, the project can accommodate that requirement. The Commission is satisfied that this level is sufficient to protect public health.

MITIGATION:

- ☑ The Project Owner shall control PM_{10} to meet an emission limitation of 9.0 lbs/hr. Conditions: **AQ-17**.
- ☑ The Project Owner shall conduct source testing and report emissions. Conditions: **AQ-30, AQ-35 & AQ-36**.

- ☑ The Project Owner shall obtain PM_{10} offsets and allowable SO_x interpollutant offsets. Condition: **AQ-37.**

Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Natural gas contains very little sulfur and consequently has very low SO2 emissions when combusted. The District is designated attainment for all the SO2 state and federal ambient air quality standards.

SMUD estimated, and the District accepted, the project SO_x emissions using natural gas that has a sulfur content of 0.25 gr/100scf. This estimate shows that the project SO_2 emissions are sufficient to trigger BACT, but are below the District requirement for emission offsets. BACT is natural gas with sulfur content of 1 gr/100scf. (FDOC p. 16) Since SMUD's estimate of emission was below the offset trigger, it has not proposed to mitigate any SO_2 emissions from the project. Instead, SMUD proposes to use all the SO_x emission reduction credits to inter-pollutant trade for the project's particulate matter emissions.

Project SO_x emissions estimated by staff are different from those estimated by SMUD and the District. The applicant has a summary of the hourly sulfur content measurements for an entire year (most recently as 2000), which indicates that the annual average sulfur content of natural gas is approximately 0.28 gr/100scf, and the sulfur can be as high as 0.49 gr/100scf. These data indicate that SMUD's and the District's estimates of project SO_x emissions using the 0.25 gr./100 scf sulfur content are underestimated. Instead, Staff suggests using the annual average sulfur content of 0.28 gr/100 scf of natural gas.

SMUD shall comply with the BACT requirement. Otherwise, SO_x offsets are for particulate emissions.

MITIGATION:

- ☑ The Project Owner shall conduct source testing and report emissions. Condition: **AQ-35 & AQ-36.**

Precursor Organic Compounds

There are no state or federal standards for POCs. POCs are formed in the combustion process. BACT for POCs will be achieved by use of dry low-NOx combustors, which use air to fuel ratios that result in low combustion POCs while still maintaining low NOx levels. POCs are significant emissions since they are precursors (contributors) to ozone. Ozone attainment, therefore, requires minimum POC emissions and, as appropriate, POC offsets.

Using a concept called inter-pollutant trading, SMUD proposes to surrender POC emission reduction credits to offset project NO_x emissions. Since both POC and NO_x are precursors to ozone, reductions of one air contaminant can offset the increase of the other. SMUD has purchased excess, or surplus, POC credits, which would be used as inter-pollutant trade for the project's shortfall in meeting NO_x offsets requirements. (See Nitrogen Dioxide, above.)

SMUD will limit POC emissions to 1.4 ppmvd as BACT. SMUD will provide POC interpollutant offsets for ozone mitigation. (FDOC pp. 13, 14 & 17; Condition 30)

MITIGATION:

- ☑ The Project Owner shall control POC to meet an emission limitation of 1.4 ppmvd. Condition: **AQ-22**.
- ☑ The Project Owner shall obtain POC offsets. Conditions: **AQ-39.**

Commissioning and Start-Up

The initial commissioning of a power plant refers to the time frame between completion of construction and the consistent production of electricity for sale on the market. Normal operating emission limits usually do not apply during initial commissioning procedures. The turbines will go through several layers of test during initial commissioning. During the first set of tests, post-combustion control will not be operational (i.e., the SCR and, if necessary, oxidation catalyst).

All startup scenarios result in emissions that are higher than normal operating emission limits since equipment is not up to normal operating temperatures.

Both the initial commissioning and start-up sequences are subject to District rule to minimize emissions. Since these events are of short duration and subject to controls and procedures to minimize emissions, there will not be a significant impact from commissioning and start up so longs as District rules are met. (FDOC Conditions 7 - 15)

Cooling Towers

Cooling tower drift consists of small water droplets, which contain particulate matter that originate from the total dissolved solids in the circulating water. To limit these particulate emissions called “drift,” drift eliminators are installed in the cooling tower to capture these water droplets.

SMAQMD’s PM_{10} BACT requirement is not triggered by the cooling tower emissions. Nonetheless, SMUD is proposing drift eliminators to control drift to 0.0005%. This equipment would have satisfied cooling tower BACT had cooling tower BACT been applicable. (FDOC p. 17)

MITIGATION:

- ☑ The Project Owner shall control the cooling tower drift rate not to exceed 0.0005%. Condition: **AQ-28**.

PSD Review

Ordinarily, a visibility analysis of the project's gaseous emissions is required under the Federal Prevention of Significant Deterioration (PSD) permitting program. Under District rules, this project's emission levels of NOx and CO trigger a PSD review. PSD regulations require a BACT determination for NOx and CO, notwithstanding that the District is in attainment for each pollutant. As discussed above, BACT has been applied to both NOx and CO.

In addition, SMUD provided, as part of its PSD application to the District, a visibility impact analysis, which shows that the project is not expected to exceed any significant visibility impairment increment inside any nearby (Desolation Wilderness and Mokelumne Wilderness) PSD Class I areas. Class I areas are areas of special national or regional value from a natural, scenic, recreational, or historic perspective.

The District included an analysis of project emission impacts on agriculture, concluding that emissions and drift will have an insignificant impact compared to the amount of fertilizer, manure, herbicides, and insecticides present in production agriculture. (FDOC pp. 18 – 21; SA Air Quality, p. 4.1-16)

Cumulative Impacts

To evaluate reasonably foreseeable future impacts as part of the project impacts analysis, SMUD performed a cumulative modeling analysis. The cumulative analysis included potential and/or permitted, but not yet operating, projects located up to six miles from the proposed facility site. SMUD consulted the District to identify potential and/or permitted projects of size that might interact with the SMUD project plumes and impacts. None were identified, so additional analysis and cumulative modeling was not conducted. (SA Air Quality, p. 4.1-14)

Finding

With the implementation of the Conditions of Certification below, the project conforms with applicable laws related to air quality, and all potential adverse impacts to air quality will be mitigated to insignificance.

The Commission has also reviewed Staff's proposed condition AQ-SC-8, suggesting direct quarterly reporting to the CPM, instead of relying upon quarterly reports to the SMAQMD and forwarded to the CPM as required by Condition AQ-34. The Commission has reviewed the additional substantive requirements of Staff's proposed condition and does not find them to be sufficiently compelling to establish a separate reporting system in addition to that which already exists through the AQMD.

CONDITIONS OF CERTIFICATION

AQ-SC1 The project owner shall fund all expenses for an on-site air quality construction mitigation manager (AQCMM) who shall be responsible for maintaining compliance with conditions AQ-SC2 through AQ-SC4 for the entire project site and linear facilities construction. The on-site AQCMM may delegate responsibilities identified in Conditions AQ-SC1 through AQ-SC4 to one or more air quality mitigation monitors. The on-site AQCMM shall have full access to areas of construction of the project site and linear facilities, and shall have the authority to appeal to the CPM to have the CPM stop any or all construction activities as warranted by applicable construction mitigation conditions. The on-site AQCMM, and any air quality construction mitigation monitors responsible for compliance with the requirements of Condition AQ-SC4, shall have a current certification by the California Air Resources Board for Visible Emission Evaluation prior to the commencement of ground disturbance. The AQCMM may have other responsibilities in addition to those described in this condition. Employment of the on-site AQCMM shall not be terminated without written consent of the CPM.

Verification: At least thirty (30) days prior to the start of ground disturbance, the project owner shall submit to the CPM, for approval, the name, current ARB Visible Emission Evaluation certificate, and contact information for the on-site AQCMM and air quality construction mitigation monitors.

AQ-SC2 The project owner shall provide a construction mitigation plan, for approval, which shows the steps that will be taken, and reporting requirements, to ensure compliance with conditions **AQ-SC3** and **AQ-SC4**.

Verification: At least thirty (30) days prior to starting ground disturbance for construction (i.e., excluding ground disturbance related to testing activities), the project owner shall submit to the CPM, for approval, the construction mitigation plan. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. Otherwise, the plan shall be deemed approved.

AQ-SC3 The on-site AQCMM shall prepare, and the project owner shall submit to the CPM, in the monthly compliance report, a construction mitigation report that demonstrates compliance with the following mitigation measures:

a) All unpaved roads and disturbed areas in the project and linear construction sites shall be watered until sufficiently wet to comply with the dust mitigation objectives of **AQ-SC4**.
b) No vehicle shall exceed 10 miles per hour within the construction site.
c) The construction site entrances shall be posted with visible speed limit signs.
d) All vehicle tires shall be washed or cleaned free of dirt prior to entering paved roadways.
e) Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
f) All entrances to the construction site or laydown area shall be graveled or treated with water or dust soil stabilization compounds. The location and

composition of any dust soil stabilization compounds proposed for use must be approved, in advance, by the CPM.

g) No construction vehicles can enter the construction site except through the treated entrance roadways.

h) Construction areas adjacent to any paved roadway shall be provided with sandbags to prevent run-off to the roadway.

i) All paved roads within the construction site shall be swept twice daily.

j) At least the first 500 feet of any public roadway exiting from the construction site shall be swept twice daily.

k) All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or treated with appropriate dust suppressant compounds.

l) All vehicles that are used to transport solid bulk material and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

m) Wind erosion control techniques, such as wind breaks, water/chemical dust suppressants and vegetation, shall be used on all construction areas that may be disturbed. Any windbreaks used to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

n) Deleted.

o) All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

p) All large construction diesel engines, which have a rating of 100 hp or more, shall meet, at a minimum, the 1996 ARB or EPA certified standards for offroad equipment.

q) All large construction diesel engines, which have a rating of 100 hp or more, shall be equipped with catalyzed diesel particulate filters (soot filters), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types.

r) All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM that shows the engine meets the conditions **AQ-SC3**(p) and **AQ-SC3**(q) above.

Verification: In the monthly compliance report (MCR), the project owner shall provide the CPM a copy of the construction mitigation report and any diesel fuel purchased records, which clearly demonstrates compliance with condition **AQ-SC3**.

AQ-SC4 No construction activities are allowed to cause visible dust emissions at or beyond the project site fenced property boundary. No construction activities are allowed to cause visible dust plumes that exceed 20 percent opacity at any location on the construction site. No construction activities are allowed to cause any visible dust plume in excess of 200 feet beyond the centerline of the construction of linear facilities. The on-site AQCMM shall conduct a visible emission evaluation at the construction site fence line, or 200 feet from the center of construction activities at the linear facilities, each time he/she sees excessive fugitive dust from the construction or linear facility site.

Verification: The records of the visible emission evaluations shall be maintained at the construction site and shall be provided to the CPM in the monthly compliance reports.

AQ-SC5 Deleted.

AQ-SC6 The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or EPA, and any revised permit issued by the District or EPA, for the project.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC8 Deleted.

DISTRICT'S CONDITIONS OF CERTIFICATION

AQ-1 The equipment shall be properly maintained.

Verification: The project owner shall provide the District and the CPM quarterly and annual reports as required in condition **AQ-34**.

AQ-2 The Air Pollution Control Officer and/or authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this permit to operate, and
b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit to operate, and
c. To inspect any equipment, operation, or method required in this permit to operate, and
d. To sample emissions from the source or require samples to be taken.

Verification: Not necessary.

AQ-3 This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26, Part 4, Chapter 3, of the California Health and Safety Code or the rules and regulations of the Air Quality Management District.

Verification: The project owner shall provide the District and the CPM quarterly and annual reports as required in condition **AQ-34**.

AQ-4 A legible copy of this permit shall be maintained on the premises with the equipment.

Verification: Not necessary.

AQ-5 Malfunction - the Air Pollution Control Officer shall be notified of any breakdown of the emissions monitoring equipment, any equipment, or any process which results in an increase in emissions above the allowable emissions limits stated as a condition of this permit or any applicable state or federal regulation or which affects the ability for the emissions to be accurately determined. Such breakdowns shall be reported to the District in accordance with the procedures and reporting times specified in Rule 602 - Breakdown Conditions; Emergency Variance.

Verification: The project owner shall provide the District and the CPM quarterly and annual reports as required in condition **AQ-34**.

AQ-6 Severability – if any provision, clause, sentence, paragraph, section, or part of these conditions for any reason is judged to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of these conditions.

Verification: Not necessary.

COMMISSIONING ACTIVITIES

Conditions **AQ-7** through **15** shall only apply during the commissioning period. The commissioning period is defined as, "The Period shall commence when all mechanical, electrical, and control systems are installed and individual start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The Period shall terminate when the plant has successfully completed both performance and compliance testing."

AQ-7 The owner/operator of the CPP combustion gas turbines #1 and #2 (CTG's #1 & #2) shall minimize emissions of carbon monoxide and nitrogen oxides to the maximum extent possible during the commissioning period.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

AQ-8 At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the gas turbine combustors of CTG's #1 & #2 shall be tuned to minimize the emissions of carbon monoxide and nitrogen oxides.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

AQ-9 At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the Selective Catalytic Reduction (SCR) systems #1 & #2 shall be installed, adjusted, and operated to minimize the emissions of nitrogen oxides from CTG's #1 & #2.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

AQ-10 The owner/operator of the CPP shall submit a plan to the District and the Energy Commission CPM at least 4 weeks prior to first firing of CTG's #1 & #2 describing the

procedures to be followed during the commissioning of the gas turbines and HRSGs. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but is not limited to, the tuning of the dry-low-NOx combustors, the installation and operation of the SCR systems, the installation, calibration, and testing of the NOx, CO, and O2 continuous emission monitors, and any activities requiring the firing of the CTG's #1 & #2 without abatement by their respective SCR systems.

Verification: The project owner shall submit a commissioning plan to the District and CPM for review at least four weeks prior to the first firing of CTG's 1 and 2.

AQ-11 During the commissioning period, the owner/operator of CTG's #1 & #2 shall demonstrate compliance with conditions AQ-13 through 16 through the use of properly operated and maintained continuous emission monitors and data recorders for the following parameters:

a. Firing hours for each CTG,
b. Fuel flow rates to each CTG,
c. Stack gas nitrogen oxide emission concentrations of each CTG,
d. Stack gas carbon monoxide emission concentrations of each CTG, and
e. Stack gas oxygen concentrations of each CTG.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the CTG's #1 & #2. The owner/operator shall use District approved methods to calculate heat input rates, NOx, CO, ROC, SO_x and PM_{10} mass emission rates, and NOx and CO emission concentrations, summarized for each clock hour and each calendar day.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with. All records shall be retained on site for at least 5 years from the date of entry and made available to District personnel and CPM upon request.

AQ-12 The District approved continuous emission monitors specified in condition 11 shall be installed, calibrated, and operational prior to first firing of the CTG's #1 & #2. After first firing of the turbines, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of NOx and CO emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with. In addition, the project owner shall provide evidence of the District's approval of the emission monitoring system to the CPM prior to first firing of the gas turbines.

AQ-13 The total number of firing hours of each CTG without abatement of nitrogen oxide emissions by SCR systems #1 & #2 shall not exceed 400 hours during the commissioning period. Such operation of CTG's #1 & #2 shall be limited to discrete commissioning activities

that can only be properly executed without the SCR systems fully operational. Upon completion of these activities, the owner/operator shall provide written notice to the District and the unused balance of the 400 firing hours without abatement shall expire.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

AQ-14 The total mass emissions of nitrogen oxides, carbon monoxide, reactive organic compounds, sulfur oxides, and PM_{10} that are emitted by the CTG's #1 & #2 during the commissioning period shall accrue towards the quarterly emission limitations specified in condition **AQ-19.**

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

AQ-15 Combined pollutant mass emissions from CTG's #1 & #2 shall not exceed the following limits during the commissioning period.

Maximum Allowable Emissions During the Commissioning Period, Including Start-ups and Shutdowns.		
Pollutant	Lbs./hr	Lbs./day
NOx	142	2,095
CO	918.46	7,844
ROC	--	159
SO_x	--	48
PM_{10}	--	324

Note: Hourly limits for NOx and CO will be monitored using CEMS. For those pollutants that are not directly monitored (ROC, SO_x, and PM_{10}), the mass emissions shall be calculated based on District approved emission factors contained in footnotes to condition **AQ-17**.

Verification: The project owner shall submit in the monthly compliance report to the CPM a discussion about how this condition is being complied with.

EMISSION LIMITS

AQ-16 The equipment shall not discharge into the atmosphere any visible air contaminant other than uncombined water vapor, for a period or periods aggregating more than three minutes in any one hour, which is Ringelmann No. 1 or greater.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-17 Emissions from the following equipment shall not exceed the following limits, not including periods containing start-ups and short-term excursions as defined in condition AQ-26.

Pollutant	Maximum Allowable Emissions

	CTG #1 (lbs./hr)	CTG #2 (lbs./hr)
NO_x	13.51 (a)	13.51 (a)
CO	16.46 (b)	16.46 (b)
ROC	3.30 (c)	3.30 (c)
SO_x	1.31 (d)	1.31 (d)
PM_{10}	9.00 (e)	9.00 (e)

(a) Based on data submitted in the application and is monitored by the turbine's NOx CEM system (1 hour average).

(b) Based on data submitted in the application and is monitored by the turbine's CO CEM system (3 hour average)

(c) Based on a turbine ROC emission factor of 0.00177 lb/mmbtu and firing at full capacity.

(d) Based on a turbine SO_x emission factor of 0.00071 lb/mmbtu and firing at full capacity.

(e) Based on a turbine PM_{10} emission factor of 0.00483 lb/mmbtu and firing at full capacity.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-18 Emissions of NOx, CO, ROC, SO_x, and PM_{10} from Phase 1 of the CPP facility including start-ups and shut-downs shall not exceed the following limits.

Pollutant	Maximum Allowable Emissions (lbs./day)			
	CTG #1	CTG #2	Cooling Tower	Total
NO_x	523.7	523.7	NA	1,047.4
CO	3,051.7	3,051.7	NA	6,103.3
ROC	117.3	117.3	NA	234.6
SO_x	31.4	31.4	NA	62.9
PM_{10}	216.0	216.0	3.6	435.6

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-19 Emissions of NOx, CO, ROC, SO_x, and PM_{10} from Phase 1 of the CPP facility including start-ups and shut-downs shall not exceed the following limits.

Pollutant	Maximum allowable emissions				
	Qtr 1 (lbs./quarter)	Qtr 2 (lbs./quarter)	Qtr 3 (lbs./quarter)	Qtr 4 (lbs./quarter)	Total (lbs./year)
NO_x	62,021	62,643	63,265	63,265	251,194
CO	147,929	148,687	149,444	149,444	595,505
ROC	14,807	14,958	15,110	15,110	59,986
SO_x	5,405	5,465	5,525	5,525	21,922
PM_{10}	39,204	39,640	40,075	40,075	158,994

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-20 Each combined cycle combustion turbine shall not emit more than 2.0 ppmvd NOx at 15% O_2, averaged over any one hour period, excluding periods containing start-ups/shut-downs and short term excursions as defined in condition **AQ-26**.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-21 Each combined cycle combustion turbine shall not emit more than 4.0 ppmvd CO at 15% O_2, averaged over any consecutive three hour period, excluding periods containing start-ups/shut-downs as defined in condition **AQ-26**.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-22 Each combined cycle combustion turbine shall not emit more than 1.4 ppmvd ROC at 15% O_2, averaged over any consecutive three hour period, excluding periods containing start-ups/shut-downs as defined in condition **AQ-26**.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-23 Each combined cycle combustion turbine shall not emit more than 10 ppmvd ammonia at 15% O_2, measured as NH_3, averaged over any consecutive three hour period, excluding start-ups/shut-downs as defined in condition **AQ-26**.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-24 The total dissolved solids content of the circulating cooling water shall not exceed 470 ppmw, averaged over any consecutive three-hour period.

Verification: The project owner shall include information on the date, time, and duration of any violation of this permit condition in the quarterly and annual reports.

EQUIPMENT OPERATION

AQ-25 Each combined cycle turbine shall not be operated without a functioning selective catalytic reduction air pollution control system, excluding periods of start-ups and shut-downs.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-26 The duration of each combined cycle turbine's start-up period shall not exceed 180 minutes. Start-ups are defined as time periods commencing with the introduction of fuel to the gas turbine, and ending at the time that 15-minute average NOx and CO concentrations do not exceed 2.0 ppmvd and 4.0 ppmvd respectively, but in no case exceeding 180 consecutive minutes.

The duration of each combined cycle turbine's shut-down period shall not exceed 30 minutes. Shut-downs are defined as the 30-minute period immediately prior to the termination of fuel flow to the gas turbine.

Compliance with the concentration and hourly NOx emission limitations specified in conditions AQ-17 and AQ-20 shall not be required during short-term excursions limited to a cumulative total of 10 hours per combustion turbine per calendar year. Short-term excursions are defined as 15-minute periods designated by the owner/operator that are the direct result of transient load conditions, not to exceed four consecutive 15-minute periods, when the 15-minute average NOx concentration exceeds 2.0 ppmvd @ 15% O_2. Examples of transient load conditions include, but are not limited to the following:

a. Initiation/shutdown of combustion turbine inlet air cooling and
b. Rapid combustion turbine load changes

The maximum 1-hour average NOx concentration for periods that include short-term excursions shall not exceed 30 ppmvd @ 15% O_2.

All emissions during start-ups/shut-downs and short-term excursions shall be included in all calculations of daily, quarterly, and annual mass emissions required by this permit.

Verification: As part of the quarterly and annual compliance reports, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-27 The cooling towers shall not use any chromium-containing water treatment chemicals.

Verification: The project owner shall include information on the date, time and duration of any violation of this permit condition in the quarterly and annual reports.

AQ-28 The cooling tower drift rate shall not exceed 0.0005%. The project owner shall provide a written vendor statement, prior to installation, declaring that the cooling towers mist eliminators used meet the drift criteria stated above.

Verification: Sixty (60) days prior to installation, the project owner shall provide a manufacturer design specification of the cooling tower mist eliminator, which demonstrates compliance with the drift limit.

NEW SOURCE PERFORMANCE STANDARDS COMPLIANCE

AQ-29 The project owner shall provide written notification to the Air Pollution Control Officer for the following:

A. The date construction is commenced postmarked no later than 30 days after such date.
B. The anticipated date of initial start-up of the plant not more than 60 days or less than 30 days prior to such date.
C. The actual date of initial start-up of the plant within 15 days after such date.
D. A notification of any physical or operational change to the facility which may increase the emission rate to which a standard applies except exempted modifications as defined in 40 CFR 60.14(e), postmarked 60 days or as soon as practicable before the change is commenced.
E. The date upon which the demonstration of the continuous monitoring system performance commences postmarked not less than 30 days prior to such date.

Verification: The project owner shall provide a copy of each required written notification, in the same time frame of condition **AQ-29** to the CPM.

AQ-30 The following tests, reports and conditions shall be met:

A. Within 60 days of achieving the maximum production rate but no later than 180 days after initial start-up the owner or operator shall conduct performance test(s) as per Condition AQ-35 and furnish the Air Pollution Control Officer a written report of the results of such performance test(s).
B. The owner or operator shall provide the Air Pollution Control Officer 30 days prior notice of the performance test(s).

Verification: Approval of the source test protocols, as required in condition AQ-35, and the source test reports shall be deemed as verification for this condition. The project owner

shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM within 60 days of the date of the tests.

MONITORING SYSTEMS

AQ-31 The CPP shall operate a continuous emission monitoring system that has been approved by the Air Pollution Control Officer for each combined cycle turbine's emissions.

A. The continuous emission monitoring (CEM) system shall monitor and record nitrogen oxides, carbon monoxide, and oxygen.
B. The CEM system shall comply with the EPA performance specifications (title 40, Code of Federal Regulations, Part 60, Appendix B, Performance Specifications 2, 3, and 4).

Verification: At least sixty (60) days prior to purchase of the CEM system, the project owner shall submit to the District, for approval, and to the CPM, for review, a copy of the manufacturer specifications for the continuous emission monitoring system, which demonstrates compliance with the EPA performance specifications.

AQ-32 The CPP shall operate a continuous monitoring system that has been approved by the Air Pollution Control Officer that either measures or calculates and records the following:

Parameter to be monitored	Units
Fuel consumption of each combined cycle turbine.	Mmbtu/hr of natural gas
Exhaust gas flow rate of turbine and duct burner.	Kscfh or lb/hr
Total dissolved solids content of the circulating water in the cooling towers.	PPMW

Verification: At least sixty (60) days prior to purchase of the continuous monitoring system, the project owner shall submit to the District, for approval, and to the CPM, for review, a copy of the manufacturer specifications for the continuous monitoring system, which demonstrates compliance with the District's monitoring requirements.

RECORD KEEPING

AQ-33 The following record shall be continuously maintained on site for the most recent five-year period and shall be made available to the Air Pollution Control Officer upon request. Quarterly and yearly records shall be made available for inspection within 30 days of the end of the previous quarter or year respectively.

Frequency	Information to be recorded
General	A. Record of the occurrence and duration of any start-up, short-term excursion, or shut-down. B. Malfunction in operation of each turbine.

	C. Measurements from the continuous monitoring system. D. Monitoring device and performance testing measurements. E. All continuous monitoring system performance evaluations. F. All continuous monitoring system or monitoring device calibration checks. G. All continuous monitoring system adjustments and maintenance.
Hourly	A. Each combined cycle turbine's natural gas fuel consumption (mmbtu/hr). B. Indicate when each combined cycle turbine start-up/shut-down occurred. C. Each combined cycle turbine's NOx, CO, ROC, SO_x, and PM_{10} hourly mass emissions. For those pollutants directly monitored (NOx and CO), the hourly mass emissions shall be calculated based on concentration measurements from the CEM system required pursuant to condition AQ-31. For those pollutants that are not directly monitored (ROC, SO_x, and PM_{10}), the hourly mass emissions shall be calculated based on District approved emission factors contained in footnotes to condition AQ-17. D. Each combined cycle turbine's NOx and CO concentration measured in ppmvd at 15% O_2. E. Total dissolved solids content of the circulating water in the cooling towers in ppmw. F. Cooling tower hourly PM_{10} mass emission rate. The hourly emissions shall be calculated based on the cooling water circulation rate multiplied by the cooling tower drift rate, density of water, and the measured TDS level.
Daily	Total facility NOx, CO, ROC, SO_x, and PM_{10} daily mass emissions.
Quarterly	Total facility NOx, CO, ROC, SO_x, and PM_{10} quarterly mass emissions.

Verification: All quarterly and annual reports shall be maintained on site for a minimum of five (5) years and shall be provided to the CPM or District personnel upon request.

REPORTING

AQ-34 For each calendar quarter submit to the Air Pollution Control Officer a written report which contains the following. Each quarterly report is due by the 30th day following the end of the calendar quarter.

Frequency	Information to be submitted
Whenever the continuous emissions monitoring system is inoperative except for zero and span checks.	A. Date and time of non operation of the continuous emission monitoring system B. Nature of the continuous emission monitoring system repairs or adjustments.
Whenever an emission occurs as measured by the	A. Magnitude of the emission which has been determined to be in excess.

required continuous monitoring equipment that is in excess of any emission limitation	B. Date and time of the commencement and completion of each period of excess emissions C. Periods of excess emissions due to start-up, shut-down, short-term excursion, and malfunction shall be specifically identified. D. The nature and cause of any malfunction (if known). E. The corrective action taken or preventive measures adopted.
If there were no excess emissions for a quarter	A report shall be submitted indicating that there were no excess emissions

Verification: The project owner shall submit to the District and CPM, quarterly reports for the proceeding calendar quarter within 30 days from the end of the quarter. The report for the fourth quarter can be an annual compliance summary for the preceding year.

In addition, this information shall be maintained on site for a minimum of five (5) years and shall be provided to the CPM or District personnel upon request.

COMPLIANCE TESTING REQUIREMENTS

AQ-35A NOx, ROC, CO, SO_x, PM_{10}, ammonia, and CEM accuracy source test of each combined cycle turbine shall be performed during the time frame pursuant to Condition AQ-30.

A. The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source test is to be performed.

B. The Air Pollution Control Officer shall be notified at least 7 days prior to the emission testing date.

C. During the test(s), each turbine is to be operated at its maximum firing capacity defined as $\geq$ 90% of rated heat input capacity and taking into account ambient conditions.

D. The source test results shall be submitted to the Air Pollution Control Officer within 60 days from the completion of the source test(s).

Verification: No later than thirty (30) working days before the commencement of the source tests, the project owner shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. The District and the CPM will notify the project owner of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The project owner shall incorporate the District and the CPM comments into the test plan. The project owner shall notify the District and the CPM within 7 working days prior to the planned source testing date. The source test results shall be submitted to the District and the CPM within 60 days from the completion of the source test.

AQ-36A NOx, ROC, CO, SO_x, PM_{10}, ammonia, and CEM accuracy source test of each combined cycle turbine shall be performed once each calendar year. The Air Pollution Control Officer may waive the annual PM10 and/or ROC source test requirement if, in the Air Pollution Control Officer's sole judgment, prior test results indicate an adequate compliance margin has been maintained.

A. The project owner shall submit a test plan to the Air Pollution Control Officer for approval at least 30 days before the source test is to be performed.

B. The Air Pollution Control Officer shall be notified at least 7 days prior to the emission testing date.

C. During the test(s), each turbine is to be operated at its maximum firing capacity defined as ≥ 90% of rated heat input capacity and taking into account ambient conditions.

D. The source test results shall be submitted to the Air Pollution Control Officer within 60 days from the completion of the source test(s).

Verification: The project owner shall notify the District and the CPM within 7 working days prior to the planned source testing date. The source test results shall be submitted to the District and the CPM within 60 days from the completion of the source test.

EMISSION REDUCTION CREDITS

AQ-37 The project owner shall provide the District emission reduction credit certificates in sufficient quantity to show compliance with the quarterly emission limits by the use of the following calculation procedure.

For NOx or ROC

$$QTR_q = \frac{P_{q\leq 15}}{1.3} + \frac{P_{q>15}}{1.5}$$

For PM_{10}

$$QTR_q = \frac{P_{q\leq 15}}{1.2} + \frac{P_{q>15}}{1.5}$$

Pq	=	Emission offset credit for pollutant in lb/quarter
q	=	Quarter (1, 2, 3, or 4)
QTR	=	This is the quarterly limit specified in Condition 19
<=15	=	Those emission reduction credit certificates whose point of origin was within 15 miles of the CPP project
>15	=	Those emission reduction credit certificates whose point of origin was greater than 15 miles but less than 50 from the CPP Project.

Verification: At least thirty (30) working days prior to starting any ground disturbance for construction, the project owner shall provide valid emission reduction credits specified in AQ-38 to 40 to the District for approval and to the CPM for review.

AQ-38 Except as provided in condition AQ-41, the following list of emission reduction credits shall be surrendered to the APCO prior to commencement of actual on-site construction. The values in the tables below represent the value of the credit after the appropriate distance ratio has been applied.

	District/ Certificate #	Quarter 1	Quarter 2	Quarter 3	Quarter 4
ROC					
Formica	PCAPCD/ 2000-0007	45,333	46,667	46,667	41,333
Formica	PCAPCD/ 2001-17	41,799	2,767	32,263	19,306
Swansons Cleaners	SMAQMD/ 653	10,657	13,631	7,762	16,389
Procter & Gamble	SMAQMD/ 755	16,667	16,667	16,667	16,667
Donner Furniture	SMAQMD/ 750	263	505	439	523
Burns Philp Food	YSAQMD/ EC-0121	0	3	13	6
Holly Sugar	YSAQMD/ EC-0174 – EC 0178	48	798	820	843
Blue Diamond Growers	SMAQMD/ 836	1,060	1,030	1,067	1,037
Ag Containers	SMAQMD/ 776	453	827	1,040	347
Ag Containers	SMAQMD/ 852	876	1,610	2,030	656
American River Asphalt	SMAQMD/ 851	167	421	792	675
Rancho Seco	SMAQMD/ 471,473,477, 479	355	189	116	196

	District/ Certificate #	Quarter 1	Quarter 2	Quarter 3	Quarter 4
NOx					
Burns Philp Food	YSAQMD/ EC-0121	0	195	801	333
General Mills	YSAQMD/ EC-0123	510	501	716	671
Holly Sugar	YSAQMD/ EC-0174 – EC 0178	1059	19,706	20,743	21,000
Blue Diamond Growers	SMAQMD/ 00849	3,795	3,946	4,106	3,659
Procter & Gamble	SMAQMD/ 777, 823, 826, 827	5,565	5,565	5,565	5,565
American River Asphalt	SMAQMD/ 851	215	540	1,019	869
Campbell Soup Company	SMAQMD/ 737,838	1,190	2,545	6,887	0

	District/ Certificate #	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM_{10}					
Campbell Soup	SMAQMD/ 737	382	224	1,239	438
Poppy Ridge Partners	SMAQMD/ 726,727	685	663	493	659
Blue Diamond Growers	SMAQMD/ 849	2,320	2,214	2,289	2,138
Procter & Gamble	SMAQMD/ Various	7,513	7,513	7,513	7,513
Grace Industries	SMAQMD/ 833-835	2,394	2,393	2,383	2,343
Elk Grove Ready Mix	SMAQMD/ 758	850	1,004	1,043	965
Rancho Seco	SMAQMD/ 471,473,475,477, 479	1,722	821	424	859
Road Paving	SMAQMD/ 768,769,772-776	14,823	20,448	28,300	21,156
American River Asphalt	SMAQMD/ 851	343	819	1,429	1,131

	District/ Certificate #	Quarter 1	Quarter 2	Quarter 3	Quarter 4
SO_x					
Grace Industries	SMAQMD/ 388, 390	471	775	770	390
Campbell Soup	SMAQMD/ 737	34	44	116	31
Poppy Ridge Partners	SMAQMD/ 726,727	17	36	36	15
Rancho Seco	SMAQMD/ 471,473,475,477, 479	21,741	13,377	3,511	7,383
American River Asphalt	SMAQMD/ 851	62	256	483	212

The specific allocation of ERC's to satisfy the offset requirement for those pollutants where SMUD possess an excess amount of ERC's shall be determined at the time of the surrender of the credits.

Verification: Thirty (30) days prior to start any ground disturbance for construction, the project owner shall provide the necessary emission reduction credit certificates. If the credits deviate from those listed in this condition, the applicant shall include detailed calculations showing that the District's offset requirements are fully satisfied.

AQ-39 ROC emission reduction credits may be traded for NOx emission reduction credits at a ratio of 2.6 lb ROC for 1 lb NOx.

Verification: Thirty (30) days prior to start any ground disturbance for construction, the project owner shall provide the necessary emission reduction credit certificates. If the credits deviate from those listed in Condition **AQ-38**, the applicant shall include detailed calculations showing that the District's offset requirements are fully satisfied.

AQ-40 SO_x emission reduction credits may be traded for PM_{10} emission reduction credits at the following ratios:

a) 2.8 lb SO_x for 1 lb PM_{10} for Calendar Quarter 1
b) 1.7 lb SO_x for 1 lb PM_{10} for Calendar Quarter 2 and 3
c) 3.3 lb SO_x for 1 lb PM_{10} for Calendar Quarter 4.

Verification: Thirty (30) days prior to start any ground disturbance for construction, the project owner shall provide the necessary emission reduction credit certificates. If the credits deviate from those listed in Condition **AQ-38**, the applicant shall include detailed calculations showing that the District's offset requirements are fully satisfied.

AQ-41 Those credits that that are being generated contemporaneous with the construction of the CPP (i.e. road paving ERC applications 00768, 00769, & 00772-00776) will only be required to be submitted prior to operation.

Verification: Not later than thirty (30) days after the issuance of the District emission reduction credit certificates, the project owner shall surrender the necessary certificates to the District, with a copy to the CPM. In the event that the reductions indicated on those certificates are lower than the values shown in Condition **AQ-38**, the applicant shall also submit detailed calculations showing that the District's offset requirements are fully satisfied.

AQ-42 SMUD shall pave the roadways described in SMAQMD ERC applications 00768, 00769, 00772-00776.

Verification: Prior to issuance of the District emission reduction credit certificates, the project owner shall provide the District and the CPM the work order completion and pictures of the roadways before and after paving is performed.

AQ-43 SMUD shall ensure that the paved roads described in SMAQMD ERC applications 00768, 00769, 00772-00776 are properly maintained and repaired for the life of the Cosumnes Power Plant.

Verification: The project owner shall include pictures of the roadways after being paved for credits in the annual compliance report as required in the verification requirement for Condition **AQ-34**.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

AIR QUALITY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act §111: 42 USC §7411; 40 CFR Part 60, subparts Db and GG	Establishes standards of performance to limit the emission of criteria pollutants for which the EPA has established national ambient air quality standards (NAAWS).
Clean Air Act §112 42 USC §7412; 40 CFR Part 63	Establishes national emission standards to limit hazardous air pollutant (HAP) emissions from existing major sources of HAP emissions in specific source categories.
Clean Air Act §160-169A 42 USC §7470-7491; 40 CFR Parts 51 & 53	Requires pre-construction 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.)
Clean Air Act §171-193 42 USC 501 et seq.; 40 CFR Parts 51 & 52	Requires pre-construction review and permitting of new or modified major stationary sources of air pollution to allow industrial growth without interfering with the attainment of ambient quality standards.
Clean Air Act §401 42 USC 654 et seq.; 40 CFR Part 72	Requires 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 limits Sox and NOx emissions from electrical power generating facilities.
Clean Air Act §501 (Title V) 42 USC §7661; 40 CFR Part 70	Requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, record-keeping 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.
Clean Air Act 501 (Title V) 42 USC §7414; 40 CFR Part 64	Requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency.
Emergency Planning and Community Right-to-Know Act § 313 (EPCRA)	EPCRA requires certain facilities and establishments to report toxic releases to the environment if they: 1. Manufacture more than 25,000 lbs. of a listed chemical per year; 2. Process more than 25,000 lbs. of a listed chemical per year; or 3. Otherwise use more than 10,000 lbs. of a listed chemical per year.
STATE	
Health & Safety Code (H&SC) §39500 et seq.	Required by the 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.
H&SC §40910-40930	The California Clean Air Act requires local Air Pollution Control District's (APCD) to attain and maintain both national and state AAQS at the earliest practicable date.

APPLICABLE LAW AIR QUALITY	DESCRIPTION
H&SC §39650-39675	The Toxic Air Contaminant Identification and Control Act creates a two-step process to identify toxic air contaminants (TAC) and control their emissions. The ARB identifies and prioritizes the pollutants to be considered for identification as Tacos. The ARB then assesses the potential for human exposure to a substance while the Office of Environmental Health Hazard Assessment evaluates the corresponding health effects.
California Public Resources Code §25523(a); 20 CCR §§1752, 1752.5, 2300-2309, and Div. 2 Chap. 5, Art.1, Appendix B, Part(k)	Establishes requirements in the Sec's decision making process on an application for certification that assures protection of environmental quality.
LOCAL	
SMAQMD Rule 202 – New Source Review (NSR)	Requires that a source be subject to a New Source Review process, including an evaluation of best available control technology (BACT), an air quality impact analysis, and emission offsets.
SMAQMD Rule 304	Allows inter-pollutant offsets between precursor contaminants on a case-by-case basis. For pollutants that do not cause or contribute to a violation of ambient air quality standards.
SMAQMD Rule 401.	Prohibits visible emissions as dark or darker than No. 1 on the Ringelmann chart.
SMAQMD Rule 402 - Public Nuisance	Requires air dispersion modeling and a Screening Health Risk Assessment in accordance with CARB and CAPCOA guidelines.
SMAQMD Rule 403 - Fugitive Dust	Requires the application of best available control technology to control fugitive dust during construction.
SMAQMD Rule 406	Establishes emission limits for sulfur and particulates.
SMAQMD Rule 413	Limits NO_x emissions to 9ppm at 15% O_2; requires continuous emission monitoring.
SMAQMD Rule 420.	Limits sulfur content of gaseous fuels.

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BIOLOGY

BIOLOGY – GENERAL

Power Plant Site and Laydown Area

The 30-acre power plant site and the 20-acre laydown area consist of annual grassland with wetlands dispersed throughout the site. The laydown area may be used for up to 32 months depending on whether Phase 2 is constructed. The Army Corps of Engineers (ACOE)-verified wetland delineation accounted for 2.50 acres of wetlands within the project site foot print and laydown area, all of which are "waters of the U.S." (jurisdictional) and regulated by the ACOE. Thus, there are federal permits required in order for the project to be constructed. In addition, there are also affected wetlands that are not "waters of the U.S."

SMUD has categorized the wetlands for the project site and construction laydown area into the following types: seasonal wetland, seasonal swale, vernal pool, freshwater and seasonal marsh, Placer tailing, riparian willow scrub, seasonal and perennial creek, seasonal stream, drainage ditch, pond, ponded feature, and open water.

The power plant site and construction laydown area have not been leveled and contain many of the natural features present in areas with vernal pools and seasonal swales. SMUD selected the area south of the project for laydown since it has been heavily grazed, whereas a potential west of the site has much higher biological resource value. A seasonal stream and a seasonal swale cross the construction laydown area. They are diverted under Clay East Road and continue through the proposed project site. There are several wetland features on the site, as well as a mine-tailing pond directly east of the project site that holds water all year.

Clay Creek, which crosses north of the proposed plant site, drains to Hadselville Creek west of the site. Hadselville Creek is a tributary to Laguna Creek, which is a tributary to the Cosumnes River. There are also several large degraded pools located between the proposed project site and the existing Rancho Seco Nuclear Plant site that were excavated during the construction of the Rancho Seco Nuclear Facility. There is evidence that they were used to recapture concrete wash water and the soils may potentially contain chemicals

The annual grasslands on the project site and laydown area provide suitable foraging and habitat for a variety of species.

Transmission Line

The proposed transmission line corridor would be constructed from the northwest corner of the power plant site to the existing Rancho Seco Nuclear Plant switchyard. The transmission line corridor would be 50 feet wide and 0.4 mile long, with three sets of two towers. SMUD proposes a 150-foot wide construction corridor that would be disturbed for approximately 8 weeks. The proposed locations of the towers are within 250 feet of several wetland features that exist between the plant site and Rancho Seco Nuclear Plant.

Construction Access Road

SMUD proposes to build a new 0.5-mile long construction access road from the existing paved Rancho Seco Park entrance south to Clay East Road. The access road would be located on an existing firebreak in annual grassland habitat, would cross several seasonal streams, and would be within 250 feet of several vernal pools. The proposed road would be 24 feet wide and paved, with an additional 25-foot wide construction disturbance for 3 months. The area near the proposed access road was originally delineated in 1993 as part of the Preliminary Delineation of Waters of the United States, Including Wetlands, for the Rancho Seco Park Master Plan.

Water Supply Pipeline and Storm Water Detention Basin

The proposed 0.4 mile long 20-inch diameter water supply pipeline would extend underground from the northern end of the site to an existing water supply line for the Rancho Seco Nuclear Plant. It would cross annual grassland, Clay Creek, and several other wetland features. The plant cooling and make-up water would be delivered via an existing 66-inch pipeline that extends from the Folsom South Canal to the Rancho Seco Plant. Construction of the water pipeline would require a 75-foot wide construction corridor.

The source of the water supply is surface flow from the Lower American River, and would be delivered under contract by the U.S. Bureau of Reclamation (USBR). SMUD has both Appropriative Water Rights (which are under the jurisdiction of the State Water Resources Control Board (SWRCB)), and a federal contract with the USBR for water deliveries. See also **WATER RESOURCES**.

SMUD has modified the project to include Zero Liquid Discharge (ZLD) technology, so no wastewater discharge of cooling water to Clay Creek or evaporation ponds is necessary. A storm water detention basin would be constructed to contain storm water flows and regulate run-off to Clay Creek from the site and the west side of the laydown area.

Natural Gas Pipeline

The gas pipeline is approximately 26.5 miles long with a permanent easement 35 feet wide and an additional 30-foot wide construction corridor. Starting at the Carson Ice-Gen Cogeneration Facility, the gas pipeline route goes through annual grassland in the Bufferlands, and then ruderal grassland paralleling the Union Pacific railroad tracks on the west side. At Elk Grove Boulevard, the proposed gas pipeline has been realigned and turns east to Franklin Boulevard and continues south on the shoulder of Franklin Boulevard to the Union Pacific railroad crossing. The alignment follows the railroad tracks through an agricultural area to Core Road and heads east to Bruceville Road. It then continues east through irrigated pasture to Eschinger Road and follows that to an unimproved farm road. It then turns south and crosses the Cosumnes River, Badger Creek, and the Cosumnes River Preserve. After crossing under State Route (SR) 99, the pipeline alignment continues east along Arno Road to Valensin Road, crosses Laguna Creek (using HDD), continues along Laguna Road to Twin Cities Road, and

then to Clay East Road before ending at the plant site. Most of the area east of SR 99 consists of agricultural areas that include irrigation canals and other wetland features. Crops include corn, alfalfa, vineyards, and irrigated pasture.

A wetland delineation and rare plant survey were completed for the proposed gas pipeline route. The wetland delineation maps identify several types of wetland areas along the proposed route including: agricultural ditches, drainage ditches, roadside ditches, agricultural ponds, pools, marshes, swales, creeks, open water, and canals. The wetland delineation that has been verified by the ACOE identified 4.28 acres of non-jurisdictional wetlands and 1.749 acres of jurisdictional wetlands. The wetland delineation also identified several areas along the gas pipeline route that were vernal pool invertebrate habitat.

Thirty-seven stream crossings have been identified by SMUD in their Streambed Alteration Agreement Application (SAA) to the DFG. Of the 37 stream crossings identified, SMUD is proposing to use Horizontal Directional Drill (HDD) technology to cross the Cosumnes River, Badger Creek, the Badger Creek backwater lake, Laguna Creek, and a slough on Franklin Boulevard. The other waterways to be crossed or altered are identified as either drainage or irrigation ditches or ephemeral drainages. Dry season trenching would be used for crossing the other 32 waterways during gas pipeline construction.

Pipeline Valve Stations/Compressor Stations

There are three proposed natural gas valve stations and an inter-tie station to be constructed along the proposed gas pipeline route. All of them are located along existing roads in agricultural areas used for crops such as hay and alfalfa, which are used as foraging habitat by raptors and other bird species

Two new natural gas compressor stations are proposed for Phase 2 of the project; one would be located near Winters, and the other near the Carson Ice-Gen Cogeneration Plant. The compressor station near Winters is bordered by orchards to the north and agricultural fields to the south. The closest potential nesting tree is within 100 yards of the site, with other trees located approximately 200 yards away. The Winters compressor station would be located within the existing fence line and adjacent to the existing SMUD/PG&E 400/401 interstate pipeline station.

The second compressor station would be adjacent to the existing SMUD #190 Crosstie Compressor Valve Station fenced area, which is located within the Bufferlands. (SA Biological Res., p. 4.2-11-15)

Protected Species Impact

For the purpose of this analysis, the Commission reviewed all federally- and state-listed species, species proposed for listing under the California and Federal Endangered Species acts, federal species of concern, state species of special concern, and plant species designated as rare, threatened, or endangered (List 1B or List 2) by the CNPS Inventory of Rare and Endangered Plants of California.

Rare Plants

All of the identified sensitive plant species are either associated with vernal pool habitats or wetlands. None of the plant species were found during SMUD's special-status plant surveys of the project site and gas pipeline construction corridor, although they are known to occur at the Laguna Stone Lake Preserve site and at the Rancho Seco vernal pools. Construction of the gas pipeline along the Franklin Boulevard alignment avoids the Preserve and would likely avoid significant impacts to plant species. Legenere is also known to occur at the Cosumnes River Preserve, but not along the proposed alignment. Sensitive plants are not likely to be impacted at the project site or along the gas pipeline. (SA Biological Res., p. 4.2-19)

Heritage Trees

SMUD identified several heritage trees along the gas pipeline construction corridor. SMUD did not survey the trees in the riparian area of the Cosumnes River since it intends to use HDD bore technology in that location. The Sacramento County Tree Preservation Ordinance requires a permit for activities that include trenching, grading, or filling within the dripline of a heritage tree. The County does not allow the removal, killing, or destruction of any heritage tree without a tree permit, or unless authorized as a condition of a discretionary project approval by the Board of Supervisors or Planning or Zoning commissions. Commission Staff and the CDFG have concerns that the HDD bore under the Cosumnes River could impact heritage trees due to the need for a guidance system, equipment laydown, or from emergency response to a frac-out. SMUD has identified several trees along the gas pipeline alignment that would be removed that are not heritage trees. No heritage trees are proposed for removal, although work may occur within the dripline. Construction activities that result in impacts to heritage trees would be significant. (SA Biological Res., p. 4.2-19)

MITIGATION:

☑ The Project Owner shall avoid heritage trees when possible; any trees that are removed shall be replaced. Condition: **BIO-16**

Invertebrates

Vernal pool invertebrates: The USFWS has communicated to SMUD and Staff that vernal pool invertebrate species should be assumed present in all of the areas that seasonally pond water. There are 10.325 acres of vernal pool invertebrate habitat along the gas pipeline route and at the site that would be disturbed as a result of constructing the proposed project. Individuals of listed crustaceans and their cysts may be directly injured or killed by activities leading to the destruction of the pools in which they exist, or indirectly injured by changes in hydrology, building of roads, use of pesticides/herbicides and introduced predators. Impacts to vernal pool habitat would result in adverse impacts to individuals or their cysts that require an Incidental Take Permit under Section 7 of the Federal Endangered Species Act for the federally-listed vernal pool invertebrates.

Ms. Diane Moore, Intervenor Peasha's biology witness, testified that the wetlands inventory was inadequate (Moore, p. 3). The Commission is satisfied with the adequacy of the wetlands inventory through the testimony of the other witnesses that between the ACOE's delineation of its "jurisdictional" wetlands and the Commission staff's review of additional "non-jurisdictional" wetlands. (RT 5/12 p. 38-41, 171-173)

MITIGATION:

- ☑ The Project Owner shall minimize wetlands loss. Condition: **BIO-12**
- ☑ The Project Owner shall grade after vernal pools are dry or shall use protective erosion and sedimentation control measures. Condition: **BIO-13**

Valley elderberry longhorn beetle: This federally-listed threatened insect is completely dependent on its host plant, the elderberry plant (*Sambucus* spp.). The project site and gas pipeline route were surveyed for elderberry plants, and nine plants were located. If elderberry plants with exit holes are within 100 feet of construction activities they could be adversely affected by construction, thereby resulting in an adverse impact to the valley elderberry longhorn beetle. Impacts to elderberry plants with exit holes would result in adverse impacts to the valley elderberry longhorn beetle which requires an Incidental Take Permit under Section 7 of the Federal Endangered Species Act. (SA Biological Res., p. 4.2-19-20)

MITIGATION:

- ☑ The Project Owner shall follow USFWS conservation guidelines for the valley elderberry longhorn beetle. Condition: **BIO-17**

Fisheries

SMUD has redesigned the project to use Zero Liquid Discharge technology. Therefore, no impacts to fisheries resources in Clay Creek or downstream in the Cosumnes River from cooling water discharge would occur. Storm water from the laydown area would flow north under Clay East Road in two locations. The water being diverted from the eastern portion of the laydown area would flow around the east side of the power plant site to Clay Creek. The other seasonal swale would flow through the laydown area, under Clay East Road and through the plant site to the stormwater detention basin. Before the stormwater is discharged to Clay Creek, the water would have to meet Central Valley Regional Water Quality Control Board (CVRWQCB) standards and would result in a clean discharge. (See **WATER QUALITY**) No impacts to fisheries in Clay Creek or downstream impacts are expected from the stormwater being discharged from the laydown area or the storm water detention basin.

The United States Bureau of Reclamation (USBR) is in the process of renewing its contract for water supply with SMUD, which expires in 2012. As part of the USBR contract renewal process, the environmental impacts of the new contract would be assessed as required by the National Environmental Policy Act. The USBR would initiate consultation with the NMFS to address potential impacts to fisheries in the Lower American River.

SMUD completed modeling of flows in the Lower American River and addressed whether there would be changes to water levels and temperatures that would result in significant impacts to fisheries from the proposed water use. Modeling results showed that impacts would be less than significant. The federal National Marine Fisheries Service (NMFS) reviewed the modeling results and determined that the proposed water use for, and the construction of, the project is not likely to adversely affect the Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, or Central Valley steelhead.

HDD bore technology uses drilling mud, such as bentonite, as a drilling lubricant. A frac-out occurs if the bentonite were to release from the drilling hole to the surface through fissures or cracks in the earth. Bentonite can smother invertebrates and aquatic plants, as well as impact fisheries if a frac-out occurred in a stream channel. A frac-out could have impacts to fisheries in the Cosumnes River, Laguna Creek, and Badger Creek. However, SMUD has proposed to complete the HDD bores during the dry season when there is no surface water in the Cosumnes River. SMUD has also developed a Response Plan with detailed procedures for notification and clean-up should a frac-out occur. Therefore, impacts would be less than significant. (SA Biological Res., p. 4.2-20-21)

Amphibians

Western spadefoot toad: This toad is a federally- and state-listed species of special concern. Western spadefoot toads lay eggs in early March and by the end of spring tadpoles metamorphose into adults and move into upland areas to aestivate (Zeiner 1988). Upland habitat containing small mammal burrows and large cracks in the soil could be used for aestivation (amphibian for “chillin” out of the hot sun) during the dry season. There are no historical records from the site or project vicinity that show presence of western spadefoot toads. SMUD conducted surveys for amphibian species along the gas pipeline route and at the project site. No individuals were found. Where they occur in their range, western spadefoot toads are usually abundant. Therefore, no impacts to western spadefoot toads are expected from the project.

California tiger salamander: This salamander is a candidate species for federal listing and is a state-listed species of special concern. The project is within the historical range of the California tiger salamander and is within the vicinity of current known locations. SMUD reported that California tiger salamander larvae were found in 2002 at a created vernal pool approximately 0.25 mile east of Rancho Seco Reservoir. For tiger salamander larvae to reach successful transformation to adults, it is necessary for potential breeding sites to contain water for a minimum of 10 weeks in the winter and spring months. California tiger salamanders usually use ephemeral water bodies for breeding. Upland habitat containing small mammal burrows and large cracks in the soil could be used for aestivation during the dry season.

There is a potential for California tiger salamander to aestivate on the project site and laydown area. SMUD completed a survey for the California tiger salamander and western spadefoot toad in April 2002, but did not find either species along the survey route. Bullfrog juveniles and adults, a predatory species, were present at some of the locations with permanent water including the open water in the Cosumnes River

Preserve and the mine tailing pond located east of the power plant site. The presence of introduced fishes, bullfrogs, and crayfish in permanent and intermittent aquatic habitats may limit the successful recruitment of the population of California tiger salamander in the Rancho Seco area .

The habitat assessment demonstrates that the project site and laydown area could provide suitable California tiger salamander breeding and aestivating habitat. Predators of California tiger salamander are unlikely to get established in seasonal ponds, as their life cycle is adapted to permanent water bodies. A second year of surveys should be completed. Construction of the project could potentially impact breeding and aestivating California tiger salamanders. (SA Biological Res., p. 4.2-21-22)

Ms. Diane Moore, Intervenor Peasha's biology witness, testified that the salamander surveys are questionable due to an irregular winter rain pattern and an unreliable baseline inventory. (Moore, p. 3). It appears from the testimony of others that the pipeline route was adequately surveyed. (RT 5/12 157-159; 215) The Commission finds the surveys in the record are adequate to identify potential impacts. Moreover, the pre-construction surveys required by Condition of Certification **BIO-18** ensures that the potential impacts to the salamander will not be significant.

MITIGATION:

- ☑ The Project Owner shall use dry season trenching and grading within potential California tiger salamander habitat. Condition: **BIO-12**
- ☑ The Project Owner shall conduct a pre-construction survey for California tiger salamanders and western spadefoot toads. Condition: **BIO-18**

Reptiles

Giant garter snake: The giant garter snake is a federally- and state-listed threatened species and is classified as California Fully Protected. Giant garter snakes hibernate underground during the winter months; the active period for the giant garter snake is May 1 – October 1. Throughout this period the snake is active and if disturbed, usually retreats to water. During the hibernation period giant garter snakes may be impacted by construction of the gas pipeline in areas where construction is within 200 feet from the banks of giant garter snake aquatic habitat. Giant garter snakes would be affected during the active season if they get trapped in the gas pipeline trench, if they occupy areas that would be used for equipment storage, or are occupying areas within the construction corridor. Giant garter snakes are not present at the power plant site. Since the populations that would be impacted are areas that the USFWS recovery plan designates as important to the recovery of the species, any potential impacts to individuals in these populations are significant. SA Biological Res., p. 4.2-22

MITIGATION:

- ☑ The Project Owner shall limit laydown areas away from banks of water bodies in giant garter snake habitat and use horizontal directional drilling during summer months when the giant garter snake is active. Condition: **BIO-13.**

Northwestern pond turtle: The northwestern pond turtle is a federally- and state-listed species of special concern. Pond turtles are associated with permanent water in a wide variety of habitats, and are known from locations along the gas pipeline and Clay Creek. Pond turtles require basking sites. Eggs are deposited in nests constructed along sandy banks or hillsides. Northwestern pond turtles would be affected if they get trapped in the gas or water pipeline trenches. Construction activities at the power plant site or along the gas pipeline could injure or harm individual turtles, and result in potentially significant impacts. (SA Biological Res., p. 4.2-22)

MITIGATION:

- ☑ The Project Owner shall maintain sufficient water quality in storm water releases from the detention pond to not affect northwestern pond turtle habitat downstream. Condition: **BIO-12**
- ☑ The Project Owner shall temporarily fence and provide wildlife escape ramps for steep holes and trenches. Condition: **BIO-13**

Birds

Western burrowing owl: The burrowing owl is a state-listed species of special concern. Complete protocol burrowing owl survey results have not been provided to Staff, although several reconnaissance surveys have been completed. Field surveyors for the project checked for burrowing owls while conducting the wetland delineation along the gas pipeline, but Energy Commission biology staff also requested that SMUD conduct a CDFG protocol level survey. SMUD's Biological Resources Assessment states that protocol level surveys were completed for the project site and laydown area, but these surveys along the gas pipeline have not been conducted. An additional reconnaissance level survey was completed in February 2003.

Several burrowing owl pairs are located on Bufferlands property at the northern end of the proposed pipeline route and burrowing owl pellets were located outside a burrow near the northern edge of the power plant site. SMUD has identified several areas that could be used by burrowing owls. The Energy Commission received a letter from a resident that identified another potential location for burrowing owls along the gas pipeline corridor (French 2002).

Wintering burrowing owls within 160 feet of, and nesting burrowing owls within 250 feet of project construction activities are susceptible to construction activities that would cause unsuccessful nesting or burrow abandonment. Impacts to nesting success would be significant, although if individuals are not present along the gas pipeline, project site, or laydown area, then impacts would be unlikely. (SA Biological Res., p. 22-23)

MITIGATION:

- ☑ The Project Owner shall limit construction activities to existing roads and approved construction area, so as to avoid mapped and marked burrows. Condition: **BIO-13.**
- ☑ The Project Owner shall conduct a pre-construction survey for the burrowing owl at the power plant site and pipeline route, map occupied burrows, and monitor burrow abandonment. Condition: **BIO-18**

Swainson's Hawk: The Swainson's hawk is a state-listed threatened species. Significant impacts to nesting Swainson's hawks would occur if construction activities occur within 0.5 mile of a nest, as this can cause nest abandonment or forced fledging. Impacts would also occur if nest trees were trimmed or removed. Swainson's hawk nest sites are considered active if they have been used in the last 5 years as determined by CDFG nesting records or other confirmed sources. There are approximately 13 potential nest sites along the gas pipeline based on surveys reported by SMUD and CDFG. The Energy Commission also received a letter from a resident that identified a potential Swainson's hawk nesting tree along Clay Station Road (French 2002). Construction activities within 0.5 mile of a nest tree would likely result in significant impacts to nesting pairs.

Ms. Diane Moore, Intervenor Peasha's biology witness, testified that the surveys for the burrowing owl and the Swainson's hawk are inadequate to assess project impacts and determine appropriate mitigation. The surveys were taken too early in the nesting season and not with accepted protocols. (Moore, p. 3). SMUD's witness, Ms. Crowe, testified that both surveys were performed according to the CDFG guidelines. (RT 5/12 42-43; 61; 151-152) The Commission is not only satisfied with the surveys but also is reassured that the pre-construction surveys will fully mitigate any potential impacts.

MITIGATION:

☑ The Project Owner shall conduct a pre-construction survey for the Swainson's hawk at the power plant site and pipeline route, map and monitor occupied nests. Condition: **BIO-18**

Other migratory birds and raptors: The Migratory Bird Treaty Act and Fish Game Code protect other migratory birds and raptors. Some species have potential nesting and/or foraging habitats in areas that would be impacted by construction activities at the power plant site and along the linear facilities. Activities such as tree and shrub removal that result in take or needless destruction of nests or eggs of any protected bird would be considered a significant impact. Significant impacts can be avoided by clearing nesting substrate outside the nesting season, and avoiding nesting individuals.

MITIGATION:

☑ The Project Owner shall conduct a pre-construction survey for nesting birds, including raptors, at the power plant site and pipeline route. Condition: **BIO-18**

Greater sandhill cranes are present in the Sacramento Valley in the winter months, during their migration. Greater sandhill cranes use the Cosumnes River Preserve and other fields along the gas pipeline route with forage habitat. Greater sandhill cranes are unlikely at the project site. Construction of the natural gas pipeline would occur within the Cosumnes River Preserve during the dry season when greater sandhill cranes are not present, so impacts are unlikely. (SA Biological Res., p. 4.2-19)

Mammals

The proposed project is located within the range of several bat species that are federal species of special concern. Construction of the project would not result in the removal of buildings, nor would the gas pipeline cross bridges or structures that are suitable bat roosting habitat. The riparian areas at the Cosumnes River, Badger Creek, and Laguna Creek would be avoided by using HDD to bore under those areas. Although SMUD proposes to remove some trees, it is unlikely to result in significant impacts to bats. . (SA Biological Res., p. 4.2-24)

Phase 2 Construction Impacts

Additional impacts could occur during construction of Phase 2 of the project from species mortality and injury. The compressor stations would not be constructed until Phase 2 and the laydown area would be used again after a potential period of non-use. Although surveys were completed in 2002, and preconstruction surveys would be conducted prior to construction of Phase 1, species such as Swainson's hawks and burrowing owls could occupy the area after those surveys are completed. If construction of Phase 2 resulted in any of the impacts as identified for Phase 1, significant impacts would likely occur. Therefore, prior to construction of Phase 2 surveys would have to be reinitiated and submitted to the Energy Commission, and mitigation measures implemented to prevent significant impacts to individuals from mortality or injury.

The construction laydown area could be disturbed for an extended time period depending on when or if Phase 2 is constructed. The eastern drainage and the western swale that would be fenced and avoided during Phase 1 could be impacted by erosion, sedimentation, and run-off if the area was not revegetated after use. This could also result in changes in hydrology that could impact vernal pools that fill from the surface run-off. If the construction of Phase 2 proceeded shortly after Phase 1 is complete, and the construction lay down area reused, then no revegetation between Phases would be required to reduce impacts. Restoration and revegetation would be completed after construction of Phase 2 is complete. (SA Biological Res., p. 4.2-24)

<u>Long-term Habitat Loss/Degradation</u>

Construction and operation of the power plant and the linear facilities would have direct and indirect impacts that would result in permanent losses of habitat. The habitats impacted are either wetland or uplands, but can be categorized based on the species that use them.

If habitat is impacted long-term, the most accepted mitigation is providing compensatory habitat, usually through the Project Owner's purchase of suitable habitat, which is managed to maintain its habitat value. Once a potential impact is determined it becomes largely an accounting exercise to determine the extent of the total impact and calculate, usually through appropriate ratios, the acreage of suitable compensatory habitat. Occasionally, the same compensatory habitat addresses potential impacts to multiple species.

Upland habitats can be used as upland refuge by giant garter snakes; as aestivating habitat for California tiger salamanders; and as foraging and nesting habitat for

burrowing owls, Swainson's hawks, and the other identified bird species. The construction of the power plant and the linear facilities would result in 51.85 acres of permanent impacts to upland habitat (SA Biological Res., Table 2, p. 4.2-16).

Swainson's Hawk

Swainson's hawks will forage within an approximate 10-mile radius from their nest site. Projects that adversely modify nesting/foraging habitat should be required to provide mitigation for the project's impacts to the species. SMUD reported that the closest known Swainson's hawk nest to the power plant site and laydown area is approximately 4.9 miles away, south of Valensin Road and there is an additional nest site approximately 3 miles away. Construction of the power plant, access road, valve and inter-tie stations, and transmission line towers would result in the permanent loss of upland forage habitat. The loss of habitat at the laydown area would occur for more than one nesting season and is therefore considered a long-term loss of habitat. Both permanent and long-term impacts are significant. The permanent habitat impact is 30 acres, representing the power plant project site; SMUD will acquire compensatory habitat (plus 23.9 acres for temporarily impacted habitat) at the nearby Laguna Creek mitigation area. (SA Biological Res., p. 4.2-16; Exhibit 5)

MITIGATION:

☑ The Project Owner shall provide compensatory upland habitat. Condition: **BIO-14**

Burrowing Owl

Loss of burrowing owl foraging habitat can also occur if upland habitat adjacent to an active burrow is permanently impacted. Burrowing owls rely on approximately 6.5 acres of forage habitat per occupied burrow, calculated on an approximately 300-foot foraging radius around the burrow. Construction of the project would result in the permanent loss of upland habitat at the power plant site. No active burrows were identified near the project site and laydown area during surveys, although burrowing owl pellets were found at the entrance to a potential burrow along Clay Creek. If burrowing owls were observed occupying burrows near the power plant site and construction laydown area during spring surveys, then the loss of forage habitat would be significant. Since gas and water pipeline impacts are temporary, significant permanent impacts to burrowing owl foraging habitat along the gas pipeline are unlikely. (SA Biological Res., p. 4.2-16-17)

MITIGATION:

☑ If pre-construction surveys disclose the presence of burrows at the power plant site or pipeline route, the Project Owner shall provide a minimum of 6.5 acres of compensatory burrowing owl habitat. Condition: **BIO-15**

Other Birds

Other birds such as golden eagles, white-tailed kites, northern harriers, loggerhead shrikes, California horned larks, and tricolored blackbirds are known to nest in the area,

and could use the power plant site and laydown area for foraging or nesting habitat in any given year. Along the gas pipeline and other linear facilities, impacts to upland areas are expected to last less than one nesting season. In areas where the gas pipeline would cross agricultural fields, there may be temporary losses in habitat for greater sandhill cranes and other foraging birds, but the impacts would be short-term and would be considered less than significant. . (SA Biological Res., p. 4.2-19)

California Tiger Salamander

SMUD's survey for California tiger salamander along the gas pipeline, at the project site and laydown area was completed during the spring of 2002. No salamander were observed; however, they have been observed in the Rancho Seco Vernal Pool Area and Howard Ranch. A second year survey for California tiger salamander breeding habitat is currently being conducted by SMUD. California tiger salamander are known to travel up to 1.0 mile from breeding to aestivating habitat (CDFG, 1997). Depending on the results of the second year survey, construction of the project may result in significant impacts to California tiger salamander breeding and aestivating habitat. Since gas pipeline construction would occur during the dry season, impacts to California tiger salamander breeding habitat are unlikely. But see **Short-term Construction Disturbance** (following) regarding temporary impacts during construction to aestivating habitat. (SA Biological Res., p. 4.2-19)

Giant Garter Snake

Giant Garter Snake use both wetland and upland habitat. Habitat was considered suitable for giant garter snakes if it had 1) adequate water during the snake's active season; 2) wetland vegetation, such as cattails, for escape cover and foraging habitat; 3) upland habitat with grassy banks and openings for basking; and 4) higher elevation upland habitats for cover and refuge during the snake's inactive season in winter.

Upland habitat is calculated as a 200-foot wide area around suitable aquatic habitat. SMUD submitted a complete list of giant garter snake habitat. Using USFWS guidelines the project impacts are considered Level II; defined as greater than 20 acres of affected upland habitat. There is no permanent habitat loss, either at the power plant of the pipeline. However, construction of the gas pipeline would result in a significant short-term impact to giant garter snake aquatic and upland habitat. (SA Biological Res., p. 4.2-19; Exhibit 5)

Wetlands/ Vernal Pools

Wetlands or vernal pool invertebrate habitat is impacted either indirectly or directly by project activities. Direct effects occur when vernal pool invertebrate habitat is within a construction corridor, or would be altered or filled from project activities. Indirect effects to vernal pool invertebrate habitat occur when habitat is within 250 feet of a proposed action, and the hydrology or habitat could change as a result of project activities. Habitat includes any areas that seasonally pond water in which one or more of the listed vernal pool species could exist.

SMUD has calculated that a total of 2.967 acres of vernal pool invertebrate habitat would be permanently, directly impacted by the project, including USFWS proposed critical habitat. Due to the nature of vernal pool and seasonal swale soils and hydrology, and the need for the hard pan layer and uplands around the pool to stay intact to protect the integrity of the pool, any disturbance within 250 feet of a pool or complex would result in a significant indirect impact to that pool.

Since the proposed project would dredge and fill wetlands, SMUD has completed a wetland delineation that has been verified by the ACOE, and has been submitted with the Clean Water Act Section 404 Permit Application. Due to the ACOE's no net loss policy, the ACOE may ask for additional wetland mitigation for the jurisdictional impacts, as the wetlands are "waters of the U.S." The amount would be identified in the 404 permit. SMUD is also required to receive Clean Water Act 401 Certification from the Regional Water Quality Control Board (RWQCB).

A 3:1 ratio applies to direct vernal pool habitat impacts, so that 19.7 acres must be preserved for compensatory habitat, in this instance at the Laguna Creek Mitigation Bank. (Additional compensatory mitigation applies to temporary, indirect impacts.) SA Biological Res., p. 4.2-18; Exhibit 5)

MITIGATION:

☑ The Project Owner shall provide compensatory vernal pool habitat. Condition: **BIO-21**

Fisheries

No impacts to Essential Fish Habitat or anadromous fish species critical habitat have been identified by SMUD. The waterways with sensitive fish habitat would be avoided by using HDD technology to bore under them. A frac-out plan has been developed to address the potential for the inadvertent return of drilling mud to the surface during the HDD bores.

The irrigation canals along the gas pipeline would be crossed using open trench methods. Although some fish species may be found in them, they are not considered fisheries habitat. The NMFS has been consulted and found that the proposed SMUD Cosumnes Power Plant project is not likely to adversely affect critical habitat or Essential Fish Habitat. Construction of the proposed project would not result in significant adverse impacts to fisheries habitat.
(SA Biological Res., p. 4.2-18-19)

Short-term Construction Disturbance

Construction of the power plant and the linear facilities would have direct and indirect impacts that would result in temporary losses of habitat. The habitats impacted are either wetland or uplands, but can be categorized based on the species that use them.

To the extent feasible, construction impacts from construction activities on specific species and their mitigation have been addressed above in **Protected Species** Impact.

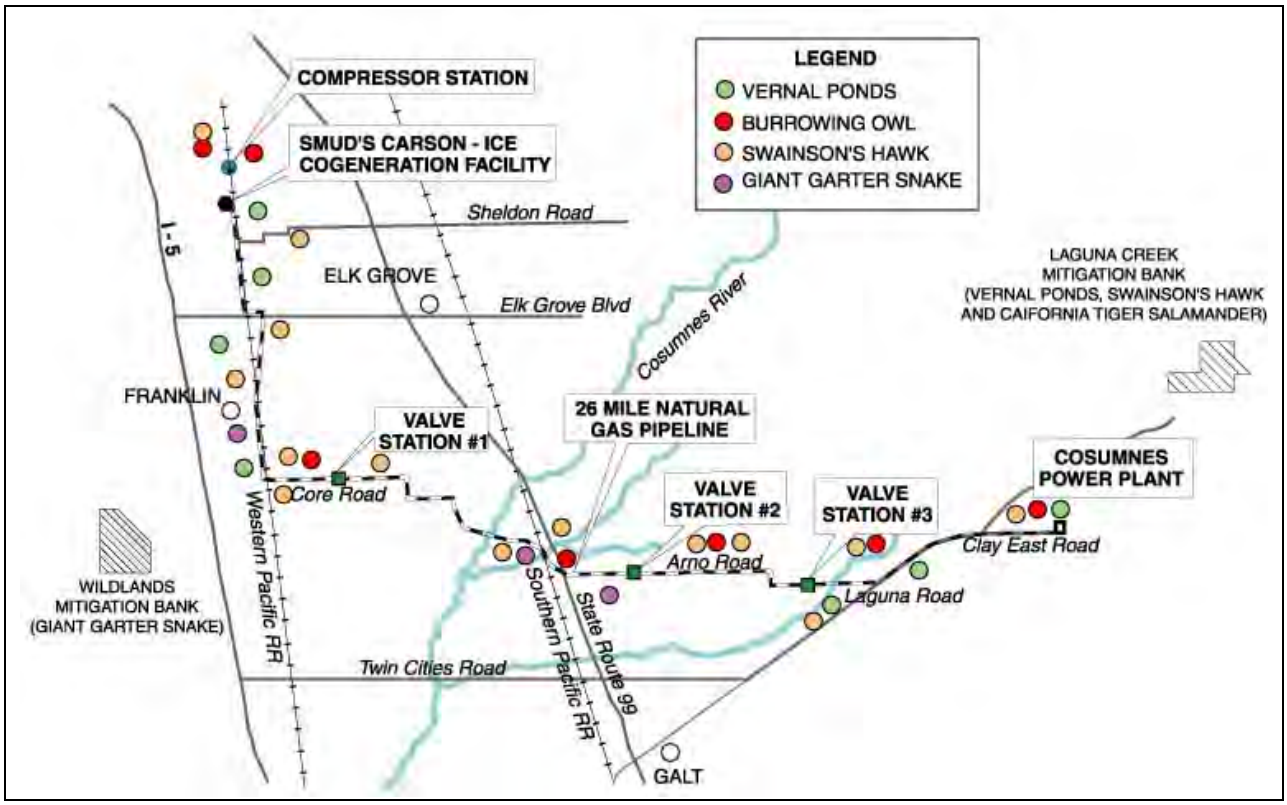
However, the construction of the power plant and the linear facilities would result temporary impacts to wetland and upland habitats.

Swainson's Hawk

Swainson's hawks will forage within an approximate 10-mile radius from their nest site. Construction activities, which adversely modify nesting/foraging habitat, should be required to provide mitigation for the project's impacts to the species. (SA Biological Res., p. 4.2-19) Swainson's Hawk nest sitings are shown above. SMUD has identified 23.9 acres of foraging habitat that will be temporarily impacted. (Exhibit 5) SMUD will mitigate this impact with compensatory habitat at the Laguna Creek Mitigation Bank, plus compensatory habitat for permanent habitat loss.

MITIGATION:

☑ The Project Owner shall provide compensatory upland habitat. Condition: **BIO-14**



Burrowing Owl

Burrowing owls could be impacted by the loss of burrows if construction activities result in the destruction of occupied burrows. Although burrowing owl presence has been found nearby, occupied burrows have not been located within the construction corridor of the gas pipeline, the power plant site, or the laydown area. SMUD has notified staff that protocol level spring surveys are being conducted in 2003. There is a potential for

occupied burrows to be impacted significantly by construction activities. SA Biological Res., p. 4.2-19)

MITIGATION:

☑ If pre-construction surveys disclose the presence of burrows at the power plant site or pipeline route, the Project Owner shall provide a minimum of 6.5 acres of compensatory burrowing owl habitat. Condition: **BIO-15**

Other Birds

Other birds such as golden eagles, white-tailed kites, northern harriers, loggerhead shrikes, California horned larks, and tricolored blackbirds are known to nest in the area, and could use the power plant site and laydown area for foraging or nesting habitat in any given year. Along the gas pipeline and other linear facilities, impacts to upland areas are expected to last less than one nesting season. In areas where the gas pipeline would cross agricultural fields, there may be temporary losses in habitat for greater sandhill cranes and other foraging birds, but the impacts would be short-term and would be considered less than significant. . (SA Biological Res., p. 4.2-19)

California Tiger Salamander

SMUD completed a survey for California tiger salamander along the gas pipeline, at the project site and laydown area during the spring of 2002. None were observed. However, they have been observed in the Rancho Seco Vernal Pool Area and Howard Ranch. The California tiger salamander is known to travel up to 1.0 mile from breeding to aestivating habitat. A second year survey for California tiger salamander breeding habitat is currently being conducted by SMUD. Depending on the results of the second year survey, construction of the project may result in significant impacts to California tiger salamander breeding and aestivating habitat. Gas pipeline construction would occur during the dry season; so impacts to California tiger salamander breeding habitat are unlikely. (SA Biological Res., p. 4.2-19) However, there may be potential impacts to aestivating habitat. SMUD estimates that there are 30 acres of aestivation habitat that are temporarily impacted. Compensatory habitat would be provided at the Laguna Creek Mitigation Bank, but would be included in the Vernal Pool mitigation habitat. (Exhibit 5)

MITIGATION:

☑ The Project Owner shall provide compensatory California tiger salamander habitat, in conjunction with vernal pool compensatory habitat. Condition: **BIO-21**

Giant Garter Snake

Giant garter snakes use wetland and upland habitats. Construction of the gas pipeline would result in a significant impact to giant garter snake upland and aquatic habitat. (SA Biological Res., p. 4.2-19) The giant garter snake has been sited near the pipeline route, as shown above. SMUD estimates that 41.5 acres of habitat will be temporarily impacted and proposed compensatory habitat at nearby Wildlands. (Exhibit 5)

MITIGATION:

☑ The Project Owner shall provide compensatory garter snake habitat. Condition: **BIO-20**

Wetlands/Vernal Pools

Vernal pool invertebrate habitat is impacted either indirectly or directly by project activities. Direct effects occur when vernal pool invertebrate habitat is within a construction corridor, or would be altered or filled from project activities. Indirect effects to vernal pool invertebrate habitat occur when habitat is within 250 feet of a proposed action, and the hydrology or habitat could change as a result of project activities. Habitat includes any areas that seasonally pond water in which one or more of the listed vernal pool species could exist.

Vernal Pool areas are near the power plant site and the pipeline route. SMUD has calculated that 6.877 acres of vernal pool invertebrate habitat would be impacted indirectly by project activities. Due to the nature of vernal pool and seasonal swale soils and hydrology, and the need for the hard pan layer and uplands around the pool to stay intact to protect the integrity of the pool, any disturbance within 250 feet of a pool or complex would result in a significant impact to that pool.

MITIGATION:

☑ The Project Owner shall provide compensatory vernal pool habitat. Condition: **BIO-21**

Fisheries

No impacts to Essential Fish Habitat or anadromous fish species critical habitat have been identified by SMUD. The waterways with sensitive fish habitat would be avoided by using HDD technology to bore under them. A frac-out plan has been developed to address the potential for the inadvertent return of drilling mud to the surface during the HDD bores. The irrigation canals along the gas pipeline would be crossed using open trench methods. Power plant site and laydown are stormwater runoff are controlled in the detention basin. Construction of the proposed project would not result in significant adverse impacts to fisheries habitat. (SA Biological Res., p. 4.2-18-19)

Operation Impact

Construction and operation of the proposed project would result in an increase of air emissions, noise, and light, all of which may result in impacts to biological resources at the site and adjacent areas. There is also the potential of electrocution hazards and avian collisions with the heat recovery steam generator (HRSG) stacks (165 feet in height) and transmission lines (125 feet in height). (SA Biological Res., p. 4.2-24)

Noise

Although the area surrounding the proposed project is relatively undeveloped, background noise is generated from agricultural activities and the Rancho Seco Nuclear Facility. Night time background noise measurements taken approximately 800 feet to the west of the project measured 39 dBA (decibels) on average for nighttime measurements (AFC p. 8.5-8).

Project construction would result in a short-term temporary increase in the ambient noise level from the use of construction equipment. The increases in noise would be primarily experienced close to the noise source. Dump trucks, backhoes, jack hammers and rock drills have the highest noise level. Pile drivers can be as noisy as 104 dBA. At 50 feet from the loudest construction equipment, noise levels could be as high as 98 dBA. Once construction is complete, noise levels would return to ambient levels.

SMUD has not submitted the noise levels for HDD, which could result in noise impacts to nesting birds. Staff is assuming that the HDD would take several days, and would operate for extended periods of time, up to 24-hours a day. During the nesting season, Swainson's hawks are susceptible to nest failure from construction noise. If the HDD was conducted after the female had laid eggs, but prior to young being 2-3 weeks old, the risk of nest failure increases, and the HDD would likely result in significant impacts. Conducting the HDD with a biological monitor present, a monitoring plan in place, and later in the nesting season would reduce potential impacts less than significant levels.

SMUD has proposed noise control equipment as part of the facility's design. At a distance of about 1,000 feet from the CPP site during operation, the plant noise level would be about 56 dBA (AFC, p. 8.5-14).

SMUD has proposed noise control equipment as part of the facility's design. At a distance of about 1,000 feet from the site during operation, the plant noise level would be about 56 dBA. (AFC p. 8.5-14)

Increases in noise could result in indirect impacts to sensitive species from nest abandonment, interrupting foraging behavior, or discouraging animals from using the project site vicinity and result in adverse impacts to the species. However, bird species that use the project area for foraging or nesting habitat would most likely be temporarily impacted from exposure to increased noise during construction. Loss of foraging and nesting habitat for bird species, nest abandonment, or forced fledging resulting from construction noise would result in significant impacts, the potential for which requires an Incidental Take Permit. (See **BIO-7**.)

Air Emissions

Air emissions from both Phases 1 and 2 HRSG stacks would not have a significant effect on surrounding vegetation and soils. Pollutants emitted from the stacks include carbon monoxide (CO), oxides of nitrogen (NO_x) and sulfur dioxides (SO_2), and inhalable particulates (PM_{10}) (AFC, p. 8.1-28). The maximum 1-hour CO emissions of 917.7 micrograms per cubic meter ($\mu g/m^3$) predicted from the stack combined with the maximum 1-hour CO background air concentration of 9,200 $\mu g/m^3$ results in a total

predicted 1-hour concentration of 10,118 $\mu g/m^3$. This is below ambient air quality standards (23,000 $\mu g/m^3$) and below concentrations known to result in growth retardation in plants (115,000 $\mu g/m^3$) and below the concentration found to result in slight reduction of nitrogen fixation (113,000 $\mu g/m^3$) (AFC, p. 8.2-40).

The maximum annual average of SO_2 concentrations estimated for this project (0.03 $\mu g/m^3$) is lower than the thresholds for chronic plant injury estimated at 130 $\mu g/m^3$ (AFC, p. 8.2-40).

The maximum predicted annual average of NO_x emissions for this project (0.24 $\mu g/m^3$) is lower than the 219.0 $\mu g/m^3$ threshold limits that can cause decreases in dry weight and leaf area on plants (SMUD 2001a, page 8.2-40). Maximum annual sulfur and nitrogen concentrations modeled at the Desolation and Mokelumne Wilderness Areas are below the Prevention of Significant Deterioration (PSD) Class I Wilderness Area increments (AFC, p. 8.1-42).

The maximum annual predicted concentration for PM_{10} from the CPP is 0.20 $\mu g/m^3$. Combined with the maximum ambient background concentration of 21.3 $\mu g/m^3$ measured in the project area, this would result in a total impact of 21.5 $\mu g/m^3$ (AFC, p. 8.1-40).

There are no sensitive habitats in the area such as serpentine grasslands that would be impacted by a slight increase in nitrogen deposition. Commission Staff believes that air quality impacts to biological resources would be less than significant. (SA Biological Res., p. 4.2-25-26) The SMAQMD found that the small increases of combustion emissions is insignificant compared to the quantity of fertilizer, manure, herbicides and insecticides used and present in production agriculture. (FDOC, p. 21)

Avian Collision and Electrocution

Bird collisions with electric transmission lines, transmission line ground wires, and exhaust stacks can result in significant bird losses when these structures are located in areas where suitable habitat attracts bird populations. Most bird collisions occur during migration in inclement weather. The mine-tailing pond and Rancho Seco Reservoir contain open water that may be used by low-flying flocking bird species. Construction of the proposed project would not increase the chances of collision with power plant-related facilities. The mine-tailing pond and reservoir are close to the site, but are not situated in a location that would increase collisions or electrocutions with the power plant related facilities.

Installation of transmission lines and construction of the transmission line towers according to the guidelines suggested by the Avian Power Line Interaction Committee (APLIC) would greatly reduce the likelihood that birds would collide with or be electrocuted by transmission lines. SMUD would build the 0.4-mile transmission line to APLIC guidelines, which would reduce the potential impact to a less than significant level (AFC, p. 8.2-13).

Cumulative Impacts

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future action, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Loss of Habitat

Much of the vernal pool and annual grassland habitats in the Central Valley have been lost due to agricultural practices and urbanization. The Sacramento and Elk Grove urban areas are both expanding. There is also an increase in vineyards in the area near SMUD's property. As vineyards are planted and houses are built annual grassland and vernal pool habitats are converted to agricultural and urban areas, reducing the overall biological diversity of the region. With the ongoing conversion and impacts, it is important to mitigate for the loss of sensitive species habitat and to reduce impacts to less than significant levels. The project would not result in significant cumulative impacts to the region when habitat compensation is provided.

Water Use

Water is an important resource in California, which is allocated to many beneficial uses including, but not limited to, agriculture, industry, municipal, the environment, and recreation. As water is allocated to agriculture and the growing population, less water remains in rivers to be utilized by fish and wildlife. All of the major rivers in California, except for the Cosumnes River, are dammed, which limits the amount of fish spawning habitat available for reproduction. The Lower American River is designated as a fully appropriated stream system by the SWRCB (WR Order 98-08), which means that all the water in the river is allocated. Folsom Reservoir does not have a large cold water pool to draw from; hence Lower American River water temperatures can become increasingly warm in the summer and fall, which has a negative impact on fisheries in the river. Through water conservation and the use of best available technologies, impacts to cold and warm water fisheries habitat can be lessened.

When the USBR renews contracts for Lower American River flows, they will consult with the NMFS through Section 7 of the Federal Endangered Species Act. Through the consultation process, impacts to fisheries and Essential Fish Habitat will be addressed and mitigation will be assessed to reduce significant impacts. The Central Valley Project Improvement Act of 1992 (CVPIA) also increased the amount of water that was allotted to the environment. Through the Anadromous Fish Restoration Program (AFRP), goals were established to increase salmon populations throughout the Central Valley of California.

EBMUD and the County of Sacramento are working on a joint project that would divert water near Freeport, on the Sacramento River to the Folsom South Canal, and eventually the Mokelumne River. EBMUD is completing a new Environmental Impact Report and will consult with the NMFS to address impacts to fisheries from the diversion.

SMUD could lessen its contribution to the cumulative impacts on the Lower American River by replacing the use of fresh in-land water with reclaimed water. In addition, in the event that the USBR is unable to make the full deliveries, SMUD would have a water source that would allow continued power production. SMUD has agreed to use reclaimed water in Phase 2, to the extent it is available, and if determined economically feasible and reasonably priced relative to the costs of other water sources for power production. SMUD has also agreed to consider the possible future use of reclaimed water in Phase 1 in the event reclaimed water in excess of the amount needed for Phase 2 is available. The project would use ZLD technology, which does minimize the amount of cooling water required.

SMUD's use of ZLD and the potential use of reclaimed water in Phases 1 and 2. These project elements would reduce cumulative impacts to the Lower American River to less than significant levels. (SA Biological Res., p. 4.2-27-28)

Findings

The project conforms with applicable laws related to biological resources, and there are no potentially significant adverse impacts to biological resources.

CONDITIONS OF CERTIFICATION

Designated Biologist Selection

BIO-1 The project owner shall submit the resume, including contact information, of the proposed Designated Biologist and Biological Monitors to the CPM for approval.

The Designated Biologist must meet the following minimum qualifications:

1. Have a Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Have three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. Have at least one year of field experience with biological resources found in or near the project area; and

Verification: The project owner shall submit the specified information at least 60 days prior to the start of any site (or related facilities) mobilization. Site and related facility activities shall not commence until an approved Designated Biologist is available to be on site.

If the Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and

approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

Designated Biologist Duties

BIO-2 The Designated Biologist shall perform the following during any site (or related facilities) mobilization, ground disturbance including cultural resources testing, grading, construction, operation, and closure activities:

1. Advise the project owner's Construction/Operation Manager, supervising construction and operations engineer on the implementation of the biological resources Conditions of Certification;
2. Be available to supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species or their habitat;
3. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
4. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (parking lots) for animals in harms way;
5. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification;
6. Respond directly to inquiries of the CPM regarding biological resource issues; and
7. Implement preconstruction surveys.

Verification: The Designated Biologist and Biological Monitors shall maintain written records of the tasks described above, and summaries of these records shall be submitted in the Monthly Compliance Reports.

During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

Designated Biologist Authority

BIO-3 The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist to ensure conformance with the biological resources Conditions of Certification.

If required by the Designated Biologist, the project owner's Construction/Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there shall be an adverse impact to biological resources if the activities continued;
2. Inform the project owner and the Construction/Operation Manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or shall be instituted, as a result of the halt.

Verification: The Designated Biologist must notify the CPM immediately (and no later than the following morning of the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure shall be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner shall be notified by the CPM that coordination with other agencies shall require additional time before a determination can be made.

Worker Environmental Awareness Program

BIO-4 The project owner shall develop and implement a CPM approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation and closure are informed about sensitive biological resources associated with the project.

The WEAP must:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
3. Present the reasons for protecting these resources;
4. Present the meaning of various temporary and permanent habitat protection measures;
5. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
6. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM two (2) copies of the WEAP, all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

The signed training acknowledgement forms shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for active project operational personnel shall be kept on file for six months, following the termination of an individual's employment.

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-5 The project owner shall submit two copies of the proposed BRMIMP to the CPM (for review and approval) and to CDFG and USFWS (for review and comment) and shall implement the measures identified in the approved BRMIMP.

The final BRMIMP shall identify;

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources Conditions of Certification identified in the Commission's Final Decision;
3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion and the ACOE 404 permit;
4. All biological resources mitigation, monitoring and compliance measures required in other state agency terms and conditions, such as those provided in the CDFG Incidental Take Permit and Streambed Alteration Agreement and Regional Water Quality Control Board permits;
5. All biological resources mitigation, monitoring and compliance measures required in local agency permits, such as site grading and landscaping requirements;
6. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
7. All required mitigation measures for each sensitive biological resource;
8. Required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
9. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;

10. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
11. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities - one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Include planned timing of aerial photography and a description of why times were chosen;
12. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
13. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
14. All performance standards and remedial measures to be implemented if performance standards are not met;
15. A discussion of biological resources related facility closure measures;
16. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
17. A copy of all biological resources permits obtained;
18. A copy of the Restoration and Revegetation Plan for the laydown area, gas pipeline, water pipeline, and transmission line;
19. A copy of the Landscaping Plan that includes tree species and location;
20. A frac-out contingency plan;
21. Project reporting, field verification and full disclosure forms;
22. A list of herbicides and pesticides that will be used during construction or operations; and
23. A nesting raptor monitoring plan.

Verification: The project owner shall provide the proposed BRMIMP at least 60 days prior to start of any site (or related facilities) mobilization.

The CPM, in consultation with the CDFG, the USFWS, and any other appropriate agencies, shall determine the BRMIMP's acceptability within 45 days of receipt.

The project owner shall notify and seek approval from the CPM no less than five working days before implementing any modifications to the approved BRMIMP.

Any changes to the approved BRMIMP must also be approved by the CPM in consultation with CDFG, the USFWS, and appropriate agencies to ensure no conflicts exist.

Implementation of the mitigation measures shall be reported in the monthly and annual compliance reports and submitted to the CPM for review. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for

review and approval, a written report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding.

BIO-6 Deleted. (See General Conditions regarding closure.)

Incidental Take Permit

BIO-7 The project owner shall acquire an Incidental Take Permit from the California Department of Fish and Game (CDFG) (per Section 2081(b) of the Fish and Game Code; California Endangered Species Act) and incorporate the terms and conditions into the project's BRMIMP.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the final CDFG Incidental Take Permit.

Streambed Alteration Agreement

BIO-8 The project owner shall acquire a Streambed Alteration Agreement from the CDFG (per Section 1600 of the Fish and Game Code), and incorporate the biological resource related terms and conditions into the project's BRMIMP.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the final CDFG Streambed Alteration Agreement.

Regional Water Quality Control Board Certification

BIO-9 The project owner shall acquire the Regional Water Quality Control Board Section 401 state Clean Water Act certification, and incorporate the biological resource related terms and conditions into the project's BRMIMP.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall provide the CPM with a copy of the final Regional Water Quality Control Board's certification.

Federal Biological Opinion

BIO-10 The project owner shall provide final copies of the Biological Opinion per Section 7 of the Federal Endangered Species Act obtained from the U.S. Fish and Wildlife Service. The terms and conditions contained in the Biological Opinions shall be incorporated into the project's BRMIMP.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the U.S. Fish and Wildlife Service's Biological Opinion.

U.S. Army Corps of Engineers Section 404 Permit

BIO-11 The project owner shall provide a final copy of the U.S. Army Corps of Engineers Section 404 of the Federal Clean Water Act permit. The biological resources

related terms and conditions contained in the permit shall be incorporated into the project's BRMIMP.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the U.S. Army Corps of Engineers 404 permit.

Preventative Design Mitigation Features

BIO-12 The project owner shall modify the project design to incorporate all feasible measures that avoid or minimize impacts to the local biological resources. These include:

1. Design of transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources;
2. Avoiding and minimizing wetland loss;
3. Prohibiting refueling or storage of hazardous materials within 200 feet of flagged sensitive resources, or 100 feet from "waters of the U.S.";
4. Design and construction of transmission lines and all electrical components in accordance with APLIC 1996 guidelines to reduce the likelihood of electrocutions and collisions of large birds;
5. Discharges from the storm water detention basin are of sufficient water quality to not effect fish and northwestern pond turtle habitat downstream;
6. Dry season trenching and grading within potential California tiger salamander habitat;
7. The stormwater detention basin shall be operated to reduce contaminates consistent with stormwater requirements, and with a flow dissipater structure to reduce velocity and potential scouring at the outfall;
8. That the setback from the seasonal stream and swale that cross the laydown area is as provided in the Army Corps of Engineers' 404 Permit, but in no case less than 25 feet;
9. Design and operate a ZLD system that shall process all wastewater produced by the plant; and
10. Constructing the gas pipeline using an alternative route that does not cross the Laguna Stone Lake Preserve;

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP.

Construction Mitigation Management to Avoid Harassment or Harm

BIO-13 The project owner shall manage their construction site, and related facilities, in a manner that avoids or minimizes impacts to the local biological resources. Measures shall include the following:

1. Temporarily fence and provide wildlife escape ramps for construction areas that contain steep walled holes or trenches if outside of an approved, permanent

exclusionary fence. The temporary fence shall be hardware cloth or similar materials;

2. Require that construction activities be limited to existing roads and identified approved construction areas;
3. Implement work windows when construction activities are close to sensitive resources;
4. Monitor construction sites daily to ensure that all trash and litter is picked up, placed in closed containers and disposed of daily;
5. Feeding of wildlife shall be prohibited;
6. Prohibit non-security related firearms or weapons from being brought to the site;
7. Prohibit pets from being brought to the site;
8. Prohibit intentional killing or collection of either plants or wildlife;
9. Report all inadvertent deaths of sensitive species to the appropriate biologist. Injured animals shall be reported to the CPM, the USFWS and the CDFG. The project owner shall follow instructions that are provided by the USFWS and the CDFG;
10. Construction activities within 0.25 mile of an active raptor nest shall be conducted in compliance with a monitoring plan to be submitted.
11. Laydown and staging areas near giant garter snake aquatic habitat shall be at least 200 feet inland from the banks;
12. Clearing and grading of the project site and laydown area shall be conducted after the vernal pools and seasonal swales in the vicinity are dry. Alternately, clearing or grading shall not begin without erosion and sediment control measures in place and approved to ensure that adjacent wetlands are not contaminated by sediments from the site. Sensitive biological resources adjacent to the site shall be fenced and/or flagged to minimize and avoid impacts;
13. No dust soil stabilization compounds except water or gravel shall be used within 50 feet of a delineated wetland;
14. No use of equipment at the HDD bore site that shall result in cutting back vegetation in the riparian areas;
15. Allow only authorized vehicles on the project site that have been inspected to ensure fire safety;
16. The use of HDD for construction of the gas pipeline under the Cosumnes River, Laguna Creek, and Badger Creek during summer months when salmon and steelhead are not expected in the river and creeks and when the giant garter snake is active;
17. A biological monitor shall be onsite or on call during the HDD and shall assist in monitoring frac-outs;
18. HDD equipment shall be located at least 150 feet from the Cosumnes River and Badger and Laguna Creek riparian corridors; and
19. No use of the herbicides or pesticides on the USFWS's prohibitive list.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP.

Upland Habitat Replacement

BIO-14 To compensate for impacts to upland foraging habitat for Swainson's hawks, the project owner shall purchase or place a conservation easement on a minimum of 53.9 acres of replacement habitat in Sacramento County. The project owner shall provide additional monetary funds for long-term management and monitoring of the protected lands as necessary based on the Center for Natural Lands Management Property Analysis Record, or a similar cost analysis. The project owner shall identify the location of the mitigation area and the entity that shall manage the property in perpetuity for approval by the CPM prior to ground disturbance.

Verification: Fifteen (15) days prior to site or related facilities mobilization, the project owner shall provide a copy of the check to the CPM and a letter from the CPM approved land management organization stating the amount of funds received, and the amount of acres conserved in long term management.

Burrowing Owl Habitat and Burrow Replacement

BIO-15 To compensate for permanent impacts to upland foraging habitat and/or occupied burrows at the site and related facilities, the project owner shall purchase a minimum of 6.5 acres of foraging habitat for every pair or unpaired resident bird occupying a burrow within 250 feet of permanent facilities at an approved mitigation bank in Sacramento County. The project owner shall provide additional monetary funds for long-term management and monitoring of the protected lands as necessary based on the Center for Natural Lands Management Property Analysis Record, or a similar cost analysis. The project owner shall also provide artificial burrows at an approved location for all occupied burrows that are destroyed from project activities. The project owner shall identify the location of the mitigation area and the entity that shall manage the property in perpetuity for approval by the CPM prior to ground disturbance.

Verification: Fifteen (15) days prior to site or related facilities mobilization the project owner shall provide a copy of the check to the CPM. At the same time the project owner shall also provide a letter from the CPM approved land management organization stating the amount of funds received, and the amount of acres purchased and/or constructed artificial burrows in long term management.

If burrowing owls preconstruction surveys are reported and burrowing owls are not occupying burrows at the CPP site, or along the project related facilities than habitat compensation shall not be required.

Heritage Tree Protection

BIO-16 The project owner shall implement the following:

- Construction plans shall be prepared showing the location of native oaks and heritage trees;
- Any trees that are removed shall be replaced on an inch-for-inch basis, and be in the form of replanting on site or payment at current market value. One 15 gallon

tree equals 1 inch of tree removed; One 24-inch box tree equals 2 inches; and one 36-inch box tree equals 3 inches of oak tree removed; and

- Consent of the owner of the land on record prior to tree removal.

Verification: All of the mitigation measures and their implementation methods shall be included in the BRMIMP. The tree replacement locations shall be submitted to the CPM for approval.

Valley Elderberry Longhorn Beetle

BIO-17 The project owner shall conduct the following:

1. Identify a conservation area that meets the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999b) and

2. Follow the USFWS (1999) standard conservation guidelines for the valley elderberry longhorn beetle.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP.

Surveys

BIO-18 The project owner shall conduct the following surveys:

1. California tiger salamanders and western spadefoot toads surveys will be conducted the season prior to site or related facilities mobilization.
2. Western burrowing owl surveys within a 500-foot buffer to the project site and all related linear facilities according to CDFG protocol (1995) shall be conducted prior to site mobilization. Known occupied burrows shall be identified and mapped. Monitoring of the active nests shall be conducted by the Designated Biologist throughout the initial construction season to identify additional losses from nest abandonment.
3. Pre-construction Swainson's hawk surveys shall be conducted out to 0.5 mile from all project construction areas. All nests shall be mapped within the 0.5 mile construction buffer. Surveys shall be conducted during the Swainson's hawk nesting season. If active nests are found, they shall be monitored according to CDFG guidelines (1994).
4. Pre-construction surveys for nesting birds, including raptors, shall be conducted out to a 500-foot buffer from the project site and all related facilities during the nesting season. Monitoring of the active nests shall be conducted by the Designated Biologist until young birds can independently feed and protect themselves before construction within the 500-foot buffer may begin.
5. A second preconstruction survey for all sensitive biological resources shall be conducted within 48 hours prior to clearing or grading activities.

Verification: Surveys shall be conducted within in the appropriate season, prior to site or related facilities mobilization. Within 10 days of completion, survey results shall be submitted to the CPM and included in the BRMIMP.

Giant Garter Snake

BIO-19 The project owner shall implement the mitigation measures in the USFWS giant garter snake formal consultation guidelines (1997). Mitigation measure shall be implemented in all previously identified habitat along the gas pipeline corridor.

Verification: All of the mitigation measures identified by SMUD and Energy Commission staff in the mitigation section and their implementation methods shall be included in the BRMIMP. The project owner shall include the status of mitigation measure implementation in the monthly and annual compliance reports for submittal to the CPM.

Giant Garter Snake Habitat Compensation

BIO-20 To mitigate for impacts to giant garter snake habitat, the project owner shall provide a minimum of 41.5 acres of giant garter snake habitat at a CPM approved location. Any site restoration necessary to create suitable giant garter snake habitat shall be completed at the project owner's expense. The property shall be located in Sacramento County. The project owner shall provide additional monetary funds for long-term management and monitoring of the protected lands as necessary based on the Center for Natural Lands Management Property Analysis Record, or similar cost analysis program. Approval of the management plan by the CPM is required prior to ground disturbance, and restoration shall be completed prior to commercial operation.

Verification: The project owner shall submit the location of the mitigation area, the entity that shall manage the property in perpetuity and the management plan for the area to the CPM for approval. Fifteen (15) days prior to site or related facilities mobilization the project owner shall provide a copy of the check and the signed contract to the CPM. At the same time the project owner shall also provide a letter from the CPM approved land management organization stating the amount of funds received, and the amount of acres purchased in long term management.

Vernal Pool Habitat Compensation

BIO-21 To mitigate for impacts to vernal pool habitat the project owner shall provide habitat compensation at a CPM approved area for a minimum of 9.84 acres impacted by construction. The habitat area shall also be within the occupied range of California tiger salamander. The minimum habitat compensation rates are as follows:

Total "Bank" (Wetted Acres)	**Total "Non-Bank" (Wetted Acres)**
19.7 Preservation **3.0 Creation**	**29.5 Preservation** **5.9 Creation**

The required habitat compensation shall consist of monetary funds for restoration and long-term management and monitoring of the protected lands as necessary. Costs shall be based on the Center for Natural Lands Management Property Analysis Record, or a similar cost analysis. Approval of the management plan by the CPM is required prior to ground disturbance, and restoration shall be completed prior to commercial operation although monitoring of success criteria may be ongoing after commercial operation is started.

Verification: The project owner shall submit the location of the mitigation area, the entity that shall manage the property in perpetuity and the management plan for the area to the CPM for approval. Fifteen (15) days prior to site or related facilities mobilization the project owner shall provide a copy of the check and the signed contract to the CPM. At the same time the project owner shall also provide a letter from the CPM approved land management organization stating the amount of funds received, and the amount of acres

LAWS, ORDINANCES, REGULATIONS & STANDARDS

BIOLOGY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Endangered Species Act of 1973 (16 USC, Section 1531 et seq.) and implementing regulations, (CFR, Section 17.1 et seq.)	Designates and provides for protection of threatened and endangered plants and animals and their critical habitat.
National Environmental Policy Act (NEPA) of 1969 (42 USC 4341 et seq.) and implementing regulations (40 CFR Parts 1500-1508)	NEPA must be addressed if an Environmental Impact Statement (EIS) would be required for a Federal action/permit that would have a significant effect on the environment.
Section 404 of the Clean Water Act (33 USC Section 404 et seq.)	Prohibits the discharge of dredged or fill material into waters of the United States without a permit. A 404 Nationwide permit 12 is applicable for utility line placement near waters of the U.S. causing temporary discharge of material.
Executive Order 11990, Protection of Wetlands	Requires governmental agencies take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out their responsibilities.
STATE	
California Endangered Species Act of 1984, (Fish and Game Code, Section 2050 et seq.)	Protect California's endangered and threatened species.
LOCAL	
Sac. Co. Tree Preservation Ordinance (SCC 480 § 1)	Establishes standards and measures for the preservation and protection of trees.
Sac. Co. General Plan, Conservation Elements	Establishes goals and policies for the preservation of riparian areas, wetlands, waterways, trees, endangered species, and critical habitat.

CULTURAL RESOURCES

CULTURAL RESOURCES- GENERAL

This analysis discusses cultural resources, which are defined as the structural and cultural evidence of the history of human development and life on earth. Cultural resources may be found on the ground surface or buried beneath the surface. Evidence of California's early occupation is becoming increasingly vulnerable due to the ongoing development and urbanization of the state. Potential cultural resources are identified through records searches and field surveys.

Since project development and construction usually entail surface and sub-surface disturbance of the ground, the proposed project has the potential to adversely affect both known and unknown cultural resources. Direct impacts are those which may result from the immediate disturbance of resources, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, or excavation. Indirect impacts are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or vandalism to exposed resource materials due to improved accessibility. Cumulative impacts to cultural resources may occur if increasing amounts of land are cleared and disturbed for the development of multiple projects in the same vicinity as the proposed project.

Prehistoric

Prehistoric archaeological resources are those resources relating to prehistoric human occupation and use of an area; these resources may include sites and deposits, structures, artifacts, rock art, trails, and/or any other traces of Native American human behavior. In California, the prehistoric period has been determined to pre-date 10,000 years before present (B.P.) and which extended well into the 18th century with the initiation of the Mission Period (ca. 1769) and the first Euro-American (Spanish) settlement of California.

The project area and the greater Sacramento Valley have been occupied for about 12,000 years, although only a few archaeological sites have been found that date earlier than 5,000 years ago. The probable reason for this is that much of the evidence for human occupation is buried beneath the alluvial sediments that accumulated quickly (as much as 30 feet) during that period.

Three general patterns of prehistoric resource exploitation have been identified for the area. During the time period between 2500 B.C. to A.D. 1500, the Windmiller Pattern was a seasonal hunting/gathering economy characterized archaeologically by projectile points, fishing hooks and spears, groundstone, and the remains of a wide variety of fauna and fish. Over a period of 1,000 years, that pattern evolved into a more specialized adaptive pattern called the Berkeley Pattern that demonstrates a shift to a greater reliance on acorns and shellfish as demonstrated by the use of mortars and pestles and the presence of shell mounds. The Augustine Pattern reflects development of social organization and stratification demonstrated by mortuary ritual, sedentism,

population growth, and beads as monetary exchange after A.D. 500 (SMUD 2001a, p. 8.3-9 to 8.3-12).

Historic

Historic archaeological resources are those materials usually associated with Euro-American exploration and settlement and the beginning of written historical records. Historic resources may also include archaeological deposits, sites, structures, traveled ways, artifacts, documents, and/or any other evidence of human activity. Prior to 1998, federal and state requirements identified historic resources as being greater than fifty years of age. Amendments to CEQA have removed the references to the fifty-year designation, while the federal regulations maintain the requirement.

The first documented European presence in the Sacramento Valley was by the Spanish explorer Pedro Fages in 1772. Spanish Colonel Juan Bautista De Anza and a party of Spanish settlers, soldiers, and Franciscan Fray were sent to Monterey to establish a mission. They traveled through the Bay Area in 1776. Spanish explorer Lieutenant Gabriel Moraga's caravan crossed the Mokelumne, Cosumnes, and American Rivers and explored the Feather River in 1808 while looking for suitable mission locations and capturing runaway Mission Indians. The first river-based expedition took place along the San Joaquin and Sacramento rivers by Spanish explorers in 1811. The last, and most substantial Spanish exploration in the area, occurred in 1817 when Luis Arguello, then commander of the San Francisco Presidio, traveled up the Sacramento River and on to the Feather River.

The Mexican revolt of 1822 brought an end to colonization through coastal mission building and began an emphasis on establishment of extensive land grants that included interior California. American trapper and explorer, Jedediah Smith explored the western Sierra Nevada and foothills starting in 1826, trapping in and around the Sacramento Valley in 1827. Large Mexican land grants were issued to John Sutter who founded New Helvetia in 1838. During the mid-1840s ranchos were granted around Sloughhouse, the Cosumnes River, modern Elk Grove, and the existing Rancho Seco Plant. Jackson Road was established as the main route between the Cosumnes River and Sacramento in 1848. The European population in the Sacramento Valley boomed in the early 1849 with the discovery of gold, just subsequent to the decimation of the indigenous population by epidemics of disease. California became a state in 1850, following the end of the Mexican war in 1848 and the Treaty of Guadalupe Hidalgo that ceded the territory of California to the United States.

A stage line that followed Laguna Creek to Stockton Road served as the main transportation route in the local area in the 1860s and 1870s. The Central Pacific Railroad completed a line to transport coal mined in adjacent Amador County in 1877 and used surrounding land grant property to graze cattle. Farming was started to supply stock feed and grew to include fruit orchards, hops production, and vineyards during the early 20th century. Agriculture has dominated the project area since that time. In 1966 SMUD began construction of the Rancho Seco Plant and operations

began in 1972. The power plant was closed by a vote of Sacramento County residents in 1989, after a controversial history of operation (AFC, p. 8.3-13, -15).

Thirteen potential historic resources have been identified in the vicinity of the project site and laydown areas. The location of previously recorded controversial archaeological site ARS 85-15-1 could not be identified. Potential historic ranch area CA-SAC-500 and CA-SAC-504 associated with historic mining were located. Seven features that appeared to be associated with historic mining activity was also recorded. It appears that all these resources in the vicinity of the project footprint would be avoided by the project. Since the project can avoid the potential resources evaluation of those potential cultural resources is not necessary. Staff recommends full-time monitoring during ground disturbance in the vicinity of these of these previously identified cultural resources to ensure avoidance pursuant to **CUL-7** and **CUL-8**.

Along the project linear facilities, three previously recorded archaeological sites (CA-SAC-93, CA-SAC-68, CA-SAC-02) and one newly discovered site that appears to have both a prehistoric and a historic component (CA-SAC-526/H), potentially may be impacted. Presence absence testing in the locations of CA-SAC-68 and CA-SAC-526/H did not identify cultural resource sites. However, staff recommends full-time monitoring during ground disturbance in the vicinity of these previously recorded sites. Presence/absence testing would be concluded at the location of CA-SAC-93 pursuant to the previously agreed upon test plan. If a site is identified, plans for either avoidance or data recovery as agreed upon in the treatment plan would be implemented pursuant to **CUL-8**.

The applicant's consultant, CH2MHILL, has also identified areas along the proposed gas line route where consideration of the terrain suggests that there may have been prior human habitation. There is potential for encountering subsurface cultural resources in these areas. Some of these areas would be monitored full time and some would be monitored on an intermittent basis as described in the treatment plan required by proposed Condition of Certification **CUL-8**. **Cultural Resources Table 2** lists the known resources that may potentially be adversely affected by the project, the site investigations made to date, and staff's proposed mitigation for those resources.

Presence/Absence Testing at CA-SAC-68

Presence/absence testing was conducted on June 26, 2002 at previously recorded site CA-SAC-68 to determine whether subsurface archaeological deposits are present. Six 50 cm by 50 cm were excavated to 40 cm deep. Auger testing was then used to reach a depth of 7 ft. Historic debris was identified (bottle glass, brown bottle glass, metal and fragments of metal etc.) in the top 25cm of the excavation. The historic debris was believed to be less than 45 years old. No cultural materials were found below 25 cm. Native Americans from Miwok Tribe, Randy Yonemura and Lisa Daily, monitored the excavation (SMUD 2002r, p.1-2). It appears that the site would not be impacted by the project because it does not extend into the natural gas line route. However, the natural gas pipeline would disturb more area than the test pits. Since there is a recorded find nearby, staff recommends full-time monitoring in the vicinity of CA-SAC-68.

Presence/Absence Testing at CA-SAC-93
Presence/absence testing was conducted on June 27 and 28, 2002, at previously recorded site CA-SAC-93. The proposed route of the gas line would extend through the site. However, the site is located in what is currently agricultural land where plowing activity is thought to have disturbed the surface to a depth of approximately four feet. The purpose of the test was to determine whether a subsurface component to the site still existed and if there was enough of the site left to evaluate for eligibility to the CRHR.

Three test units, 50 cm by 50 cm, were placed at 50-foot intervals, beginning in the center of the previously identified surface scatter of the site. Auger testing was used to reach a depth of seven feet, the expected depth of the gas line trench. The limited testing revealed 114 (one hundred fourteen) nodules, four (4) small chunks of baked clay, and seven (7) bone fragments. No cultural materials were found below the plow zone (SMUD 2002r, p.1-3). Test units 10 and 11 were discontinued at approximately 47 inches and 24 inches respectively, due to the presence of hard pan soils. Native Americans, Dwight Dutschke and Billie Blue Elliston, (of the Miwok Tribe) observed the presence/absence testing. Randy Yonemura and Lisa Daily, from the Miwok Tribe, monitored the presence/absence testing (SMUD2002r, p. 1-4). The test plan identified approximately 2,000 feet to be tested, however, only a 300-foot area was tested before the landowner requested the testing be discontinued. After permitting, but prior to construction, the agreed upon test plan would be completed pursuant to the treatment plan referenced in **CUL-8**. If a cultural resource is identified, it would be evaluated for eligibility to the CRHR. If it is recommended eligible, it would be avoided or data recovery would be conducted.

Presence/Absence Testing in the Area Between CA-SAC-68 and CA-SAC-93
Presence/absence testing was conducted in a location situated between CA-SAC-68 and CA-SAC-93 pursuant to the agreed upon test plan. A small piece of glass that appeared to be modern was identified. Although no cultural resources site was identified, this area appears sensitive for cultural resources and would be subject to disturbance from directional drilling. Staff recommends full-time cultural resources monitoring in this area during ground disturbance.

Presence/Absence Testing at CA-SAC-02
The applicant also conducted a survey of the area of previously recorded CA-SAC-02. No cultural resources materials were identified. However, this is an area that appears sensitive for cultural resources and the location of the previously recorded site is in question. Presence/absence testing would be conducted in the vicinity of CA-SAC-02 as agreed upon in the treatment plan proposed in **CUL-8**. If a site were verified, it would be evaluated for eligibility to the CRHR. If determined eligible, data recovery and curation would be conducted. If a site is identified, either an avoidance plan or data recovery would be concluded at least 30 days prior to beginning ground disturbance in the area. If no site is identified, caution is still warranted in the vicinity of the previously recorded site. Staff recommends full-time monitoring in the vicinity of the site during ground disturbance.

Presence/Absence Testing at CA-SAC-526/H
Presence/absence testing of anomalies identified during remote sensing in the area of CA-SAC-526/H did not locate any cultural resources within the route of the natural gas line.

Remote sensing conducted at CA-SAC-526/H revealed anomalies. Those anomalies were investigated at a later date by shovel tests. No cultural resources were identified. Staff recommends full-time monitoring during ground disturbance in the vicinity of this newly recorded cultural resource.

Hicksville Cemetery
Construction techniques (ground disturbance) in the area of Hicksville Cemetery would be agreed upon in the proposed treatment plan specified in **CUL-8**.

Cultural Resources Table 2
Potentially Affected Known Resources and Staff Proposed Mitigation Measures

Resource Designation	Testing Status	Additional Testing	Energy Commission Mitigation Requirements
CA-SAC-93	Incomplete	Backhoe/shovel	To be determined per treatment plan
CA-SAC-68	Complete	Not necessary	Full-time monitoring per treatment plan
CA-SAC-526/H	Complete	Not necessary	Full-time monitoring per treatment plan
CA-SAC-02	Incomplete	Backhoe/shovel	To be determined per treatment plan
Hicksville Cemetery	Not Necessary	Not Necessary	Construction techniques to be determined per treatment plan and full time monitoring
Area between CA-SAC-93 and SAC-68	Complete	Not necessary	Full-time monitoring of ground disturbance
ARS 85-15-1	Resource not confirmed	Not necessary	Full-time monitoring of ground disturbance
CA-SAC-500/H	Not necessary	Not necessary	Project will avoid
CA-504/H	Not necessary	Not necessary	Project will avoid
Elliot Ranch	Not necessary	Not Necessary	Project will avoid
Jungkeit Dairy	Not necessary	Not Necessary	Project will avoid
Hicksville Townsite	Not necessary	Not Necessary	Full time monitoring to ensure avoidance
Arno Townsite	Not necessary	Not Necessary	Full time monitoring to ensure avoidance

There are no structures at the project site eligible for listing as historic resources. (AFC p. 5.7-19-22; SA Cultural Res., 4.3-7, 8).

Ethnic Heritage

Ethnographic resources are those resources important to the heritage of a particular ethnic or cultural group, such as Native Americans, Hawaiian, Eskimo, African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources also include personal biographical data, interview data, and collections or oral histories relating the lifeways of previous generations.

The project area was inhabited by the Eastern Miwok, a subfamily of the Utian family, Penutian stock. The Eastern Miwok once contained seven language divisions and five separate groups. The project area falls into the Plains Miwok subdivision that occupied the lower Mokelumne and Cosumnes rivers and the Sacramento River from Rio Vista to Freeport. As known mostly from Spanish mission records, diaries, and journals, the Plains Miwok relied on the resources of the Delta and surrounding areas for food and material needs. Acorns were the primary food staple, supplemented by large game, waterfowl, fish, and shellfish. Trade with coastal groups and mountain tribes is indicated by obsidian, steatite, and shell. Social structure centered around tribelets associated with central permanent settlements on high ridges or knolls, or on Delta islands (SMUD 2001a, p. 8.3-12, 8.3-13).

Several representatives of the Native American community have expressed concern regarding the identification and treatment of Native American sites, artifacts, human remains, and other issues. To address these cultural concerns, staff recommends that the applicant keep members of the Native American community informed regarding cultural resource activities for the proposed project. Staff recommends that not more than one paid Native American monitor be onsite at a time, unless deemed necessary by the CRS, due to construction requirements in more than one location.

Public workshops were held on June 11, 18, and 25, 2002. Portions of the June 11 and June 18 workshops were allotted to cultural resources and cultural resources was the sole topic at the June 25th workshop. Concerns raised at the various workshops include, but are not limited to, the usefulness of the proposed site test plan and Native American involvement in the project. Some additional concerns expressed were that all recovered artifacts be returned to the ground, a request for a MOU with Native Americans, the recommendation that remote sensing be used to identify sites and recommendation that a burial plan be developed. Glen Villa Jr., a spokesperson for the Ione Band of Miwok, and Randy Yonemura provided concerns in writing.

Native Americans who participated in the workshops included Randy Yonemura and Billie Blue Elliston. Dwight Dutschke, Glen Villa Sr., and Glen Villa Jr. members of the Cultural Committee and spokespersons for the Ione Band of Miwok, also attended. The Native American Heritage Commission was represented by Debbie Pilas-Treadway at the June 18th workshop.

Based on Energy Commission Regulations and policy, staff's interaction with Native American governmental authority is similar to staff's interaction with State and local agencies. On November 25, 2002, staff met with the Cultural Committee of the Ione Band of Miwok. The purpose of the meeting was to hear concerns regarding the project and to discuss several outstanding issues of concern to Native Americans. Topics discussed were Native American monitoring, concerns about Hicksville Cemetery, and remote sensing results. The Cultural Committee commented on the possible locations of Native American habitation sites and stressed that they were interested in both prehistoric and historic sites due to a Native American presence in the area during historic times. They also commented on possible curation sites, daily monitoring logs, and the selection of Most Likely Descendent (MLD) if human remains are found. They requested that they be informed of cultural finds during project ground disturbance. They also suggested procedures that would allow them to be involved and provide opportunities to provide comment on discoveries. On January 16, 2003, staff e-mailed a draft copy of the proposed cultural conditions of certification to the members of the cultural committee. On January 29, 2003 staff received confirmation that the draft proposed conditions were received. As of February 3, 2003, staff has not received comments regarding the proposed conditions.

MITIGATION:

- ☑ The Project Owner will designate a cultural resource specialist who will monitor excavation and, in the event of an unanticipated discovery, provide for the handling and curation of any recovered cultural resources. Conditions: **CULT-1** through **CULT-9.**

Cumulative Impacts

The potential for cumulative impacts may be associated with the degree of prehistoric and historic sensitivity. The project site is located in an area where both historic properties and archaeological sites have previously been identified. Most of the area proposed for use has already been disturbed by development. Therefore, cumulative impacts are not an issue at this time.

Cumulative impacts to cultural resources in the project vicinity may occur if subsurface archaeological deposits (both prehistoric and historic) and the setting of historic structures are affected by other projects in the same vicinity as the proposed project. Residential and commercial development is planned or is underway in the vicinity of portions the proposed gas line.

However, project proponents for this and future projects in the area can mitigate impacts to as yet undiscovered subsurface archaeological sites to less than significant levels. Impacts can be mitigated by requiring construction monitoring, evaluation of resources discovered during monitoring, and avoidance or data recovery for resources evaluated as significant (eligible for the CRHR or NRHP).

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to cultural resources and all potential cultural resource impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance, the project owner shall provide the California Energy Commission Compliance Project Manager (CPM) with the name and resume of its Cultural Resources Specialist (CRS), and alternate(s), if an alternate(s) is proposed, for approval. The CRS will be responsible for implementation of all cultural resources conditions of certification. The project owner shall ensure that an alternate CRS assumes the duties of the CRS, if the CRS is temporarily unavailable due to an emergency, vacation, illness, or other temporary circumstance.

1.) The resume for the CRS and alternate(s), shall include information that demonstrates that the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published by the CFR 36, CFR Part 61 are met. The resume shall include the names and phone numbers of contacts familiar with the CRS's work on referenced projects. In addition, the CRS shall have the following qualifications:

   a. A background in anthropology, archaeology, history, architectural history, or a related field and
   b. At least three years of archaeological or historic (as appropriate) resource mitigation and field experience in California.

2.) The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during project ground disturbance, construction, and operation.

3.) The CRS may obtain qualified cultural resource monitors (CRM) to monitor as necessary on the project. CRMs shall meet the following qualifications:

   a. A BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
   b. An AS or AA in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or
   c. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historic archaeology, or a related field and two years of monitoring experience in California.

4.) The project owner shall ensure that the CRS completes any monitoring, mitigation and curation activities necessary to this project and fulfills all the requirements of these conditions of certification. The project owner shall also

ensure that the CRS obtains additional technical specialists, or additional CRMs, if needed, for this project. The resume(s) of any additional technical specialists shall be submitted to the CPM for approval. The project owner shall also ensure that the CRS evaluates any cultural resources that are newly discovered or that may be affected in an unanticipated manner for eligibility to the California Register of Historic Resources (CRHR). No ground disturbance shall occur prior to CPM approval of the CRS, unless specifically approved by the CPM.

Verification: At least 45 days prior to the start of ground disturbance, the project owner shall submit the name and resume of its CRS and alternate CRS, if an alternate is proposed, to the CPM for review and approval.

At least 10 days prior to a termination or release of the CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to the CRM's qualifications. The letter shall be provided one week prior to the CRM beginning on-site duties.

At least 10 days prior to beginning tasks, the resume(s) of any additional technical specialists shall be provided to the CPM for review and approval.

At least 10 days, prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions of certification.

CUL-2 Prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps will include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM in consultation with the CRS, shall review submittals and approve those that are appropriate for use in cultural resources planning activities.

If construction of the project will proceed in phases, maps and drawings shall be submitted prior to the start of each phase, if they have not previously been submitted. A letter identifying the proposed schedule of each project phase shall be provided to the CPM.

At a minimum, the CRS shall consult weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases. No ground disturbance shall occur prior to the CPM approval that maps and drawings are appropriate for cultural resources planning activities, unless specifically approved by the CPM.

Verification: At least 40 days prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with the maps and drawings. The CPM will review submittals and approve maps and drawing suitable for cultural resources planning activities in consultation with the CRS.

If this is to be a phased project, the project owner shall also provide to the CRS and CPM a letter identifying the proposed schedule of the ground disturbance or construction phases, and the associated dates for submittal of maps and drawings, along with the initial maps and drawings, if they have not been previously submitted.

If there are changes to the footprint for a project phase, revised maps and drawings shall be provided to the CRS and CPM at least 15 days prior to start of ground disturbance for that phase. If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

CUL- 3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by the CRS, to the CPM for review and approval. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1) A proposed general research design that includes a discussion of research questions and testable hypotheses applicable to the project area. A refined research design will be prepared for any resource where data recovery is required.

2) Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during ground disturbance, construction, and post-construction analysis phases of the project.

3) Identification of the person(s) expected to perform each of the tasks; a description of each team member's qualifications and their responsibilities; and the reporting relationships between project construction management and the mitigation and monitoring team.

4) A discussion of the inclusion of Native American observers or monitors, the procedures to be used to select them, and their role and responsibilities.

5) A discussion of all avoidance measures such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and/or operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of construction and how long they will be needed to protect the resources from project-related effects.

6) A discussion of the requirement that all cultural resources encountered will be recorded on a Department of Parks and Recreation (DPR) form 523 and mapped (may include photos). In addition, all archaeological materials collected as a result of the archaeological investigations shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79.

7) A discussion of any requirements, specifications, and funding needed for curation of the materials to be delivered for curation and how the requirements, specifications and funding will be met. Include information indicating that the project owner will pay all curation fees and state that any agreements concerning curation will be retained and available for audit for the life of the project. Include discussion that: collected items shall be retained and catalogued; prior to curation the items shall be reviewed by a member of the Cultural Committee of the Ione Band of Miwok to ensure items of religious significance are not designated for curation; all other items collected as a result of this project shall be curated at California State University, Sacramento, unless the curation facility is unwilling or unable to take the collection; and if the facility is unwilling to take the collection, the project owner shall provide the names of additional curation facilities acceptable to the Ione Band of Miwok.

8) A discussion of the availability and the CRS's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.

9) A discussion of the proposed Cultural Resource Report (see CUL-4) which shall be prepared according to Archaeological Resource Management Report (ARMR) Guidelines.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CRMMP to the CPM for review and approval. A letter shall be provided to the CPM indicating that the project owner will pay curation fees for any materials collected as a result of the archaeological studies. Ground disturbing activities may not commence until the CRMMP is approved, unless agreed to by the CPM.

CUL-4 The project owner shall submit the Cultural Resources Report (CRR) to the CPM for approval. The CRR shall report on all field activities including dates, times and locations, findings, samplings and analysis. All survey reports, DPR 523 forms, and additional research reports not previously submitted to the California Historic Resource Information System (CHRIS) shall be included as an appendix to the CRR. After approval, the CRR shall be provided to any curating institution the CHRIS and the State Historic Preservation Officer (SHPO).

Verification: The project owner shall submit the subject CRR within 90 days after completion of ground disturbance (including landscaping). Within 10 days after CPM approval, the project owner shall provide documentation to the CPM that copies of the CRR have been provided to the curating institution (if archaeological materials were collected), the SHPO and the CHRIS.

CUL-5 Worker Environmental Awareness Program (WEAP) training shall be provided, on a weekly basis, to all new employees starting prior to the beginning and for the duration of ground disturbance. The training may be presented in the form of a video. The training shall include:

1) a discussion of applicable laws and penalties under the law;
2) samples or visuals of artifacts that might be found in the project vicinity;
3) information that the CRS, alternate CRS, or CRM has the authority to halt construction in the event of a discovery or unanticipated impact to a cultural resource;
4) instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the CRS or CRM;
5) an informational brochure that identifies reporting procedures in the event of a discovery;
6) an acknowledgement form signed by each worker indicating that they have received the training; and
7) a sticker that shall be placed on hard hats indicating that environmental training has been completed.
8) The Cultural Committee of the Ione Band of Miwok shall be provided an opportunity to participate in cultural resources training sessions. If a video is filmed for cultural resources training, a spokesperson for the Ione Band of Miwok shall be afforded an opportunity to express the Ione Band's concerns in the video.

No ground disturbance shall occur prior to implementation or the WEAP training, unless specifically approved by the CPM.

Verification: The project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Certification of Completion form of persons who have completed the training in the prior month and a running total of all persons who have completed training to date.

No less that two weeks prior to the beginning of training, the project owner shall provide to the CPM a copy of a letter inviting the Ione Band of Miwok to participate in cultural resources training for the CPP. The letter shall be addressed to the Cultural Committee of the Ione Band of Miwok to beginning training. Prior to the start of training, an additional letter shall be provided to the CPM that addresses whether the Band will participate and whether they will provide information in person or via a video at training sessions.

CUL-6 The project owner shall grant authority to the CRS, alternate CRS, and the CRM(s) to halt construction if previously unknown cultural resource sites or materials are encountered, or if known resources may be impacted in a previously unanticipated manner (discovery). Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

If such resources are found or impacts can be anticipated, the halting or redirection of construction shall remain in effect until all of the following have occurred:

1. the CRS has notified the project owner, and the CPM within 24 hours of the discovery or by Monday morning, if the cultural resources discovery occurs between 8:00 A.M. on Friday and 8:00 A.M. on Sunday, including a description of the discovery (or changes in character or attributes), and the action taken (i.e., work stoppage or redirection) and a recommendation of eligibility and recommendations for mitigation;
2. the CRS, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed;
3. any necessary data recovery and mitigation has been completed; and
4. the Cultural Committee of the Ione Band of Miwok has been notified, and in the event of a significant find (following notification and CPM concurrence with the significance of the discovery), the Cultural Committee has been provided an opportunity to examine the discovery. The opportunity to examine the discovery shall be within four hours of notification that the CPM has concurred that the discovery is significant or until 5:30 PM on the date of CPM concurrence, whichever allows the most time.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRM(s) have the authority to halt construction activities in the vicinity of a cultural resource discovery. The letter shall also confirm that the CRS or project owner shall notify the CPM within 24 hours or by Monday morning, if the cultural resources discovery occurs between 8:00 A.M. on Friday and 8:00 A.M. Sunday morning of any cultural resources discoveries whether or not a determination of significance has been made, including the circumstance and proposed mitigation measures.

CUL-7 1. The project owner shall ensure that the CRS, alternate CRS, or CRM(s) shall monitor ground disturbance full time in the vicinity of the project site, linears and

laydown areas, access roads or other ancillary areas to ensure there are no impacts to undiscovered resources or known resources affected in an unanticipated manner. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter, e-mail, or Cultural Resources Treatment Plan providing a detailed justification for the decision to reduce the level of monitoring shall be provided to the CPM for review and approval.

2. CRM(s) shall keep a daily log of any monitoring or cultural resource activities and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities. The CRS may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff. Copies of daily monitoring logs shall be faxed or e-mailed each day to the attention of the Cultural Committee at the tribal office of the Ione Band of Miwok. Any documents that reveal site locations shall be provided under confidential cover.

3. The project owner shall ensure that the CRS notifies the project owner and the CPM within 24 hours, by telephone or e-mail, of any incidents of non-compliance with any cultural resources conditions of certification. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions of certification.

   Cultural resource monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a CRM from duties assigned by the CRS, or direction to a CRM to relocate monitoring activities by anyone other that the CRS shall be considered non-compliance with these conditions of certification.

4. A Native American monitor(s) shall be obtained to monitor ground disturbance in areas where archaeological monitoring is required by the conditions of certification. Only one Native American monitor shall be assigned to each construction site unless additional monitors are deemed necessary by the CRS. If a Native American monitor is not available for scheduled ground disturbance, construction may continue under the oversight of the CRS or CRM(s).

   Lists of concerned Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Consultation with the Ione Band of Miwok shall occur prior to selecting a Native American monitor(s). Preference in selecting monitors shall be given to Native Americans with traditional ties to the area that will be monitored. The Ione Band of Miwok, a federally recognized tribe, meets this requirement.

Verification: During the ground disturbance phases of the project, if the CRS wishes to reduce the level of monitoring occurring at the project, a letter, e-mail, or Cultural Resources Treatment Plan identifying the area(s) where the CRS recommends the reduction and justifying the reductions in monitoring shall be submitted to the CPM for review and approval.

During ground disturbance, the project owner shall include in the MCRs copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring. Copies of daily logs shall be retained on-site and made available for audit by the CPM. The project owner shall provide a statement in the MCR that copies of cultural resources monitoring daily logs have been faxed or e-mailed to the Ione Band of Miwok tribal office. If the logs reveal site locations, they shall be provided under confidential cover.

Within 24 hours of recognition of a non-compliance issue, the CRS shall notify the CPM by telephone of the problem and of steps being taken to resolve the problem. A report that describes the issue, resolution of the issue, and the effectiveness of the resolution measures shall be provided in the next MCR.

One week prior to ground disturbance, in areas where archaeological monitoring will occur, the project owner shall send notification to the CPM identifying the person(s) retained to conduct Native American monitoring. The project owner shall also provide a plan identifying the proposed monitoring schedule and information explaining how Native Americans who wish to provide comments will be allowed to comment. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

CUL-8 Prior to construction-related ground disturbance or site mobilization in those areas subject to presence/absence testing, the project owner shall submit a Cultural Resources Treatment Plan to the CPM for approval. The project owner shall ensure that site recording, presence/absence testing and treatment of sites agreed upon in the approved Cultural Resources Treatment Plan, are completed before ground disturbance may commence in those areas. No ground disturbance shall occur prior to CPM approval of and completion of tasks identified in the Cultural Resources Treatment Plan, unless specifically approved by the CPM.

Following completion of site recording, presence/absence testing and treatment of sites required in the Cultural Resources Treatment Plan and prior to construction related ground disturbance, the project owner shall provide the results of testing or treatment as a technical report in Archaeological Research Management Report (ARMR) format. The report shall provide the site records and procedures, methodology, and findings of the presence/absence testing and treatment of sites to the CPM for approval. If necessary, the technical report shall also provide a plan for avoidance, data recovery or other recovery, as appropriate. Any data recovery required by the report shall be completed and approved by the CPM.

Prior to construction-related ground disturbance or site mobilization in those areas subject to presence/absence testing, the project owner shall also ensure that avoidance, data recovery or other recovery based on information obtained during presence/absence testing or treatment of sites, and deemed necessary to mitigate impacts to cultural resources by the CPM, is completed and approved by the CPM prior to construction related ground disturbance. If, avoidance, data recovery or other

recovery has been conducted, a report (in ARMR format) documenting completed avoidance or data recovery shall be provided for CPM approval.

Verification: At least 75 days prior to construction-related ground disturbance within a 100-foot circumference of those areas subject to presence/absence testing, the project owner shall submit the treatment plan for CPM approval.

At least 30 days prior to ground disturbance within a 100-foot circumference of those areas subject to presence/absence testing, the project owner shall provide a technical report (in ARMR format) that provide procedures, methodology, and findings of the presence/absence testing completed pursuant to the treatment plan, to the CPM for approval.

Prior to ground disturbance within a 100-foot circumference of those areas subject to presence/absence testing, if avoidance or data recovery or other recovery are necessary, a report (in ARMR format) including the procedures, methodology and findings, shall be provided to the CPM for approval.

CUL-9 If a federal permit requires Section 106 Compliance, the project owner shall ensure that a copy of the permit and copies of correspondence from the federal agency to the project owner are provided to the CPM.

Verification: Within two (2) weeks of permitting by a federal agency, copies of the permit shall be provided to the CPM. Within two (2) weeks of the project owner receiving correspondence from the federal agency, the project owner shall provide copies of the correspondence to the CPM.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

CULTURAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
National Historic Preservation Act 916 USC 470, et seq.)	Applicable if federal permits are required, Federal funding provided, or lands owned by Federal government. Requires consultation with lead Federal agency, SHPO, & Advisory Council on Historic Preservation.
36 CFR 61 Appendix A	Professional qualification standards/procedures for state and local government historic preservation programs/cultural resources management.
STATE	
California Environmental Quality Act (CEQA) Guidelines (Sections 15064.5 & 15126.4)	Construction may encounter archaeological resources.
Health & Safety Code 7050.5	If potential Native American human remains are encountered, coroner notifies the Native American Heritage Commission within 24 hours.
Public Resources Code Section 5097.9	If Native American human remains are encountered, the Native American Heritage Commissioner assigns Most Likely Descendent.

GEOLOGY

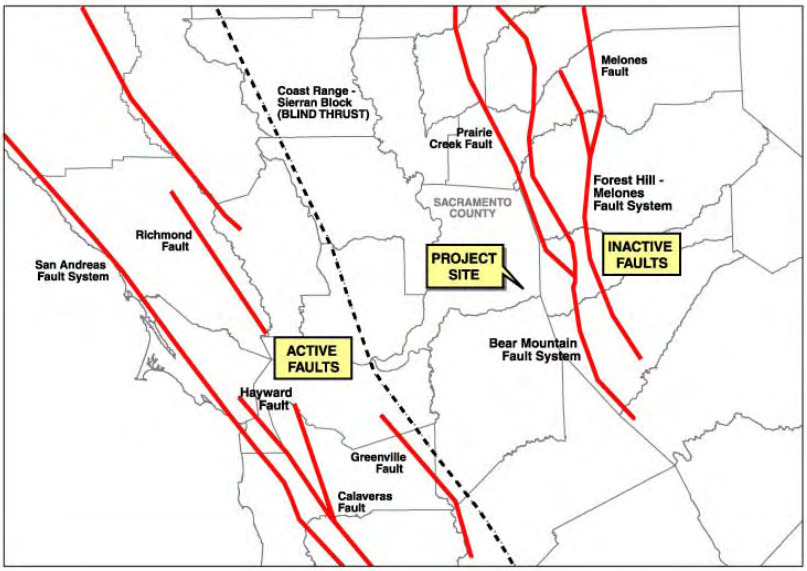
GEOLOGY – GENERAL

The project is located along the eastern margin of the Central Valley, at an average elevation of 150 feet. The foothills of the Sierra Nevada begin about 6 miles to the east, while the low mountains of the Coast Ranges lie 40 to 80 miles to the west. The site is well above the floodplain of the major rivers. The site is underlain by unconsolidated silt, sand, and gravel of the alluvial deposits of the Laguna Formation, and is blanketed by arkosic, gravelly alluvium of the Modesto-Riverbank Formation that occupies the broad, shallow valley of Clay Creek. Clay Creek is an ephemeral (seasonal) stream that crosses north of the project site, draining to the west. Several ephemeral streams occupy shallow swales that drain north into Clay Creek; these unnamed streams include what have been termed the "east swale" and the "west swale" of the temporary construction laydown area south of Clay East Road. The small swales, as well as the larger one occupied by Clay Creek currently support vernal pools. The channel of Clay Creek has been modified where the access road between Clay East Road and Rancho Seco Nuclear Plant crosses it.

Rancho Seco Reservoir, an earthen dam reservoir built for storage of emergency cooling water for the Rancho Seco Nuclear Plant is located 1.2 miles east of the proposed site. (SA Geology, etc., p. 5.2-2).

Earthquake

Energy Commission staff reviewed the following publications of the California Division of Mines and Geology (CDMG): *Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions* (CDMG, 1994); *Geologic Map of California – Sacramento Sheet* (Wagner et al., 1981); *Probabilistic Seismic Hazard Map for California*, (CDMG, 1996); and *Seismic Shaking Hazard Maps of California, Map Sheet 48* (CDMG, 1999a). No active or potentially active faults are known to cross the power plant footprint or the associated linear facilities. The project is located within **Seismic Zone 3** as delineated on Figure 16-2 of the 1998 edition of the CBC. The closest known faults are those of the Foothills Fault System, located between 11 and 15 miles east and north of the project site. Together, the various faults of the Foothills system are 174 miles long, trending north to northwest. They separate several bedrock groups in the eastern Sierra with nearly vertical faults. In the vicinity of the site, the faults are considered to be inactive, though 40 miles north, in Auburn, more recent fault activity (described as possibly Holocene) has been noted.



The nearest known active faults are those associated with the San Andreas Fault system: the Greenville (53 miles west), Concord (58 miles west), Calaveras (65 miles west), Hayward (71 miles west), and the San Andreas itself (90 miles west). These are all active, nearly vertical strike-slip faults associated with a plate boundary of the Pacific and North American Plates. Blind thrust faults along the Coast Range-Central Valley margin lie 44 to 62 miles west and southwest of the site.

On January 23, 2002 Energy Commission staff visited the project location and did not observe any evidence of surface faulting. Previous investigations at the site (performed near the Rancho Seco Nuclear Plant) found no faults crossing the project site. The potential of surface rupture on a fault at the power plant footprint is considered to be very low, since no active faults are known to have ruptured the ground surface of the project site, no geomorphic evidence of ancient faults is recognized, and no microseismicity is known at the site. No identified faults are mapped along the water or natural gas pipelines or transmission lines; thus, risk of fault rupture along these linear facilities is also low.

SMUD refers to the Caltrans report of Mualchin (1996) to characterize likely ground-shaking due to an earthquake. Mualchin estimates a magnitude 6.5 earthquake along the Foothills fault system would cause peak ground acceleration of up to 0.2 to 0.3g (gravity) near the site. These values are higher than those shown on the CDMG *Map Sheet 48* (CDMG, 1999a), which predicts a peak ground acceleration with a 10 percent chance of exceedance in 50 years of between 0.10 and 0.20g for the project area.

The seismic design criteria specified in the AFC simply identify the UBC sections that would be used when designing buildings and structures (UBC Section 10B3.6.1). Design and construction of the project should conform to the California Building Code (1998) requirements outlined in Conditions **GEN-1, GEN-5,** and **CIVIL-1** under **FACILITY DESIGN** and would reduce the impact of strong seismic ground shaking to less than significant.

Rancho Seco Reservoir is a small reservoir located 1.2 miles upstream of the site, on Clay Creek. The reservoir has a maximum capacity of 2,850 acre-feet. The maximum dam height is approximately 60 feet, total length is 1,800 feet, and crest width is 28 feet. The side slopes were constructed at a 4:1 slope. The reservoir was designed to supply

cooling water and fire-flow water to the Rancho Seco Nuclear Plant in the event of an emergency such as a loss-of-coolant accident, fire, or other emergency, including one resulting from a seismic event. The reservoir and dam were analyzed prior to its construction and approved by the Nuclear Regulatory Commission for the intended purposes. The dam is under the jurisdiction of the State of California, Division of Dam Safety, and as such, is designed and constructed to standards established by the State of California, which include consideration for earthquake and extreme flood.

SMUD indicates that the effects on the project site from a dam failure or other sudden release of water have been investigated. An instantaneous break 50 feet wide and the full height of the dam occurring simultaneously with the peak flow from a design storm would not flood the site. The top of the engineered construction pad is 150 feet above mean sea level.

Staff consulted with the Department of Water Resources' Division of Safety of Dams (DSOD) Engineer for Area 5 of the Central Region regarding the Rancho Seco Reservoir Dam. The most recent dam inspection report (dated January 12, 2002) indicated, "the dam, reservoir, and the appurtenances are judged satisfactory for continued use" (DWR-DSOD 2002). A complete dam appraisal was performed in 1986; no safety issues were identified at that time. The dam was built to code in 1972 and has been under DSOD jurisdiction since. Based on this information, and the fact that the design peak ground accelerations at this site are relatively low (0.2 g to 0.3 g), the dam is unlikely to fail during the design earthquake, and the project site is at low risk of flooding from dam failure.. (AFC p. 5.3-5-22; SA Geology, etc., p. 5.2-3, 4).

MITIGATION:

- ☑ The Project Owner shall prepare a Geotechnical Report pursuant to the California Building Code to fully describe the geologic conditions of the power plant site and pipeline route. Conditions: **GEN-1, GEN-5 & CIVIL-1**.

Instability

Liquefaction

Liquefaction is a condition in which, during an earthquake, cohesionless soil loses its shear strength due to a sudden increase in pore water pressure. The soils most prone to liquefaction during earthquakes are fine-grained, poorly graded, saturated sands and silts. CDMG (1997) states that if depth to groundwater is greater than 50 feet, and groundwater is not expected to become shallower, then the soils generally do not constitute a liquefaction hazard that would require mitigation.

The subsurface investigations of the geotechnical report included in Appendix 8.15A of the AFC were not performed at the project site, but 0.6 miles to the north, nearer the Rancho Seco site. These investigations found the groundwater to be about 150 feet below the surface. This indicates the soils and sediments occurring in the vicinity of the project site are generally well drained, with groundwater levels significantly deeper than the 50-foot threshold depth of liquefaction in unconsolidated materials. Therefore, the potential for liquefaction is low.

Subsidence
Subsidence is the process of the loss of soil and alluvium volume upon the application or removal of water. Subsidence can occur where the water table is lowered through overly aggressive groundwater pumping, usually associated with agricultural wells. No large-scale agricultural pumps are active in the vicinity of the site. Also, the soils and sediment at the site are dense and relatively dry so that the potential for subsidence is considered to be low. The potential for damage to the project linear facilities from local subsidence is unknown and will be addressed in the geotechnical report as required in Conditions **GEN-5** and **CIVIL-1** under **FACILITY DESIGN**.

Expansive Soils
Soils that contain a high percentage of expansive clay minerals are prone to expansion if subjected to an increase in water content. Expansive soils are identified throughout Sacramento County. The potential for damage to the project facilities from expansive soils is incompletely characterized at this time, especially for the linear facilities. Expansive soils can be mitigated by removing the soil and backfilling with non-expansive material, chemical stabilization, or uplift resistance foundation design. Further investigation of the location, depth, and thickness of expansive soils at the project site should be considered before final design. (See Condition **GEN-5** under **FACILITY DESIGN**).

Slope Failure
The project is located on well-drained alluvium that has a slope of between 1 and 2 percent, and there are no significant slopes adjacent to the site. The ”east swale” that drains to Clay Creek on the east side of the site would be relocated several tens of feet to the north, allowing the site to be built up at the northern edge. If not adequately engineered, this fill may have some potential to slump or settle. Close adherence to the soils engineering portions of the CBC (see Condition **GEN-1** under Facility Design) would ensure that the engineered fill and banks would perform properly. The banks of all the ephemeral streams and swales are not likely to be potential locations of failure as they have very low slopes. (AFC § 8.15; SA Geology, etc., pp. 5.2-4, 5.)

MITIGATION:

☑ The Project Owner shall perform liquefaction, subsidence, and expansive soils analyses. Condition: **GEN-5.**

Mineral Resources
The only potential geological and mineral resources on the site are placer gold, a potential aggregate source, and natural gas from the subsurface. Dredge tailings east of the site indicate that Clay Creek has been explored for placer gold in the past; the works have since been abandoned.

The mineral resources map of Sacramento County showed the site zoned as MRZ-3, indicating the area is known to have aggregate resources but the significance of the resources has not been determined. Loss of potential aggregate resources at the site in

not considered a significant impact because the resource is publicly owned by SMUD, and it is not required by law to recover aggregate resources. Additional lands in the general region have similar aggregate resources and may support aggregate resource recovery, if pursued by the property owner. Furthermore, the aggregate resources located on the project site may still be available for recovery once the project site is closed.

Natural gas is produced in the central and western parts of the Central Valley. The Galt and Lodi gas fields are located 8 to 10 miles south-southwest of the site. Deposits from which gas is produced are not present or are too thin to be economic under the proposed site as demonstrated by the presence of four plugged and abandoned dry wildcat wells just west of the town of Clay. No other significant mineralogical resources are known to exist in the project area. (AFC § 8.15.3.5; SA Geology, etc., p. 5.2-6.)

Fossils - Paleontology

SMUD presented a thorough review of the geological units and the potential paleontological resources that underlie the proposed site. The paleontological assessment included both an archival record search from the University of California, Berkeley, Museum of Paleontology and field surveys of the project site by qualified paleontologists. The paleontologist's report is largely repeated in the AFC as Section 8.16, the other report was submitted as the confidential paleontology report.

The archival search revealed no previously recorded fossil localities in the immediate project area. However, the Tertiary and Quaternary formations that underlie the site are known to contain land mammal fossils in other locations. Land mammal fossils are deemed scientifically and paleontologically important and significant according to Society of Vertebrate Paleontologists criteria. During the field survey, the paleontologist found fossil remains at several locations at and in the vicinity of the proposed project site.

The paleontologist concluded that the stratigraphic units present at the site and pipeline route all qualify as high sensitivity and that there is a high potential for finding fossil remains similar to those found in the vicinity at other established fossil sites. Proposed mitigation measures include paleontological resource monitoring during any project-related ground-disturbing activity, emergency discovery procedures, sampling and data recovery, museum storage of collected specimens or data, pre-construction coordination, and reports. A plan for monitoring and collecting should be developed and presented as the Paleontologic Resource Monitoring and Mitigation Plan (PRMMP). Conditions **PAL-1** through **PAL-7** would mitigate any potential impacts to less than significant levels. (AFC § 8.16.4.1; SA Geology, etc., p. 5.2-7.)

MITIGATION:

- ☑ Procedures for the recovery of unknown paleontological resources at the power plant site and pipeline route will prevent a significant impact to paleontological resources. Conditions: **PAL-1** to **PAL-7**.

Floods

Stormwater runoff typically increases with new construction activities. The proposed project would increase stormwater runoff at the point where site runoff enters Clay Creek, but due to the site's relatively small size, the project would have a negligible effect on the stormwater flows of Clay Creek or downstream rivers. Further, the proposed detention basin would control site discharges up to the 100-year flood level so that flood flows would be at or below the natural discharge. The floodplain encroachment into Clay Creek would not affect existing structures or improvements nor would it affect adjacent property not owned by SMUD. No significant impacts are anticipated.

A complete dam appraisal was performed in 1986 for the existing Rancho Seco Lake. No safety issues were identified at that time. The dam was built to code in 1972 and has been under DSOD jurisdiction since. Based on this information, and the fact that the design peak ground accelerations at this site are relatively low (0.2 g to 0.3 g), staff concluded the dam is unlikely to fail during the design earthquake, and the site is at low risk of flooding from dam failure.

Cumulative Impacts

CEQA Guideline requires the cumulative impact analysis of an EIR to whether a project's incremental effect is cumulatively considerable. That analysis determines whether there are past, present, or probable future projects producing related or cumulative impacts. As evidence in the record, neither the Staff nor SMUD analyses identified any past, present, or probable future projects from which the Commission could assess the potential for cumulative impact potential due to other possible projects. Both Staff and SMUD concluded that since project impacts are fully mitigated there could be no cumulative impacts. (AFC § 8.16.5; SA Geology, etc., p. 5.2-8.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to geological and paleontological resources, all potential adverse impacts to geologic and paleontological resources will be mitigated to insignificance, and the public is not exposed to geological hazards.

CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to Geology are covered under Conditions of Certification **GEN-1, GEN-5**, and **CIVIL-1** in the **FACILITY DESIGN** section. Conditions of Certification for Paleontology are as follows:

PAL-1 The project owner shall provide the CPM with the résumé and qualifications of its Paleontological Resource Specialist (PRS) for review and approval. If the approved

PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall submit to the CPM to keep on file, résumés of the qualified Paleontological Resource Monitors (PRMs). If a PRM is replaced, the résumé of the replacement PRM shall also be provided to the CPM.

The PRS résumé shall include the names and phone numbers of references. The résumé shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontologists (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. institutional affiliations or appropriate credentials and college degree;
2. ability to recognize and collect fossils in the field;
3. local geological and biostratigraphic expertise;
4. proficiency in identifying vertebrate and invertebrate fossils; and
5. at least three years of paleontological resource mitigation and field experience in California, and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified PRMs to monitor as he or she deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

1. BS or BA degree in geology or paleontology and one year experience monitoring in California; or
2. AS or AA in geology, paleontology or biology and four years experience monitoring in California; or
3. Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: (1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a résumé and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with résumés naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and résumés to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties.

(3) Prior to the termination or release of a PRS, the project owner shall submit the résumé of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction laydown areas and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would normally be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and can be at a scale of 1 inch = 40 feet to 1 inch = 100 feet range. If the footprint of the power plant or linear facility changes, the project owner shall provide maps and drawings reflecting these changes to the PRS and CPM.

If construction of the project will proceed in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Prior to work commencing on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

Verification: (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner shall submit to the CPM for review and approval, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting and sampling activities and may be modified with CPM approval. This document shall be used as a basis for discussion in the event that on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of the Vertebrate Paleontologists (SVP, 1995) and shall include, but not be limited to, the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and collection; identification and inventory; preparation of final reports; and transmittal of materials for curation will be performed according to the PRMMP procedures;
2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;
3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;
5. A discussion of the locations where the monitoring of project construction activities is deemed necessary, and a proposed plan for the monitoring;
6. A discussion of the procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;
7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources;
9. Identification of the institution that has agreed to receive any data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and
10. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for all project managers, construction supervisors, and workers who are involved with or operate ground disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS-directed training during the project kick-off for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

The Worker Environmental Awareness Program (WEAP) shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Good quality photographs or physical examples of vertebrate fossils shall be provided for project sites containing units of high paleontologic sensitivity;

3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. A Certification of Completion of WEAP form signed by each worker indicating that they have received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: (1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP including the brochure with the set of reporting procedures the workers are to follow.

(2) At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning on using a video for interim training.

(3) If the owner requests an alternate paleontological trainer, the résumé and qualifications of the trainer shall be submitted to the CPM for review and approval prior

to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

(4) In the Monthly Compliance Report (MCR) the project owner shall provide copies of the WEAP Certification of Completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The Monthly Compliance Report shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potentially fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered.

The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring different from the accepted schedule presented in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring. The letter or email shall include justification for the change in monitoring and submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keeps a daily log of monitoring of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS immediately notifies the CPM of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM immediately (no later than the following morning after the find, or Monday morning in the case of a weekend) of any halt of construction activities.

The project owner shall ensure that the PRS prepares a summary of the monitoring and other paleontological activities that will be placed in the Monthly Compliance Reports.

The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities and general locations of excavations, grading, etc. A section of the report will include the geologic units or subunits encountered; descriptions of sampling within each unit; and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring including any incidents of non-compliance and any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the project shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is an unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in their compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report (PRR)(see **PAL-7**). The project owner shall be responsible to pay any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submitted to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated.

Verification: Within 90 days after completion of ground disturbing activities, including landscaping, the project owner shall submit the Paleontological Resources Report under confidential cover to the CPM.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

GEOLOGY

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no Federal LORS related to geological hazards and resources.	N/A
STATE	
Uniform Building Code	Specifies acceptable design criteria for storage and open excavation with respect to seismic design and load bearing capacity.
California Building Code 1195	Specifies acceptable design criteria for storage and open excavation with respect to seismic design and load-bearing capacity.
LOCAL	
No local LORS related to geologic hazards and resources.	N/A

PALEONTOLOGICAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no applicable LORS for this section.	
STATE	
California Environmental Quality Act	Defines significant impacts on a fossil site. Project construction might encounter fossil site/remains.
Public Resource Code Section 5097.5	Defines any unauthorized disturbance or removal of fossil site/remains on public land as a misdemeanor. Project construction might encounter fossil site/remains; construction workers might remove fossil remains.
Warren-Alquist Act	Requires CEC to evaluate energy facility siting in unique areas of scientific concern. Project construction might encounter fossil site/remains.
LOCAL	
There are no applicable LORS for this section.	

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HAZARDOUS MATERIALS

HAZARDOUS MATERIALS – GENERAL

The purpose of this analysis is to determine if the proposed project will cause a potential significant impact on the public as a result of the transportation, use, handling, storage, or disposal of hazardous materials at the proposed facility.

This analysis does not address potential exposure of workers to hazardous materials used at the proposed facility. (See **WORKER SAFETY**.) There are specific regulations applicable to protection of workers in general the standards for exposure and methods used to protect workers are very different than those applicable to the general public. Employers must inform employees of hazards associated with their work and workers accept a higher level of risk than the general public in exchange for compensation. Workers are thus not afforded the same level of protection normally provided to the public. Further, special protective equipment and training can be used to protect workers and reduce the potential for health impacts associated with the handling of hazardous materials. Application of this type of mitigation would not be appropriate for the general public.

For additional information regarding hazardous materials transportation, see **TRAFFIC & TRANSPORTATION.** For additional information on hazardous waste disposal, see **WASTE MANAGEMENT**.

Transportation

Hazardous materials, including aqueous ammonia, sodium hypochlorite, and others would be transported to the facility via tanker truck or shipping trucks. While many types of hazardous materials would be transported to the site, it is Staff's belief that transport of aqueous ammonia poses the predominance of risk associated with such transport. If the risks of transporting this hazardous material were insignificant, all other transportation risks would be insignificant as well.

Although an accidental release of aqueous ammonia during transportation to an Energy Commission-certified gas power plant has never occurred, it is theoretically possible for aqueous ammonia to be released during a transportation accident.

The maximum usage of aqueous ammonia each year of operation of the proposed Cosumnes Power Plant would require about 104-156 tanker truck deliveries of aqueous ammonia per year (maximum of 2-3 trucks per week). Each delivery truck would travel about 10 miles between State Route (SR) 99 and the facility along the designated transportation route (Twin Cities Road to Clay East Road). (If Interstate 5 were used instead of SR-99, an additional 8 miles would be traveled per trip.) The result is a maximum of 1,560 miles of delivery truck travel in the project area per year (2808 miles per year if I-5 were used). Previous assessments by Staff have found that the risk over this distance is negligible.

However, portions of the designated route near the power plant do not have shoulders, are used by slow-moving farm equipment, and most importantly are designated school bus pick-up and delivery route.

The Commission has largely addressed the presence of school buses and school children in **TRAFFIC & TRANSPORTATION**. However, to address heavy fog conditions which generally exists during morning hours during certain times of the year (late winter and early spring), the Commission adopts Condition of Certification **HAZ-8**; requiring all hazardous materials tankers carrying more than 1000 gallons to delay delivery until the fog clears or be escorted from SR 99 or I-5 to the facility by a lead vehicle equipped with fog lights and a two-way radio or other method of communicating with the transportation vehicle. (SA Hazardous Materials, pp. 4.4-12-4.4-14)

MITIGATION:

- ☑ Hazardous materials haulers shall delay deliveries until foggy conditions clear or shall use an escort vehicle on local roads. Condition: **HAZ-8**

Storage & Use

Provisions of California Health and Safety Code, section 25500 et seq., direct facility owners that store or handle acutely hazardous materials in threshold quantities to develop a Risk Management Plan (RMP) and submit it to appropriate local authorities, the US EPA, and the designated local Administering Agency for review and approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release, the magnitude of potential human exposure, any preexisting evaluations or studies of the material, and the accident history of the material. This new, recently developed program supersedes the California Risk Management and Prevention Plan (RMPP) and is called the California Accidental Release Prevention Program (CalARP).

The only hazardous material proposed for use at the project in quantities exceeding the threshold amount is aqueous ammonia.

Aqueous Ammonia

The project will use Selective Catalytic Reduction (SCR) to reduce combustion-generated nitrogen oxide (NOx) emissions to comply with air permit requirements. Aqueous ammonia (29% ammonia and 71% water) will be used as a reactant within a catalyst to reduce the NOx to water vapor and nitrogen. The ammonia will be stored in one 18,000 gallon capacity double walled storage tank with an underground spill vault which is equipped with leak detectors, pressure relief valves and gauges for temperature and pressure. The ammonia will be trucked in.

The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with use of the more economical anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the more hazardous anhydrous form, which is stored as a liquefied gas at high pressure. The high pressure and resultant latent internal energy associated with the anhydrous form of ammonia can

act as a driving force in the event of an accidental release. Loss of containment involving anhydrous ammonia typically results in violent release and can rapidly introduce large quantities of the material into the ambient air, where it can be transported by the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are typically much less violent and easier to contain. In addition, the emission rate from a release of aqueous ammonia is limited by mass transfer from the free surface of the spilled material, thus reducing the rate of emission to the atmosphere.

Large accidental and continuous releases of aqueous ammonia culminating in potentially catastrophic outcomes to the public are possible through three potential accident scenarios: (1) failure of the storage tank, (2) failure of the operating pipeline, and (3) tanker truck delivery accident. Energy Commission staff typically evaluates four "bench mark" exposure levels of ammonia gas occur off-site in parts per million (PPM). These include: 1) the lowest concentration posing a risk of lethality, 2,000 PPM; 2) the Immediately Dangerous to Life and Health level (IDLH) of 300 PPM; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 150 PPM (recently changed from 200 PPM), which is also the RMP level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 PPM.

If the exposure associated with a potential release would exceed 75 PPM at any public receptor, staff will presume that the potential release poses a risk of significant impact. However, staff may also assess the probability of occurrence of the release and/or the nature of the potentially exposed population. Staff may, based on such analysis, determine that the likelihood and extent of potential exposure are not sufficient to support a finding of potentially significant impact.

SMUD provided the results of modeling for a worst-case accidental release of aqueous ammonia. The worst-case release is associated with a failure of the ammonia storage tank releasing all of its content into the secondary containment area, and the alternative scenario is a failure of a supply truck loading hose spilling aqueous ammonia onto the truck unloading pad with flow to the capture sump.

The results indicated that concentrations exceeding 75 ppm in the worst-case scenario would be present at 801 feet, which is mostly limited to the project site. The off-site areas impacted by the 75-ppm concentration would be to the north and east of the fenceline and approximately 75 feet to the west (just past the transmission towers). In the alternative scenario the concentration of 75 ppm would be present 318 feet away from the truck unloading pad which would impact off-site areas only to the north and east. The areas immediately to the north, south, east, and west are open fields. The Rancho Seco Nuclear Plant is located approximately 0.5 miles north and northeast of the project site. Workers would continue to be employed and active during decommissioning of the nuclear power plant through sometime in the year 2008. However, workers would be present only at the facility and not on the surrounding fields and thus not be within the 801-foot radius of the 75-ppm airborne concentration of ammonia.

There are no sensitive receptors (schools, hospitals, day care centers, etc.) in a three-mile radius and the 75 ppm level does not extend to the public road (Clay East Road) to the south of the site.

Staff reviewed SMUD's modeling calculations and found that due to the engineering controls proposed for the storage and transfer of aqueous ammonia any accidental release of aqueous ammonia used for the project would not cause a significant impact (with the exception of Rancho Seco workers noted above). (SA Hazardous Materials, pp. 4.4-10-11)

Sodium Hypochlorite

According to SMUD, a maximum of 16,800 gallons of sodium hypochlorite would be stored at the site. Sodium hypochlorite has a low potential to affect the off-site public because its vapor pressure is low and it is in an aqueous solution. In fact, hypochlorite is used at many such facilities as a substitute for chlorine gas, which is much more toxic and much more likely to migrate off-site because it is a gas and is stored in concentrated form under pressure. Thus, the use of a water solution of sodium hypochlorite is much safer to use than the alternative chlorine gas. The amount of sodium hypochlorite that would be stored on the site is below the Reportable Quantity as defined in the Cal-ARP regulations. Based upon staff's knowledge about the use of this material and the modeling of accidental releases, an aqueous solution of sodium hypochlorite poses an insignificant risk to the off-site public. However, the chances for accidental spills during transfer from delivery vehicles to the storage tanks should still be reduced as much as possible. Thus, measures to prevent transfer spills are extremely important and would be required as a standard condition in a Safety Management Plan for delivery of sodium hypochlorite

Sodium Hydroxide

According to SMUD and Staff sodium hydroxide would be stored on site but would not pose a risk of off-site impacts because it has relatively low vapor pressure and thus spills would be confined to the site. (SA p. Hazardous Materials, 4.4-7-8.)

MITIGATION:

- ☑ The Project Owner shall not store and use amounts of acutely hazardous materials in excess of proposed quantities. Condition: **HAZ–1**
- ☑ The Project Owner will provide a Business Plan and Safety Management Plan. Conditions: **HAZ-2** & **HAZ-3**
- ☑ The Project Owner will design the aqueous ammonia storage tank to ASME and ANSI requirements and use a secondary containment basin. Condition: **HAZ-4**

Hydrochloric Acid

Hydrochloric acid, which is used in large quantities once every four years for the cleaning of the Heat Recovery Steam Generators (HRSG), does not pose a significant risk of off-site impacts because of the infrequent use and the safety measures taken by the HRSG cleaning company, including the use of temporary berms.

Other Materials

During construction, the only hazardous materials proposed for use include gasoline, fuel oil, hydraulic fluid, lubricants, solvents, cleaners, sealants, welding flux, paint, and paint thinner. Any impact of spills or other releases of these materials would be limited to the site due to the small quantities involved.

Except as discusses above, during operation, materials at the proposed facility pose a minimal potential for off-site impacts as they will be stored in a solid form, in smaller quantities, have low mobility, or have low levels of toxicity.

An example of these types of chemicals are those proposed for use in a Zero Liquid Discharge (ZLD) system that would process all wastewater and reduce the use of fresh water by the plant. The ZLD system would require the use of six new chemicals (calcium sulfate, sodium chloride, hydrotreated light distillate, EDTA, polyacrylate, and possibly other scale inhibitors) and the increase in use of three others (sodium hydroxide, sulfuric acid, and sodium carbonate). These chemicals would be present in very small quantities – or the incremental increase would not be significant compared to other uses - and some are solids, thus posing an insignificant risk of off-site impacts. (SA Hazardous Materials, p. 4.4-6-7))

Natural Gas

Natural gas poses some risk of both fire and explosion. Although no natural gas is stored on-site, the project will use natural gas in its operation. While natural gas will be used in significant quantities, it will not be stored on site other than the amounts contained within the natural gas lines at any given time. No changes are needed to the existing piping network for the project. The risk of a fire and/or explosion from natural gas can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. (SA Hazardous Materials, p. 4.4-8-10)

MITIGATION:

- ☑ The Project Owner shall prepare a design review and inspection plan for the natural gas pipeline. Condition: **HAZ–6**
- ☑ The Project Owner inspect the gas pipeline after earthquake causing a surface rupture within a mile of the pipeline. Condition: **HAZ-7**

Disposal

Hazardous waste generated by the power plant will be minimal. Hazardous wastes will be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. Hazardous wastes will be transported off-site using a hazardous waste manifest, copies of which will be maintained for three years. (See **WASTE MANAGEMENT**)

Cumulative Impacts

Projects that could potentially contribute to cumulative impacts are those located or which will be located in the same geographic area of influence defined as within a 1-mile radius of the proposed power plant. Staff found no other facilities within a 1-mile radius of the CPP, with the exception of the Rancho Seco Nuclear Power Plant, which is no longer in operation and thus no longer using hazardous materials.

The project poses a minimal risk of accidental release that could result in off-site impacts. Even if another source of large quantities of hazardous materials were to be in proximity to the proposed project in the future, it is extremely unlikely that an accidental release that has very low probability of occurrence (about one in a million per year) would independently occur simultaneously at the project and another facility. (SA Hazardous Materials, pp. 4.4-17-18)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to hazardous materials management and all potential adverse impacts related to hazardous materials management will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous material not listed in Appendix B (AFC Table 8.12-3R), below, or in greater quantities than those identified by chemical name in Appendix B, below, unless reviewed in advance by the Sacramento County Environmental Management Department and approved by the CPM. This requirement does not apply to small quantities (less than a total of 25 gallons each) of paint, paint thinner, or cleaning solutions.

Verification: The project owner shall provide to the Compliance Project Manager (CPM), in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) to the Certified Unified Program Authority - CUPA (Sacramento County Environmental Management Department) for review and to the CPM for review at the time the RMP is first submitted to the U.S. Environmental Protection Agency (EPA). After receiving comments from the CUPA, the EPA, and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the CUPA and EPA for information and to the CPM for approval.

Verification: At least 60 days prior to receiving any hazardous material on the site, the project owner shall provide a copy of a final Business Plan to the CPM for approval. At least 30 days prior to delivery of aqueous ammonia to the site, the project owner

shall provide a copy of the latest version of the RMP that was submitted to the EPA, to the Sacramento County Environmental Management Department for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and sodium hypochlorite and shall submit this plan to the CPM for approval. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of aqueous ammonia with incompatible hazardous materials.

Verification: At least 60 days prior to the delivery of aqueous ammonia or sodium hypochlorite to the facility, the project owner shall provide the plan to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, the storage tank shall be protected by a secondary containment basin capable of holding either 125% of the storage volume or the tank volume plus the volume associated with 24 hours of rain assuming a 25-year storm. The final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.
Verification: At least 60 days prior to delivery of aqueous ammonia to the facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank and secondary containment basin to the CPM for review and approval.

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only transport vehicles that meet or exceed the specifications of DOT Code MC-307.

Verification: At least 60 days prior to receipt of aqueous ammonia on site, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 The project owner shall require that the gas pipeline undergo a complete design review and detailed inspection 30 years after initial startup and every 5 years thereafter.

Verification: At least 30 days prior to the initial flow of gas in the pipeline, the project owner shall provide an outline of the plan to accomplish a full and comprehensive pipeline design review to the CPM for review and approval. The full and complete plan shall be prepared and submitted to the CPM for review and approval, not later than one year before the project owner implements the plan.

HAZ-7 After any significant seismic event in the area where surface rupture occurs within one mile of the pipeline, the gas pipeline shall be inspected by the project owner.

Verification: At least 30 days prior to the initial flow of gas in the pipeline, the project owner shall provide a detailed plan to accomplish a full and comprehensive pipeline inspection in the event of a significant seismic event where surface rupture occurs within one mile of the pipeline to the CPM for review and approval. This plan shall be amended, as appropriate, and submitted to the CPM for review and approval, at least every five years.

HAZ-8 The project owner shall direct all vendors delivering hazardous materials in quantities greater than 1,000 gallons to the site during the months of November through April to verify that fog conditions do not exist along state roads used for the delivery by calling the CALTRANS Highway Information Network prior to commencing delivery.

If fog conditions exist, then delivery of that hazardous material shall be postponed until such time that the fog conditions have abated or the delivery vehicle is escorted from State Route 99 or Interstate 5 to the facility by a lead vehicle equipped with fog lights. In the event that a lead vehicle is used, both vehicles shall be equipped with radios to provide communication between the lead vehicle and the tanker truck and both vehicles shall have their headlights on at all times when traversing the route.

The project owner shall also direct all vendors delivering any hazardous materials in quantities greater than 1,000 gallons not to deliver during the time in the mornings and afternoons when children are going to and from Arcohe School located along the transportation route or when children are present outside for physical education, recess, or outdoor after-school events. The project owner shall coordinate with the school regarding the times when students may be traveling the transportation route or when children are outdoors.

Verification: At least sixty (60) days prior to receipt of any hazardous material in quantities greater than 1,000 gallons on-site, the project owner shall submit to the CPM, a copy of the letter to be mailed to the vendors. The letter shall state the required policy for verification of road conditions or lead vehicle as appropriate, and identify the hours that delivery of hazardous materials may and may not take place.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

HAZARDOUS MATERIALS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act (40 CFR 68)	Requires a RMP if listed hazardous materials are stored above threshold quantities (TQ).
Clean Water Act (40 CFR 112)	Requires preparation of an SPCC plan if oil is stored above TQ.
SARA Title III, Section 302	Requires certain planning activities when EHSs are present in excess of TQ. Aqueous ammonia to be used onsite in excess of TQ.
SARA Title III, Section 311	MSDSs to be kept onsite for each hazardous material. Required to be submitted to SERC, LEPC and local fire department.
SARA Title III, Section 313	Requires annual reporting of releases of hazardous materials.
49 CFR 171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.
STATE	
Health & Safety Code §25500, et seq. (Waters Bill)	Requires preparation of HMBP if hazardous materials are handled or stored in excess of threshold quantities.
Health & Safety Code §25531, et seq.	Requires registration of facility with local authorities and preparation of RMP if hazardous materials stored or handled in excess of threshold quantities.
CCR Title 8, Section 5189	Facility owners are required to implement safety management plans to ensure safe handling of hazardous materials.
California Building Code	Requirements regarding the storage and handling of hazardous materials.
California Government Code, Section 65850.2	Restricts issuance of COD until facility has submitted a RMP.
LOCAL	
Sacramento County Code, Chapters 6.96 & 6.99	Regulates hazardous materials within the County.

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LAND USE

LAND USE - GENERAL

Land uses are controlled and regulated by a system of plans, policies, goals, and ordinances that are adopted by the various jurisdictions with land use authority over the area encompassed by the proposed project.

The proposed power plant site is located in southeastern Sacramento County, approximately 25 miles southeast of the City of Sacramento. The site is about one-half mile south of the Rancho Seco Nuclear Power Plant, which is currently being decommissioned. The project would be built on a 30-acre site located within a 2,480-acre site owned by SMUD. The land use in this general area is predominantly agricultural with incorporated and unincorporated urban/suburban areas. The site is currently grazed by cattle for weed control purposes.

Existing land uses within a one-mile radius of the site include the Rancho Seco Nuclear Power Plant to the north, four solar photovoltaic electricity facilities to the northeast, agricultural areas (i.e., vineyards and grazing lands) to the south and west. The Rancho Seco Reservoir and recreation area is about two miles to the east. The recreation area is used for camping, picnicking, fishing, swimming, wind surfing, and miscellaneous small boat activities. The nearest residence is approximately 800 feet southwest of the proposed site, and there are a few other residences/ranches within one mile. A grape vineyard is about 1,200 feet to the west of the power plant site.

The only other planned development in the proposed power plant vicinity is an expansion of SMUD's photovoltaic facility, which is still in the conceptual stage. SMUD periodically reviews proposals for other uses of its property. Local law enforcement agencies have approached SMUD concerning use of the Rancho Seco property for security training. No specific proposal had been made at the time of this review. Given the agricultural nature of the proposed power plant area, no urban growth is currently anticipated. The power plant site, related transmission line, and access road are located in areas that do not involve irrigated agricultural lands.

The majority of the 26-mile long natural gas line would be constructed in existing public right-of-way (road and utility easement), or just outside railroad right-of way. A portion of the gas line would cross lands used for agricultural and natural preservation purposes. A segment of the pipeline would also be in the northern portion of Elk Grove, which is a combination of residential and commercial uses. In general, there are ongoing and anticipated developments along the natural gas pipeline route, but these are relatively minor projects, or they will be completed by the start of construction of the pipeline.

The natural gas pipeline also requires three valve stations, which will be located along the pipeline near major roadway intersections. Phase 2 of the project would require installation of two compressor stations to maintain pipeline pressure. One compressor station would be located approximately five miles north of the City of Winters in Yolo County, and the other just north of the Carson Ice-Cogeneration facility, where the new pipeline construction begins.

According to the Guidelines to the California Environmental Quality Act (CEQA), a project may have a significant effect on land use and planning if a proposed project would:

- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- disrupt or divide the physical arrangement of an established community; or
- convert Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to non-agricultural use.

A project may also have a significant impact on land use if it would create unmitigated noise, dust, public health hazard or nuisance, traffic, or visual impacts or when it precludes or unduly restricts existing or planned future uses. (SA Land Use p. 4.5-4, 5)

General/Specific Plans

The Sacramento County General Plan is the primary document for determining the project's consistency with local land uses. The power plant site, which is designated Public-Quasi Public with a Resource Conservation overlay by Sacramento County, is within an approximately 2,480-acre area owned by SMUD. Elements of the General Plan most relevant to the proposed project include Land Use, Agricultural, and Public Facilities.

General Plan Land Use (LU) Policies numbers 22 through 25 provide guidelines related to structures and lighting to minimize adverse visual affects to nearby neighbors. The Agricultural element is to maintain agricultural land and its productivity. The County recognizes the importance of agriculture not only for food production, but for open space considerations as well. Specifically, Policy AG-1 requires the County to protect prime farmland and lands with intensive agricultural investments from urban encroachment policy. Finally, the most relevant portion of the Public Facilities element is the Energy Facilities section that offers suggestions to minimize environmental impacts caused by the construction and operation of energy facilities.

Public Facilities (PF)-72 encourages energy production and distribution facilities to be located and designed in a manner that is compatible with surrounding land uses. PF-85 through 89, 92, 93, 99, and 100 describe siting priorities and design features for transmission lines. The goal is to utilize existing transmission line corridors whenever possible, avoid existing and planned urban areas, minimize visual impacts, preserve existing land uses, and avoid biological and cultural resources. PF-118 requires that new high-pressure gas lines be routed within railway and electric and transmission corridors, along collector roads, and within existing easements. A power plant is consistent with the Public-Quasi Public designation of the site because it is a public use project of large scale and regional importance.

The second phase of the project would require installing two gas compressor stations, one of which would be in agricultural lands in rural Yolo County five miles north of the City of Winters. The land is designated for agricultural uses directly related to the production of

crops. The relevant goals from the Yolo County General Plan for the proposed project are: 1) to protect prime and other agricultural land from urban development, encourage conservation (energy, open space, and materials); 2) to ensure that efficient utility service is provided, and 3) to assure that the costs of new projects are borne by the beneficiaries of such development. More specifically, Land Use Policy 35 provides for mitigation and avoidance of adverse impacts by managing industrial and commercial locations and development configurations. The underground natural gas pipeline project is consistent with the Yolo County General Plan.

The City of Elk Grove has nearly completed its first general plan with approval expected in June 2003. Among other items, the Plan acknowledges the presence of natural gas and petroleum pipelines within the Union Pacific Railroad right-of-way located west of Franklin Boulevard and south of Elk Grove Boulevard.

The Elk Grove General Plan and the East Franklin Specific Plan are applicable to the area crossed by the proposed gas pipeline with the City of Elk Grove. The natural gas line would cross the southwest portion of the East Franklin Specific Plan area. Within the Specific Plan, policy Land Use-18 requires new development to be compatible with surrounding development. The Economic Development Element of Draft Elk Grove General Plan encourages businesses to install necessary infrastructure improvements. Since there are natural gas and other utility lines adjacent to the project's proposed gas line, the proposed gas line is compatible with the General and Specific plans. (SA Land Use p. 4.5-2-3, 7-8)

Zoning Ordinances

Under the Sacramento County Zoning Code, the project site is zoned AG-80, which allows single-family dwellings at a density no greater than one unit per 80 acres. Sacramento County grants use permits to allow public utilities to be built in the AG-80 zone. The zoning rationale is that agricultural activities can co-exist with utility facilities, and utilities provide a public good (e.g., electricity) for both rural and urban users. The project, as a public utility, is exempt from Sacramento County's permitting process. The applicable AG-80 zoning development standards within Sacramento County Zoning Code are found in Sections 320-1 to 320-8, and 301-21 and pertain to setback, landscaping, fencing, and height. The project generally complies with these sections although it is not mandatory. In addition, the site's Public/Quasi-Public designation allows for other uses such as utilities.

Insofar as the natural gas pipeline, the Sacramento County Zoning Code applies to Sacramento County and the City of Elk Grove. Section 301-17 entitled Underground Utilities requires that all utilities should be placed underground. The natural gas pipeline is consistent with this code section. The City of Elk Grove has requested that the project owner coordinate with City of Elk Grove and the Sacramento County departments of water resources with respect to the installation and/or upgrade of water and sewer lines that are planned to cross the railroad right-of way. The construction of these lines may overlap with the construction of the gas, sewer and water lines. SMUD has stated that it will work with the City of Elk Grove and the County to avoid construction conflicts.

Under the Yolo County Zoning Code, the compressor station site is zoned AG1, which provides land in rural areas for uses directly related to agricultural industry. Section 8-2.612 describes the principal uses for AG1 land. In general, any requested change in an authorized use shall require a Minor Use Permit. One of the listed uses pertains to electrical distribution substations, transmission substations, communication equipment buildings, and public utility service yards. (SA Land Use, p. 4.5-8)

Existing/Planned Uses

The 30-acre power plant site is currently grazed for weed control purposes. The area within a one-mile radius of the site is similar to the proposed site except for vineyards 0.25 miles to the west and north, and the Rancho Seco Nuclear Power Plant 0.25 mile to the north. The open area around the proposed plant would provide a buffer between the project site and adjoining properties.

Construction laydown and parking areas for the power plant would be located within the 30-acre project site and a 20-acre area located south of Clay East Road. The 20-acre laydown area would temporarily displace some grazing land, however SMUD proposes to restore the 20-acre area after construction is complete. The temporary impact of removing grazing land is not considered a significant impact. In addition, the permanent loss of 30 acres of grazing land for the project is a minor impact given the large amount of agricultural land in the area.

The project would not disrupt or divide the established community of rural residences. The project is compatible with the surrounding agricultural uses such as grazing, and vineyards to the west and north. It is merely an expansion of the long established energy facility use in the area. It is compatible with recreational uses (e.g., swimming, fishing, boating, and wind surfing) at the Rancho Seco Park as it would not disrupt or preclude any activities.

The proposed 26-mile long natural gas pipeline would connect the project with the end of SMUD's gas line at the Carson Ice-Cogeneration power facility in Elk Grove. The majority of the route would be constructed adjacent to and within an existing railroad and transmission rights-of-way, and roadways (Franklin Road, Core Road, Arno Road, Valensin Road, Laguna Road, Twin Cities Road, and Clay East Road). The pipeline would also be placed beneath the Cosumnes River within the Cosumnes River Nature Preserve and other sensitive habitats. Since the majority of the pipeline would be underground and placed within or adjacent to existing easements, the proposed gas pipeline would not preclude or unduly restrict existing or future surrounding land uses.

There are numerous pending or approved projects along or near Franklin Boulevard. Three of these are located adjacent to the northern portion of the proposed gas line, including two residential developments, and a RV and boat storage facility. The other six projects are a considerable distance away from the proposed natural gas line. These projects would not be adversely impacted by the construction and operation of the gas pipeline, which would have a short-term construction period, and would be buried underground.

The three proposed valve stations (to be enclosed within an approximate 50-foot x 50-foot enclosure) and one interconnection station (to be enclosed within a 100-foot x 100-foot enclosure) would be located in rural areas along the proposed natural gas pipeline alignment. They are compatible with the existing and planned land uses as discussed in the above Gas Pipeline section.

Two gas compressor stations are required for Phase 2. One station would be located in Yolo County, approximately 5 miles north of the City of Winters. The Yolo County Zoning Code requires a conditional Use Permit, franchise Agreement, and encroachment Permit for any requested change in electrical distribution and transmission substations, communication equipment buildings, and public utility service yards. However, since the compressor would be installed on SMUD's property and outside of the Yolo County road right-of-way, where the natural gas pipelines from PG&E and SMUD are linked, Yolo County Planning staff believes that no agreement or encroachment permit is required.

The second gas compressor would be located within SMUD's existing natural gas Valve Station #190 enclosed facility, north of the Carson Ice-Cogeneration facility in Elk Grove, that is surrounded by the Sacramento Regional Wastewater Treatment facility buffer land. Because this compressor station would expand the existing fenced Station #190 station and there are no planned uses in the vicinity, this compressor station is a compatible use.

The proposed 0.4 mile interconnection route between the power plant switchyard and the existing Rancho Seco 230 kV transmission line crosses SMUD-owned, undeveloped property. The SMUD-owned property is planned for energy production uses, and is therefore consistent with the planned use of the area. Construction of the 0.4-mile water supply pipeline would be located on SMUD-owned property in the open area between Rancho Seco and the project. The water supply pipeline is consistent with the power production designated use of the land.

SMUD proposes to construct an access road heading south off of the road to the Rancho Seco Reservoir, which is the eastern boundary of the project site within SMUD's 2,480-acre property. The access road follows an existing dirt road which currently functions as a fire break. It would not disrupt or divide the physical arrangement of the local area.

Development of the project would preclude future use of the site for agriculture. The lack of irrigation, the relatively small amount of acreage, and the absence of cultivation support the conclusion that the conversion from grazing land to industrial use is not a significant impact. (SA Land Use p. 4.5-9-11)

<u>Pipeline</u>
Agricultural uses predominate along the natural gas pipeline route from Highway 99 east to the power plant site. Generally, SMUD proposes to place the pipeline and valve stations on private property by negotiated easements.

A number of owners of agricultural property, mostly along Arno Road, have addressed comments to the Committee and Commission about the adverse impacts to their agricultural lands and uses from the proposed pipeline route. These owners urge SMUD to relocate the pipeline to existing public rights-of-way in the roadway or in a roadside drainage ditch.

SMUD has apparently relocated the pipeline, upon request, from agricultural property to the public right-of-way on portions of Valensin Road. (See left.) The Arno Road owners also urge SMUD to relocate Valve Station #2 to less desirable property at the intersection of Highway 99 and Arno Road. Sacramento County Supervisor Nottoli has written the Commission in support of these property owners and has offered his assistance to expedite obtaining the applicable encroachment permits.

There are apparent advantages and disadvantages to a pipeline route on certain private, agricultural parcels. This is also true for alternative routings in a public right-of-way within Arno Road or in a public right-of-way along side the roadway in a drainage ditch. Private easements may cause impacts to agriculture and may be costly to acquire. If negotiations fail, a private easement must be obtained by condemnation, which is a time-consuming, potentially costly, and uncertain process. Use of the public right-of-way under the existing roadway creates traffic impacts and materially increases the costs and time of construction. Use of the roadside drainage ditch avoids the much greater costs of construction in the roadway, and has lesser traffic impacts. However, the ditch is similar to some habitat for species discussed in the **BIOLOGY** section, although substantially degraded by the presence of the road and traffic. Perhaps, in the future, the roadway may be widened over the pipeline.

In some instances, we prefer that the pipeline be placed in the roadside drainage ditch. This placement would be the least disruptive to affected landowners. We recognize, however, that many of the concerns voiced during the proceedings may be addressed by good faith negotiations between SMUD and the affected landowners. Therefore if, during easement negotiations, SMUD and the property owners conclude that relocation of the pipeline as discussed above is appropriate, we believe that this Decision should incorporate adequate flexibility to accommodate this result. In such event, the Conditions of Certification including, but not limited to, **BIO-13, BIO-18** through **BIO-21, CUL-2** through **CUL-8,** and **TRANS-2, TRANS-5** through **TRANS-7** will mitigate the potential impacts of such relocation.

The Committee notes complaints by property owners regarding heavy-handed approach taken by SMUD representatives in discussions with property owners. The Committee is disappointed by this behavior but is relieved by assurances from Mr. James Shetler, SMUD Assistant General Manager, that SMUD will negotiate fairly and honorably with the affected property owners.

Cumulative Impacts

Cumulative land use impacts may occur when a project has effects that are individually limited but cumulatively considerable when viewed together with effects of existing, pending or foreseeable residential, commercial, and industrial projects.

Without identifying other than three pending projects along the Franklin Boulevard pipeline segment, Energy Commission staff concludes that the project will not affect other proposed projects in the local area and that in conjunction with those permitted, pending or recorded projects would not create a significant adverse impact.

AFC § 8.4.6 notes that the project is consistent with the Rancho Seco Nuclear Power Plant land use, and otherwise the land use, agricultural land, and visual effects of the project are not significant. (AFC § 8.4.6; SA Land Use, p. 4.5-11)

Findings

With the implementation of the Condition of Certification below, the project conforms with applicable laws related to land use, and all potential adverse impacts to land use will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

LAND-1: The project owner shall provide a statement to the CPM identifying those locations where the pipeline route is to be relocated to any area already analyzed by the CEC staff in this proceeding from private property to avoid impacts to agricultural lands or uses.

Verification: The project owner shall provide a statement identifying any such changes 30 days prior to construction in that area or a time mutually agreed to by the project owner and the CPM.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

LAND USE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Federal Aviation Administration	Interruption of flight patterns by exhaust stacks.
STATE	
None	
LOCAL	
Sacramento County General Plan	Describes specific land uses allowed within the County.
Sacramento County Zoning Ordinance	Implements the General Plan.
Yolo County General Plan	Describes specific land uses allowed within the County.
Elk Grove General Plan	Describes specific land uses allowed within the City.

NOISE

NOISE – GENERAL

The construction and operation of any power plant create noise, or unwanted sound. Construction noise is a temporary phenomenon. Construction noise levels heard offsite would vary from hour to hour and day to day, depending on the equipment in use and the operations being performed.

The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the facility to any sensitive receptors combine to determine whether the facility will meet applicable noise control laws and/or cause any significant noise impacts. The nearest residential receptors are a caretaker's trailer (R1) which SMUD has relocated with the owner's agreement from 800-feet to about 3,500-feet from the power plant and a cluster of permanent residences (R2) approximately 5,100 feet from the power plant site.

Sound associated with the operation of the project will be produced by the inlets, outlets, structures, motors, pumps and fans associated with the four gas turbines, the heat steam recovery generators, the electric generators, the transformers, and the cooling towers. Essentially, project equipment will operate continuously and produce a steady sound 24-hours per day and seven days per week. Occasional short-term noise level increases will occur during plant startup or shut down, during load transitions, and during opening of steam release valves for venting pressure. At other times, the plant will be shut down, producing less noise. (SA Noise, p. 4.6-5-6)

Worker noise health and safety matters are addressed in **WORKER SAFETY**.

Loudness/Time of Day

Construction: The construction phase does not create a long-term increase in noise levels. The potentials for speech interference during the daytime or sleep disturbance at night are the most appropriate criteria for assessing construction noise impacts. If the hourly average construction noise level during the day were to exceed 60 dBA Leq in an outdoor activity area near a residence, the construction noise would begin to interfere with speech communication.

Construction activity at night that would generate an hourly average noise level exceeding 55 dBA Leq outside a residence would cause noise levels inside to exceed 35 dBA even when windows are closed. A noise level in excess of 35 dBA would begin to interfere with sleep. SMUD plans no nighttime construction.

The Sacramento County noise performance standards exempt construction noise from otherwise applicable daytime limitations. SMUD estimates, and Staff confirms, that worst-case construction noise estimates for the nearest residences 5,100 feet away would be perceptible due both to increased noise levels and to the difference in the character of construction sounds from ambient sounds. Noisy construction is limited to daytime hours so

that potential impacts to affected residents are mitigated to a level of insignificance. (AFC p. 8.5-10; SA Noise, p.4.6-8.)

Pipeline construction will generally require trenching, which involves the use of diesel-powered equipment. Horizontal directional drilling will occasionally be required to avoid sensitive waterways. Noise produced by these various pieces of equipment will impact nearby residents. These impacts will be mitigated to insignificance in most cased by limiting such noisy activity to the daytime. Horizontal drill rigs operated on a continuous basis are to be adequately muffled. Daytime construction of the pipeline compressor stations will not have a significant noise impact. (SA Noise, p. 4.6-10-11)

MITIGATION:

- ☑ The Project Owner will notify neighboring residents and business owners of impending construction at the power plant site together with a telephone number to report any undesirable noise conditions. Condition: **NOISE-1**.
- ☑ Additionally, the Project Owner will create a noise complaint process through which it will attempt to resolve all noise complaints. Condition: **NOISE-2**.
- ☑ Noisy construction is limited to 6 a.m. to 8 p.m. weekdays (and more restrictive for Saturdays and Sundays) to avoid nighttime disturbance of neighboring residential receptors. Condition: **NOISE-6**.

Since the power plant will include a heat recovery steam generator to produce steam from the waste heat of the combustion turbine, it is necessary during construction to clear the steam pipes of debris that would damage this equipment. This flushing process, known as a steam blow, is traditionally accomplished by venting high-pressure steam through the steam generator and associated to the atmosphere. This venting is performed in short bursts several times daily for two to three weeks and would produce loud sound levels. Use of exhaust silencers on the steam blow piping can reduce the noise substantially. SMUD is considering the use of either a new, quieter steam blow process or alternative flushing processes. (SA Noise, p. 4.5-8-9)

Since steam blows are inherently not emergency events, they can be planned and predicted. If a planned high-pressure steam blow is used, maximum noise at the nearest residential receptor shall be not greater than 65 dBA Leq during the daytime, and is prohibited at night. Low-pressure steam blows, which are not done in short bursts, shall not exceed 45 dBA during nighttime hours. Condition of Certification **NOISE-4** reflects the different requirements that arise from the type of the steam blow used. (AFC p. 8.5-11SA Noise, p. 4.6-9-10)

MITIGATION:

- ☑ If the Project Owner uses high-pressure steam blow, it will so notify nearby residents, use silencers and/or barriers, limit hours of steam blows, and limit peak noise levels. Conditions: **NOISE-3 & NOISE-4**.

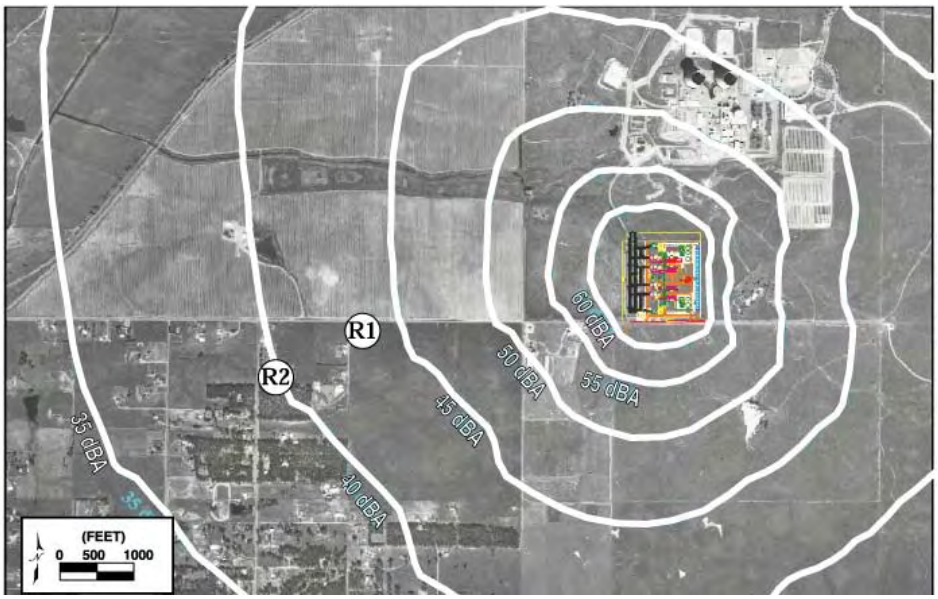
Operation: During its operating life, the project will represent essentially a steady, continuous noise source day and night. The noise emitted by power plants during normal operations is

generally broadband, steady state in nature. Occasional short-term increases in noise level will occur as steam relief valves open to vent pressure, or during startup or shutdown, as the plant transitions to and from steady-state operation. At other times, such as when the plant is shut down for lack of dispatch or for maintenance, noise levels will decrease.

The Sacramento County General Plan, Noise Element, establishes the applicable noise level performance standards for the project at 50 dBA L50 exterior hourly during daytime and 45 dBA L50 during nighttime hours, as predicted or measured at residential properties. The City of Elk Grove established identical limitations.

Applying CEQA in past proceedings, the Energy Commission has concluded that a potential for a significant noise impact exists where the added noise of the project exceeds the existing background by 5 dBA L_{90} or more at the nearest noise sensitive receptor.

For this proceeding, Energy Commission staff considered it reasonable to assume that an increase in background noise levels up to 5 dBA in a rural setting is insignificant; while an increase of more than 10 dBA is clearly significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of a case.



Based upon the predicted noise levels at the nearest receptors, Energy Commission staff believes that the operation of the power plant, as proposed, would result in substantial increases in background noise levels at the nearest sensitive receptors (R1- a caretaker's trailer initially 800-feet from the project which has been relocated now and R2 – a permanent residence on Kirkwood Street 5,100-feet from the project).

Staff proposed a condition of certification (FSA-NOISE-6) to require that the noise level produced by the plant operation not exceed 39 dBA L50 at any existing permanent residence. Staff suggests this limit to ensure that the noise from the power plant would not constitute an annoyance to a reasonable person accustomed to the pre-project noise environment. A this level, the cumulative nighttime background noise level (L_{90}) at any permanent residential receptor would not increase by more than 9 dBA [from 31 dBA (measured) to 40 dBA (predicted)], and that noise due to the plant operations would not exceed the standards of the Sacramento County Noise Element at any sensitive receptor. To SMUD and Staff, the

resulting increase in ambient noise levels of 9 dBA would be noticeable, but not necessarily annoying in and of itself based upon the premise that if the existing environment were already impacted by noise instead of quiet, the 9 dBA increase would be of greater impact. (AFC § 8.5.4.1.2; SA Noise, p. 4.6-13

Particularly for continuous nighttime power plant noise, the Commission is not convinced by Staff's testimony that a 9 dBA increase in noise level at R2 won't be problematic, notwithstanding that the higher level is within the Sacramento County noise limits. If a 10 dBA increase has become "significant" by our past CEQA precedents, then a 9 dBA increase cannot be passed off as merely "not necessarily annoying" particularly when it occurs at night in an otherwise quiet rural setting. To assure mitigation of project noise to a level of insignificance and accepting SMUD's offer of mitigation (AFC § 8.5.5), the Commission has added Condition of Certification **NOISE-7** to continue our past precedents of limiting, where feasible, nighttime noise level increases to not more than 5 dBA at residential receptors. Thus, any resident within the 35 dBA contour may request a project noise survey within a year of plant operation and obtain case-specific noise-abating mitigation if measured post-project noise exceeds 36 dBA. Since SMUD has already moved the caretaker's trailer to the apparent satisfaction of the property owner, the Commission need not further address that matter.

Staff has similarly addressed the effects of the natural gas pipeline compressor stations, required for Phase 2. Staff's proposed a condition of certification (FSA-NOISE-6) to require that the noise level produced by the Elk Grove (Valve 190 Station) gas compressor operation not exceed 39 dBA L50 at any residence, again so that added noise would not constitute an annoyance to a reasonable person accustomed to the pre-project noise environment.. This proposed limit would ensure that the cumulative nighttime background noise level (L_{90}) at any residential receptor would not increase by more than 8 dBA [32 to 40 dBA], and that noise due to the gas compressor would not exceed the standards of the Elk Grove Noise Element at any sensitive receptor.

In the vicinity of the Winters gas compressor, Staff proposes that the noise level produced by the gas compressor operation not exceed 37 dBA L50 at any residence. This would ensure that the cumulative nighttime background noise level (L_{90}) at any residential receptor would not increase by more than 7 dBA [31 to 38 dBA], and that noise due to the gas compressor would not exceed the standards of the Yolo County Noise Element at any sensitive receptor. (SA Noise, p. 4.6-11-16)

Once again, particularly for continuous nighttime compressor noise, the Commission is not convinced by Staff's testimony that a 7 or 8 dBA increase in noise level at residential receptors won't be problematic, notwithstanding that the higher levels are within applicable noise limits. Consequently, to ensure that potential noise impacts of the project are mitigated to a level of insignificance, the Commission includes potential receptors of compressor noise in Condition of Certification **NOISE-7** allowing residents to request a noise survey to determine whether post-project noise exceeds measured ambient noise levels in this proceeding by more than 5 dBA, and if so, receive case-specific mitigation.

MITIGATION:

- ☑ The Project Owner will conduct an "after" comparative community noise survey once the power plant achieves full operation to determine if the project conforms to applicable daytime and nighttime noise limitations. If necessary, the Project Owner will perform additional noise mitigation to achieve applicable noise limitations. Condition: **NOISE-5**.

- ☑ After operation and upon the request of a potentially affected resident, the Project Owner will survey specific residential receptors to determine whether nighttime noise exceeds "before" levels by 5 dBA or more and apply case-specific mitigation. Condition: **NOISE-7**.

Vibration

A potential source of significant vibration is pile driving during construction. Given the relocation of the caretaker's trailer (R1) to approximately 3,500 feet from the power plant, no vibration effects would be likely if pile driving were to be required. Energy Commission staff had proposed a condition of certification (FSA NOISE-9) which required vibration testing when R1 was 800-feet from the project. With the added distances to potentially sensitive receptors, the proposed condition is not necessary. (SA Noise, p.4.6-8)

Cumulative Impacts

No other new or proposed noise-producing development near the project site was identified which might cause cumulative impacts exceedences of applicable noise standards or criteria. (SA Noise, p. 4.6-17)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to noise and all potential noise impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

PRE-CONSTRUCTION NOTICE & CONSTRUCTION NOISE COMPLAINT HOTLINE

NOISE-1: At least 15 days prior to the start of ground disturbance, the project owner shall notify by mail all residents within one-half mile of the site and the linear facilities of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number

shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement, signed by the project manager, stating that the above notification has been performed, and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2: Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- If the noise is project related, take all feasible measures to reduce the noise at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 5 business days of receiving a noise complaint, the project owner shall file with the Sacramento County Planning and Community Development Department and the CPM a copy of the Noise Complaint Resolution Form, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 3-business day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

HIGH PRESSURE STEAM BLOW

NOISE-3: If a traditional, high-pressure steam blow process is employed, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 65 dBA, measured at any residential receptor.

If a low-pressure continuous steam blow process is proposed, the project owner shall submit a description of this process, with expected noise levels and projected period of execution, to the CPM. The resulting noise level shall not exceed 45 dBA during nighttime hours at any residence. If the low-pressure process is approved by the CPM, the project owner shall implement it in accordance with the requirements of the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM and Sacramento County drawings or other information describing the

temporary steam blow silencer and the noise levels expected, and a description of the steam blow schedule.

At least 15 days prior to any low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

STEAM BLOW NOTIFICATION

NOISE-4: Prior to the first high-pressure steam blow(s), the project owner shall notify all residents or business owners within one mile of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner.

The notification may be in the form of letters to the area residences, telephone calls, fliers or other effective means. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: Project owner shall notify residents and businesses at least 15 days prior to the first high-pressure steam blow(s). Within five (5) days of notifying these entities, the project owner shall send a letter to the CPM confirming that they have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

OPERATING NOISE LIMITATION

NOISE-5: The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the hourly median noise level (L50) produced by steady state operation of the project will not exceed the hourly median (L50) noise level of the following values:

- At the relocated residence identified as R1: 42 dBA.
- At the existing residence identified as R2: 39 dBA.
- At the nearest existing residence to the Winters gas compressor: 37 dBA.
- At the nearest existing residence to the Valve Station #190 gas compressor: 39 dBA.

No new pure tone components may be introduced at the nearest existing residences (relocated in the case of R1). No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints.

1. Within 30 days of the Phase 1 project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at Sites R1 and R2. Within 45 days of the Phase 2 project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at Sites R1, R2, M2, and M4. The noise surveys shall also include short-term measurement of one-third octave band sound pressure levels at each of the

above locations to ensure that no new pure-tone noise components have been introduced.

2. If the results from the noise survey indicate that the noise level due to the steady state plant operations exceeds the noise standard listed above during the 25-hour period, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

3. If the results from the noise survey indicate that the steady state plant operations result in pure tones at R1 (relocated), R2, M2 or M4, mitigation measures shall be implemented to eliminate the pure tones.

The measurement of power plant noise for the purposes of demonstrating compliance with this Condition of Certification may alternatively be made at a location, closer to the plant (e.g., 400 feet from the plant or compressor station boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the nearest residence. However, notwithstanding the use of this alternative method for determining the noise level, the character of the plant noise shall be evaluated at the nearest residence to determine the presence of pure tones or other dominant sources of plant noise.

Verification: Within 45 days after completing the community noise survey required for Phase 1, the project owner shall submit a summary report of the survey to the Sacramento County Planning Department and to the CPM. Within 45 days after completing the community noise survey required for Phase 2, the project owner shall submit a summary report of the survey to the Sacramento County, Yolo County, and City of Elk Grove planning departments, and to the CPM. Included in the post-construction survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

CONSTRUCTION TIME RESTRICTIONS

NOISE-6: Noisy construction or demolition work shall be restricted to the times of day delineated below:

- Weekdays 6 a.m. to 8 p.m.
- Saturdays 7 a.m. to 8 p.m.
- Sundays and holiday 8 a.m. to 8 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Use of engine compression for truck braking ("jake brakes") shall be limited to emergencies.

Horizontal drill rigs may be operated on a continuous basis, provided that the rigs are fitted with adequate mufflers and engine enclosures, and that the rigs are shielded from view of

residences within a one-half mile radius by berms, canal banks or other suitable barriers, such as loaded vinyl curtains or straw bales.

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

CASE-SPECIFIC RESIDENTIAL NOISE IMPACTS

NOISE-7: Notwithstanding the requirements of **NOISE-5**, if the property owner of any existing residence (except R1) within the 35 dBA contour of the plant identified above requests an operational noise survey within 1 year of the start of commercial operation of either Phase 1 or Phase 2, the project owner shall conduct a nighttime (10 P.M. to 7 A.M.) noise survey within 90 days of the property owner's request. If the steady-state plant noise level exceeds a criterion value of 36 dBA within 25 feet of the property owner's residence, the project owner, at its cost, and with the permission of the property owner, shall install acoustical improvements at the residence such that the plant noise level reduction provided by the building facades is improved to within 5 dBA of measured, existing ambient noise values.

If the property owner of any existing residence adjacent to either of the gas compressor stations requests an operational noise survey within 1 year of the start of commercial operation of Phase 2, the project owner shall conduct a nighttime (10 P.M. to 7 A.M.) noise survey within 90 days of the property owner's request. If the steady-state plant noise level exceeds by 5 dBA the measured noise values in this Decision within 25 feet of the property owner's residence, the project owner, at its cost, and with the permission of the property owner, shall install acoustical improvements at the residence such that the plant noise level reduction provided by the building facades is improved to within 5 dBA of measured, existing ambient noise values.

Acoustical improvements evaluated shall include, but are not limited to, replacement of single-pane windows with acoustically-rated windows; upgrade hollow-core exterior doors with solid-core doors; providing additional sound insulation in walls and around penetrations or cracks; and installation of air conditioning systems, if not already present. The CPM, in consultation with the project owner and the property owner, shall be responsible for determining which specific acoustical improvements are required to meet the terms of this condition.

Verification: Fifteen (15) days prior to commercial operation of Phase 1 and Phase 2, the project owner shall notify by mail all property owners within the 35 dBA contour identified on Figure 8.5-2R3 (presented in FSA, Noise and Vibration Figure 5) and, for Phase 2, property owners adjacent to the compressor stations and the CPM of the start of the commercial operation of each respective phase. The notice shall inform property owners of the potential to receive acoustical improvements if the above described conditions are met.

The project owner shall notify the CPM within one (1) week of any noise survey requests received.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

NOISE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
EPA 1974 Noise Guidelines	Guidelines for State and Local Governments
HUD Circular 1390.2	Directions for noise levels at construction site boundaries not to exceed 65 dBA for 9 hours in a 24-hour period.
29 CFR Section 1910.95 (OSHA Health and Safety Act of 1970)	Exposure of workers to over an 8-hour shift should be limited to 90 dBA.
Federal Transit Administration	Guidelines for vibration standards.
STATE	
California Vehicle Code §23130 and 23130.5	Regulates vehicle noise limits on California Highways.
8 CCR §5095 et seq. (Cal-OSHA)	Sets employee noise exposure limits. Equivalent to Federal OSHA standards.
LOCAL	
Sacramento County General Plan, Noise Element	Establishes noise performance standards.
Sacramento County Code	Establishes noise performance standards and construction noise exemptions.
City of Elk Grove General Plan, Noise Element	Establishes noise performance standards.
Yolo County General Plan, Noise Element	Establishes noise performance standards.

PUBLIC HEALTH

PUBLIC HEALTH – GENERAL

Operating the proposed power plant would create combustion products and possibly expose the general public and workers to these pollutants as well as the toxic chemicals associated with other aspects of facility operations. The purpose of this public health analysis is to determine whether a significant health risk would result from public exposure to these chemicals and combustion by-products routinely emitted during project operations. The issue of possible worker exposure is addressed in the **WORKER SAFETY** section. Exposure to electric and magnetic fields (EMF) is addressed in the **TRANSMISSION LINE SAFETY AND NUISANCE** section.

The exposure of primary concern in this section is to pollutants for which no air quality standards have been established. These are known as non-criteria pollutants, toxic air pollutants, or air toxins. Those for which ambient air quality standards have been established are known as criteria pollutants. The criteria pollutants are also identified in this section because of their potentially significant contribution to the total pollutant exposure in any given area. Furthermore, the same control technologies may be effective for controlling both types of pollutants when emitted from the same source.

Construction Health Risks

Construction-phase impacts are those from human exposure to:

(a) the windblown dust from site grading and other construction-related activities and
(b) emissions from the heavy equipment and vehicles to be used for construction.

The procedures for minimizing such dust generation [**AQ-SC3 & AQ-SC4**] are addressed in the **AIR QUALITY** section while the requirements for soil remediation are specified in the **WASTE MANAGEMENT** section.

SMUD is subject to Conditions of Certification to address construction equipment emissions. The measures to mitigate these emissions have been specified in Conditions **AQ-SC3**. Since chronic health impacts are usually not expected from equipment emissions within the relatively short construction periods, only acute health effects could be significant with respect to the toxic exhaust emissions of concern in this analysis. Mitigation measures specified in Condition **AQ-SC3** are sufficient to reduce these potential acute health effects to insignificance.

Cancer Risks

According to present understanding, cancer from carcinogenic exposure results from biological effects at the molecular level. Such effects are currently assumed possible from every exposure to a carcinogen. Therefore, Energy Commission staff and other regulatory agencies generally consider the likelihood of cancer as more sensitive than the likelihood of

non-cancer effects for assessing the environmental acceptability of a source of pollutants. This accounts for the prominence of theoretical cancer risk estimates in the environmental risk assessment process.

For any source of specific concern, the potential risk of cancer is obtained by multiplying the exposure estimate by the potency factors for the individual carcinogens involved. Health experts generally consider a potential cancer risk of one in a million as the *de minimis* level, which is the level below which the related exposure is negligible (meaning that project operation is not expected to result in any increase in cancer). Above this level, further mitigation could be recommended after consideration of issues related to the limitations of the risk assessment process.

SMUD conducted a screening level health risk assessment for the project-related non-criteria pollutants of potential significance. This assessment was conducted according to procedures specified in the 1993 California Air Pollution Control Officer's Association (CAPCOA) guidelines for sources of this type. The screening level assessment uses conservative assumptions to avoid underestimating actual risks. The cancer risk estimates from this analytical approach represent only the upper bound on this risk. The actual risk would likely be much lower. Thus, when a screening level analysis is less than 1 in a million, the potential cancer risk is insignificant and additional, more refined analysis is not warranted.

SMUD calculated a risk estimate of 0.26 in a million, at a location 0.19 miles northeast of the project, for all the project's carcinogens from this screening level analysis. Commission staff's independent estimate for the maximum theoretical cancer risk is 0.67 in a million. Other locations would have a lower risk estimate. These screening level estimates suggest that the project's cancer risk would be negligible and is significantly less than the 10 in a million which Staff considers as a trigger for recommending mitigation above the applied toxic-best available control technology or T-BACT. This means that the proposed emission controls measures are adequate for the project's operations-related toxic emissions of primary concern in this analysis. This risk estimate is also below both the 1 in a million considered significant for this type of project. (SA Public Health, p. 4.7-12, 13)

Non-cancer Risk

SMUD's health risk assessment reviewed non-criteria pollutants with respect to non-cancer effects. A chronic hazard index of 0.015 was calculated for the project's non-carcinogenic pollutants considered together. Their acute hazard index was calculated to be 0.10. These indices are well below the levels of potential health significance (hazard index 1.0), suggesting that no significant health impacts would likely be associated with the project's non-criteria pollutants. (SA Public Health, p. 4.7-12)

Cooling Towers

In addition to toxic air contaminants, the possibility (however remote) exists for bacterial growth to occur in the cooling tower, including Legionella. Legionella is a type of bacteria that

grows in water (optimal temperature of 37° C) and causes Legionellosis, otherwise known as Legionnaires' Disease. Untreated or inadequately treated cooling systems in the United States have been correlated with an outbreak of Legionellosis. These outbreaks are usually associated with building heating, ventilating, and air conditioning (HVAC) systems; but it is possible for growth to occur in an industrial cooling tower. In fact, Legionella bacteria have been found in drift droplets. The U.S. Environmental Protection Agency (U.S. EPA) published an extensive review of Legionella in a human health criteria document. The U.S. EPA noted that Legionella survival is enhanced by symbiotic relationships with other microorganisms, particularly in biofilms, and that aerosol-generating systems such as cooling towers can aid in the transmission of Legionella from water to air. Numerous outbreaks of Legionellosis have been linked to cooling towers and evaporative condensers in hospitals, hotels, and public buildings, clearly establishing these water sources as habitats for Legionella.

Health experts have not found a concentration of this bacterium which would not present some risk of infection to the public, that is, a concentration in water below which would be deemed totally "safe". Evidence supports the fact that despite water temperature and biocide control, a thin "bio-film" can form on the inside walls of piping and serve to protect the bacteria from the biocide and temperature variations. Additional chemical additives, mechanical removal, and/or "back-flushing" of the system can be used to remove this bio-film. Despite these facts, it is clear than outbreaks of Legionnaire's Disease caused by Legionella bacteria are rare and are due most likely to sources other than modern industrial cooling towers that utilized biocides and that if biofilm formation is under control, Legionella will be restricted to negligible levels.

In order to ensure that Legionella growth is kept to a minimum, thereby protecting both nearby workers as well as members of the public, Staff has proposed Condition of Certification **PUBLIC HEALTH-1**. The condition would require the project owner to prepare and implement a biocide and anti-biofilm agent monitoring program to ensure that proper levels of biocide and other agents are maintained within the cooling tower water at all times, that periodic measurements of Legionella levels are conducted, and that periodic cleaning is conducted to remove bio-film buildup. With the use of an aggressive antibacterial program coupled with routine monitoring and biofilm removal, the chances of Legionella growing and dispersing would be reduced to insignificance.

MITIGATION:

- ☑ The Project Owner shall implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to the minimum. Condition: **PUBLIC HEALTH-1**

Intervenor Roskey's PM Risk Testimony

Intervenor, Dr. Mike Roskey, (not testifying as an expert) submitted testimony on the public health effects of particulate matter emissions, concluding that the project would contribute to 3.0 – 9.2 deaths per year in the project area due to cardiopulmonary disease and lung cancer. (Roskey, p. 12) Dr. Roskey presented information about the health concerns

regarding PM10 and PM2.5, ambient air quality measurements, epidemiological studies, and local demographic information to extrapolate his view of the effects of the project. (Roskey, pp. 2-12)

SMUD and Staff testified in rebuttal that Dr. Roskey misapplied the maximum impact modeling data and did not account for the effect of particulate matter offsets. (RT 5/12 p. 381 – 387)

The Committee has reviewed Dr. Roskey's testimony and concurs generally with his concern over the health effects of particulate matter. However, the Commission notes that Dr. Roskey's conclusion regarding mortality from the project is not supported by the record which both accounts for the effect of particulate matter offsets and uses the maximum impact modeling by expert witnesses in a appropriate way. The Commission finds that with the offsets provided in the **AIR QUALITY** Conditions of Certification the project will not have a significant impact on public health.

Cumulative Impacts

The residential maximum cancer risk as calculated by Staff for the project is 0.67 in one million, and occurs about 0.19 miles northeast of the proposed site where pollutant concentrations from the project would theoretically be the highest. Even at this location, Staff does not expect any significant change in lifetime risk to any person, and the increase does not represent any real contribution to the average lifetime cancer risk. Modeled facility-related residential risks are lower at more distant locations, and actual risks are expected to be much lower, since worst-case estimates are based on conservative assumptions, and overstate the true magnitude of the risk expected. Therefore, the incremental impact of the additional risk posed by the project is neither significant nor cumulatively considerable.

The worst-case long-term non-cancer health impact from project (0.015 hazard index) is well below the significance level of 1.0 at the location of maximum impact. At this level, any cumulative health impacts will not be significant. As with cancer risk, long-term hazard would be lower at all other locations, and cumulative impacts at other locations would also be less than significant.

Even in the unlikely event that worst-case emissions from an existing facility were to coincide both geographically and temporally with project emissions at the location of maximum impact, the overall long-term health outlook would not change for anyone. Thus, the project would not result in any significant cumulative cancer or chronic non-cancer health impacts.

Finding

With the implementation of the Conditions of Certification below and in other sections of this Decision, the project conforms with applicable laws related to public health, and all potential adverse impacts to public health will be mitigated to insignificance.

Condition of Certification

PUBLIC HEALTH-1 The project owner shall develop and implement a Cooling Water Management Plan to ensure that the potential for bacterial growth in cooling water is kept to an absolute minimum. The Plan shall include monitoring of biocide and chemical biofilm prevention agents, periodic maintenance of the cooling water system to remove bio-film buildup, and testing to determine the concentrations of Legionella bacteria in the cooling water.

Verification: At least 60 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

PUBLIC HEALTH

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Air Act, §109 and 301(a). 42 USC §7401 et seq. and 40 CFR 50	Established air quality standards to protect the public health from exposure to air pollutants.
Clean Air Act §112(g), 42 USC §7412, and 40 CCR 63	Requires review of new or modified sources prior to promulgation of the standard and establishes emissions standards for HAP from specific source types including gas turbines. SMUD will not be a major source of HAP and hence is not subject to these provisions at this time.
STATE	
Health and Safety Code §25249.5 et seq. (Safe Drinking Water and Toxic Enforcement Act -– Proposition 65)	Requires posting of facilities that have chemicals known to cause cancer and public notification of significant risks.
Health and Safety Code §39650-39625	Provides for a special statewide program directed by the ARB to evaluate the risks associated with emissions of chemicals designated as TAC and to develop and mandate methods to control these emissions.
Health and Safety Code §44300 et seq. (Air Toxics "Hot Spots" Information and Assessment Act – AB2588)	Requires facilities that emit listed criteria or toxic pollutants to submit emissions inventories to the local air district. Such facilities may also be required to conduct a health risk assessment.

SOCIOCECONOMICS

SOCIOECONOMICS – GENERAL

The socioeconomic impact analysis evaluates the potential direct and cumulative project-induced impacts on community services and/or infrastructure including schools, medical and protective services and related community issues such as environmental justice.

The project site is located in agricultural and open space areas of southeastern Sacramento County, approximately 25 miles southeast of the City of Sacramento. Other population centers in the vicinity of the project site include the cities of Galt and Elk Grove, in Sacramento Count, and Lodi and Stockton in San Joaquin County.

Employment

Construction of Phase 1 and Phase 2 of the proposed project would be completed in 24 months and 18 months, respectively. The project would require a peak number of 381 workers in month 12 of Phase 1 and month 9 of Phase 2.

A total of 67,210 construction workers are projected to be available within the Sacramento and San Joaquin County area. Since the number of construction workers required represents such a small portion of the local available labor force, no in-migration would be expected as a result of project-related construction activities. Therefore, no significant impacts are expected as a result of construction-related population increases.

Twenty (20) permanent employees would be required for operation of the proposed facility. SMUD anticipates that all 20 permanent employees would be hired from the existing local labor force, resulting in no operational employees coming from outside the local labor force. With year 2000's population of 1,787,097 in the Sacramento County and San Joaquin County areas, any potential permanent employees drawn from outside the region would result in a negligible increase to the total population. Therefore, any potential population in-migration impacts resulting from the operational workforce would be insignificant. (AFC § 8.8.4.3-8.8.4.3.5.2; SA Socioeconomics p. 4.8-8-11)

Housing

There are 658,239 total housing units within Sacramento and San Joaquin counties with 38,045 vacant units, resulting in a 5.8 percent vacancy rate. During project construction, it is expected that most construction workers are within 1 to 2 hours commuting distance of the proposed project site, and therefore would not need to move into the area for the duration of construction. However, in the event that construction workers temporarily relocate to the study area during peak construction periods, an ample number of housing units are available in the study area. In addition to the available housing units, there are over 12,000 motel and hotel rooms within commuting distance of the proposed project site. Therefore, no

construction-related impacts are expected on the local housing supply. (AFC § 8.8.4.3.3; SA Socioeconomics pp. 4.8-10 -11)

Schools

Neither temporary construction workers nor operational employees are expected to move to and/or bring families to the Galt Joint Union High School District or the Arcohe Union Elementary District. Thus, there is not expected to be any impact on the need for school facilities. (AFC § 8.8.4.3.6; SA Socioeconomics p. 4.8-13)

Utility/Public Services

The project would be fueled by natural gas delivered to the site by a supply line to be constructed as part of the project. Natural gas would be obtained from Pacific Gas & Electric's (PG&E) transmission backbone pipelines 400 and 401 located near Winters, California, and transported through SMUD's 50-mile pipeline network. A new 24-inch diameter pipeline would be constructed from SMUD's existing Carson Ice-Generation Plant to the proposed project site.

Water supply is provided by the Folsom South Canal water which originally provided water to the Rancho Seco Nuclear Plant through a 66-inch diameter pipeline. Water for the proposed project would be diverted into a 12-inch diameter pipe to the proposed project site.

Domestic wastewater for the proposed project site would be treated with a package treatment system and leachfield for sanitary waste. To reduce the project's use of fresh inland water, the SMUD is proposing to employ the use of zero liquid discharge (ZLD) technology as part of the project. The ZLD is designed to process all plant wastewater, returning a relatively high quality distillate stream for reuse in the plant, and producing a solid waste stream suitable for proper landfill disposal. The process water would not be discharged into Clay Creek as originally proposed.

The project would rely on both onsite fire protection systems and local fire protection services. The onsite fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services including trained firefighters and equipment for a sustained response would be required from the Herald Fire District. (SA Worker Safety, p. 4.15-9)

The Sacramento County Sheriff's Department, South Field Services provides law enforcement services for the project area. A Problem Oriented Police (POP) officer, whose responsibility is to provide proactive service and deal with specific local issues, is assigned to the area, but is not responsible for responding to service calls. The zone serving the proposed project site is staffed with one officer in a patrol car 24-hours a day, 7 days a week. Response time to a service call at the site varies depending on the officer's location at the time of the call (AFC, p. 8.8-9).

Major hospitals serving the project site include Kaiser Permanente Hospital and Methodist Hospital in south Sacramento, Lodi Memorial Hospital in Lodi, and Dameron Hospital and St. Joseph's Immediate Care in Stockton. The Galt Fire District provides emergency medical service (i.e., ambulance service) to the project area. (AFC, p. 8.8-10; SA Socioeconomics pp. 4.8-6-13)

Economy/Government Finance

The estimated construction payroll for both phases of the proposed project would be $60 million. Along with the construction payroll, it is expected that between $16 and $20 million would be spent within the Sacramento County and San Joaquin County economies on material and supplies over 2 years. In addition, construction activity would result in secondary economic impacts (i.e., indirect and induced employment due to the purchase of goods and services by firms involved with construction, and induced employment due to construction workers spending their income within the counties). The estimated indirect and induced employment within the two-county region would be 38 and 555 jobs, respectively. These additional jobs result from $5.6 million in local construction expenditures as well as $42 million in spending by local construction workers. The increase in workers and their wages would result in a positive fiscal and economic impact on the local area.

During operation, the proposed project is expected to employ approximately 20 people in full-time, onsite positions, which would generate an annual operation payroll of $1.25 million, resulting in a permanent increase in tax revenues and local and regional spending by the operations staff for the life of the project. Annual expenditures by SMUD for supplies and materials are estimated to be approximately $8-10 million, of which approximately $5 million is anticipated to be spent locally. These expenditures are expected to help generate additional jobs within the area, and additional spending. The operation of the proposed project would result in the creation of 25 indirect and 18 induced permanent jobs that would occur within the two-county region. The indirect and induced impacts from the additional 43 jobs would result from annual expenditures on payroll of $1.25 million, as well as operations and maintenance budget of $5 million. Construction and operation of the project would result in a positive fiscal and economic impact on the local area.

The initial capital cost of both phases of the project is estimated to be $595 million. The estimated value of materials and supplies that will be purchased locally during construction is $16-20 million. The local sales tax expected to be generated during construction is $1.2-1.5 million.

Since SMUD is a municipal entity, it does not pay property taxes, so Sacramento County would not derive any additional funds from property taxes. (AFC p. 8.8-14-17; SA Socioeconomics p. 4.8-11-12)

Environmental Justice

Presidential Executive Order 12898, entitled "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

For all siting cases, the Energy Commission follows the U.S. Environmental Protection Agency's guidance in conducting a two-step environmental justice analysis. The analysis assesses:

- Whether the population in the area potentially affected by the proposed project is more than 50 percent minority and/or low-income, or has a minority or low-income population percentage that is meaningfully greater than the percent of minority or low income in the general population, or other appropriate unit of geographic analysis; and
- Whether significant environmental impacts are likely to fall disproportionately on the minority and/or low-income population.

Commission staff determined the affected area for this environmental justice analysis to be the area within a six-mile radius of the proposed project site. This area corresponds to the area analyzed for potential air quality and public health impacts.

Updated census tract data were reviewed to assess the demographic profile within a six-mile radius of the proposed power plant site. On the basis of this data, the area within a six-mile radius is 16.5 percent minority population.

Federal guidance does not give a percentage of population threshold to determine when a low-income population becomes recognized for an environmental justice analysis. The Energy Commission uses the same greater than 50 percent threshold that is used for minority populations, as well as a "meaningfully greater" percentage population. Staff found only 2.78 percent of the population below the poverty level in local census tracts.

However, even though low-income and minority populations exist in the area around the proposed project, this Decision finds there are no identified significant, project-related, unmitigated adverse human health or environmental effects. Therefore, no significant adverse impacts to minority or low-income populations are expected to occur. The **AIR QUALITY, PUBLIC HEALTH** and **HAZARDOUS MATERIALS** sections of this Decision indicate that potential risks to all segments the public can be mitigated to a less-than-significant level through use of minimized hazardous materials, engineering controls, operational controls, administrative controls, and emergency response planning. Additionally, no significant adverse cumulative impacts are associated with the proposed project.

Therefore, there are no significant adverse cumulative impacts to minority or low-income populations are expected. (AFC § 8.8.6; SA Socioeconomics pp. 4.8-14-15)

Cumulative Impacts

There are no known major construction projects in the vicinity of the project site or along the associated proposed pipelines. Therefore, no significant socioeconomics impacts would occur from the cumulative actions of this project and other potential projects. Due to the large number of available workers within the study area (approximately 67,210 construction workers projected to be available in 2004 within the Sacramento County and San Joaquin County area), it is very unlikely that a significant number of construction or operations workers would relocate to the study area. Even if some workers did relocate to the study area, there would be adequate available housing units to accommodate them. Therefore, due to an available large labor pool of construction workers, the cumulative demand for workers resulting from any cumulative projects in combination with this project can be met without causing a significant influx of workers from outside the study area. No significant cumulative socioeconomic impacts would occur. (AFC §8.8.5; SA Socioeconomics p. 4.8-130)

Findings

The project would not cause a significant adverse direct or cumulative impact on housing, employment, schools, public services or utilities. The project would have a temporary benefit to the adjacent areas in terms of an increase in local jobs and commercial activity during the construction of the facility. The construction payroll and project expenditures would also have a positive effect on the local and county economies. The estimated benefits from the project include increases in the affected area's sales taxes, employment, and sales of services, manufactured goods, and equipment. Overall, the project will have a positive socioeconomic impact on the area.

The project conforms to applicable laws related to socioeconomic matters and all potential socioeconomic impacts will be insignificant.

CONDITIONS OF CERTIFICATION

None

LAWS, ORDINANCES, REGULATIONS & STANDARDS

SOCIOECONOMICS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Executive Order 12898	Executive Order 12898, "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The Order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.
STATE	
California Government Code sec. 65995-65997	Includes provisions for levies against development projects in school districts. The local Unified School District will implement school impact fees based on new building square footage.
LOCAL	
None	

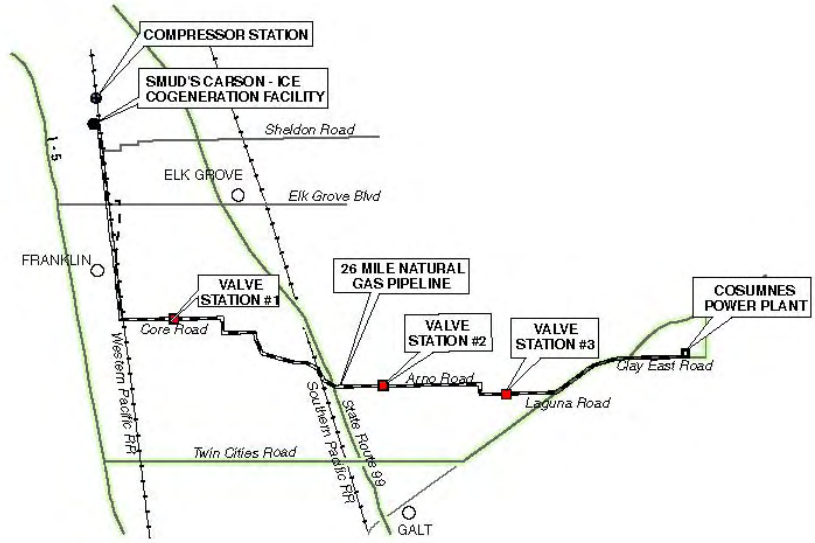
TRAFFIC & TRANSPORTATION

TRAFFIC – GENERAL

The project would be constructed in two phases. Phase 1 is anticipated to take 24 months and Phase 2, 18 months. SMUD's construction plans call for a minimum two to three month or longer idle period between the two phases, although SMUD would decide sometime in 2003 or 2004 whether to proceed with Phase 2 construction or defer construction to a future date.

Phase 1 of the project would also require the construction of a 26-mile natural gas pipeline, originating at SMUD's Carson Ice-Gen cogeneration facility located northwest of the project site. Phase 2 would require the installation of two compressor stations to ensure sufficient delivery of natural gas to the project. One of the natural gas compressor stations would be installed near the community of Winters in Yolo County, adjacent to an existing PG&E – SMUD inter-tie natural gas station. The other gas compressor station would be built at the existing SMUD gas pipeline Valve Station 190 located in Elk Grove.

Phase 1 of the project also requires three valve stations located along the gas line for emergency shut-off capability. These 50-foot square stations would be located at the intersections of Core and Bruceville roads, Arno and Valensin roads, and Valensin and Alta Mesa roads.



The construction of the power plant and pipeline causes additional trips by construction workers and delivery trucks to and from the sites, increasing daily traffic volumes on the freeways and local streets. The potential impact of the project is measured by the LOS (Level of Service) of the surrounding roadway segments and intersections based upon average daily traffic volume. LOS is measured in a range from LOS A to LOS F. A LOS of A refers to little or no congestion, whereas LOS F is heavy congestion with significant delays and significantly reduced travel speeds. (AFC §8.10.3; SA Traffic & Transportation, p. 4.9-7)

Congestion

Construction:

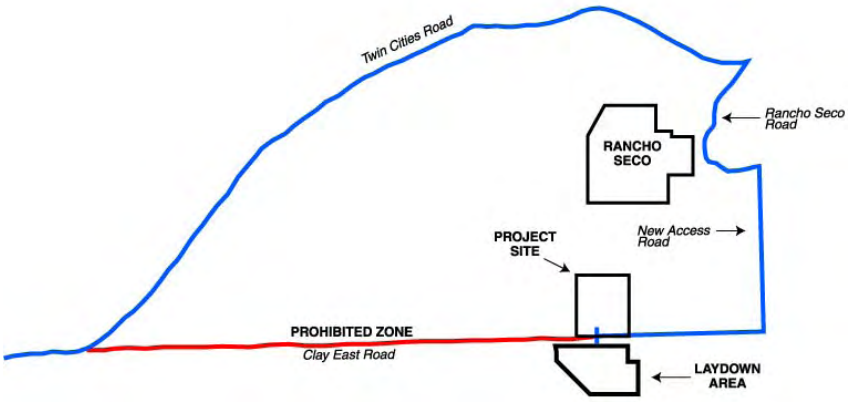
Commuting Workers: The project would require an average workforce at the site of 159 workers per month over the 24 months to construct Phase 1. During Phase 1's peak construction month (Month 12), the workforce would reach an estimated 328 workers at the plant site. The Phase 2 workforce would average 196 workers, because of the shorter construction time of 18 months. The peak work force would also be 328 workers.

This traffic analysis assumes a worst-case scenario in which each worker would make two trips per day during peak traffic hours (one round trip from home to the site and back). Assuming each construction worker drives a separate vehicle, the average of 196 workers would result in the construction workforce generating approximately 392 (i.e., 2 times 196) vehicle trips per day on average and 656 (i.e., 2 times 328) vehicle trips per day during the peak construction period.

The majority of the workforce for this project is expected to come from the greater Sacramento area, including San Joaquin County. The traffic routes would most likely be north or south on Highway (State Route) 99 and I-5 from the Sacramento area and San Joaquin County. This traffic would exit eastbound onto Twin Cities Road (State Route 104).

Twin Cities Road is presently operating at a LOS of A. Taking construction traffic into account, the LOS for Twin Cities Road is not worse than a LOS of B, which is an acceptable level. The intersection of Highway 99 and Twin Cities Road is expected to drop from a LOS of A to B during peak construction traffic. Likely, given the signaling system at the intersection of Highway 99 and Twin Cities Road, there will be minor congestion at peak commute times.

SMUD has proposed that construction workers and equipment access the power plant site by traveling east along Twin Cities Road, and then by turning south into the joint entrance of the Rancho Seco Park and the Rancho Seco Plant. The workers would then follow the road to the Park for a short distance. Once past the Park's gates, the workers would turn south and follow a new access road that would be built from the gate-house going south to Clay East Road. This new road would be designed to handle the large and heavy loads needed for construction. At the intersection of the access road with Clay East Road, construction traffic would then travel west on Clay East



Road to the plant entrance road. Since this section of Clay East Road comes to a dead end to the east, current traffic consists of residents and their visitors, delivery trucks, and local farming and cattle operations located along Clay East Road. This route would keep construction traffic from traveling by the residences located on Clay East Road.

Construction traffic leaving the plant site would exit SMUD property the same way it entered the Rancho Seco Plant entrance at Twin Cities Road. SMUD has stated that during construction it would require that all contractors and workforce personnel associated with the construction activity use this route. If needed, having a flagperson at the intersection of Clay East Road and the plant entrance road would enforce this requirement.

Truck Traffic: In addition to worker traffic, truck traffic would deliver equipment and construction material such as concrete, wire, pipe, cable, and steel. Deliveries would also include hazardous materials to be used during construction such as gasoline, diesel fuel, oil, and lubricants.

Truck deliveries would average 10 round trips per day, with the peak being 20 round trips per day. Truck deliveries were assumed to occur during the normal construction hours between 7:00 a.m. and 3:30 p.m., Monday through Friday. To evaluate the worst case scenario, it was assumed that the delivery trucks would arrive and depart during peak traffic hours.

Truck deliveries would use I-5, Highway 99, and Twin Cities Road. A projected LOS of not worse than B at the Highway 99/Twin Cities Road intersection means that the addition of construction truck delivery traffic will not cause significant congestion. (AFC §8.10.4.2; SA Traffic & Transportation p. 4.9-8-12)

Rail Activity: SMUD intends to use the existing rail spur at the Rancho Seco plant for the delivery of heavy equipment (e.g. steam turbines, combustion turbine, heat recovery steam generators). The heavy equipment would be unloaded near the Rancho Seco plant site and transferred to lowboy trailers pulled by trucks for transport to the site. This equipment would be transported over internal roads within the SMUD property and through a gate to the site. No access to public roadways would be required for truck movement of rail deliveries to the site. (SA Traffic & Transportation p. 4.9-12)

New Gas Pipeline Construction

Phase 1

Phase 1 requires construction of a 26-mile natural gas pipeline. The pipeline would require approximately seven months to construct. The workforce would average 50 with a peak workforce of 55 during the second and fourth month. This workforce would be traveling to designated locations along the pipeline route where they would park and then be transported to the work site. Since the small workforce associated with the pipeline construction would not be parking in the roadways along the pipeline route, there would not be a significant effect on traffic.

The natural gas pipeline construction activity would consist of normal trenching operations, the use of horizontal directional drilling for water crossings, and jack-and-bore for the crossing of roads and railroad tracks. Minor traffic impacts are likely along Franklin Boulevard and other roadways, but this can be mitigated with appropriate consultation and coordination with the City of Elk Grove, Sacramento County, and Caltrans.

Use of the railroad right-of-way for a portion of the pipeline route allows construction activity to occur out of the local roadway system, and it greatly reduces the number of roadway intersections along the route. The two major roadways that intersect the Union Pacific right-of-way are Elk Grove Boulevard and Laguna Boulevard. These roadways were built with overpasses over the railroad tracks, eliminating conflicts with those roadways. This places the remaining construction activity in more rural areas with light traffic.

When state highways and regional or local roads would be affected by pipeline construction, SMUD would be required to ensure that the construction contractors obtain all of the necessary roadway encroachment permits. The construction contractors must follow all traffic safety requirements for working in the roadways and ensure that all highway, road, railroad and waterway crossings are installed in compliance with encroachment permitting requirements.

When possible, the pipeline would be installed out of the roadway in a separate right-of-way. If this were not possible the pipeline would be placed in the roadway that could have an impact on traffic. The exact locations where the pipeline would put in the roadway have yet to be determined and will be included in the traffic control plan (TCP) to ensure minimal disruption to traffic and allow for its safe passage through the construction zone. The TCP would cover such things as lane closures, construction lay down areas, workforce parking, detours, maintaining access over both public and private roads, maintaining access to businesses and residents during construction, and a flag person if required. If SMUD follows the traffic control measures suggested in the *Manual of Traffic Controls for Construction and Maintenance Work Zones* (Caltrans 1998), impacts on traffic would be mitigated to a less than significant level.

Gas pipeline construction activity is not expected to significantly affect the level of service or overall traffic conditions, because the impact on each section of road would be of relatively short duration and the amount of traffic on most of the affected roads is minimal.

<u>Phase 2</u>
To ensure that a sufficient supply of natural gas fuel is available for Phase II, SMUD would install one natural gas compressor station in western Yolo County and another in southern Sacramento County. Construction of the proposed gas compressor station in Yolo County would be at the existing SMUD and Pacific Gas & Electric (PG&E) facility. After site preparation and foundations are set, the installation of a compressor at the Yolo County site is expected to take less than two weeks. The expected construction route travel route to this location would exit Interstate 505 on County Road 29A and zigzag west and north to the compressor site bordering on County Road 29.

The construction work should not require construction activity in the local roadways. But construction activity could result in truck traffic temporary blocking traffic in the westbound lane of County Road 29. If this should occur, SMUD would consult with Yolo County and prepare a traffic control plan. However, due to the light traffic conditions and short duration of construction activity at this location, the effect on local traffic would not be significant.

The second compressor would be located adjacent to SMUD's existing Valve Station number 190 located north of the Carson Ice-Cogeneration facility on Sacramento Regional Wastewater Treatment Plant property. This location can be accessed from Franklin Road by way of a private access road. In this area, Franklin Road is a four-lane divided road. The construction activity would not take place in any of the area roadways and would take approximately two weeks. Therefore, the effects on traffic would be insignificant. (AFC §8.10.4.2, §8.10.6; SA Traffic & Transportation, pp. 4.9-12-15.)

Operation:
The proposed project is expected to need 20 new full-time employees. This represents an insignificant increase in traffic levels as a result of the operation the power plant.

Deliveries to the project site are expected for on-going maintenance of the plant. In addition to other materials, SMUD indicates that the operation of the project will require approximately two to three 6,000-gallon tanker truck deliveries of aqueous ammonia per week. The incremental change in the number of delivery trips to the plant site is expected to be nominal and will generally occur during non-commute periods. Therefore, the resulting LOS on local roadways would remain unchanged from the existing LOS. (AFC § 8.10.4.3; SA Traffic & Transportation, p. 4.9-17, 18)

MITIGATION:

- ☑ The Project Owner's shall prepare a Traffic Control Plan to assure that added peak commute traffic and in-street pipeline construction does not create unacceptable congestion impacts. Condition: **TRANS-5**.
- ☑ The Project Owner will coordinate roadway projects with any local jurisdiction. Condition: **TRANS-7**

Safety

School Bus Safety:
Local residents have raised concerns that construction traffic on Twin Cities Road and Clay East Road would conflict with school buses also traveling on those roads, and students walking to and from bus stops. Both of these rural roads are relatively narrow, with minimal shoulders. Construction traffic traveling on these roads presents a potentially significant impact and safety hazard for children waiting for a school bus, and when children are getting on and off buses.

These students are traveling to and from the Arcohe Elementary School just off Twin Cities Road in the community of Herald. The school hours are 8:10 a.m. to 2:45 p.m. The District school buses leave the bus storage yard at 6:45 a.m. with student pick-up starting after 7:00

a.m. After school, the buses pick students up at the school between 2:50 and 2:55 p.m. and are back to the school bus yard between 3:55 and 4:10 p.m.

On an average basis, SMUD expects construction workers to make over 390 trips per day, with 40 truck trips, on these two roads. During the peak period, over 650 worker trips and 160 trucks are expected. The major portion of the construction workforce traffic would be scheduled to arrive at the plant site between 5:30 a.m. and 7:00 a.m. and leave between 3:30 p.m. and 5:30 p.m.

In response to the Clay East Road concerns, SMUD has proposed a new construction access road, discussed above, that would establish a route that would avoid the use of Clay East Road between Twin Cities Road and Kirkwood Street. The alternate route would *require* construction traffic to travel east on Twin Cities Road to the intersection of Twin Cities Road and the entrance to the Rancho Seco Park.

To reduce the potential risk to school bus safety, the access road must be constructed very early in the project, before the level of construction traffic becomes significant. SMUD has agreed to complete construction access road work before the construction workforce reaches 100 workers. In addition, the initial workforce schedule would be set so that construction traffic (no more than 100 workers) avoids the use of Clay East Road during the hours in which school buses would be operating on the roadway. SMUD is to work with the school district on construction workforce scheduling to avoid having the workers' shifts starting and ending during the school bus route times, including the interval after 3:30 p.m. when students may be walking from the bus stops.

To ensure that construction workers and repeat deliverymen are aware of the potential risk to school children, SMUD will conduct a Worker Traffic Safety Program to inform each new employee or contractors' employees of the applicable laws pertaining to school bus safety, potential road conditions, safe driving practices, and required commute times to avoid school bus traffic. In addition, a public complaint procedure will be established to allow citizens to inform SMUD of any traffic related safety issues and provide prompt resolution.

Lastly, at least during the construction period, SMUD will post appropriate, approved roadside signage (See sample) advising traffic of the school bus zone and the presence of school children along Twin Cities Road and the prohibition against use of Clay East Road. (SA Traffic & Transportation, p. 4.9-10, 11, 15)

<u>Construction</u>:
Construction will require the use of large vehicles, occasionally including oversize or overweight trucks. Additionally, there will be deliveries to the power plant site of hazardous construction substances, such as gasoline, diesel fuel, oils, solvents, cleaners, paints, etc.

Operation:
Hazardous and non-hazardous would be delivered by truck to the plant site on an incidental basis. Unlike the construction phase, the anticipated travel routes for hazardous and non-hazardous materials delivered to the project would be on Highway 99, and then east on Twin Cities Road and then on Clay East Road to the plant access road. Operational access would not be required to enter at the Rancho Seco entrance and use the construction access road.

Deliveries to the project site are expected for on-going maintenance of the plant. In addition to other materials, SMUD indicates that the operation of the project will require approximately two to three 6,000-gallon tanker truck deliveries of aqueous ammonia per week.

Transportation and handling of hazardous substances associated with the project can increase the potential for roadway hazards. The California Department of Motor Vehicles specifically licenses all drivers who carry hazardous materials. Drivers are also required to check for weight limits and conduct periodic brake inspections. Commercial truck operators handling hazardous materials are also required to take instruction in first aid and procedures on handling hazardous waste spills. Drivers transporting hazardous waste are required to carry a manifest, which is available for review by the California Highway Patrol at inspection stations along major highways and interstates.

The California Vehicle Code and the Streets and Highways Code (Sections 31600 through 34510) are equally important to ensure that the transportation and handling of hazardous materials are done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the California Highway Patrol. (SA Traffic & Transportation, p. 4.9-18)

MITIGATION:

- ☑ Caltrans permits control vehicle size and weight. Condition: **TRANS-1**.
- ☑ Encroachment permits shall be obtained. Condition: **TRANS-2**
- ☑ Hazardous materials haulers must be specially licensed by the California Highway Patrol. Condition: **TRANS-3;**
- ☑ Construction-impacted roadways will be restored to their pre-construction condition. Condition: **TRANS-6**.
- ☑ To protect school children and school bus activity along Twin Cities Road, the Project Owner will conduct a Worker Traffic Safety Program to inform workers laws relating to school bus traffic, establish commute times different from student pick-up and drop-off times, post cautionary roadside signage, and establish a school traffic complaint process. Conditions: **TRANS-5, TRANS-8** through **TRANS-10.**

The handling and disposal of hazardous substances are also addressed in the **HAZARDOUS MATERIALS** and **WASTE MANAGEMENT** sections.

Parking

Construction:
For Phase 1, construction worker parking and materials laydown will be accommodated adjacent to the power plant site. Construction worker parking and some laydown will be on the undeveloped Phase 2 site. Additional laydown and parking are in the laydown area immediately south of Clay East Road. This 20-acre area would provide adequate parking for the construction workforce, which has a worst case estimate of 328 workers and vehicles. There would be no parking along the roadways by construction workers or trucks delivering materials and supplies to the site. Therefore, vehicles parking along the roadways would not affect traffic flow.

Vehicles accessing the laydown area would use the construction access route described above. Upon early completion of the access road, all construction traffic is prohibited from using that portion of Clay East Road that passes the local residents. Traffic from the laydown area to the construction site must cross Clay East Road, but would not affect the residential area located along the western portion of Clay East Road. The location of the laydown area would not result in a significant effect on traffic.

Operation: Adequate on-site parking is available for the twenty new power plant personnel. (SA Traffic & Transportation, p. 4.9-16.)

MITIGATION:

☑ The Project Owner shall develop a construction worker parking and materials staging plan. Condition: **TRANS-4**

Cumulative Impacts

The site is located in a rural area of Sacramento County that does not experience heavy traffic flow. At this time there are no proposed projects that would result in additional construction traffic traveling the same routes.). Based on the current traffic characteristics (i.e., LOS, AADT, highway capacities) of the area, traffic associated with the project operation of the facility would not have a significant traffic impact. (AFC § 8.10.5; SA Traffic & Transportation, p. 4.9-19.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to traffic and transportation and all potential adverse traffic and transportation impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

OVERWEIGHT & OVERSIZE VEHICLES

TRANS-1 The project owner shall comply with Caltrans and other relevant jurisdictions' limitations on vehicle sizes and weights. In addition, the project owner or its contractor shall

obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

ENCROACHMENT PERMITS

TRANS-2 The project owner or its contractor shall comply with Caltrans and other relevant jurisdictions' limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions. Compliance with this condition shall encompass the items noted in Caltrans' September 17, 2002 letter to the Energy Commission regarding encroachment permits.

Verification: In Monthly Compliance Reports, the project owner shall submit copies of permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

LICENSED HAZARDOUS MATERIALS HAULERS

TRANS-3 The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

PARKING & STAGING PLAN

TRANS-4 During construction of the power plant and all related facilities, the project shall develop a parking and staging plan for all phases of project construction to enforce a policy that all project-related parking occurs on-site or in designated off-site parking areas.

Verification: At least 45 days prior to start of site mobilization, the project owner shall submit the plan to the appropriate jurisdiction(s) for review and comment, and to the CPM for review and approval.

TRAFFIC CONTROL PLAN

TRANS-5 The project owner shall consult with Caltrans, Sacramento and Yolo counties, and the City of Elk Grove and prepare and submit to the CPM for approval, a construction traffic control plan (TCP) and implementation program. The TCP should address the following issues:

- Timing of heavy equipment and building materials deliveries;
- Redirecting construction traffic with a flagperson;
- Signing, lighting, and traffic control device placement if required;
- Need for turning restrictions;
- Need for construction work hours and arrival/departure times outside of peak traffic periods, local school bus travel times on SR 104/Twin Cities Road and Clay East Road, and the intervals that children would be walking to and from bus stops;
- Installation of road signs along Twin Cities Road to inform drivers of school bus zones;
- Signage directing construction workers and deliveries off of Clay East Road;
- Ensure access for emergency vehicles to the project site;
- Temporary travel lane closure;
- Access to adjacent residential and commercial property during the construction of all linear facilities;
- Installation of the gas pipeline, compressor and valve stations;
- Completion of the construction access road as early in the construction phase as possible. Restrict the use of Clay East Road during non-school bus hours to no more than 100-day shift workers per day until the access road is complete. Require all construction traffic (contractors and workforce personnel) to use Twin Cities Road and the access road to enter and exit the site and laydown area.

Verification: At least 45 days prior to site mobilization, the project owner shall provide to the CPM a copy of the TCP for review and approval.

ROADWAY REPAIRS

TRANS-6 Following completion of Phase 1 and 2 construction, the project owner shall repair any damage to area roadways incurred during construction of the project to pre-project construction conditions. If there is a multi-year gap (i.e., more than 12 months) between the phases, the project owner must make the repairs after each phase is completed.

Protocol:

Prior to start of construction, the project owner shall photograph, videotape or digitally record images of roadways that would be impacted by the linear facilities and plant construction traffic. For the plant construction, this would include Twin Cities Road between SR-99 and the Rancho Seco facility and Clay East Road between the access road and the entrance to the site. For the natural gas pipeline, this would include those roadways to be impacted by the construction traffic and the laying of the pipelines. The project owner shall provide the CPM, the County of Sacramento, the City of Elk Grove, and Caltrans (as necessary) with a copy of the images for their respective roadway system.

Verification: Within 30 days after completion of the construction, the project owner shall meet with the CPM, the City of Elk Grove, the County of Sacramento, and Caltrans (as

needed) to determine the actions necessary and schedule to complete the repair of identified sections of public roadways to original or as near original condition as possible. Following completion of any regional road repair, the project owner shall provide to the CPM a letter from the City of Elk Grove, County of Sacramento, and Caltrans if work occurred within their jurisdiction stating their satisfaction with the repairs.

TRAFFIC COORDINATION

TRANS-7 Prior to start of construction of Phase 1 and 2, the project owner shall also notify the City of Elk Grove, County of Sacramento, and Caltrans about the schedule for project construction. The purpose of this notification is to postpone any planned roadway resurfacing and/or improvement projects until after the project construction has taken place and to coordinate construction related activities associated with other projects.

Verification: Forty–five (45) days prior to the start of construction, the project owner shall provide to the CPM a copy of the transmittal notifying the City of Elk Grove, County of Sacramento, and Caltrans of the construction schedule.

SCHOOL TRAFFIC COMPLAINTS

TRANS-8 Throughout construction of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all complaints related to construction traffic affecting school bus safety or children walking to and from school bus stops. The project owner or authorized agent shall:

- Use a CPM-approved Complaint Resolution Form, or functionally equivalent procedure acceptable to the CPM, to document and respond to each traffic safety complaint;
- Attempt to contact the person(s) making the traffic safety complaint within 24 hours;
- Conduct an investigation to determine the source of the traffic safety problem related to the complaint;
- If the traffic safety issue is project related, take all feasible measures to reduce the safety problem at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of traffic safety improvement efforts; and if obtainable, a signed statement by the complainant stating that the traffic safety problem is resolved to the complainant's satisfaction.
- The project owner shall establish a telephone number for use by the public to report any project-related traffic safety issues. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until project construction is complete.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement, signed by the project manager, stating that a telephone number has been established and posted at the site, giving the telephone number.

Within 5 days of receiving a traffic safety complaint, the project owner shall file a copy of the Complaint Resolution Form, with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 3-day period, the project owner shall submit an updated Traffic Safety Complaint Resolution Form when the mitigation is implemented.

TRAFFIC SAFETY SPECIALIST

TRANS-9 The project owner shall select a traffic safety specialist (TSS) (e.g., a Sacramento County Sheriff officer or California Highway Patrol officer, retired or presently employed) to oversee a Worker Traffic Safety Program (WTSP) school bus/ school children awareness training. The TSS shall have a minimum of five (5) years experience in traffic safety training in California.

Verification: Thirty (30) days prior to ground disturbance, the project owner shall submit the traffic consultant's resume to the CPM for approval.

WORKER TRAFFIC SAFETY PROGRAM

TRANS-10 Prior to ground disturbance, the project owner shall develop and implement a Worker Traffic Safety Program (WTSP) focusing on awareness of school buses and school children in the vicinity of the project. The plan shall include as a minimum the following:

1. a discussion of all applicable motor vehicle laws and penalties under the law; safe driving practices, potential road conditions (e.g., school bus stops, children who are walking to or from a bus stop, children boarding or exiting buses, ground fog, horses/livestock, slow vehicles etc.) along the expected travel corridor (i.e., Twin Cities Road);
2. required commute work travel times (per **TRANS-5**);
3. expected school bus travel times; and
4. a discussion of consequences in the event a worker is found driving in an unsafe manner.

The training shall be provided on a weekly basis to all new employees (including all contractors and subcontractors) at the beginning of Phase 1, and continue for the duration of the Phase 1 and Phase 2 construction periods. Any training presented in the form of a video must be reviewed and approved by the CPM in advance.

Verification: The project owner shall provide a copy of the WTSP to the CPM for review and approval 30 days prior to ground disturbance. The training may be presented in the form

of a video if the video has been reviewed by the TSS and approved by the CPM. The video shall be provided to the CPM for review and approval 30 days prior to ground disturbance.

The project owner shall provide the WTSP Certification of Completion for persons who have completed the training in the prior month, and a running total of all persons who have completed training to date in the Monthly Compliance Report (MCR).

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRAFFIC & TRANSPORTATION

APPLICABLE LAW	DESCRIPTION
FEDERAL	
49 CFR §171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.
14 CFR §77.13(2)(i)	Requires applicant to notify FAA of any construction greater than an imaginary surface as defined by the FAA.
14 CFR 77.17	Requires applicant to submit Form 7460-1 to the FAA. VALERO has received approval.
14 CFR §§77.21, 77.23 & 77.25	Regulations which outline the obstruction standards which the FAA uses to determine whether an air navigation conflict exists.
STATE	
California State Planning Law, Government Code §65302	Requires each city and county to adopt a General Plan consisting of seven mandatory elements to guide its physical development, including a circulation element.
CA Vehicle Code §35780	Requires approval for a permit to transport oversized or excessive load over state highways.
CA Vehicle Code §31303	Requires transporters of hazardous materials to use the shortest route possible.
CA Vehicle Code §32105	Transporters of inhalation hazardous materials or explosive materials must obtain a Hazardous Materials Transportation License.
California Department of Transportation Traffic Manual, Section 5-1.1	Requires Traffic Control Plans to ensure continuity of traffic during roadway construction.
Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470	Requires Encroachment Permits for excavations in city streets.
LOCAL	
Sacramento County, General Plan, Circulation Element	Establishes goals and policies for transportation improvements and usage.
Yolo County, General Plan, Circulation Element	Establishes goals and policies for transportation improvements and usage.

VISUAL RESOURCES

VISUAL RESOURCES - GENERAL

Visual resources analysis has an inherent subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

The CEQA Guidelines defines 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 (Cal. Code Regs., tit.14, § 15382).

Appendix G of the CEQA Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

11. Would the project have a substantial adverse effect on a scenic vista?
12. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
13. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
14. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Objectionable Appearance

Construction: Construction of the proposed power plant and linear facilities would cause adverse visual impacts due to the presence of equipment, materials, and workforce. Construction would involve the use of cranes, heavy construction equipment, temporary storage and office facilities, and temporary laydown/staging areas. Construction would include site clearing and grading, digging for construction of underground linear facilities, construction of the actual facilities, and site and rights-of-way cleanup and restoration.

Project construction would span a period of approximately four years. Construction of the first phase of the project would occur over a 24-month period. Construction of the second phase of the project would occur over a 20-month period, which could follow three months or years after completion of the first phase. Due largely to the short-term nature of project construction, the adverse visual impacts that would occur during construction would not be significant.

Also, while the majority of construction activities would occur during daylight hours when supplemental lighting would not be needed, some construction activity may occur at night to make up schedule deficiencies or to complete critical construction activities. Additionally, some construction activities during the startup phase would be performed 24 hours a day, 7

days a week. In order to ensure that significant construction lighting impacts do not occur, Condition of Certification **VIS-4** requires minimum brightness, shielding, and use of motion detectors, all consistent with worker safety.

Gas Pipeline Construction

A typical pipeline construction spread would include a bulldozer, backhoe, boom trucks, excavation diggers, material delivery trucks, welding trucks and inspection vehicles. In traffic areas, the spread would be less than 500 feet in length. In rural or agricultural areas, the spread would depend on safety and construction efficiency. Generally, the speed of construction would be 100 feet to 500 feet per day depending upon width of construction easement, equipment type, soil, and weather conditions.

Construction of the proposed gas pipeline could result in adverse visual impacts. Given that construction activities would move along the pipeline route at a rate of 100 to 500 feet per day, pipeline construction impacts would only be visible to adjacent and nearby residents for a period of one to seven days. To ensure that visual impacts resulting from pipeline construction do not become significant, Condition **VIS-1** requires that all staging, material, and equipment storage areas for gas pipeline construction are visually screened from adjacent public roads and nearby residences. All evidence of pipeline construction activities, including ground disturbance due to staging and storage areas, shall be removed and remediated upon completion of construction to its pre-construction condition. Any vegetation removed in the course of construction will be replaced on a 1-for-1 in-kind basis. Such replacement planting shall be monitored for a period of three years to ensure survival. Also, if nighttime pipeline construction activities occur, standard white construction lights that are approximately six to eight feet tall would be used to illuminate the immediate construction activity. In order to ensure that significant construction lighting impacts do not occur, Condition of Certification **VIS-4** requires minimum brightness, shielding, and use of motion detectors, all consistent with worker safety.

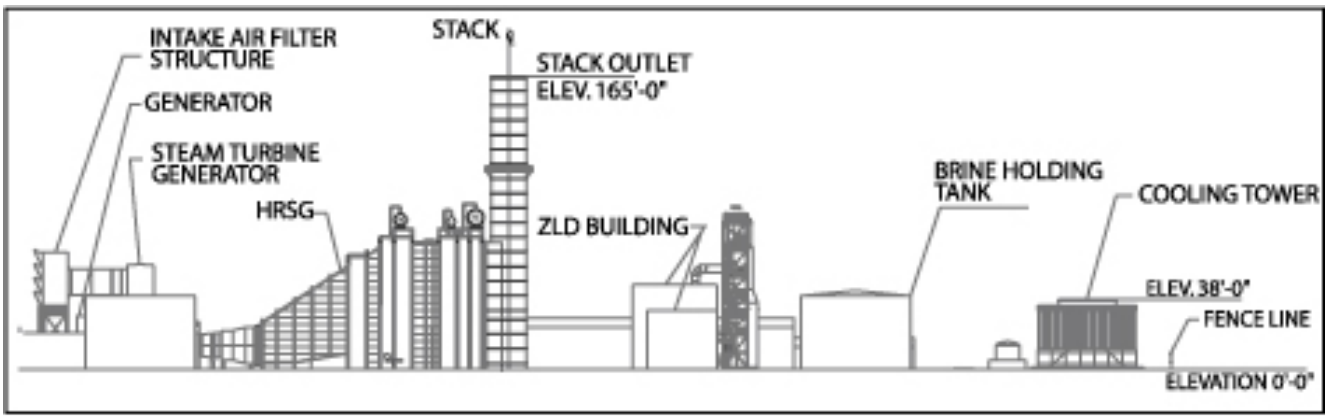
Proper implementation of Conditions of Certification **VIS-1** and **VIS-**4 would ensure that the visual impacts associated with pipeline construction remain less than significant. (SA Visual Res., p. 4.12-15)

MITIGATION:

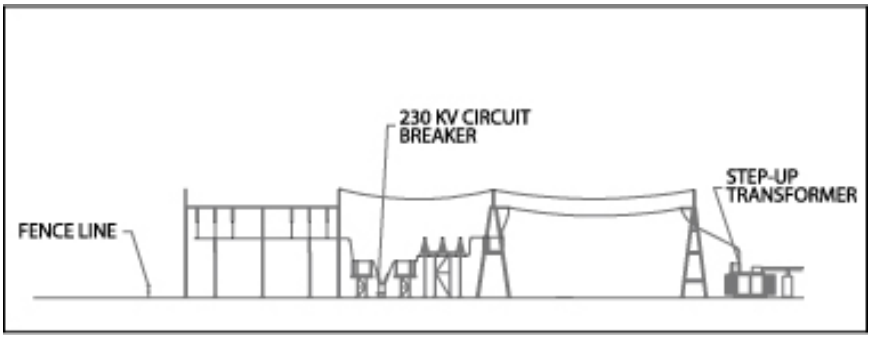
- ☑ The Project Owner shall screen the pipeline construction areas, including material equipment storage areas, from residential viewers. Condition: **VIS-1.**
- ☑ The Project Owner shall control construction area lighting by minimizing brightness, using shielding, and motion detectors, all consistent with worker safety. Condition: **VIS-4.**

Operation: The proposed project would be located in rural southeast Sacramento County, characterized largely by pasturelands, agriculture, and residential. The site is approximately 30 acres of 2,480 acres owned by SMUD, situated between Rancho Seco Power Plant on the north and Clay East Road on the south.

The most visible features of the proposed two-phase project would include the four 165-foot tall HRSG stacks; the four 107-foot tall HRSG structures; the 65-foot tall air inlets to the combustion turbine generators; the two 40-foot tall, 2.5-million-gallon raw water storage tanks; and the 43-foot tall, 864-foot long 18-cell cooling tower structure. Other features associated with the generation site include ancillary structures; parking areas; an 8-foot chain link fence, with an additional two feet of barbed or razor wire; and lighting.



A new on-site switchyard would be located immediately west of the power generation facilities. Components of the new switchyard would have an industrial appearance similar to that of other components associated with the power generation facilities and would include transformers, 70-foot A-frame take-off structures, and other electrical equipment.

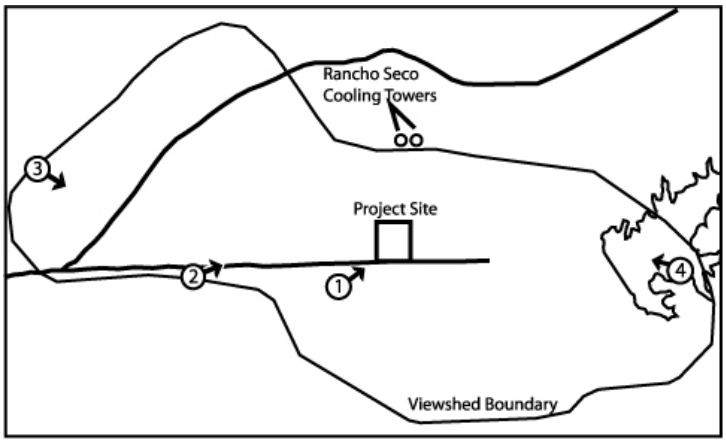


The 230 kV electric transmission interconnection and switchyard would also be visible in the immediate power plant vicinity. The transmission interconnection would be located adjacent to the existing PG&E 230 kV transmission line. The existing lattice structures are a maximum of 138 feet tall. The proposed 0.4 mile transmission line would be carried on six single-pole tubular structures, which would be a maximum of 125 feet in height. (SA Visual Res., pp. 4.12-6-7.)

Key Observation Points

Within the areas of power plant visibility, there are relatively few viewing opportunities due to the screening provided by the rolling terrain and the sparsely populated nature of the viewshed. Most viewing opportunities are from the west and south of the project site and some available views are unobstructed and panoramic, encompassing broad vistas of agricultural lands, the foothills, Sierra Nevada Mountains, and expansive distances of sky.

SMUD, with input from Energy Commission staff, selected Key Observation Points (KOPs). Foreground to middleground views of the proposed project are available from:



KOP 1: the nearest residences on Clay East Road, 0.2 mile southwest of the site,
KOP 2: a small cluster of residences, approximately 1.1 miles southwest of the site along the east side of Kirkwood Street,
KOP 3: several hilltop residences west of the project site including one on Clay Station Road, approximately 2 miles northwest of the project site, and
KOP 4: the recreational use areas of Rancho Seco Park approximately 1.6 miles southeast of the site.

The following paragraphs briefly summarize the concluding assessments of overall visual sensitivity at each KOP. Overall visual sensitivity takes into account existing landscape visual quality, viewer concern, and overall viewer exposure.

KOP 1 – Clay East Road

KOP 1 was located at the front yard of 14460 Clay East Road, approximately 0.2 mile southwest of the project site. This viewpoint was selected to represent the view from the two residences closest to the project site. (NOTE: The caretaker's trailer was relocated due to potential noise impacts.) It also represents views from eastbound Clay East Road which dead ends just past the project site at the entrance road to a private ranch.

From this viewpoint, the most prominent features in the predominantly rural landscape are the flat, open agricultural fields that occupy the foreground and middleground; Rancho Seco Power Plant and its prominent twin parabolic cooling towers in the middleground, the electric

transmission and utility infrastructure that crosses the foreground fields and parallels Clay East Road, and the linear form of Clay East Road.

When not obscured by haze, the distant Sierra Nevada Mountains are also visible in the background. The overall landscape character is rural agricultural, and the landscape character becomes more industrial in appearance in close proximity to the unobstructed Rancho Seco Power Plant.

The proposed project would introduce prominent geometric forms such as the HRSG structures and stacks and intake air inlet structures and the vertical forms and lines of the electric transmission interconnection and switchyard. These structural characteristics would appear similar to the existing forms and lines established by the adjacent Rancho Seco Power Plant and electric transmission infrastructure converging on the plant.

The proposed power plant facilities would be spatially prominent in the view from KOP 1. The scale of the proposed facilities, without landscaping, would appear co-dominant with the existing power plant and landforms. Also, the height of the vertical HRSG stacks would contribute to the structural prominence of the proposed facilities. Overall project dominance would be co-dominant.

A very low number of potential viewers, whether residents or motorists, are at this location.

For direct project impacts, CEQA requires that the project be considered in the context of the existing setting. SMUD regards the existing visual setting by saying, "[The Rancho Seco Plant] facilities detract from the moderate visual quality landscape because of their stark difference in form, line, color, and texture when compared to the landscape in which they exist." (AFC p. 8.11-5)

SMUD also says, "The presence of the nuclear facility, however, also provides variety and interest to the landscape, due both to the great mass and height of its facilities and the uniqueness of a well-known nuclear plant facility." (AFC p. 8.11-5)

Staff generally concurs that Rancho Seco degrades the existing visual setting, and on that basis believes that the project, while causing an adverse visual effect, does not have a *significant* effect. (SA Visual Res., p. 4.12-7)

Therefore, in line with the requirements of CEQA, the Commission must find that the project's visual change from KOP 1 would cause an adverse but not significant visual impact, when considered within the context of the existing landscape, which is dominated and degraded by the Rancho Seco Nuclear Power Plant.

KOP 2 – Kirkwood Street

KOP 2 is located at the back yard of 11615 Kirkwood Street, near the intersection with Clay East Road. This viewpoint is approximately 1.1 miles southwest of the project site. This viewpoint was selected to represent the slightly elevated perspective from the four residences along Kirkwood Street that are closest to the intersection with Clay East Road. It also

somewhat represents the motorist view from eastbound Clay East Road, as the road begins to descend the slight rise from Kirkwood Street. This view is also somewhat similar to views experienced by approximately 50 residences in the area from west of the plant to south of the site.

This viewpoint affords panoramic views of flat agricultural landscape with a prominent presence of energy and electric transmission infrastructure in the middleground, back-dropped by foothills and the distant Sierra Nevada mountain range. The most prominent features in the landscape are the twin parabolic cooling towers at Rancho Seco Power Plant with its complex industrial character. Other noticeable features in the landscape include electric transmission and utility infrastructure and the linear form of Clay East Road.

Site visibility is high in that the view of the site from KOP 2 is open and unobstructed for a distance of approximately 1.1 miles. Motorists on Kirkwood Street would generally not be able to see the project site except near the intersection with Clay East Road because residences and vegetation along most of the length of the street generally screen views to the east. At the Clay East Road intersection, the attention of the motorist traveling northbound on Kirkwood Street is primarily drawn to the west away from the project site because most of the oncoming traffic is approaching from the west and then turns south on Kirkwood Street. Eastbound motorists on Clay East Road would also have a brief view of the site at the intersection with Kirkwood Street before turning south on Kirkwood Street (there is no stop for traffic on Clay East Road). Overall, for motorists, who are mostly also residents, visibility is of short duration.

The proposed project would introduce the same noticeable geometric forms of the HRSG structures and stacks and intake air inlet structures and the vertical forms and lines of the electric transmission interconnection and switchyard. These structural characteristics would appear similar to the existing forms and lines established by the adjacent Rancho Seco Power Plant and electric transmission infrastructure converging on the plant. The flat, horizontal form of the agricultural fields along with the low rolling hills and the prominent complex industrial forms of Rancho Seco Power Plant dominate the predominantly rural agricultural landscape visible from KOP 2. The proposed power plant facilities would be spatially noticeable in the view from KOP 2 but the scale of the proposed facilities, without landscaping, would appear smaller than that of either the surrounding landforms or power

plant with its two massive hyperbolic cooling towers. Overall the project's visual dominance would be either subordinate to or co-dominant with the Rancho Seco Power Plant.

SMUD proposes to create a landscaping screen with native trees and shrubs on the west side of the project site, which has been incorporated into Condition **VIS-3**.

Again, for direct project impacts, CEQA requires that the project be considered in the context of the existing setting. When considered within the context of the existing landscape, which is dominated and degraded by the Rancho Seco Nuclear Power Plant, the project's visual change from KOP 2 would cause an adverse but not significant visual impact. SMUD's visual screening will contribute to keeping the effect less than significant.

KOP 3 – Clay Station Road

KOP 3 is located at the backyard of 11540 Clay Station Road, slightly over two miles northwest of the project site. This viewpoint represents the elevated perspective available to approximately two hilltop residences.

This viewpoint affords unobstructed, panoramic views of a flat agricultural landscape with the prominent twin parabolic cooling towers at Rancho Seco Power Plant, back-dropped by the distant Sierra Nevada mountains range. Other noticeable features in the landscape include electric transmission lines converging on the power plant.

The number of viewers from this location is very low.

The most obvious change to the landscape would be the introduction of the same noticeable HRSG structures and stacks and intake air inlet structures and the transmission lines and switchyard. These structural characteristics would appear similar to the existing forms and lines established by the adjacent Rancho Seco Power Plant and electric transmission infrastructure converging on the plant. However, at this background viewing distance, the

structural mass of the proposed project would appear smaller than that of the existing Rancho Seco Power Plant to the north of the project site.

It should be noted that the photo simulation above does not reflect the most recent changes in the new design (slightly different spacing between HRSG structures and stacks and a five-foot increase in the height of the HRSG stacks), which would not be readily apparent at this viewing distance.

The project would be visually subordinate to the existing Rancho Seco Power Plant.

When considered within the context of the existing landscape, which is dominated and degraded by the Rancho Seco Nuclear Power Plant, the project's visual change from KOP 3 would cause an adverse but not significant visual impact. SMUD's visual screening, although less noticeable at this distance, will contribute to keeping the effect less than significant.

KOP 4 – Rancho Seco Park

KOP 4 is located at the swimming and picnic area at Rancho Seco Park. This viewpoint is approximately 1.6 miles southeast of the project site. This viewpoint was selected to represent the recreational views of park users.

This viewpoint affords panoramic views of the reservoir and park landscape, back-dropped by the low reservoir dam and prominent parabolic cooling towers of Rancho Seco Power Plant.

The number of viewers is moderate, the duration of view is greater than that of a motorist; but viewers are transient.

The proposed project would introduce the noticeable vertical lines of the upper portion of the HRSG stacks, which would be 5 feet higher than shown in the above photo simulation. The

stacks would be minimally visible above Rancho Seco Dam and noticeable in the center of the view from KOP 4. They would appear subordinate in size compared to the existing natural features in the landscape (sky, water, and grass) and to the massive hyperbolic forms of the Rancho Seco Power Plant cooling towers existing power plant structures.

When considered within the context of the existing landscape, which is dominated and degraded by the Rancho Seco Nuclear Power Plant, the project's visual change from KOP 4 would cause an adverse but not significant visual impact.

Mitigation
The proposed project includes a proposal to plant landscaping along the south side of the project, outside of and along the perimeter fence. It would consist of native, drought-resistant trees and shrubs that would require low levels of maintenance (AFC, p. 8.11-9)

Energy Commission staff generally agrees with SMUD's mitigation proposals. However, staff's position is that some of these proposals need to be more precisely developed. Therefore, Staff has proposed mitigation (**VIS-2)** to help blend project structures with the existing landscape by coloring plant structures.

Staff also conducted a line-of-sight analysis from KOP 2 and KOP 3, and concluded that the planting of screening vegetation along SMUD's western property boundary (not just the site fenceline) could be effective in screening from view a majority of the project facilities. (**VIS-3**) However, vernal pools and swales exist on portions of the property west of the site. U.S. Fish and Wildlife Service (USFWS) guidelines require a 250-foot buffer between such wetlands and actions that could adversely affect them. The wetlands have been delineated. Staff has mapped the areas within 250 feet of delineated wetlands. In addition, USFWS staff advised Energy Commission staff that tree species native to the Central Valley should be used for landscape screening west of the power plant site. USFWS also stated that the landscape irrigation should be designed so it does not drain into or otherwise impact the wetland areas. (SA Visual Resources, pp. 4.12-36, 37)

The Commission adopts the power plant structure coloring and vegetative screening mitigation as the best feasible means to reduce the direct visual impacts of the project.

MITIGATION:

- ☑ The Project Owner shall treat project structures in colors to minimize visual intrusion and contrast. Condition: **VIS-2.**
- ☑ The Project Owner shall provide landscaping that is effective in screening the project from views from nearby residences. Condition: **VIS-3.**

CUMULATIVE IMPACTS
Cumulative impacts to visual resources could occur where project facilities occupy the same field of view as other built facilities or impacted landscapes. It is also possible that a cumulative impact could occur if a viewer's perception is that the general visual quality of an area is diminished by the proliferation of visible structures, even if the new structures are not within the same field of view as the existing structures. The significance of the cumulative

impact would depend on the degree to which (1) the viewshed is altered; (2) visual access to scenic resources is impaired; (3) visual quality is diminished; or (4) the project's visual contrast is increased.

Sacramento County identified an approved project that was considered in Staff's cumulative analysis. The project is a proposed biosolids storage facility that would be located within one mile northwest of the proposed power plant site, on the north side of Twin Cities Road. Depending on where the biosolids storage facility is located on the candidate parcels, it may be visible in the same field of view of westbound motorists on Twin Cities Road, when approaching the project region east of the proposed power plant site. However, to the extent that both the proposed power plant and biosolids storage facility are visible in the same field of view, it would only be for a very brief viewing period due to the intermittent screening of the power plant site by intervening terrain. (SA Visual Resources, p. 4.12-23) The Commission finds that while the cumulative impact might be adverse, it is not significant.

However, there is a cumulative impact issue with the existing Rancho Seco Plant that demands attention.

In Staff's view, the visual effects of the proposed project would be cumulatively "considerable" in combination with the ongoing adverse visual effects of the existing Rancho Seco Power Plant structures. However, Staff also believes that Conditions of Certification **VIS-2** [surface treatment] and **VIS-3** [landscape screening], renders the incremental visual effects of the project "not …cumulatively considerable." (SA Visual Res., p. 4.12-39)

SMUD's view is that the project would not cause any cumulative visual impacts. "This is because the project will be developed adjacent to the existing Rancho Seco Plant; views of the proposed project and the other anticipated projects are obstructed from Twin Cities Road (the nearest major roadway); views are limited to residences to the west and southwest; views from the north are obstructed; and views from the east are limited to one possible residence whose entrance is at the dead-end of Clay East Road." (AFC p. 8.11-14)

The Commission acknowledges that painting the project's structures and planting screening trees allows the conclusions that the direct potential visual impacts have been mitigated to the extent feasible and there are no significant visual impacts.

However, the additive, cumulative effect of the project and the Rancho Seco Plant – and most particularly the huge cooling towers – adds additional, visually degrading industrial elements into a rural, pastoral setting with panoramas to the foothills and Sierra Nevada mountains.

Some local residents, typified by Ms. Peasha, believe that their viewsheld will be further degraded by the project.

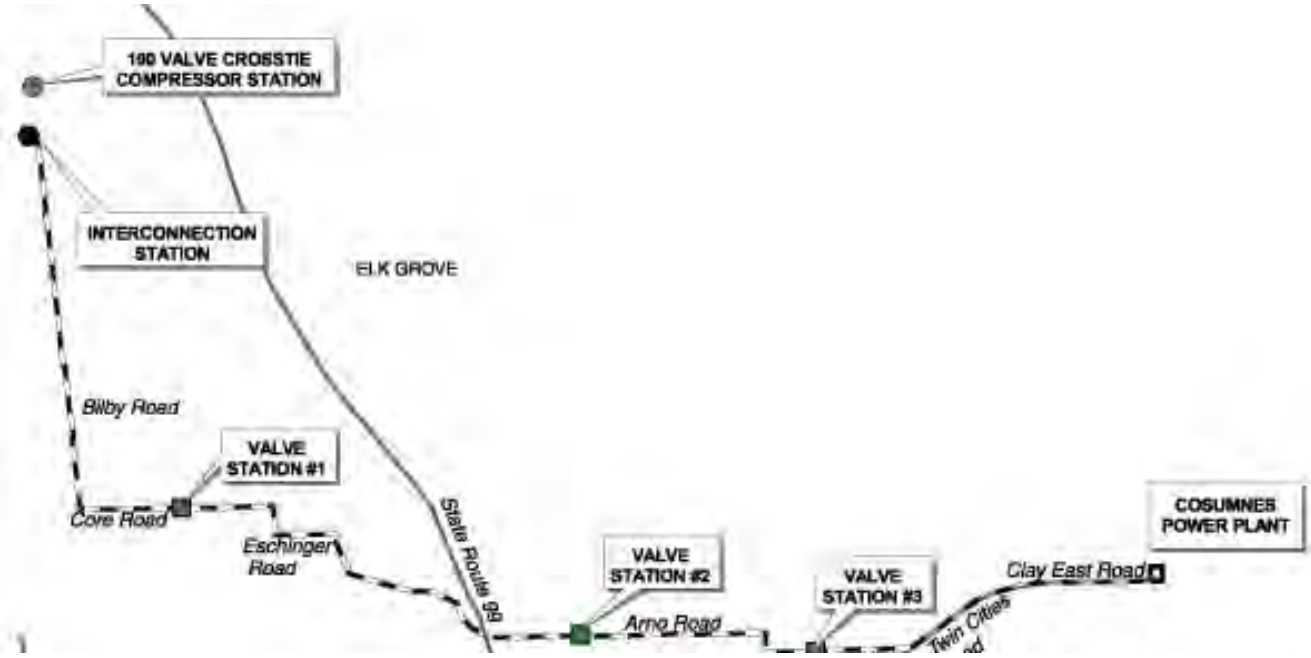
The Commission finds that the incremental effect of the project is not cumulatively considerable, due to the comparatively overwhelming effect of Rancho Seco.

Gas Pipeline

Natural gas would be delivered to the project site via a 24-inch diameter, 26-mile long underground pipeline from the Carson Ice-Generation Facility. The underground gas pipeline would also require the installation of several aboveground facilities including one interconnection station, three valve stations, a measurement station, and (for Phase II) two compressor stations.

At the valve stations, all valves would be below ground. The only components that would be aboveground would be the high head extensions for the valves (about 3.5 feet above the ground surface), a blow off stack (about 8 feet above the ground surface and up to 10 inches in diameter), and a Remote Terminal Unit (RTU) for the supervisory control and data acquisition system (a metal box about 3 feet x 3 feet x 4 feet tall). The RTU would be enclosed in a 5-foot x 8-foot x 8-foot structure. At the interconnection station and Valve Station 3, there would also be a pig launcher (a “pig” is a torpedo- or sphere-shaped device that is used to inspect or clean gas pipelines). The launcher would be about 10 feet x 10 feet x 5 feet tall. A slatted, 6-foot cyclone fence topped with barbed wire would enclose all facilities. The slats would be tinted to blend with the surrounding background of each area.

The locations of these aboveground facilities are as follows:



- **Interconnection Station** – This station would occupy an area 75 feet by 75 feet on the southwest corner of Laguna Station Road and Glacier Road. The station facilities would include above ground valves, buried valves with elevated stems, a pipeline blow down stack, a pig launcher, and control equipment.
- **Valve Station 1** – This station would occupy an area 50 feet by 50 feet on the west side of Bruceville Road, approximately 0.5 mile north of Eschinger Road. This station would include buried valves with elevated stems, a pipeline blow down stack and control equipment.
- **Valve Station 2** – This station would occupy an area 50 feet by 50 feet on the northwest corner of Arno and Valensin Roads. This station would include buried valves with elevated stems, a pipeline blow down stack and control equipment.
- **Valve Station 3** would occupy an area 100 feet by 100 feet on the southwest corner of Valensin and Alta Mesa Roads. This station would include buried valves with elevated stems, a pipeline blow down stack, a pig launcher, and control equipment.
- **Measurement Station** – This station would occupy an area 100 feet by 100 feet at the proposed power plant site. This station would include aboveground valves, buried valves with elevated gearing, a pipeline blow down stack, a pig receiver, metering equipment, and control equipment. The power plant slatted site fencing would also enclose the Measurement Station.
- **Compressor Station in Yolo County near Winters** (second phase) – A compressor would be installed within the existing inter-tie station located at 27700B County Road 29 in Yolo County. The compressor is anticipated to be skid mounted, approximately 10 feet by 20 feet by 8 feet high, within a slatted fence enclosure.
- **Compressor Station at Carson Ice Generation Plant** (second phase) – A compressor would be installed within the existing inter-tie station located at the crosstie measurement

and Valve Station 190, which is located on an un-named access road between Franklin Boulevard and the Carson Ice-Generation Plant. The compressor is anticipated to be skid mounted, approximately 10 feet by 20 feet by 8 feet high, within a slatted fence enclosure.

The proposed underground natural gas supply line, itself, would not be visible following installation except for an occasional warning marker and would not result in adverse visual impacts. Views of the two compressor station sites are extremely limited and the compressor station near Winters would be located within an existing facility. The visual impacts of compressor station construction would be less than significant.

Valve Station 3 would be particularly noticeable at the intersection of Valensin and Alta Mesa roads. The above ground valves, elevated valve stems, blow down stacks, and small structure for control equipment would appear industrial in character, and inconsistent with the surrounding landscape features.

While the resulting visual impacts of these other facilities would not be significant due to their small size relative to other visible features in the landscape, they would be adverse and should be mitigated with appropriate screening.

The proposed underground water supply pipeline would be located within SMUD's 2,480-acre property and would not result in adverse visual impacts.

Sacramento County has identified eight recently approved or proposed projects within 500 feet of the proposed gas pipeline route or compressor station including an RV & boat storage facility, a subdivision extension of time, a rezone, two lot splits, two residential accessory buildings, and an apartment development project. There would be no cumulative visual impacts associated with pipeline construction since construction impacts would be temporary and none of the identified cumulative project locations would be within the same viewshed as the interconnection station or three valve stations. There would also be no cumulative visual impacts associated with operation of the pipeline or the associated aboveground facilities because the pipeline would be buried and not visible and the associated aboveground facilities would be relatively small and not be in the same viewshed as the identified cumulative projects.

The gas compressor station in Yolo County would be located at the back of an existing PG&E-SMUD natural gas intertie station and would not be noticeable from the one public access road in the project vicinity. Therefore, no cumulative visual impacts would occur as a result of the gas compressor station in Yolo County. (SA Visual Res., p. 4.12-23)

MITIGATION:

- ☑ The Project Owner shall screen the pipeline construction areas, including material equipment storage areas, from residential viewers. Condition: **VIS-1.**
- ☑ The Project Owner shall control construction area lighting by minimizing brightness, using shielding, and motion detectors, all consistent with worker safety. Condition: **VIS-4.**

View Blockage

View blockage describes the extent to which any previously visible landscape features are blocked from view by the project. Blockage of higher quality landscape features, such as the foothills and the Sierra Nevada Mountains, by lower quality features could cause an adverse impact.

From KOP 1, the vertical HRSG structures and stacks and intake air filters (lower quality landscape features) would block the view to portions of sky (higher quality landscape feature). Portions of the Sierra foothills would also be partially blocked from view on days when they are not obscured by valley haze.

From KOP 2, the power plant structures would block from view portions of the Sierra Nevada foothills and surrounding agricultural fields. However, compared to KOP 1, which is considerably closer to the proposed project site, the view blockage experienced at KOP 2 would be less apparent in the wider field of view available from this more distant viewpoint.

From KOP 3, the structures would block from view small portions of the Sierra Nevada foothills and distant agricultural fields.

From KOP 4, the tops of the HRSG stacks would block from view very small portions sky above the horizon.

When considered within the context of the existing landscape, which is dominated and degraded by the Rancho Seco Nuclear Power Plant, the project's visual blockage would be insignificant from KOP 2, 3 and 4 due to the expansiveness of the background. From KOP 1, more of the background would be blocked due to proximity to the project, but the few number of viewers and the existing blockage by the Rancho Seco Power Plant would cause an adverse but not significant visual impact. (SA Visual Res., p. 4.12-17, 18, 20 & 21)

Scenic Designation

There are no scenic designations applicable to the project site or its immediate surroundings. (AFC p. 8.11-10, 11, 14-15; SA Visual Res., p. 4.11-16.)

Lighting

The proposed project would be located in an agricultural and rural residential area, which has relatively minimal existing night lighting except for residential lighting. The nearby Rancho Seco Power Plant has only nighttime security lighting, which is visible as a combination of orange-colored and white lights on poles and mounted on structures. A faint glow, from the lighting at the plant, can be seen in the sky above the power plant and there are red flashing lights atop the two 426-foot-tall cooling towers. There are also red, non-flashing lights on the cooling towers at heights of approximately 180 feet and 270 feet.

The proposed project would require nighttime lighting for operational safety and security, but the project would not be required to have FAA-style red, flashing warning lights on the HRSG stacks. It is expected that silhouettes of some facilities would be partially visible to nearby residences. Also, because the lights would be directed downward, illumination of visible plumes is expected to be minimal. It is, however expected that project lighting may produce a faint nighttime sky glow during periods of high humidity, and the plumes could be visible in the sky glow. Since the Rancho Seco Power Plant facilities are located approximately 0.5 mile north of the project site, existing power plant lighting is not expected to significantly illuminate proposed project facilities.

To reduce the off-site visibility of night lighting, light bulbs and reflectors would be installed so that they are not visible from public viewing areas and illumination of the vicinity and the nighttime sky would be minimized during project operation. SMUD has also committed to installing light switches on the HRSGs and cooling towers so that they would only be illuminated when needed. (AFC, p. 8.11-13).

Exterior light fixtures would be hooded, and lights would be directed on-site so that significant light or glare (backscatter to the nighttime sky) would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. In addition, the nighttime lighting system would include switches, timers, and sensors to the extent possible. This would minimize the time the lights are on to further reduce the potential for project lighting to be visible off-site (AFC, p. 8.11-9).

Staff believes that due to the lack of existing lighting at the project site and vicinity and the lack of a specific lighting plan for the proposed project, the proposed project lighting has the potential to change the character of the existing landscape at night both during construction and operation of the project. Project night lighting would be most visible from project vicinity residences (KOPs 1, 2, and 3) where views of the site are open and unobstructed with no intervening structures or light sources. Even shielded lighting elements could create significant light and glare impacts as a result of indirect lighting of project structures and backscatter. (SA Visual Res., pp. 4.12-22)

To mitigate construction night lighting impacts, SMUD shall ensure that construction lighting is used in a manner that minimizes direct public views of light bulbs and reflectors, and reflected glare and illumination of the construction vicinity. To mitigate permanent lighting, SMUD shall prepare a lighting mitigation plan that includes fixture shielding, minimum brightness, and use of motion detectors or switches to turn off unused lighting. Construction and permanent lighting complaint resolution processes shall be implemented. The resulting visual impacts from night lighting could be adverse and significant.

MITIGATION:

- ☑ Consistent with worker safety requirements, the Project Owner shall control construction area lighting by minimizing brightness, using shielding, and motion detectors. Condition: **VIS-4.**
- ☑ The project owner shall design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas, lighting does not cause

reflected glare, and illumination of the project, the vicinity, and the nighttime sky is minimized. Condition: **VIS-5.**

Visible Plumes

Since power plant cooling is accomplished through evaporation of circulating water through cooling towers, there will be a water-vapor plume that will be visible during a limited number of daylight hours per year depending on meteorological conditions. The height and width of the visible water-vapor plume from the cooling towers or HRSG will depend on meteorological conditions.

Energy Commission Staff performed an independent psychrometric analysis and dispersion modeling analysis to predict the frequency and dimensions of visible plumes from the project's proposed wet cooling towers and heat recovery steam generator (HRSG) stacks.

Staff uses a threshold of 10 percent or greater frequency of plume occurrence during seasonal daylight no rain/no fog (SDNRNF) "clear" hours, which eliminates from consideration plumes that occur at night or during rain or fog. In rain or fog conditions, plume visibility and overall visual quality are typically low. In addition, plumes that occur during mostly cloudy conditions are also eliminated because under these conditions they have less contrast with the background sky.

Staff's analysis determined that smaller HRSG plumes for this project would occur less than 10 percent of SDNRNF hours. Therefore, no further visual analysis of HRSG plumes was conducted.

However, the project's cooling tower plumes are predicted to occur approximately 18.5 percent of SDNRNF "clear" hours (293 hours per year, or approximately 1.6 hours per day, typically during the early morning hours of November through April. It should be noted that "clear" is a subset of seasonal daylight no rain/fog. The effects of using "clear" are that the dominance of the plume is increased but the frequency of the hours of dominance is decreased, because this "clear" condition happens less frequently than the seasonal daylight no rain/fog.

The 10th percentile cooling tower plumes from the 18-cell cooling tower during "clear" SDNRNF hours could achieve substantial size: approximately 380 feet in height, 272 feet in length (not including the length of the cooling tower), and 154 feet in width. These dimensions are shown in the plume photo-simulations below for both Phase 1 and 2. The two-phase project uses an 18-cell cooling tower, 43 feet high and 864 feet long. Phase 1 uses 9-cells. (SA Visible Plumes, p. 4.11-10)

Due to the openness of the project site and surrounding area, the frequency and large sizes of visible plumes that would occur at the project site would cause a noticeable but intermittent change in the landscape character when viewed from both near and more distant vantage points. Staff's model found that for an average of one hour per day, normally during the early morning hours from November through April, the plume's regional viewshed would exceed that of the existing Rancho Seco Plant cooling towers (over 12 miles for some viewers,

depending on intervening screening). Viewing locations would include numerous rural residences, Rancho Seco Park, and local roadways.

The water vapor plumes would appear as prominent, billowing linear-to-irregular forms with irregular and changing outlines. The plumes would be unique moving forms, originating near ground level and rising vertically and then diagonally across a background consisting of Sierra Nevada foothills and/or sky depending on viewing location. (SA Visible Plumes, p. 4.11-11-12)

KOP 2

KOP 2 was selected to characterize vapor plume impacts on foreground to middleground viewing locations (up to two miles). The plumes would be prominently visible to residents in the project vicinity and travelers on Clay East Road, and intermittently prominent to travelers on Twin Cities Road. Overall, plumes would be visible for approximately 1.6 hours a day during clear conditions, typically during the early morning hours, from November through April.

Under “clear” conditions, the plume would be spatially prominent and co-dominant with other project structures, Rancho Seco and its cooling towers, and natural landscape features. Under clear conditions, the project plume as viewed from KOP 2 and other locations at a similar distance would block from view a low-to-moderate portion of sky and the Sierra Nevada foothills and mountains.

Staff concludes that when viewed from KOP 2 under clear conditions, the plumes’ high visual contrast, co-dominance, and low-to-moderate view disruption taken together constitute a moderate degree of visual change and would cause an adverse but less than significant visual impact. (SA Visible Plumes p. 4.11-13) SMUD concurs with this opinion. (AFC p. 8.11-13)

KOP 3

Project plumes and their resulting visual impacts would also be apparent from more distant regional vantage points. The photo-simulation is representative of the numerous rural residences scattered throughout the landscape at two or more miles northwest to southwest of the project site. These more distant residents in some cases have panoramic views that encompass open, rural, agricultural landscapes dotted with rural residences and farm buildings. For those residents with panoramic views, project features appear very small in the broad pastoral context of the valley floor and few features (with the exception of the Rancho Seco cooling towers) break the low horizontal horizon line, which is uninterrupted in a 360 degree viewing arc from many vantage points.

Plumes, under the "clear" SDNRNF hours that Staff uses for its analysis, would be taller than the existing Rancho Seco Plant cooling towers 52 percent of the time (approximately 50 minutes a day typically during the early morning hours, November through April). Necessarily therefore, plumes are shorter for the remaining the 48 percent of the time

Apparently whether higher or shorter than the Rancho Seco cooling towers, in Staff's view, under "clear" conditions the plumes' scale dominance would be subordinate-to-co-dominant, depending on distance, in relation to the broad landform of the valley floor (or Sierra Nevada foothills) and blue sky. .

From vantage points two miles and greater from the proposed site, Staff believes the plumes' high visual contrast, co-dominance, and low-to-moderate view disruption taken together constitute a moderate degree of visual change under clear conditions, which would cause an adverse but less than significant visual impact. (SA Visible Plumes, p. 4.11-13-14) SMUD also concurs with this opinion. (AFC, p. 8.11-13)

Plume Abatement

Staff believes, and SMUD concurs, that the cooling tower water vapor plumes would occur generally for a short-duration on any given day, would vary in size (height, length, and width),

and would be primarily seasonal in nature. As such, they would not cause a significant direct effect nor contribute substantially to an adverse significant cumulative visual impact, assuming Staff's proposed mitigation and the existing Rancho Seco Power Plant, which did not include plume abatement to reduce visual effects. During the short period during the day when plumes do occur, Staff's model predicts that the plumes, under "clear" SDNRNF hours, to be taller than the existing Rancho Seco Plant cooling towers slightly more than half of the time. (SA Visual Resources, p. 4.11-17).

Applicant's testimony by Dr. Priestly and Ms. Hayden also asserts that there are no direct or cumulative significant effects. (3/14 RT 42, 35& 51)

In contrast to Staff's or SMUD's assessment that there are no direct or cumulative significant effects, Ms Peasha, an Intervenor and local resident, claims that the project will cause direct and cumulative significant visual impacts. Ms Peasha asserts that the Rancho Seco Plant has already degraded the landscape and opines that SMUD should be required to remove the twin cooling towers. Ms. Peasha suggests that more effective plume abatement technology is feasible. Lastly, Ms. Peasha argues that the landscaping mitigation is inadequate since it will take years to reach maturity. (Peasha Brief on Phase 1 Issues, 6/04/03)

Staff did consider, but did not recommend, plume abatement to reduce visual effects. Staff's estimate for such a wet/dry plume abatement system for the proposed project would be approximately $2.5 million (for Phase 1 only) or $5 million (for Phase 1 and 2) in addition to the cost of the proposed non-abated cooling tower. SMUD refuted Staff's analysis pointing out that the cost estimate is understated and failed to reflect increased operating costs.

The Committee also directly observed the proposed project site and the physical setting during the site visit and the various hearings that were held in the local community of Herald.

The Commission appreciates Ms. Peasha's concern regarding the frequency and height of visible plumes. However, the Committee must side with the Staff and SMUD as well as on its own observations and conclusions on this matter that there are no direct or cumulative significant effects due to the visible plume.

The Commission has reviewed the record for technological "fixes" to reduce the plume from conventional wet cooling. Staff offers proposed Condition of Certification **PLUME-1**, which essentially requires SMUD to design its cooling tower to match what Staff reviewed and modeled. In response to public comments that the plume be abated to the maximum extent possible, Staff responded that since it found no potential plume impacts it did not consider "mitigation in the form of plume abatement or other methods of plume size/frequency reduction…" (SA Visible Plumes, p. 4.11-20) The Commission agrees with Staff.

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to visual resources and potential adverse visual resource impacts will be mitigated to a level of insignificance.

CONDITIONS OF CERTIFICATION

GAS PIPELINE CONSTRUCTION SCREENING AND SURFACE RESTORATION

VIS-1 The project owner shall require the following as a condition of contract with its contractors to construct the gas pipeline:

1. Aboveground facility construction sites, staging areas, and material and equipment storage areas shall be visually screened with temporary screening fencing if they are visible within ½-mile from a residence or public road. Screening shall be of an appropriate design and color for each specific location, as determined by the CPM.

2. The project owner shall submit to the CPM for review and approval and to Sacramento County for review and comment a specific screening and restoration plan whose proper implementation will satisfy these requirements. The plan shall specify each location to be screened and the type, height, color, and opacity of the proposed screening material, and the timing for the screening installation.

3. All evidence of construction activities, including ground disturbance due to staging and storage areas, shall be removed and all disturbed areas shall be remediated to an original or improved condition upon completion of construction including the replacement of any vegetation or paving removed during construction.

4. The project owner shall not begin construction of the gas pipeline or implement the screening and restoration plan until receiving written approval of the plan from the CPM.

Verification: At least 45 days prior to construction of the gas pipeline, the project owner shall submit the plan to the CPM for review and approval and to Sacramento County for review and comment. The plan shall include a commitment to remove all evidence of construction activities and remediation of all disturbed areas within 90 days after completion of construction.

If the CPM notifies the project owner that any revisions of the plan are needed, the project owner shall submit to the CPM a revised plan within 30 days of receiving such notification.

The project owner shall notify the CPM within seven days after installing temporary screening at aboveground construction sites, staging areas, and material and equipment storage areas, that the screening is ready for inspection.

The project owner shall notify the CPM within seven days after completing the surface restoration that it is ready for inspection.

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-2 The project owner shall treat the surfaces of all project structures and buildings visible to the public such that their colors minimize visual intrusion and contrast by blending with the landscape; their surfaces do not create glare; and they are consistent with local laws, ordinances, regulations, and standards. The project owner shall submit for CPM review and approval and Sacramento County review and comment, a specific treatment plan whose proper implementation will satisfy these requirements. The treatment plan shall include:

a) Specification, and 11" x 17" color simulations at life size scale, of the treatment proposed for use on project structures, including structures treated during manufacture;

b) A list of each major project structure, building, tank, transmission line tower and/or pole, and fencing specifying the color(s) and finish proposed for each (colors must be identified by vendor brand or a universal designation);

c) Two sets of brochures and/or color chips for each proposed color;

d) Samples of each proposed treatment and color on each material to which they would be applied that would be visible to the public;

e) A detailed schedule for completion of the treatment; and

f) A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated on site, until the project owner receives notification of approval of the treatment plan by the CPM.

Verification: The project owner shall submit its proposed treatment plan at least 45 days prior to specifying to the vendor the color for the first structures that are color-treated during manufacture.

If a revision is required, the project owner shall provide the CPM with a revised plan within 30 days of receiving such notification.

Prior to the start of commercial operation, the project owner shall notify the CPM that all buildings and structures are ready for inspection.

The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

LANDSCAPING AND SCREENING

VIS-3 The project owner shall provide landscaping that is effective in screening the proposed project from views from nearby residences.

The project owner shall screen from view the aboveground gas pipeline interconnection and valve stations with landscaping or other aesthetically acceptable permanent screening material. The project owner shall submit a screening plan for these facilities to the CPM for review and approval.

The project owner shall install a 25-foot landscape setback along the entire length of the plant site that fronts Clay East Road. The project owner shall submit a landscaping plan for this area to the CPM for review and approval and to Sacramento County for review and comment.

The project owner shall submit a landscaping plan for the SMUD property west of the power plant site to the CPM for review and approval. The plan shall include:

a. 11”x17” color simulations of the proposed landscaping at 5 years and at 20 years as viewed from KOPs 2 and 3.
b. A landscaping plan(s) and map(s) drawn to scale showing the proposed location and species of plants.
c. Tree species that are native to the Central Valley, fast-growing, and expected to reach the greatest height at maturity for the site conditions.
d. No plantings within 250 feet of any vernal pools or swales.
e. No trees or shrubs taller than 3 feet at maturity within 30 feet of the fenceline immediately west of the power plant site.
f. Plantings of informal groupings strategically placed to maximize screening of views from residences.
g. Tree spacing within groupings designed to achieve as dense a screen as possible without inhibiting tree growth or height at maturity.
h. Irrigation designed and operated to avoid adverse impacts to wetlands.
i. A detailed list of plants to be used and expected times to maturity given their size and age at planting.

The project owner shall provide a program to install landscaping trees and/or shrubs at residences to screen views of the power plant. The program shall be open to landowners whose residences are within 1.5 miles of the power plant site, and shall be available during the period from the start of project mobilization until two years after the start of commercial operation. The residential landowner will be responsible for care and maintenance of the landscaping trees and/or shrubs once they are properly planted.

The CPM shall approve all landscaping plans and programs prior to implementation by the project owner. For the area west of the power plant site, the planting must be completed by the end of the first season that is optimal for planting during the first year after the start of site mobilization (or other CPM-approved time frame). For the 25-foot setback area that fronts Clay East Road, the landscaping must be completed within 90 days (or other CPM-approved time frame) after the start of commercial operation.

Verification: Before preparing the landscape screening plan, the project owner shall meet with the CPM to discuss the requirements of the plan.

Within 30 days after project certification and at least 60 days prior to installing the landscaping west of the site, at the interconnection station, and at the valve stations, the project owner shall submit the landscaping plan for that area to the CPM for review and approval.

Within 30 days after project certification, the project owner shall submit the proposed program to provide landscape screening at residences within 1.5 miles of the plant site to the CPM for review and approval.

At least 90 days prior to the start of commercial operation, the project owner shall submit the landscaping plan for the 25-foot setback fronting Clay East Road to the CPM for review and approval and to Sacramento County for review and comment.

If any revisions of the submittals are needed, the project owner shall prepare and submit to the CPM a revised submittal within 30 days of receiving such notification.

No later than 30 days after completion of construction of the aboveground gas pipeline interconnection and valve stations, the project owner shall notify the CPM that the screening for those facilities is installed and ready for inspection.

No later than one year after site mobilization, the project owner shall notify the CPM that the landscaping for the area west of the power plant site is installed and ready for inspection.

Within one year after start of commercial operation, the project owner shall notify the CPM that the landscape setback has been installed and is ready for inspection.

In each Monthly Compliance Report during project construction and in the first two annual compliance reports after completion of project construction, the project owner shall include a description of the activities that have occurred in regard to the program to provide landscape screening at residences.

CONSTRUCTION LIGHTING

VIS-4 The project owner shall ensure that lighting for construction of the project is used in a manner that minimizes potential night lighting impacts, as follows:

a) All lighting shall be of minimum necessary brightness consistent with worker safety.
b) All fixed position lighting shall be shielded, hooded, and directed downward to minimize backscatter to the night sky and direct light trespass (direct lighting extending outside the boundaries of the construction area).
c) Wherever feasible and safe, lighting shall be kept off when not in use and motion detectors shall be employed.

d) A complaint resolution form shall be maintained by project construction management, to record all lighting complaints received and to document the resolution of each complaint.

Verification: Within seven days after the first use of construction lighting, the project owner shall notify the CPM that the lighting is ready for inspection. If the CPM notifies the project owner that modifications to the lighting are needed to minimize impacts, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

The project owner shall report any lighting complaints and documentation of resolution in the Monthly Compliance Report, accompanied by any complaint resolution forms for that month.

PERMANENT LIGHTING

VIS-5 The project owner shall design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project, the vicinity, and the nighttime sky is minimized. To meet these requirements the project owner shall submit a lighting mitigation plan that includes but is not necessarily limited to the following:

a) Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary;

b) All lighting shall be of minimum necessary brightness consistent with worker safety;

c) Lighting in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall, in addition to the hoods required above, have switches or motion detectors to light the area only when occupied; and

d) A complaint resolution form shall be used by plant operations to record all lighting complaints received and document the resolution of each complaint. All records of lighting complaints shall be kept in the on-site compliance file.

Verification: Before preparing the lighting mitigation plan, the project owner shall meet with the CPM to discuss the requirements of the plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval a lighting mitigation plan that describes the measures to be used and demonstrates that the requirements of the condition will be satisfied. The project owner shall not order any exterior lighting until it receives CPM approval of the lighting mitigation plan.

At least 30 days prior to initial firing, the project owner shall notify the CPM that the lighting has been installed and is ready for inspection. If the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed.

The project owner shall report any complaints about permanent lighting and provide documentation of resolution in the Annual Compliance Report, accompanied by any lighting complaint resolution forms for that year.

PLUME-1 The project owner shall ensure that the cooling tower is designed and operated so that the plume frequency will not increase from the design as certified. The cooling tower shall be designed and operated so that the exhaust air flow rate per heat rejection rate (1) will not be less than 21.0 kilograms per second per megawatt when the ambient temperatures are at or less than 61 degrees F; and (2) will not be less than 19.0 kilograms per second per megawatt when the ambient temperatures are more than 61 degrees F.

Verification: At least 30 days prior to ordering the cooling towers, the project owner shall provide to the CPM for review the final design specifications of the cooling tower related to plume formation. The project owner shall not order the cooling tower until notified by the CPM that the two design requirements above have been satisfied.

The project owner shall provide a written certification in each Annual Compliance Report, to include cooling tower operation recording data, to demonstrate that the cooling towers have consistently been operated within the above-specified design parameters. If determined to be necessary to ensure operational compliance, based on legitimate complaints received or other physical evidence of potential non-compliant operation, the project owner shall monitor the cooling tower operating parameters in a manner and for a period as specified by the CPM. For each period that the cooling tower operation monitoring is required, the project owner shall provide to the CPM the cooling tower operating data within 30 days of the end of the monitoring period. The project owner shall include with this operating data an analysis of compliance and shall provide proposed remedial actions if compliance cannot be demonstrated.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

VISUAL RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
NA	There are no applicable Federal LORS for the section of visual.
STATE	
California Environmental Quality Act (CEQA)	Protects resources of aesthetic significance.
LOCAL	
Sacramento County General Plan	Establishes goals pertaining to the appearance and enhancement of visual quality.

WASTE MANAGEMENT

CONSTRUCTION WASTE MANAGEMENT - GENERAL

Different types of wastes will be generated during the construction and operation of the proposed project and must be managed appropriately to minimize the potential for adverse human and environmental impacts. These wastes are designated as hazardous or non-hazardous according to the toxic nature of their respective constituents. This analysis assesses the adequacy of the waste management plan with respect to handling, storage and disposal of these wastes in the amounts estimated for the project.

Excavation

Originally, the AFC was submitted without a Phase I Environmental Site Assessment (ESA) conducted according to American Society for Testing and Materials (ASTM) standards. The purpose of the ESA is to determine the potential for the presence or likely presence of any hazardous substances or petroleum products under conditions that may indicate a release or threat of a release from present or past activities.

The AFC stated that the proposed project site had been under SMUD's continuous control since 1966. As an alternative to an ESA, SMUD summarized the historic uses of the site and surrounding areas and the results of a database search and site inspection. Energy Commission staff requested that a Phase I ESA be performed for the site, the laydown area, and the 26-mile gas pipeline route and that this assessment be prepared according to ASTM Standard E 1527.

Ultimately, SMUD provided a modified Phase I ESA containing historic information on the natural gas pipeline route and the site and laydown areas. The modified Phase I ESA concluded that minimal hazardous wastes are expected to be encountered along the pipeline route. The ESA also found that migration of hazardous waste and/or radioactive waste from the Rancho Seco Nuclear Power Plant to the proposed site and laydown areas has not occurred. Therefore, Energy Commission staff did not ask SMUD to conduct a sampling and analysis plan at the proposed site and laydown areas. Instead, Conditions of Certification **Waste-1** and **-2** (which require having a Registered Professional Engineer or Geologist with experience in remedial investigation and feasibility studies available for consultation during soil excavation and grading activities) will address any soil or groundwater contamination that may be encountered. (AFC p. 5.14-1, 7-17; SA Waste Mgt., p. 4.13-3-4.)

MITIGATION:

- ☑ The Project Owner and contractor, if necessary, will obtain a hazardous waste generator identification number. Condition: **WASTE-1**
- ☑ The Project Owner shall employ a registered engineer and prepare a waste management plan and a site remediation plan. Conditions: **WASTE-3 to WASTE-5**
- ☑ Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Condition: **WASTE-5**

Construction Wastes

Preparation and construction of the power plant will generate both hazardous and non-hazardous wastes. The non-hazardous component of the construction-related wastes will include waste paper, wood, glass, scrap metal, and plastics, from packing materials, waste lumber, excess concrete, insulation materials, and non-hazardous chemical containers. Management of these wastes will be the responsibility of the contractors. These wastes will be segregated, where practical, for recycling. Those that cannot be recycled will be placed in covered containers and removed on a regular basis by a certified waste handling contractor for disposal at a Class II or III facility.

The relatively small quantities of hazardous materials to be generated during this construction phase will mainly consist of used oil, waste paint, spent solvents, materials, used or batteries, and cleaning chemicals. These wastes will be recycled or disposed of at licensed hazardous waste treatment or disposal facilities. The construction contractor will be considered the generator of the hazardous waste produced during construction and will be responsible for compliance with applicable federal and state regulations regarding licensing, personnel training, accumulation limits, reporting requirements, and record keeping. The Applicant has in place a waste management plan to assure the appropriate handling of wastes. (AFC Table 5.14-4; SA Waste Mgt., p. 4.13-5.)

MITIGATION:

- ☑ The Project Owner shall prepare a waste management plan to assure the appropriate handling of wastes. Condition: **WASTE-3**.

Non-Hazardous Wastes

Under normal operating conditions, the typical, solid non-hazardous wastes will include routine maintenance-related trash, office wastes, empty containers, broken or used parts, and used packaging materials and air filters. Some of the wastes will be recycled to minimize the quantity to be disposed of in a landfill. The non-recyclables will be disposed of at a non-hazardous waste disposal facility. The volume of non-hazardous wastes from the proposed and similar gas-fired facilities is typically small and readily accommodated within area disposal facilities. For the proposed facility for example, such wastes are expected to be negligible compared to the capacity available Class III landfills. (AFC Table 5.14-5; SA Waste Mgt., p. 4.13-6.)

Typical sanitary wastes will be treated on-site and discharged to a leach field. Power plant liquid wastes include cooling water blowdown, rainwater runoff that includes oil, and wastewater from containment drains under storage tanks. Rather than being treated on-site and discharged, SMUD will employ a Zero Liquid Discharge (ZLD) system to treat all these liquid wastes, drawing off purified water for reuse and accumulating wastes in a salt “cake” for disposal, after toxicity testing, in an appropriate landfill. (SA Waste Mgt., p. 4.13-6-7.)

Hazardous Wastes

The hazardous waste quantities generated by the project will be minimal. The operations-related hazardous wastes will include spent air pollution control catalysts, used oil and air filters, used cleaning solvents, and used batteries. Some of these wastes will be recycled. The non-recyclables will be disposed of in a Class I disposal facility. (AFC p. 5.15-8, 9-17; SA Waste Mgt., p. 4.13-7-8.)

MITIGATION:

- ☑ The Project Owner shall prepare a waste management plan. Condition: **WASTE-3**
- ☑ The Project Owner shall report any potential enforcement action related to waste management. Condition: **WASTE-2**

Disposal Capacity

Through its contractor, SMUD currently disposes of non-hazardous solid wastes to the Elder Creek Road transfer facility and then to the Forward Landfill in Manteca, which has a projected closure date in 2006. Alternatively, the Kiefer Road Landfill in Rancho Cordova has sufficient capacity (88 million cubic yards) to remain open until 2035. The volume of waste from project construction and operation (120 cubic yards per year) would be insignificant relative to available disposal capacity.

SMUD also provided a listing of the three major Class I landfills in California available for the disposal of hazardous wastes from the proposed and similar projects. These are Safety Kleen (Buttonwillow) in Kern County, Chemical Waste Management (Kettleman Hills) in Kings County, and Westmoreland in Imperial County. There is a total of more than twenty million cubic yards of disposal space within these landfills. Thus, adequate disposal space would be available with respect to all hazardous wastes generated during the operational life of the proposed project. (AFC p. 5.14-3, 24; SA Waste Mgt., p. 4.13-8

Cumulative Impacts

As described above, there is adequate capacity in the disposal facilities available with respect to the hazardous and non-hazardous wastes associated with the proposed project. Therefore, the wastes from the construction and operation of the proposed project and its related facilities will not significantly impact the capacity of these landfills and will not create a cumulative impact. (SA Waste Mgt., p. 4.13-9)

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to waste management and all potential adverse impacts related to waste management will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

WASTE GENERATOR IDENTIFICATION NUMBER

WASTE-1 The project owner and, if necessary, its construction contractor, shall each obtain a hazardous waste generator identification number from the Department of Toxic Substances Control prior to generating any hazardous waste.

Verification: The project owner shall notify the CPM via the monthly compliance report of its receipt and keep a copy of the identification number on file at the project site.

WASTE MANAGEMENT ENFORCEMENT ACTION

WASTE-2 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the manner in which project-related wastes are managed.

WASTE MANAGEMENT PLAN

WASTE-3 Prior to the start of both site mobilization and project operation, the project owner shall prepare and submit to the Sacramento County Environmental Management Department for review and comment and to the CPM for review and approval, a waste management plan for all wastes generated during construction and operation of the facility, respectively. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including storage, treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of site mobilization, the project owner shall submit the construction waste management plan to the Sacramento County Environmental Management Department and the CPM. The operation waste management plan shall be submitted no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions within 20 days of notification by the CPM (or mutually agreed upon date). In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to planned management methods.

REGISTERED PROFESSIONAL ENGINEER/GEOLOGIST

WASTE-4 The project owner shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation

during soil excavation and grading activities. The Registered Professional Engineer or Geologist shall be given full authority to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the qualifications and experience of the Registered Professional Engineer or Geologist to the CPM for approval.

CONTAMINATED SOIL EXCAVATION

WASTE-5 If potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and CPM stating the recommended course of action. Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Registered Professional Engineer or Geologist, significant remediation may be required, the project owner shall contact representatives of the Sacramento County Environmental Management Department, the Central Valley Regional Water Quality Control Board, and the Sacramento Regional Office of the California Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the Registered Professional Engineer or Geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

SALT CAKE TOXICITY TESTING

WASTE-6 The project owner shall initially test the salt cake product from the crystallizer for the presence of hazardous levels of metals. If levels are below ten times the Soluble Threshold Level Concentration as listed in Title 22, California Code of Regulations, section 66261.24, then future testing is not required unless there is a substantial change in the wastewater treatment process. If not classified as a hazardous waste, the project owner shall manage the salt cake product appropriately as a non-hazardous or designated waste unless it is sold as a commercial product. If it is classified as a hazardous waste, the project owner shall handle and dispose of it in accordance with the requirements of Health & Safety Code § 25100 et seq.

Verification: No later than 30 days after the initial generation of salt cake, or after any substantive change in the treatment process, the project owner shall notify the CPM of the test results and the planned disposal method.

WASTE-7 The property owner shall conduct remote geophysical sensing, using either a magnetometer or ground penetrating radar, at the upper northwest corner of the construction site at the proposed location for the retention basin.

Verification: At least thirty (30) days prior to construction-related ground disturbance at the project site, the project owner shall provide the results of the remote geophysical sensing to the CPM. In the event that the results confirm the location of an underground storage tank beneath the proposed construction site, the project owner in consultation with the Central Valley Regional Water Quality Control Board, the local CUPA, and the CPM, shall determine those actions required to mitigate any significant adverse environmental impacts to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WASTE MANAGEMENT

APPLICABLE LAW	DESCRIPTION
FEDERAL	
42 U.S.C. §§6901-6992k, RCRA Subtitle C and D	Regulates non-hazardous and hazardous wastes. Laws implemented by the State.
40 CFR 260, et seq.	Implements regulations for RCRA Subtitle C and D. Implemented by the US EPA by delegating to the State.
Federal Clean Water Act, 33 U.S.C. §1251 et seq.	Regulates wastewater discharges to surface waters of the US. NPDES program administered at the State level.
STATE	
Public Resources Code §40000 et seq. (California Integrated Waste Management Act)	Implements RCRA regulations for non-hazardous waste.
Water Code §13000, et seq. (Porter-Cologne Water Quality Control Act	Regulates wastewater discharges to surface and groundwaters of California. NPDES program implemented by State Water Resources Control Board.
22 CCR §66262.34	Regulates accumulation periods for hazardous waste generators. Typically hazardous waste cannot be stored on-site for greater than 90 days.
Health & Safety Code §25100 et seq. (California Hazardous Waste Control Law)	Regulates hazardous waste handling/storing. Implemented by the Sacramento County Environmental Management Department and the Sacramento Regional Office of the California Department of Toxic Substances Control.
LOCAL	
None	

WATER QUALITY & SOILS

WATER QUALITY – GENERAL

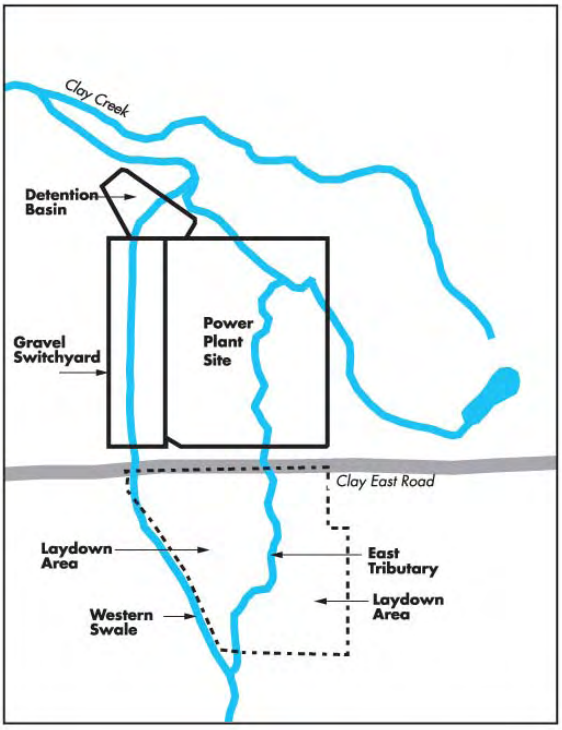
This section analyzes potential effects on water quality and soil resources that could result from construction and operation of the project, specifically focusing on the potential for erosion and sedimentation, and degradation of surface and groundwater quality. Flooding is addressed in the **GEOLOGY** section of this decision. Solid waste and contaminated soil disposal is discussed in the **WASTE MANAGEMENT** section.

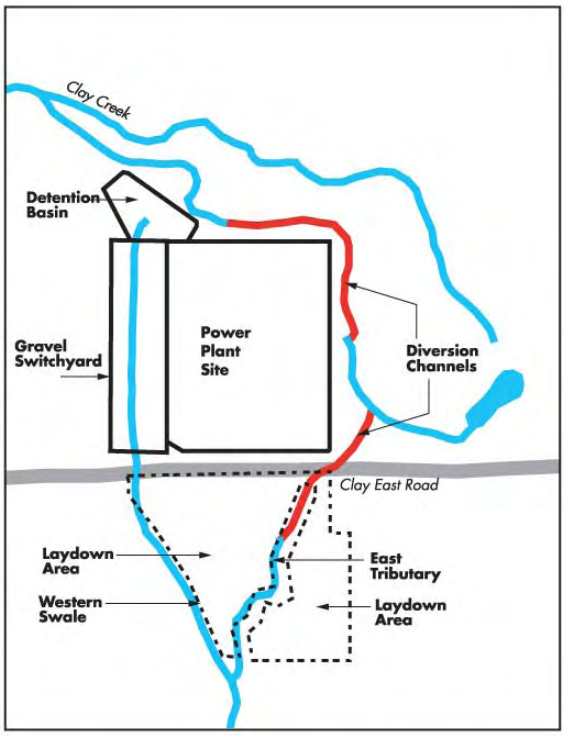
Erosion & Sedimentation

Earthmoving activities associated with construction of the proposed project can expose and disturb the soil, leaving soil particles vulnerable to being blown into the air or to being moved by rainwater or spilled liquids. Stormwater runoff, coupled with earth disturbance activities, can potentially cause onsite erosion, potentially resulting in off-site erosion and sedimentation possibly impacting surface waters.

During construction of the project, approximately 50 acres of land would be cleared of vegetation, graded, and leveled. The power plant and switchyard comprise approximately 30 acres, and the laydown area is approximately 20 acres. Removal of the vegetative cover by grading would increase the potential for wind and water erosion of the affected soils. This exposure could cause potential erosion and sediment runoff into Clay Creek, resulting in adverse impacts to surface waters downstream of the project.

Presently, as shown at left below, the power plant and laydown sites are crossed by a tributary of Clay Creek (East Tributary). The switchyard and a portion of the Phase 1 laydown area are traversed by another tributary to Clay Creek (Western Swale).





As shown above right, project construction would result in the diversion of the south branch of Clay Creek around the northeast corner of the project site and the diversion of the East Tributary to the east around the project site. The diversion to the South branch of Clay Creek would be accomplished by filling the project site to an elevation above the 100-year flood elevation of Clay Creek and by constructing a diversion channel to collect diverted flows and route them around the site to rejoin Clay Creek at a location north of the project site.

Additionally, the proposed construction laydown area, south of Clay East Road, would be graded and compacted to direct runoff to the East Tributary and the Western Swale. The East Tributary crosses the middle of the laydown area from south to north. The laydown area avoids this tributary by using a minimum buffer of 25 ft from the stream bank. Avoiding this tributary would split the laydown area into two irregular parcels of roughly triangular shapes. The majority of the laydown area is proposed to drain into the East Tributary. The East Tributary to Clay Creek would be diverted to the east around the site by installing a culvert at an angle approximately 45 degrees to Clay East Road. This culvert would discharge into a new channel constructed from the culvert outfall to the existing creek bed.

The Western Swale would continue to drain under Clay East Road at its present location near the southwest corner of the project site. The existing culvert will direct water under Clay East Road from the Western Swale through the plant switchyard area over a gravel swale into the stormwater detention basin. The western portion of the laydown area is proposed to drain to the west into the Western Swale and into the switchyard drainage system to the proposed detention basin.

The diversion of Clay Creek and the East Tributary and the grading, compacting and re-contouring of the laydown area would expose the East Tributary, the Western Swale and the rerouted stream channels to erosion. Potential impacts include:

- erosion damage to the power plant site and adjacent land during periods of runoff;
- increased turbidity of stream flows through transport of the eroded material;
- sediment deposition downstream of the site; and
- formation of two new stream channels in areas that could be unstable when subject to concentrated water flow.

After construction, SMUD proposes to restore the laydown area by removing temporary silt fences, etc., and revegetating the graded contours. The area would not be restored to its natural contours and because of grading and compaction it would have increased surface runoff

SMUD is required, under Section 402 of the Clean Water Act, to comply with the statewide NPDES permit for stormwater discharges associated with construction activity. Soil disturbed during construction is expected to result in short-term increases in water and wind erosion. Project design and the Storm Water Pollution Prevention Plan (SWPPP) would include measures to stabilize cut and fill slopes and to control drainage and erosion. SMUD has provided a draft SWPPP that identifies potential temporary and permanent Best Management Practices (BMPs) to prevent soil erosion and sediments from affecting surface water. With implementation of required mitigation measures, no significant site erosion and sedimentation

impacts associated with diversion of the existing streambeds and recontouring of swales are anticipated.

Temporary disturbances related to construction of the gas and water pipelines are expected to occur but would be minimal and short-term. Construction would include installation of approximately 26 miles of gas pipeline and a 0.4-mile water line, as well as construction of a transmission line and access road.

Construction of the pipelines would require crossing rivers, creeks, irrigation canals, riparian areas, vernal pools, and other ditches. SMUD proposes to use horizontal directional drilling (HDD) for four of the crossings including the Cosumnes River, Badger Creek, and a small lake approximately 0.5 miles southeast of the Badger Creek crossing. HDD involves drilling from the ground surface adjacent to a stream or water body using a technique that guides the direction of the drill to pass under the stream and emerge on the ground surface on the opposite side without disturbing the streambed. Staging areas are required at the entry and exit points of the drill.

HDD is used to avoid disturbance of water courses and wet areas. There are however, potential water quality impacts associated with HDD. Those potential impacts include occasional unintended fracturing (frac-outs) of the ground above the drill resulting in a pathway through which drilling mud discharges onto the ground surface or streambed. Although not generally toxic, the drilling mud can cause turbidity impacts or coat streambed surfaces to the detriment of aquatic life. Frac-outs can sometimes be difficult to detect, particularly in streams with flowing water (See **BIOLOGY** regarding frac-outs).

Stream crossings where HDD would not be used would be crossed by open trench. Potential construction-related impacts of an open trench crossing include:

- increased sediment delivery to the stream flow through disturbance of the channel bed and banks during construction;
- destabilization of the channel bed and banks resulting in long-term erosion; and
- introduction of foreign contaminants through the use of heavy machinery in the streambed.

Additionally, trenching for pipeline installation and vehicular travel within the construction right-of-way would temporarily disturb soils and potentially increase wind and water erosion. However, appropriate erosion and fugitive dust control measures would be implemented during construction. SMUD has provided a draft SWPPP that identifies temporary and permanent BMPs to prevent soil erosion and sediments from affecting surface water. Other BMPs specific to trenched stream crossings include construction in the dry season, diversion of stream flows around the active excavation area through the use of coffer dams, installation of temporary culverted crossings for heavy equipment, and regular maintenance and inspection of heavy equipment used in the stream channel to minimize the introduction of foreign pollutants. Following construction, permanent BMPs would be implemented at laydown areas and along linear routes. As a result, no significant impacts are expected.

Natural stream channels and banks are typically subject to scour of the bed and banks during flood flows. Bed scour is usually not visible because it occurs during a flood and ceases as the flood subsides. Bank erosion is more evident because the effects can be seen well after the flood. Pipelines buried below and adjacent to active stream channels can be uncovered and exposed by bank erosion or streambed scour. Exposure of the pipeline could result in pipeline rupture through the action of flowing water and debris, or through third party action after the exposure has occurred. Rupture of the gas pipeline could result in water contamination or fire hazard.

The potential for exposure of the pipeline by stream erosion and scour can be minimized by locating the pipeline below the expected 100-year depth of scour at stream crossings and extending this depth of burial a sufficient distance away from the streambed to avoid anticipated lateral erosion. (AFC §8.9.3; SA Soil & Water, pp. 4.14-11-14.)

MITIGATION:

- ☑ Prior to site clearing and grading, the project owner shall prepare erosion control and stormwater pollution prevention plans to contain and process runoff and to prevent or contain any spill or leak of construction materials onto soils or into runoff waters. Conditions: **WATER QUALITY-1 & 2**
- ☑ The project owner shall obtain necessary streambed alternation permits. Condition: **WATER QUALITY-4**
- ☑ The power plant site shall be graded above the predicted 100-year flood level for Clay Creek. Condition: **WATER QUALITY-5**
- ☑ Clay Creek tributary stormwater flow shall be diverted into channels around the east side of the power plant site. Condition: **WATER QUALITY-6**
- ☑ The natural gas pipeline shall be buried at stream crossings below the anticipated depth of scour from the 100-year flood. Condition: **WATER QUALITY-10**
- ☑ To control airborne fugitive dust, the project owner shall water disturbed areas and apply chemical dust suppressants, apply gravel or paving to traffic areas, wash wheels of vehicles of large trucks leaving the site. Condition: **AQ-SC3 & AQ-SC4.**

Prior Soil Contamination

Excavation at the power plant site or along the pipeline route might unearth soils contaminated by prior disposal practices or accidental spills or leaks. If contaminated soil is encountered during construction, such contamination will be assessed using procedures that allow for identification of best disposal options. If the soil is classified as hazardous (according to RCRA and CCR Title 22), the soil will be hauled to a Class I landfill or other appropriate soil treatment and recycling facility. (SA Waste Mgt., p. 4.13-3-4)

If the groundwater generated from the dewatering activities is determined to have some level of contamination, mitigation will be required in order to satisfy the discharge limits of the project's NPDES permit.

MITIGATION:

- ☑ Contaminated soils will be tested and, if appropriate, treated or disposed at a Class I landfill. Condition: **WASTE-3 to WASTE-5.**

Drainage & Water Contamination

The construction laydown area south of Clay East Road would include parking areas for worker and construction vehicles, equipment, a locked industrial container for hazardous materials used during construction, a concrete washout area, and equipment refueling and maintenance. The laydown area would be covered with gravel to minimize sediment and contaminants that could wash into Clay Creek and tributaries during rainfall. SMUD has proposed generic construction BMPs such as wattles, silt fences and straw bales that would be used to capture sediment and oils in the stormwater. Silt fences would be installed 25 ft or more from both sides of the East Tributary within the laydown area. SMUD's draft SWPPP proposes BMPs, including a hydrocarbon-absorbing geotextile base for the gravel ground cover. The SWPPP would include a spill-prevention and control plan for hazardous materials spills.

The Central Valley Regional Water Quality Control Board (CVRWQCB) commented on SMUD's draft SWPPP and BMPs for the laydown area, focusing on oil as "a pollutant of concern in the laydown area." Main sources of oil and grease are leakage from engines, spills at fueling stations, overfilled tanks, and waste oil disposal. The BMPs SMUD proposed to address oils in stormwater are wattles and straw bales. According to the CVRWQCB "silt fences and straw bale dikes are not Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) and are not an effective or appropriate BMP for oil and grease."

To address these concerns, Commission staff recommended that the concrete washout area, maintenance areas, and refueling areas be located in the western portion of the laydown area so that the runoff is directed into the detention basin. Further, the detention basin should be modified to retain and treat "first flush" flows (approximately two acre feet) using such appropriate measures as filter strips, sand media filters, surface infiltration trenches, infiltration basins and vegetated swales as required by the Sacramento County Guidance Manual for On-Site Stormwater Control Measures.

For the remainder of construction after initial grading and for operation, the majority of the paved power plant site would drain into the 1.5-acre stormwater detention basin. Water in the basin would be contained by an earthen embankment approximately 600 ft long adjacent to Clay Creek. The proposed basin would be designed to contain the 100-year, 24-hour runoff from the site and a portion of the laydown area. The maximum 100-year ponding depth in the basin would be between six and seven ft. Since the basin pond would be above the natural ground elevation, there could be adverse flooding impacts to downstream property from a sudden failure of the embankment. For this reason, the basin would be designed with an overflow spillway to accommodate a 100-year discharge. The top of the embankment would have three feet of freeboard above the 100-year water surface in the

overflow spillway to provide a factor of safety against embankment failure through overtopping.

The detention basin is proposed to be drained by a 12-inch-diameter pipe which would be controlled (opened or closed) by a valve operated manually. The purpose of this valve is to stop flows so an inspection can be made to determine the quality of water in the detention basin prior to releasing the water into Clay Creek. The detention basin is intended to act as a management measure to provide water quality benefits. SMUD will provide protocols for operation of the detention basin, information on inspection procedures, contaminant collection, and disposal methods.

Both the detention basin outlet and overflow spillway would discharge into Clay Creek. There is a potential for erosion from high flow velocities and turbulence at the discharge point. Erosion protection such as riprap or other appropriate measure would be installed in the bed and banks of Clay Creek at these locations.

Within the power plant site, non-hazardous and hazardous chemicals will be stored in tanks or other vessels. Hazardous material storage areas would be surrounded by berms to contain leaks and spills. Bermed areas would be sized to hold 150 percent of the contents of the largest single container and, if not covered, sized for the larger of 150 percent of the largest single container and a 25-year, 24-hour rainfall. Effluent and stormwater runoff from chemical use area drains would be collected and treated on-site. The proposed stormwater pollutant control would consist of source control measures, one or more oil/water separators to pre-treat contact stormwater prior to being sent to the ZLD system, and the detention basin as described above.

Since the natural gas pipeline and water pipeline to the existing Rancho Seco Nuclear Power Plant pipeline are underground, no post-construction drainage effects are expected. (AFC §8.8.3-5; SA Soil & Water, pp. 4.14-15-18.)

MITIGATION:

- ☑ The project owner will handle, treat, and discharge runoff in accordance with its Storm Water Pollution Prevention Plan and NPDES permit. Conditions: **WATER QUALITY-1 & WATER QUALITY-3.**
- ☑ The project owner will construct a runoff detention basin capable of containing the runoff from a 100-year storm. The detention basin will be designed to capture potentially contaminated "first-flush" runoff for treatment, if necessary. Condition: **WATER QUALITY-9**

Wastewater

Wastewater streams from the project's combustion turbine generator evaporative coolers, HRSGs, water treatment system, chemical feed area drains, and contact stormwater drains would be routed to the zero liquid discharge (ZLD) system. Those wastewater streams are concentrated in the ZLD system, with the final product being a solid cake and condensate.

The condensate would be returned to either the cooling towers or the demineralized water system for reuse. Therefore, no liquid process waste would be discharged off-site.

Periodic cleaning of the compressors and heat recovery steam generators would generate about 30,000 gal/yr. of chemical cleaning wastewater that may contain elevated metals and other toxic constituents. This wastewater would be contained on-site in a sump and analyzed. If shown to be toxic, the wastewater would be pumped out and transported off-site for disposal at a licensed facility. Therefore, no water quality impacts are expected to result from process wastewater activities.

Domestic wastewater would be managed via an on-site septic system and drain field designed and permitted according to Title 6 (Health and Sanitation) of the Sacramento County codes. Therefore, no water quality impacts are expected to result from drain field operation. (AFC §8.13.4.2.2; SA Soil & Water, p. 4.14-15, 20.)

MITIGATION:

- ☑ The project owner will handle, treat, any wastewater with a zero liquid discharge system. Condition: **WATER QUALITY-7**
- ☑ The project owner shall treat and dispose of domestic wastewater with site-specific designed septic system. **WATER QUALITY-8**

Cumulative Impacts

Construction and operation activities related to the proposed project contribute to regional wind and water erosion. However, implementation of the mitigation measures will ensure that potential erosion and sedimentation is minimized to a level of insignificance.

Stormwater runoff typically increases with new construction activities. The proposed project would increase stormwater runoff at Clay Creek, but, due to the site's relatively small size, would have a negligible effect on the stormwater flows of Clay Creek or downstream rivers. Further, the proposed detention basin would control site discharges up to the 100-year flood level so that flood flows would be at or below the natural discharge. The floodplain encroachment into Clay Creek would not affect existing structures or improvements nor would it affect adjacent property not owned by SMUD. No significant impacts are anticipated.

With the zero liquid discharge system and the use of Best Management Practices there would be no surface or subsurface discharge of wastewater from the project. The proper use of secondary containment basins and BMPs for handling hazardous materials would reduce the risk of transport of contaminants in the stormwater runoff to a level of insignificance. The project would not contribute to cumulative water quality impacts through minor stormwater discharges that will be controlled to a less than significant level through the use of BMPs addressed in the SWPPPs and the proposed Conditions of Certification. (SA Soil & Water, p. 4.14-20-21.)

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to water quality and all potential water quality impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

CONSTRUCTION NPDES PERMIT/STORM WATER POLLUTION PREVENTION PLAN

WATER QUALITY-1: The project owner shall comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the entire CPP project as required by the General NPDES permit. Prior to beginning any site mobilization associated with any project element the project owner shall submit to the CPM a copy of the Notice of Intent for Construction accepted by the CVRWQCB and obtain CPM approval of the construction activity SWPPP. Approval of the SWPPP by the CPM must be received prior to site mobilization for any project element.

Verification: No later than 60 days prior to the start of site mobilization for any project element, the project owner shall submit a copy of the SWPPP required under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity to Sacramento County for review and comment and to the CPM for review and approval. The SWPPP will include copies of the Notice of Intent for Construction accepted by the CVRWQCB. The SWPPP shall include as a minimum:

- design of drainage channels for diverted flow from the East Tributary and Western Swale;
- erosion-control measures or revegetation plans for the CPP site at the location where it encroaches into Clay Creek;
- erosion control calculations and designs for the inside surface, inlet points, and all discharge points of the detention basin;
- construction and erosion control in the diverted Clay Creek south braid;
- best management practices for wind and water erosion control during construction;
- grading plans for the proposed site and laydown area showing proposed grade and contours in comparison to existing grade and contours; and
- any other applicable measure listed under mitigation measures in the FSA section.

EROSION & SEDIMENTATION CONTROL PLAN

WATER QUALITY-2: Prior to beginning any site mobilization activities for any project element, the project owner shall obtain CPM approval for a site-specific Erosion and Sedimentation Control Plan that addresses all project elements including erosion protection for the proposed Clay Creek conveyance features and tributary diversion channels. The plan

shall address revegetation and be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**.

Verification: No later than 60 days prior to the start of any site mobilization for any project element, the project owner shall submit the Drainage, Erosion and Sedimentation Control Plan to the CPM for review and approval. No later than 60 days prior to start of any site mobilization, the project owner shall submit a copy of the plan to Sacramento County for review and comment. The plan must be approved by the CPM prior to start of any site mobilization activities.

STORM WATER POLLUTION PREVENTION PLAN

WATER QUALITY-3: The project owner shall comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial_Activity. The project owner shall develop and implement a SWPPP for the operation of the CPP as required by the NPDES permit. The project owner shall submit to the CPM a copy of the Notice of Intent for Operation accepted by the CVRWQCB and obtain approval of the General Industrial Activities SWPPP from the Energy Commission CPM prior to commercial operation of the CPP.

Verification: No later than 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the SWPPP required under the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity to Sacramento County for review and comment, and to the CPM for review and approval. The operational SWPPP shall include copies of the Notice of Intent for Operation accepted by the CVRWQCB.

STREAMBED ALTERATION PERMIT

WATER QUALITY-4: The project owner shall obtain and provide a copy of the Streambed Alteration Agreement and CWA 401, 402, and 404 permits as appropriate, or proof that they are not needed, prior to site mobilization activities. Site modifications required by any of these permits may require evaluation by the CPM prior to issuance of the final construction permit.

Verification: No later than 30 days prior to site mobilization for any project element, the project owner shall provide copies of the final, approved Streambed Alteration Agreement and CWA 401, 402, and 404 permits; or written verification that one or more are not needed, to the CPM.

SITE GRADING ELEVATION

WATER QUALITY-5: The site shall be graded to be no lower than the highest adjacent 100-year flood level of Clay Creek expected to occur after encroachment of the site into the Clay Creek floodplain. Lowest floors and foundations of buildings, storage areas and any equipment shall be at least one foot above the adjacent 100-year flood level of Clay Creek. A Plan demonstrating compliance with these requirements must be approved by the CPM prior to the initiation of site mobilization activities.

Verification: No later than 60 days prior to site mobilization for any project element the project owner shall submit to the CPM a grading and finished floor plan for the site. This plan

must clearly show that the site will be above the 100-year flood plain, and that buildings and equipment subject to damage or contamination by flooding will be at least one foot above the flood level.

STORMWATER DIVERSION CHANNELS

WATER QUALITY-6: All stormwater flow to the watercourse (referred to in this report as the East Tributary) currently entering the site at the location of a culvert across Clay East Road approximately 350 ft west of the southeast property corner, plus that portion of the laydown area graded to drain to this watercourse, shall be diverted to the east around the site and into Clay Creek using new culverts and a drainage channel designed for the 100-year peak discharge.

Verification: No later than 60 days prior to site mobilization for any project element the project owner shall submit to the CPM hydraulic calculations, plans, and structural designs for all proposed diversion channels, culverts and concrete headwalls. The plan and calculations must be approved by the CPM prior to the initiation of site mobilization activities.

ZERO LIQUID DISCHARGE SYSTEM

WATER QUALITY-7: Surface or subsurface disposal of process wastewater or contaminated stormwater from the CPP is prohibited. The project owner shall treat all appropriate wastewater streams with a ZLD system that results in a residual cake solid waste. Processed contact stormwater (from the oil-water separator) shall be recycled for use as cooling water and the residual solid waste will be disposed of in an appropriate off-site landfill.

Verification: At least 60 days prior to the start of project operation, the project owner shall submit to the CPM the final design of the zero liquid discharge system and a back-up wastewater disposal method to be implemented during periods of ZLD system shutdown or maintenance. At a minimum this submittal shall include schematic plans, narrative of operation, maintenance schedules, on-site storage facilities, containment measures, and identify influent water quality.

This information shall also include the results of the Waste Extraction Test of the residual cake solid waste from the zero liquid discharge system. In the annual compliance report, the project owner will submit a status report on operation of the zero liquid discharge system, including disruptions, maintenance, volumes of interim wastewater streams stored on site, volumes of residual salt cake generated and the landfills used for disposal. In addition, the project owner shall submit to the CPM copies of the annual monitoring report for stormwater as normally submitted to the CVRWQCB under the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity.

DOMESTIC SEPTIC SYSTEM

WATER QUALITY-8: A domestic wastewater system shall be designed for site-specific soils and percolation conditions and comply with Sacramento County laws. The on-site system should be designed and monitored to assure that effluent nitrates and viruses are reduced to the lowest practical level with no detectable effect on groundwater or surface water. Any wastewater stream with potential toxicity shall not enter this system. The project

owner must obtain and comply with Waste Discharge Requirements (WDRs) from the CVRWQCB or provide written verification from the CVRWQCB that WDRs are not needed.

Verification: No later than 90 days prior to power plant operation, the project owner shall submit to the CPM a plan for the design and quarterly monitoring of the site domestic wastewater system. The system shall include a process to reduce nutrient and virus levels and shall include shallow groundwater monitoring wells (such as one up-gradient and three down-gradient). This plan shall be sent to Sacramento County for review and comment, and must be approved by the CPM prior to power plant operation. The project owner must obtain and comply with Waste Discharge Requirements (WDRs) from the CVRWQCB or provide written verification from the CVRWQCB that WDRs are not needed.

DETENTION BASIN CAPACITY

WATER QUALITY-9: The proposed detention basin shall be designed to withstand a 100-year flood generated on site with at least three feet of freeboard from the water surface crest in the spillway to the top of embankment. The project owner shall provide adequate embankment safety and erosion protection for Clay Creek in the location of the detention basin discharges. The proposed detention basin shall also be designed to collect, hold (for a minimum 24-hours) and treat the Water Quality Volume (WQV), i.e. the "first-flush" flows according to the procedures described in the Sacramento County Guidance Manual for On-Site Stormwater Quality Control Measures (Sacramento Stormwater Management Program, 2000). At the minimum, the following shall be included or considered as applicable:

- Any pipes and structures within the embankment shall have seepage rings and other measures needed to minimize the risk of erosion relating to embankment piping.
- Pond inlets shall be configured to uniformly distribute flow across the pond width and the pond outlet should be located as far from the inlet as practical to minimize short-circuiting. A meandering low-flow channel is suggested for the bottom of the basin.
- A fixed surface baffle or a floating boom, plus oil-adsorbent pads or a continuous floating oil skimmer, shall be considered for the outlet pipe and spillway. Accumulated debris and oil should be able to be readily removed.
- Outlet screen performance shall not be impaired by a reasonable accumulation of debris. Screen area should be a minimum of 3 times the outlet pipe cross-sectional area.
- The detention basin outlet device shall be configured to limit the pond release rate to below pre-development rates.
- A separate drain valve shall be provided to enable seasonal pond drain-down and drying to eliminate the risk of vector problems. All pond outlets and drain valves shall be located in a position suitable for ready access for operations and maintenance. Buried valves are not permitted inside the embankment.
- Depth markers shall be provided to monitor sediment deposition. A means of access shall be provided to facilitate the equipment needed for sediment removal.
- The perimeter shall be suitably fenced to restrict public and animal access.

- The dike berm shall have a surface suitable to enable traffic to continuously pass around the entire perimeter during all weather conditions.
- A maintenance plan shall be developed that complements the structure's design.

Verification: At least 60 days prior to site mobilization for any project element, the project owner shall provide detailed detention basin embankment and outlet designs, hydrologic and hydraulic analysis, and maintenance and operation designs, hydrologic and hydraulic analysis, and protocols to the CVRWQCB and County of Sacramento Water Resources Division for review and comment and to the CPM for approval. Basic detention basin and spillway design shall follow the concept presented in Data Responses Informal Set 13 dated January 2, 2003, as updated by Revised Informal Set 13, dated January 24, 2003. Those designs, analysis, and protocols must be approved by the CPM prior to site mobilization.

PIPELINE BELOW SCOUR DEPTH

WATER QUALITY-10: The proposed gas pipeline at stream crossings shall be located below the anticipated depth of scour from a 100-year flood. This depth of burial shall be extended a sufficient distance away from the streambed to avoid anticipated lateral erosion. Trenched water crossings shall be constructed during the dry season using "in the dry" construction techniques that avoid trenching within open or flowing water. The stream bed at trenched crossings shall be restored to the natural contours and revegetated.

Verification: At least 60 days prior to site mobilization for the proposed pipeline, the project owner shall submit to the CPM, an analysis (plan) prepared by a registered civil engineer, that demonstrates the proposed pipeline would be below the expected 100-year depth of scour at all stream crossings, and that the pipeline will remain at that depth for a sufficient distance away from the stream channel to avoid any lateral erosion that can be reasonably expected to occur during the life of the project. The CPM must approve this analysis (plan) prior to site mobilization activities starting on the pipeline.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WATER QUALITY & SOILS

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Clean Water Act; 33 U.S.C. §1251 et seq.	Regulates discharges of wastewater and stormwater. Applies to wastewater discharged from cooling tower basins and stormwater runoff. These discharges are subject to NPDES permits obtained through the RWQCB at the state level.
STATE	
Porter Cologne Water Quality Control Act, Water Code §13000 et seq.	Established jurisdiction of nine RWQCBs to control pollutant discharges to surface and groundwater.
SWRCB Water Quality Order Nos. 91-13-DWQ and 92-08-DWQ	Regulates industrial stormwater discharges during construction and operation. These discharges subject to NPDES permits obtained through the RWQCB.
Safe Drinking Water and Toxic Enforcement Act (Prop. 65)	Prohibits the discharge of any substance known to cause cancer or birth defects to sources of drinking water.
LOCAL	
RWQCB	Responsible for controlling water quality.
Sacramento Co. Land Grading & Erosion Control Ordinance	The Ordinance (SCC-1002) is to minimize damage to surrounding properties and public rights-of-way; degradation of water quality; disruption of natural drainage flows; sediment and pollutant runoff from construction related activities; and to comply with the provisions of the County's NPDES Permit.

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WATER RESOURCES

WATER RESOURCES – GENERAL

In its original Application for Certification, SMUD proposed to use approximately 8,000 acre-feet per year (AFY) of water from the Folsom-South Canal for both Phase 1 and 2 of the project, largely for cooling purposes. SMUD has water rights through an existing contract and an additional assignment with the U.S. Bureau of Reclamation, dating back to 1970, for the delivery of a maximum of 75,000 AFY, most of which was originally intended for the Rancho Seco Nuclear Power Plant, now decommissioned. The Folsom-South Canal originates at Lake Natoma on the American River east of Sacramento and carries water south to Rancho Seco where approximately 15,000 AFY are currently used at the decommissioned power plant and then discharged into Clay Creek. Folsom-South Canal water is also stored in Rancho Seco Reservoir, presently used for recreational purposes.

The 1970 contract with SMUD will expire by its terms on December 31, 2012. Pursuant to the Central Valley Project Improvement Act (CVPIA), all long-term CVP contractors must renew their existing contracts prior to the original termination date following completion of the Programmatic Environmental Impact Statement (PEIS). The CVPIA amends previous authorizations of the Central Valley Project to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses. Additionally, the CVPIA recognizes fish and wildlife enhancement as having equal priority with power generation. A draft renewal contract (dated August 6, 2001) between U.S. Bureau of Reclamation and SMUD proposes to assign 30,000 AFY of SMUD's previous water allocation to Sacramento County Water Agency. This water re-assignment is due to increasing water demand and expected shortages in the Sacramento region.

SMUD proposes to construct a new half-mile 12-inch pipeline to the project from the existing 66-inch pipeline for Rancho Seco. An on-site water treatment plant would treat the incoming water for use in the cooling towers, potable domestic water system, plant service water, HRSG makeup water, and turbine inlet air cooling. The project would not use any groundwater for any purpose.

Originally, SMUD proposed to treat and discharge project cooling tower blowdown (water withdrawn after several cycles through the cooling towers) to Clay Creek. After intensive review by the Energy Commission staff related to concerns over the use of potable water for cooling and the environmental effects of discharging to area surface waters, SMUD revised the project to utilize a Zero Liquid Discharge system, which completely avoids water discharge to Clay Creek and reduces water consumption as well, from 4,000 AFY per phase to approximately 2,663 AFY. Additionally, SMUD has agreed to use reclaimed water for Phase 2 if it is available, which it currently is not, and it is economically feasible.

The project would have two on-site storage tanks with the capacity to store five million gallons of water to supply water during short-term peak demand or a water supply interruption. Rancho Seco Reservoir contains 2,850 acre-feet of water and currently provides storage for Rancho Seco use. SMUD proposes to use Rancho Seco Reservoir as a backup water supply for Phase 1. Reservoir drawdown would be about two inches in four days which

SMUD does not consider disruptive. Additional short-term peaking and back-up supply could be provided by additional reservoir drawdown or by the drawdown of the Folsom-South Canal. (SA Soil & Water Resources, pp. 4.14-7, 9)

Water Supply Policy

California Water Code section 13550 et seq., and the State Water Resources Control Board Resolution 75-58 identify the use of potable or fresh inland water for power plant cooling as unreasonable use and only to be used if other sources or other methods of cooling would be environmentally undesirable or economically unsound.

Energy Commission staff evaluated whether the project's proposed water supply would create significant direct impacts on water resources. The CEQA Guidelines state that a project may have a significant impact if it will "substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume" (CEQA Guidelines, App. G). The Guidelines also state that a project may have a significant impact if insufficient water supplies are available to serve the project. In past projects, staff's analyses of water supply issues has focused on whether or not a project would cause reductions in the availability of water needed to serve residential, commercial, agricultural, and industrial needs or that provides habitat for endangered species.

In this case, staff could not predict a specific level of change in the availability of water for those uses (e.g., residential, commercial, agricultural, industrial or habitat) that would result from the project, and therefore did not identify a direct water supply impact. Although the project would use a substantial amount of water, the use would not result in a demonstrable reduction in regional water supplies.

Notwithstanding, SMUD conducted a search for currently available or potentially available alternative water supplies. In AFC Supplement C, SMUD states that two sources of reclaimed water to supplement Phase 2 were also considered, and that it has held preliminary discussions with representatives from the Sacramento Regional Wastewater Treatment Plant (SRWTP) and Galt Wastewater Treatment Plant (GWTP). SMUD's preferred reclaimed water alternative would involve GWTP.

The City of Galt Wastewater Treatment Plant is located approximately 12 miles southwest of the project. Galt currently produces 2.1 million gallons per day (MGD) of secondary effluent that will increase to approximately 3.0 MGD by 2008. The City of Galt is willing to provide its current and future supply of secondary treated wastewater to SMUD at potentially no cost. The City is currently preparing its NPDES renewal application, which may require a higher level of filtration (tertiary) due to concerns over the City's current surface discharge of its secondary treated effluent during the winter. The City would be willing to negotiate a cost sharing arrangement with SMUD for additional treatment required for use at the project.

Phase 1 and Phase 2 would each use zero liquid discharge, and each consume about 2,664 AFY of water based on an average consumption of 2.5 MGD, with a peak consumption of 3.5

MGD. Thus, effluent from the City of Galt is currently insufficient for Phase 1, let alone both phases.

However, at some time in the future, the City of Galt would have available about 3 MGD of treated wastewater, sufficient to supply Phase 2 with its average water needs. Folsom-South Canal water or additional storage could be used to supplement GWTP effluent deliveries during peak need periods. Staff estimates the range of capital costs for using reclaimed water from GWTP would range from $13.4 million to $22.2 million.

As to Phase 2, SMUD has agreed that if reclaimed water becomes available within 15 miles of the project and is economically feasible it will propose the use of reclaimed water and pay for a pipeline to supply the project. (SA Soil & Water Resources, pp. 4.14-9-11, 18-25)

MITIGATION:

- ☑ SMUD will limit annual project water use. Condition: **WATER RES-1**.
- ☑ SMUD will propose the use of reclaim water for Phase 2, if it becomes available at reasonable cost. Condition: **WATER RES-2**.

Cumulative Impacts

Regional water demand is increasing. The U.S. Bureau of Reclamation's 1997 American River Water Resources Investigation (ARWRI) Planning Report addressed water-related needs of Sacramento County. The Report projects a 24 percent increase in demand, or an increase of 187,000 AFY from 2000 to 2030. The ARWRI Report concluded that future Sacramento County water needs cannot be met with current supplies, cause a regional water supply shortage as early as 2010 unless proactive steps are taken to improve conservation and management of existing resources. Current regional water demands are met by 60 percent surface water and 40 percent groundwater.

Sacramento County Water Agency (SCWA) faces the most immediate demand/supply shortfall and has adopted a policy of pursuing alternative water supplies, most notably reclaimed water where feasible. Even though the cost of reclaimed water treated for unrestricted use currently exceeds the cost of potable supplies, USEPA, SCWA and most other water purveyors consider reclaimed water a necessary alternative.

In 1995, a group of diverse stakeholders created the Water Forum to try to provide for a reliable and safe water supply for the region's economic health and planned development to the year 2030 and to preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River. The result of the Water Forum process was the Water Forum Agreement, which includes a series of specific agreements identifying the actions various stakeholders will take. Participants to the Water Forum Agreement recognized that unless adequate water supplies are made available, many residents, businesses and farmers will continue to suffer water shortages during California's periodic droughts.

To meet the Water Forum's objective of providing a reliable and safe water supply for the region's economic health and planned development through the year 2030, increased surface

water diversions will be needed even with active conservation programs and sustainable use of groundwater resources. In the Sacramento region, the water rights and firm contractual entitlements for American River water are three times greater than those for Sacramento River water (approximately 800,000 AF to 250,000 AF).

By 2030, the Water Forum expects diversions from the American River to increase from the current level of 216,500 AFY to about 481,000 AFY during Wet/Average Years. In the Drier and Driest Years, certain water purveyors will not exercise their full water rights or contract entitlements for surface water diversion from the American River. The likely response to those shortfalls may include increased use of reclaimed water, water conservation programs, and increased groundwater pumping. Depending upon demand, increased groundwater pumping could cause significant impacts, such as decreased groundwater levels and decreased water quality.

The Water Forum process addressed each water supplier's situation, providing a series of actions to be taken to manage water supply during wet, average, and dry conditions. Under the Water Forum Agreement, SMUD is allowed to divert 30,000 AFY from the Folsom-South Canal and use the 15,000 AFY from the City of Sacramento during most years. During the driest years, the Folsom-South Canal diversion drops to 15,000 AFY, which is almost six times the amount of water required for the operation of Phase 1 of the project on an annual basis. Additionally, SMUD has stipulated to the use of an alternative cooling water source for Phase 2 of the project, with the result that the Phase 1 fresh water use should represent the total amount for the entire project.

As a result, although regional water shortages are predicted, the Water Forum process has addressed SMUD's potential water use in a reasonable way. Based upon SMUD's commitments in the Water Forum process and this proceeding, the incremental effect of project water use is not cumulatively considerable. SA Soil & Water Resources, pp. 4.14-21-25.

Findings

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to water resources and all potential water resource impacts will be mitigated to insignificance.

CONDITIONS OF CERTIFICATION

WATER USE METERING

WATER RES-1: Total water use by the project owner for the operation of the project and all landscape irrigation of the CPP site shall not exceed an annual average of 2,663 AFY over any three successive calendar years, nor exceed a peak flow of 2,500 gpm.

Verification: The owner shall maintain daily records of water use from each source (FSC, Rancho Seco Reservoir and/or reclaimed if used) and as part of its annual compliance report

shall submit a water use summary to the CPM on an annual basis for the life of the project. The owner shall track its water use (from any source) on a daily basis and shall notify the CPM immediately upon exceeding, or upon forecast to exceed, the peak flow of 2,500 gpm. The annual average 2,663 AFY shall be calculated based upon any consecutive three-year period starting with the first full calendar year of operation and shall not exceed the average annual consumption for any three consecutive years for the life of the project.

RECLAIMED WATER USE FOR PHASE 2

WATER RES-2: In the event reclaimed water becomes available within 15 miles of the project site, the project owner shall, in its application for Phase 2, propose the use of reclaimed water. The Energy Commission shall determine the economic feasibility of using such reclaimed water.

Verification:

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WATER RESOURCES

APPLICABLE LAW	DESCRIPTION
FEDERAL	
STATE	
State Water Resources Control Board Policy 75 – 78; California Water Code, Sections 461 and 13552, and by Water Commission Resolution 77-1	SWRCB Resolution 75-58, discourages the use of fresh inland water for power plant cooling and prioritizes the source water of power plant cooling water: (1) wastewater discharge to the ocean, (2) ocean water, (3) brackish water from natural sources or irrigation return flow, (4) inland waste waters of low TDS, and, lastly, (5) other inland waters.
APPLICABLE LAW WATER RESOURCES	**DESCRIPTION**
LOCAL	

ALTERNATIVES

ALTERNATIVES – GENERAL

The Energy Commission's Power Plant Siting Regulatory Program is a "certified regulatory program" under CEQA. With regard to the "Alternatives" analysis required in a certified siting proceeding, the CEQA Guidelines (Cal. Code Regs., tit. 14, §15252) state that the environmental documentation shall include either:

- Alternatives to the activity and mitigation measures to avoid or reduce any significant or potentially significant effects that the project might have on the environment, or
- A statement that the agency's review of the project showed that the project would not have any significant or potentially significant effects on the environment and therefore no alternatives or mitigation measures are proposed to avoid or reduce any significant effects on the environment. This statement shall be supported by a checklist or other documentation to show the possible effects that the agency examined in reaching this conclusion."

The Energy Commission staff presented information in its Staff Assessment on the "feasibility of available site and facility alternatives to the applicant's proposal that substantially lessen the significant adverse impacts of the proposal on the environment" (Cal. Code Regs., tit. 20, §1765). Staff also analyzed whether there are any feasible alternative designs or alternative technologies, including the "no project alternative," that may be capable of reducing or avoiding any potential impacts of the proposed project while achieving its major objectives.

Alternative Sites

Consistent with the CEQA Guidelines, the consideration of alternative sites was guided by whether most project objectives could be accomplished at alternative sites and whether locating the project at an alternative site would substantially lessen any identified potential impacts of the project (Cal. Code Regs., tit. 14 §15126.6(a)).

According to SMUD's AFC, the project's objectives are:

- Generation of approximately 1,000 MW of electricity in a location that can serve baseload electricity to SMUD's service area;
- Commercial operation of 500 MW (Phase 1) by the first quarter of 2005 and an additional 500 MW (Phase 2) at some future date; and
- Location where sufficient land (a minimum of 30 acres) and infrastructure are available for Phase 1 and Phase 2.

SMUD presented three sites (the Carson Ice-Generation Facility, the Procter & Gamble site, and the Campbell Soup site) in the AFC's Alternatives section (9.0). However, based on field reconnaissance of the sites and preliminary analysis of the comparative merits of these sites to the proposed site, Commission staff determined that two of the sites (Procter and Gamble site and Campbell Soup site) are not of sufficient size to accommodate either a 500 MW or

1,000 MW power plant and would not meet the project's objectives. Therefore, these two sites have been eliminated from this analysis.

Staff then identified two additional, potential alternative sites (the Lodi site and the Woodland site). Three alternative sites are evaluated in detail: Carson Ice-Generation site, Lodi site, and Woodland site. Each alternative site was evaluated for both a 500 MW generation power plant and a 1,000 MW power plant. The following issue areas were evaluated at each site because these issue areas have the greatest potential for significant impacts from power plants: air quality, biological resources, cultural resources, noise, transmission system engineering, visual resources, and water resources.

Carson Ice-Generation Site

The Carson Ice-Generation site (recommended as an alternative in the AFC) is a 55-acre site that is currently managed in accordance with the policies of the Sacramento Regional Wastewater Treatment Plant's (SRWTP) Bufferlands. The Sacramento Regional County Sanitation District (SRCSD) set aside 2,500 acres in the 1970s to serve as a buffer between the SRWTP and surrounding neighborhoods in southern Sacramento County. The SRWTP is located at 8521 Laguna Station Road in Elk Grove, approximately 20 miles northwest of the proposed site. A majority of the parcel is currently used for agriculture.

Although there are no current plans, the SRCSD has stated that it would like to reserve a 55-acre area for part of its planned expansion zone. If the SRWTP does not expand on to the site, the parcel would become a permanent part of the Bufferlands. Since the parcel is currently being managed as part of the Bufferlands, construction of a power plant is not consistent with the County's management policy for the Bufferlands, which discourages the conversion of agricultural land or open space to permanent structures.

Nearby drainage courses include Laguna Creek, approximately 1,600 feet to the northeast of the site (note that this is not the same Laguna Creek that passes near the proposed site). According to the Sacramento County Department of Public Works, the Carson Ice-Gen site is entirely within the 100-year floodplain of Laguna Creek.

The parcel is potential habitat for Swainson's hawk and burrowing owl. There are known Swainson's hawk nests within one-quarter mile of the site; therefore, the site is likely to be within their foraging area. Along the southern boundary of the parcel there is a perennially wet drainage ditch, which is potential habitat for giant garter snake.

The nearest residences are found in large housing developments located less than one mile to the east, north, and south of the site. The homes closest to the SRWTP property would likely have views of the power plant (in addition to existing views of the SRWTP, the Carson Ice-Generation facility, and other existing structures).

The SRWTP operates a 5 million gallon per day (gpd) water recycling facility adjacent to the site. The County has certified an Environmental Impact Report evaluating the production of an additional 5 million gpd, although a construction date has not been set. With the expanded recycled water facility, sufficient recycled water would be available to operate a

power plant at this site. Since the SRWTP is adjacent to the site, installation of a short water pipeline would be required.

The site is adjacent to SMUD's existing natural gas line that terminates at the Carson Ice-Generation facility and connects to PG&E's Line 400 and 401 near Winters, California. Existing transmission lines that connect to the Carson Ice-Generation facility are 69 kV, although a double-circuit 230 kV transmission line runs north-south adjacent to the site. The existing double-circuit 230 kV transmission line adjacent to the site would likely have the capacity to be connected to a 500 MW power plant. For a 1,000 MW power plant, the existing double-circuit 230 kV lines would not be adequate.

A new 230 kV transmission line would be required. This analysis assumes the new transmission line would extend overhead, east from the site along Sims Road, crossing Laguna Station Road, turn south and parallel the existing transmission line along the Union Pacific railroad line. The new transmission line would extend south for approximately three miles to avoid conflicts in the City of Elk Grove. The transmission line would then continue east, parallel to Bilby Road, through undeveloped land for approximately 6.5 miles to connect to the north-south SMUD 230 kV system corridor that parallels Waterman Road

Emissions from construction and operation of a 500 MW (Phase 1) power plant at the Carson Ice-Generation site would not be significantly different from the construction activities for the proposed site. Given the similarity in topography and meteorology between the proposed site and the alternative site, and the fact that the two sites are in the same air basin, the impacts would be similar to those calculated for the project site.

The potential impacts to biological resources at the Carson Ice-Generation site would be similar for either a 500 MW or 1,000 MW facility. The site consists of primarily upland habitat that is used for foraging by species such as burrowing owls and Swainson's hawks. There are some vernal pools near the site, but Staff believes that either facility could be sited to minimize or avoid any impacts to wetlands.

Due to its location near existing infrastructure, many of the impacts associated with long pipeline construction, such as stream crossings, frac-outs, and crossing different habitat types, which would impact more species, would be reduced. Elimination of the 26-mile natural gas pipeline to the proposed site would reduce impacts or potential impacts to wetland features, aquatic species in waterways, valley elderberry longhorn beetle, burrowing owls, Swainson's hawks, giant garter snakes, heritage trees, and a wide variety of other species and habitats. The Carson Ice-Generation site would avoid the need for a natural gas pipeline to cross the Cosumnes River Preserve and the impacts associated with directional drilling under Laguna Creek, Badger Creek, and the Cosumnes River. Of the proposed project and the other alternative sites considered in this analysis, the Carson Ice-Generation site would potentially result in the fewest impacts to biological resources.

It appears that this is an area sensitive for both prehistoric and historic resources, although the 500 MW option would likely impact fewer resources because it would not include the 26-mile long proposed natural gas transmission line route and would require a smaller plant footprint area than a 1,000 MW facility. Additional information would be needed to identify

the location of numerous, previously recorded cultural resources in the vicinity of the Carson Ice-Generation Alternative. Overall, the Carson Ice-Generation Alternative could have a similar high potential to impact cultural resources compared to the proposed project. However, as with the project, conditions of certification would likely reduce impacts to less than significant levels.

For this analysis, it was assumed that the overall power plant noise levels would be those described for the 1,000 MW power plant, which is the basis for the noise mitigation measures for the current 500 MW project (Phase 1). Ambient noise levels in the vicinity of this site are higher than at the proposed site, due to distant traffic on Interstate 5 (I-5), traffic on Franklin Boulevard, and the existing Carson Ice-Generation facility. The adjacent lands are set aside for open space uses, and are owned by Sacramento County.

The nearest homes are about 2,000 feet away, on Dwight Road. At the project site, the receptors are elevated above the power plant, and noise levels would not be greatly reduced by ground absorption of sound. Noise propagation from the Carson Ice-Generation site to the nearest homes would be better attenuated by the intervening ground surfaces because the source and receiver are at the same ground elevation.

Given that noise from the existing Carson Ice-Generation power plant is sufficiently controlled so that few noise complaints are received concerning its operation, it appears technically feasible to design a power plant for this site that would not result in a significant noise impact. Because mitigation appears feasible from a technical standpoint and because the ambient noise levels are higher in the vicinity of this site than at the project, this site would have less noise impacts than the proposed project.

For a 500 MW generating plant, the plant could connect to an existing double-circuit 230 kV transmission line running north/south along the Union Pacific Railroad tracks adjacent to the site. A 1,000 MW generating plant, however, would require that a new 230 kV line and switching station be constructed to connect to SMUD's existing double-circuit 230 kV lines with bundled conductors that run north to south along the Union Pacific Railroad line for approximately three miles. The line would then turn east and cross undeveloped land south of the City of Elk Grove for approximately 6.5 miles to existing 230 kV lines southeast of Elk Grove. Due to the significant amount of residential development in the area, the new transmission line connection could be significantly longer than 6.5 miles in length due to siting constraints. Although Staff believes it is feasible to build transmission facilities from the Carson Ice-Generation site to connect to the SMUD 230 kV system corridor, significant problems routing a 230 kV transmission line through the City of Elk Grove are anticipated. This site would have greater transmission system engineering impacts than the project, however, mitigation to reduce these impacts to a less than significant level is feasible.

The site would be visible from all directions though visibility from the west and northwest would be somewhat limited by distance and vegetation screening. However, the site would be visible from existing residential developments to the north, east, and south. The closest public viewing opportunities would be from Dwight Road and the existing residential developments on the south side of Dwight Road, which is approximately ¼-quarter of a mile south of the site. Views from the residential developments would be direct and extended.

The overall visual quality of the immediate project site is low-to-moderate, reflecting a rather non-distinct agricultural landscape and the influences of the existing power generation and electric transmission infrastructure. The use of the Carson Ice-Generation alternative site for a power plant would result in the introduction of additional linear and geometric forms of industrial character. The linear forms and lines of the project would be similar to that of the existing Carson Ice-Generation and 69 kV transmission line facilities, resulting in moderate visual contrast.

When considered within the existing landscape, a power plant at this alternative this site would cause an adverse, but not significant, visual impact. In order to reduce the adverse visual impact that would be experienced by residents along the south side of Dwight Road, mitigation is feasible by planting trees for visual screening.

It is assumed that a power plant at the Carson-Ice Generation site would generate a vapor plume with approximately the same frequency as the project. For both the 500 MW and 1,000 MW power plants, the use of the Carson Ice-Generation site for a power plant would result in the introduction of a new source for intermittent water vapor plumes that would appear similar to that of the existing Carson Ice-Generation facility. However, the addition of another plume would result in greater plume prominence in the predominantly level landscape.

When considered within the existing landscape, plumes would cause an adverse but not significant visual impact. Therefore visible plume impacts are similar to the proposed project.

A power plant project at the Carson Ice-Generation site would be subject to flooding from Laguna Creek unless protected. Sacramento County requires the lowest floor of any buildings or other improvements potentially subject to flood damage be elevated at least one foot above the 100-year flood level.

Consequently, assuming one-foot flood depth, a 25-acre power plant at this site would require the import of 40,000 to 80,000 cubic yards of fill for flood protection. Alternately, a levee around the site could provide 100-year flood protection. In comparison to the proposed site, the Carson Ice-Generation site would be subject to greater risk of flood-related impacts. The entire site is within the floodplain, as opposed to approximately 15% of the proposed site. As with the proposed site, a power plant at the Carson Ice-Generation site could be made safe from 100-year flooding by elevating on fill, but there would still be a higher risk of damage by larger floods than at the proposed site.

Stormwater impacts would be similar to those of the proposed site. Best management practices (BMPs) similar to the proposed site would be required for stormwater quality.

Soils impacts are expected to be similar to those of the proposed project, with the exception of the linear features. At the Carson Ice-Generation Site, impacts would be substantially reduced because of the shorter natural gas pipeline required.

It is anticipated that the SRWTP would supply reclaimed water for cooling at a plant at this site. This water source would be consistent with State Water Resources Control Board Resolution 75-58. Water use impacts would be greater for the project than the Carson Ice-Generation alternative site. Water use is expected to be similar to the project for Phase 2.

Lodi Site

The Lodi site was identified by Staff and is a 52-acre site located on North Thornton Road, southwest of the City of Lodi and approximately one-half mile west of I-5, south of Frontage Road. The site is located in San Joaquin County, approximately 30 miles southwest of the proposed site. The site is west of the Northern California Power Authority's (NCPA) 50 MW Combustion Turbine No. 2 project and south of the White Slough Water Pollution Control Facility (WSWPCF). It is accessible via existing paved roads. The City of Lodi owns approximately 1,000 acres in the area, 30 acres of which are used by the WSWPCF and 900 acres of which are leased to local farmers for agricultural uses. The site is zoned Public and currently used for agriculture. However, the City of Lodi is willing to negotiate other uses for the land. The WSWPCF is currently screened from views from I-5 and other roadways to the east by a row of mature trees along the plant's eastern boundary. These trees would also provide some screening for a power plant.

According to the San Joaquin County Department of Public Works, the property is entirely within the floodplain of White Slough and possibly Bishop Cut. The 100-year flood depth is approximately 3 feet. Therefore, it would require a substantial amount of fill to raise the site above the 100-year floodplain.

Nearby drainage courses include White Slough and Bishop Cut, both located approximately 1.2 miles to the west of the project site. One of the ponds of the White Slough Wildlife Area (WSWA) is located approximately 1,500 feet west of the project site.

The nearest residential receptors are more than a mile away, beyond the agricultural fields to the east. As such, the nearest residential receptors likely would not be able to see or hear a new energy facility at this site, as its view would be screened by the existing industrial facilities, existing vegetation, and I-5.

The WSWPCF adjacent to the site produces sufficient un-disinfected secondary-treated recycled water to meet the cooling needs of a power plant comparable to a 1,000 MW CPP, although additional treatment would be necessary. Recycled water from the WSWPCF is currently used by agriculture in the summer months, but this agreement could be changed to supply a power plant year round.

Four existing 230 kV transmission lines are located at the northeast corner of the Lodi site. The lines would be easily accessible to the power plant. The plant could connect to either the PG&E or WAPA lines and transfer power to the SMUD system at the Elk Grove Substation, approximately 20 miles north of the Lodi site.

While the natural gas pipeline serving the NCPA facility and WSWPCF does not have sufficient capacity to supply a 500MW power plant, a Lodi Gas Storage, LLC, 30-inch natural gas

pipeline with capacity for lease is located approximately 2 miles north of the alternative site, parallel to State Route (SR) 12. This analysis assumes that a 24-inch pipeline would be installed from the Lodi Gas Storage pipeline to the site. The pipeline would parallel I-5 south outside of the I-5 ROW for approximately 2.25 miles, then continue west for approximately 0.5 miles to the Lodi Alternative site.

Alternately, a natural gas line could be installed from the PG&E Line 108 located approximately 3.5 miles east of the alternative site, but a pipeline to the Lodi Gas Storage, LLC, pipeline is shorter, thus having less ground disturbance impacts. Additionally, the PG&E Line 108 would likely require reinforcement to the serve a 500 or 1,000MW power plant.

Emissions from construction and operation of a 500 MW (Phase 1) power plant at the Lodi site would not be significantly different from the construction activities for the proposed site. Given the similarity in topography and meteorology between the proposed site and the alternative site, and the fact that the two sites are in the same air basin, the impacts would be similar to those calculated for the project site.

The project's operating emissions and site topography could be modeled to determine specific impacts. The Lodi site would be subject to the San Joaquin Valley Unified Air Pollution Control District rules, which could require different offsets than those for the proposed project, which is in the SMAQMD. The Lodi site could require a different offset package than that proposed for the proposed site. However, rule compliance coupled with the similarity between the sites and emissions profiles, Staff expects the project's impacts would be similar to the project located at the proposed site and could be mitigated to less than significant levels.

Since the site is used for agriculture, there may be minimal impacts to special-status plants, but the area is potential giant garter snake and Swainson's hawk foraging habitat. The site is close to the WSWA, which is also habitat for wintering greater sandhill cranes and waterfowl.

This alternative has relatively short linear facilities and would have no significant impacts on stream crossings, or vernal pools. The Lodi site is located close to facilities that could provide reclaimed water to the power plant.

At this time there is a captive-breeding program for riparian brush rabbits near this proposed alternative. The Endangered Species Recovery Program, at California State Stanislaus, under guidance from the USFWS, operates and manages this program with several partner agencies. This program could last another 3-5 years. Power plant construction activities could have short-term adverse impacts on the program.

Because trees are present both east of the WSWPCF and along White Slough just west of the site, predator perching opportunities already exist on both sides of the site, thereby making this site poor quality San Joaquin kit fox habitat. Additional screening of the alternative site may be required, however, any new trees would present only an incremental increase in perching opportunities. The impacts to federally- and state-listed species could

be mitigated through avoidance and minimization measures and habitat compensation for permanent impacts.

Due to its location near existing infrastructures, many of the impacts or potential impacts associated with the 26-mile natural gas pipeline of the project would be reduced. Construction of either a 500 MW or 1,000 MW power plant on disturbed land at the Lodi site, compared with the project, would result in substantially fewer impacts to habitat and species.

A cultural resources records search was performed for the Lodi alternative site by the Central California Information Center of CHRIS. Only one small cultural resource survey has been completed adjacent to the Lodi site and two small surveys have been completed along the gas line route. No cultural resources were recorded as a result of these surveys. The area is not considered sensitive for historic cultural resources because its low topographic elevation makes it an unlikely location for habitation due to historic flooding. Compared with the project, the Lodi alternative site has less potential to affect cultural resources.

Ambient noise levels in the vicinity are relatively high due to traffic on I-5 and the operation of the NCPA energy facility. The nearest homes are located east of I-5, and would not be expected to experience significant noise exposure from the power plant. Therefore, the Lodi site would have no significant noise impacts and overall fewer noise impacts than the proposed project.

The overall visual quality of the immediate project site reflects the influence of nearby electric transmission infrastructure, the NCPA power plant, the dominance of the I-5 transportation infrastructure, and the relatively non-distinct character of the surrounding agricultural lands. The site is highly visible from both north and southbound directions of travel on I-5 and from substantial distances in all directions from the project site. The nearest residences are over one mile to the southeast of the site and on the east side of I-5.

Project visibility would be high in the foreground of views from I-5. The number of viewers would be high and the duration of view would be moderate-to-extended. Overall viewer exposure would be high. While the overall visual sensitivity of the existing landscape and viewing characteristics is rated moderate, it is important to note that the high viewer exposure from motorists traveling on I-5 that occurs at this site results in the visual sensitivity rating to be at the high end of the moderate range.

The project would be the dominant form in the project vicinity and view blockage of the agricultural lands to the west of I-5 would be moderate. When considered within the existing landscape, the visual change that would occur at this site would cause an adverse and significant visual impact. This conclusion is substantially influenced by the high degree of viewer exposure from I-5 motorists that would occur at this site. It may be possible to mitigate the significant visual impact to a less than significant level.

The production of frequent and sizable plumes at this location would introduce prominent industrial features that would be visible from local and regional vantage points at substantial viewing distances. Due to the number of viewers with unobstructed views of the plumes, the resulting visual impact would likely be adverse and significant. However, effective

implementation of mitigation measures (i.e., plume abatement) could reduce the visual impact of vapor plumes at the Lodi site to a level that would not be significant. Therefore, with mitigation, neither the alternative site nor the proposed project would result in significant visual impacts from project plumes.

A power plant project at the Lodi site would be subject to flooding from White Slough unless protected. The lowest floor of any buildings or other improvements potentially subject to flood damage would have to be elevated at least one foot above the 100-year flood level. Assuming three feet of flooding, a 25-acre power plant at this site would require the import of 120,000 to 160,000 cubic yards of fill for flood protection. If protected by a levee, a levee approximately 6 feet or more in height would be required. Access to the site may be limited during periods of flooding unless the access roads are also raised.

The Lodi site is subject to substantially greater flood risk than the proposed site. A power plant at this site could be made safe from 100-year flooding by elevating on fill, but there would still be a risk of damage by floods larger than the 100-year.

The WSWPCF would supply all cooling and plant make-up water for the Lodi site alternative. This cooling water source would be consistent with State Water Resources Control Board Resolution 75-58. Water use impacts would be greater for the proposed project than for the Lodi site due to the use of fresh inland water for Phase 1.

Woodland Site

The Woodland site identified by Staff is located on a 40-acre site approximately ½-half mile south of I-5 and approximately one mile east of County Road 102. The site is over 50 miles northwest of the proposed site located off of Gibson Road, outside of the City of Woodland, in Yolo County. The Woodland site is a vacant parcel within the 2,500 acres owned by the City of Woodland, adjacent to the Water Pollution Control Facility (WPCF).

Although the site is located within the boundary of the WPCF and is accessible via existing paved roads, upgrades or reinforcement of the existing roads would likely be required to support heavy load trucks for construction of a power plant. The Woodland site is within the 100-year floodplain of Cache Creek and Willow Slough. The 100-year flood depth is 4 feet or greater. It would be necessary to import fill to raise the site above the 100-year floodplain.

The site is zoned Open Space and is disturbed but currently vacant. Agricultural land lies to the north, south, and east of the site. The land to the west is used for industrial treatment processing.

The nearest residential sensitive receptor is a large residential development (Gibson Ranch) located approximately one mile west of the site, immediately west of County Road 102. The project requires approximately 1,651 gpm for proposed operation of a 500 MW power plant and 3,302 gpm for a 1,000 MW facility. The WPCF can provide 4,861 gpm of recycled water for power plant cooling and plant make-up. Additionally, the City of Woodland is currently planning for expansion of the facility in the future. A north-south reclaimed water pipeline that connects directly to the WPCF located along the western border of the site could provide water for the project.

PG&E's gas transmission Line 172 is located approximately one mile west of the Woodland site, parallel to County Road 102, with sufficient natural gas to support a 1,000 MW power plant. A natural gas pipeline could be constructed from Line 172, extending from the intersection of Gibson Road and County Road 102, east to Leake Road, and then north to the Woodland site.

The nearest SMUD transmission system lines with capacity adequate to serve a power plant at the Woodland site are over 14 miles to the east, across the Sacramento River. A direct transmission line route to this corridor would require a river crossing, crossing a flight path to the Sacramento Airport, and would likely conflict with new residential developments being constructed along or near the route. Due to feasibility issues, the route would not likely be used.

By contrast, however, the 500 kV PG&E Table Mountain–Tesla transmission line is located approximately 2 miles east of the Woodland site, which has adequate capacity to serve either a 500MW or a 1,000 MW power plant. A new overhead 230 kV transmission line would be required to connect to the existing PG&E Table Mountain–Tesla 500 kV line. An agreement and wheeling charge would need to be coordinated between SMUD and PG&E for the power to be routed to the SMUD system. This new transmission line is assumed to connect from the northeast corner of the site and extend approximately 2 miles due east, approximately ¼-mile south of and parallel to I-5 to the existing 500 kV line. This transmission route would be preferred to connect the Woodland site.

Emissions from construction and operation of a 500 MW (Phase 1) power plant at the Woodland site would not be significantly different from the construction activities for the site. Given the similarity in topography and meteorology between the proposed site and the alternative site, the impacts would be similar to those calculated for the project site. A facility located at the Woodland site would be subject to Yolo-Solano Air Quality Management District rules, which are very similar to Sacramento Metropolitan Air Quality Management District's rules. Rule compliance, coupled with the similarity between the sites and emissions profiles, should result in project impacts similar to the proposed project located at the proposed site.

The Woodland site is potential Swainson's hawk foraging habitat, which could also potentially have nests within a few hundred feet of the proposed site. The site is also potential giant garter snake and burrowing owl habitat. Nearby Willow Slough and the Willow Slough Bypass also provide habitat for Swainson's hawks, burrowing owls, and giant garter snakes, so habitat for these species would not be completely removed from this area with this alternative.

Due to the Woodland site's location near existing gas and water infrastructure, many of the impacts associated with the project's 26-mile long proposed natural gas pipeline would be reduced. The new transmission lines should be sited to avoid impacts to birds from collision and electrocution, or mitigation developed to reduce impacts to a less than significant level.

Any impacts to biological resources could be mitigated with seasonal avoidance of nesting Swainson's hawks and habitat compensation for permanent impacts on other species. Construction of either a 500 MW or 1,000 MW power plant at this site would result in large temporary impacts to habitat from construction of new transmission lines, but would result in fewer permanent impacts than the proposed project. Therefore, the Woodland site would likely have fewer biological resource impacts than the proposed project.

A cultural resources records search was performed for the Woodland site by the Northwest Information Center of CHRIS. The records search indicates that about half of the area proposed for the power plant site and the land that would be traversed by the linear routes has been surveyed for cultural resources. The area is not considered sensitive for historic cultural resources because of the area's past flooding events. Native Americans generally have not established settlements in frequently flooded areas. Compared with the proposed project, the Woodland site has less potential to affect cultural resources.

Ambient noise levels in the immediate vicinity of this site are relatively low. The dominant noise source is distant traffic on I-5. There are no homes or other sensitive receptors within about 5,000 feet of the site. A residential subdivision is located about 5,000 feet west of the project site, on the west side of County Road 102 at Gibson Road. Ambient noise levels at this subdivision are relatively high due to local traffic. Given the distance to the sensitive receptors, and the noise levels projected for the proposed project, it is not likely that noise from this site would result in significant noise effects. Therefore, the Woodland site would have fewer noise impacts than the proposed project.

The Woodland site is located ¼-mile south of I-5 and one mile east of County Road 102, outside the City of Woodland. The site is located adjacent to the WPCF. The site is currently grass-covered land and was previously used for agricultural purposes. In addition to several structures at the WPCF, there is also a wood pole electricity distribution line that extends north-south adjacent to the site. The regional landscape is defined by the flat landform of the Sacramento Valley floor and is rural-agricultural in character. As a result, the site is highly visible from both north and southbound directions of travel on I-5 and from a large residential development located along County Road 102, one mile west of the site.

Project visibility would be high in the foreground of views from I-5 and moderate from middle-ground views from County Road 102 and the residential development. When considered within the existing landscape, a power plant at this site would cause adverse and significant visual impacts. This conclusion applies to both the 500 MW and 1,000 MW configurations. It may be possible to mitigate the significant visual impact to a less than significant level.

Use of the Woodland site for a power plant would result in the introduction of intermittent, prominent visible plumes into an agricultural landscape. The plume would be unique in the landscape and would result in a high degree of visual contrast on clear days. When considered within the existing landscape, plumes would cause adverse but not significant visual impacts. Though this site has the greatest visible plume impacts of the alternative sites, overall impacts from visible plumes are similar to the proposed project, which would not result in significant visual impacts.

A power plant at the Woodland site would be subject to flooding from Cache Creek and Willow Slough unless protected by fill or levee. Assuming four feet of flooding during a 100-year storm event, a 25-acre power plant at this site would require the import of 160,000 to 200,000 cubic yards of fill to elevate the site and lowest floors to or one foot above the 100-year flood elevation. A levee approximately 7 feet or more in height may be appropriate, but would result in site drainage problems. Access would be limited during periods of flooding unless the access roads are raised. The flood risk to the Woodland site is substantially greater than for the proposed project. Elevating the plant on four to five feet of fill would protect against 100-year flooding, but there would continue to be a higher risk of damage by larger floods than for the proposed site.

Stormwater impacts would be similar to those of the project. Best Management Practices similar to those proposed for the project would be required for stormwater quality.

Soils impacts are expected to be similar to those of the proposed project, with the exception of the linear features, for which the impact would be substantially less.

The WPCF would supply all cooling and plant make-up water in the form of treated wastewater. This water source would be consistent with State Water Resources Control Board Resolution 75-58. The Woodland site would use reclaimed water, therefore resulting in fewer fresh water supply impacts than the proposed project. (SA Alternatives, pp. 6-6-28)

Overall, the three alternative sites considered in this section offer some advantages and disadvantages in comparison to the proposed project. However, none of the alternative sites appear to reduce the potentially significant adverse impacts of the project. It should be noted that all potentially significant impacts of the proposed project could be mitigated to less than significant levels.

All three alternative sites are located adjacent to wastewater treatment facilities that can provide recycled water to the plant and minimize linear water supply impacts to biological and cultural resources. The use of recycled water would eliminate the use of fresh inland water from the Folsom-South Canal. In addition, the sites are located within close proximity to existing and accessible natural gas pipelines. Relatively nearby natural gas sources would eliminate the need to construct the new, 26-mile natural gas pipeline associated with the proposed site, which in turn would also reduce the biological and cultural resource impacts. All three of the alternative sites are located on already disturbed lands or historically flooded areas, further reducing the chance of disturbing cultural or biological resources. However, the Carson Ice-Generation site is within the Bufferlands of the SRCSD, which consists of 2,500 acres of wetlands, grasslands, and riparian forest habitats. The Bufferlands offers habitat for a variety of threatened- and special-status species, some of which may exist on the Carson Ice-Generation site.

In addition, the alternative sites would all be subject to greater flood-related impacts due to their locations within 100-year floodplains. The Carson Ice-Generation site would require the construction of additional 230 kV transmission lines for a 1,000 MW plant and switching stations to connect with the SMUD system. The Woodland site would also require new lines

for either a 500 MW or 1,000 MW plant. The Lodi site would also require the construction of a new switching station.

The Lodi site is the most isolated, followed by the Woodland site, and the Carson Ice-Generation site. Both the Woodland and Carson Ice-Generation sites have sensitive receptors within approximately one mile. The Carson-Ice Generation site and the Woodland site both have potentially significant visual resource impacts as a result of the new overhead transmission lines**.** Depending on successful implementation of mitigation, a project facility at the Lodi and Woodland sites may also result in significant visual impacts from the power plant facility. Visible plume impacts at all three sites would be similar to those at the proposed CPP. Therefore, given that there are no significant unavoidable impacts from the proposed project and each of the alternative sites has the potential for significant impacts, none of the three alternative sites is preferred over the project.

Alternative Technology

Energy Commission staff compared various alternative technologies to the proposed project, scaled to meet the project's objectives. The technologies examined were those principal thermal electricity generation technologies that do not burn fossil fuels: solar thermal, biomass, geothermal and hydropower.

Solar Generation

Currently, there are two types of solar generation available: solar thermal power and photovoltaic (PV) power generation.

Solar thermal power generation uses high temperature solar collectors to convert the sun's radiation into heat energy, which is then used to run steam power systems. Solar thermal is suitable for distributed or centralized generation, but requires far more area than conventional plants. Solar parabolic trough systems, for instance, need approximately five acres to generate one MW.

Photovoltaic (PV) power generation uses special semiconductor panels to directly convert sunlight into electricity. Arrays built from the panels can be mounted on the ground or on buildings, where they can also serve as roofing material. Unless PV systems are constructed as integral parts of buildings, the most efficient PV systems require about four acres of ground area to generate one MW.

Solar resources would require large land areas in order to meet the project objective of generating 1,000MW of electricity (or 500 MW for Phase 1). For example, assuming that a parabolic trough system was located in a maximum solar exposure area, such as in a desert region, generation of 1,000 MW would require 5,000 acres, or over 165 times the amount of land area required by the proposed plant and linear facilities. For 500 MW of output, these numbers would be reduced to 2,500 acres of land area, or about 83 times the land area required for the proposed project. For a PV plant, depending on the efficiency of the system, generation of 1,000 MW would require between 4,000 and 10,000 acres, or between 133 and 333 times the amount of land area required by the proposed plant and linear facilities. Land

area for 500 MW of output would be between approximately 2,000 and 4,000 acres, or between 67 and 133 times the amount of land required by the proposed project.

While solar generation facilities do not generate problematic air emissions and have relatively low water requirements, there are other potential impacts associated with their use. Construction of solar thermal plants leads to potential habitat destruction. PV systems can have negative visual impacts, especially if ground-mounted. Furthermore, the manufacturing of PV panels generates some hazardous wastes.

Both solar thermal and PV facilities generate power during peak usage periods since they collect the sun's radiation during daylight hours. Solar energy technologies do not provide electricity on a constant basis. Therefore, solar generation technology would not meet the project's goals, which is to provide baseload electricity to SMUD's service area.

Wind Generation

Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feeds alternating current (AC) into the utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40 percent of the wind's kinetic energy into electricity. Modern wind turbines represent viable alternatives to large power fossil-fueled power plants as well as to small-scale distributed systems. The range of capacity for an individual wind turbine farm today ranges from 400 watts up to 3.6 MW. California's 1,700 MW of wind power represents 1.5 percent of the State's electrical capacity.

Although air emissions are significantly reduced or eliminated with wind facilities, they can have significant visual effects and wind turbines also cause bird mortality resulting from collision with rotating blades.

Wind resources would require large land areas in order to generate 1,000 MW of electricity. Depending on the size of the wind turbines, wind generation "farms" generally require between five and 17 acres to generate one megawatt (resulting in the need for between 5,000 and 17,000 acres to generate 1,000 MW, or 2,500 and 8,500 acres to generate 500 MW). Although 7,000 MW of new power wind capacity could cost-effectively be added to California's power supply, the lack of available transmission access is an important barrier to wind power development. California has a diversity of existing and potential wind resource regions that are near load centers such as San Francisco, Los Angeles, San Diego, and Sacramento. However, wind energy technologies cannot provide reliably available power for peak demand due to the natural intermittent availability of wind resources, and therefore would not successfully meet the project objectives of providing electricity during peak demand.

Biomass Generation

Biomass generation uses a waste vegetation fuel source such as wood chips (the preferred source) or agricultural waste. The fuel is burned to generate steam. Biomass facilities generate substantially greater quantities of air pollutant emissions than natural gas burning facilities. In addition, biomass plants are typically sized to generate less than 20 MW, which is substantially less than the capacity of the proposed 500 MW or 1,000 MW project. At the

peak of biomass industry from 1990 to 1993, 66 biomass plants were in operation in California. Currently, there are about 30 biomass facilities in operation.

In order to generate 1,000 MW, fifty 20 MW biomass facilities would be required or twenty-five 20 MW biomass facilities to generate 500 MW. However, these power plants would have potentially significant environmental impacts of their own, such as the emission of significant quantities of air pollutants.

Geothermal

Geothermal technologies use steam or high-temperature water (HTW) obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. There are vapor-dominated resources (dry, super-heated steam) and liquid-dominated resources where various techniques are utilized to extract energy from the HTW. Geothermal is a commercially available technology, but it is limited to areas where geologic conditions result in high subsurface temperatures. Although geothermal resources do exist in California, there are no viable geothermal resources in the Sacramento County region.

Hydropower

While hydropower does not require burning fossil fuels and may be available to the Sacramento region, this power source can cause significant environmental impacts, primarily due to the inundation of many acres of potentially valuable habitat and the interference with fish movements during their life cycles. As a result of these impacts, it is extremely unlikely that new hydropower facilities could be developed and permitted in the Sacramento region.

The alternative technologies discussed above have the advantage of no fossil fuel combustion and avoidance of the environmental and resource impacts associated with it. However, these technologies also have the potential to cause significant land use, biological, cultural resource, and visual impacts, and they have substantial cost and regulatory approval requirements before they can provide substantial amounts of power. In summary, these alternatives are eliminated as viable project alternatives because (a) they cannot feasibly meet project objectives, and (b) they have the potential to create potentially significant environmental effects of their own. (SA Alternatives, pp. 6.1-31-33)

“No Project” Alternative

CEQA Guidelines and Energy Commission regulations require consideration of the “no project” alternative. This alternative assumes that the project is not constructed, and compares that scenario to the proposed project. A determination is made whether the “no project” alternative is superior, equivalent, or inferior to the proposed project.

The No Project Alternative assumes that the project would not be constructed. As a result, the proposed site would remain, as annual grassland pasture, and the construction and operational impacts of the project would not occur. However, SMUD would not be able to make use of land and infrastructure that was originally set aside for the purpose of generating the power to meet the Sacramento area’s energy needs. The applicant would not meet the objectives of the project, which primarily are to provide energy to the Sacramento area.

Consequently, SMUD customers would have less total generating capacity. (SA Alternatives, p. 6.1-28)

Findings

The Commission has analyzed alternatives to the project design and related facilities, alternative technologies, and the "no project" alternative. An alternative site would not substantially lessen the potential impacts of the project, which are mitigated to insignificance by the Conditions of Certification. The Commission does not believe that alternative technologies (solar, wind, biomass, geothermal, and hydropower) present feasible alternatives to the proposed project. The "no project" alternative will not meet need for reliable electricity and utilization of existing infrastructure. Therefore, the "no project" alternative is inferior to the proposed project.

EFFICIENCY

EFFICIENCY - GENERAL

CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, §15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

SMUD proposes to construct and operate the two phase, 1,000 MW combined cycle project to generate baseload and load following power, providing power to SMUD customers and selling energy via contract or on the spot power market. The first phase would consist of two General Electric (GE) Frame 7FA combustion gas turbines, two multi-pressure heat recovery steam generators (HRSGs), and one three-pressure, reheat, condensing steam turbine generator, totaling approximately 500 MW. The remaining 500 MW would be built at a later date with equivalent or better equipment.

Any power plant large enough to fall under Energy Commission jurisdiction will consume large amounts of energy. Under normal conditions, the project would burn natural gas at a nominal rate of 6.8 billion Btu per hour. This is a substantial rate of energy consumption, and holds the potential to impact energy supplies. Under expected project conditions, electricity would be generated at a full load efficiency of approximately 55.1 percent with no duct burning. The average fuel efficiency of a typical utility company baseload power plant is approximately 35 percent. (AFC §§ 1.1, 2.1, 2.4.3, 6.0, 6.1, 10.2.1; SA Efficiency, p. 5.3-2).

Local/Regional Energy Supplies

The project equipment will be designed to operate with natural gas. Natural gas would be delivered from the existing Pacific Gas & Electric (PG&E) gas transmission Lines 400 and 401 (near Winters) via SMUD's existing Line 700 natural gas pipeline, and a new 26-mile segment of 24-inch diameter pipeline extending from Line 700's current terminus at the Carson Ice-Gen cogeneration plant to the project site. In order to maintain adequate pressure in the SMUD-owned pipelines, gas compressor stations are required for operation of Phase 2 where Line 700 taps into the PG&E lines near Winters, and where the new line originates adjacent to the Carson Ice-Gen plant

The PG&E gas supply infrastructure is extensive, offering access to vast reserves of gas. This source represents far more gas than would be required for a project this size. There is no likelihood that the project will require the development of additional energy supply capacity. Therefore, project will not pose a substantial increase in demand for natural gas in California. (AFC p. 7.3.)

Energy Consumption Rate

The project would be configured as a combined cycle power plant, in which electricity is generated by four gas turbines, and additionally by two reheat steam turbines that operate on heat energy recuperated from the gas turbines' exhaust. By recovering this heat, which would otherwise be lost up the exhaust stacks, the efficiency of any combined cycle power plant is increased considerably from that of either gas turbines or steam turbines operating alone. Such a configuration is well suited to the large, steady loads met by a baseload plant, intended to supply energy efficiently for long periods of time. The dual two-train gas turbine/HRSG configuration also allows for high efficiency during unit turndown because one gas turbine generator can be shut down, leaving one fully loaded, efficiently operating gas turbine generator instead of having two, each operating at an inefficient 50 percent load.

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The F-class of advanced gas turbine to be employed at the project represents one of the most modern and efficient machines now available. (AFC §§ 1.1, 2.1, 2.2.2, 9.4; SA Efficiency, p. 5.3-3, 4)

Cumulative Impacts

There are no nearby power plant projects that hold the potential for cumulative energy consumption impacts when aggregated with the project. Construction and operation of the project would not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the project. Older, less efficient power plants consume more natural gas to operate than the new, more efficient plants such as this project. Since natural gas would be burned by the power plants that are most competitive on the spot market, the most efficient plants would likely run the most. The high efficiency of the proposed project should allow it to compete very favorably, running at a high capacity factor, replacing less efficient power generating plants in the market, and therefore either not impacting or perhaps even reducing the cumulative amount of natural gas consumed for power generation. (SA Efficiency, p. 5.3-6.)

Finding

Without Conditions of Certification, the project conforms to applicable laws related to efficiency; and all potential adverse impacts regarding the efficient consumption of energy will be mitigated to insignificance by other Conditions of Certification of this Decision.

CONDITIONS OF CERTIFICATION

None

LAWS, ORDINANCES, REGULATIONS & STANDARDS

EFFICIENCY

APPLICABLE LAW	DESCRIPTION
STATE	
Title 14, California Code of Regulations, § 15126.4(a)(1)	CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix F).

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FACILITY DESIGN

FACILITY DESIGN – GENERAL

The Warren-Alquist Act requires the commission to "prepare a written decision.…which includes:

(a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety, [and]

(d)(1) Findings regarding the conformity of the proposed site and related facilities…with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws…" (Pub. Resources Code, § 25523).

Facility Design encompasses the civil, structural, mechanical and electrical engineering aspects of the project. The Facility Design analysis verifies that the project has been described in sufficient detail to provide reasonable assurance that it can be designed and constructed in accordance with all applicable laws and regulations, and in a manner that protects environmental quality and assures public health and safety.

This analysis also examines whether special design features should be considered during final design to deal with conditions unique to the site that could influence public health and safety, environmental protection or the operational reliability of the project. This analysis further identifies the design review and construction inspection process and establishes conditions of certification that will be used to ensure compliance with applicable laws and regulations and any special design requirements.

Under Section 104.2 of the California Building Code (CBC), the building official is authorized and directed to enforce all the provisions of the CBC. For all energy facilities certified by the Energy Commission, the Energy Commission is the building official and has the responsibility to enforce the code. In addition, the Energy Commission has the power to render interpretations of the CBC and to adopt and enforce rules and supplemental regulations to clarify the application of the CBC's provisions.

The Energy Commission's design review and construction inspection process is developed to conform to CBC requirements and ensure that all facility design conditions of certification are met. As provided by Section 104.2.2 of the CBC, the Energy Commission appoints experts to carry out the design review and construction inspections and act as delegate CBO's on behalf of the Energy Commission. These delegate agents typically include the local building official and independent consultants hired to cover technical expertise not provided by the local official. The project owner, through permit fees as provided by CBC Sections 107.2 and 107.3, pays the costs of the reviews and inspections. While building permits in addition to the Energy Commission certification are not required for this project, the project owner pays in-lieu permit fees, consistent with CBC Section 107, to cover the costs of reviews and inspections.

The Energy Commission has developed conditions of certification to ensure compliance with applicable laws and regulations and protection of the environment and public health and safety. Some of these conditions address the roles, responsibilities and qualifications of SMUD's engineers responsible for the design and construction of the project. Engineers responsible for the design of the civil, structural, mechanical, and electrical portions of the project are required to be registered in California, and to sign and stamp each submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that no element of construction proceed without prior approval from the CBO. They also require that qualified special inspectors be assigned to perform or oversee special inspections required by the applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility with construction activities, these conditions are written to require that no element of construction of permanent facilities, which is difficult to reverse, may proceed without prior approval of plans from the CBO. For those elements of construction that are not difficult to reverse and are allowed to proceed without approval of the plans, the applicant shall have the responsibility to fully modify those elements of construction to comply with all design changes that result from the CBO's plan review and approval process.

CONDITIONS:

- ☑ SMUD shall construct the project using the most recent California Building Code with the oversight and approval of the local Chief Building Official; shall assign California registered engineers to the project; and shall pay necessary in-lieu permit fees. Conditions: **GEN-1** through **GEN-8.**
- ☑ SMUD shall submit grading plans and erosion/sedimentation control plans, perform inspections and submit as-built plans for approval. Conditions: **CIVIL-1, CIVIL-3** & **CIVIL-4**.
- ☑ If appropriate, the resident engineer shall stop construction if unknown, adverse geologic conditions are encountered. Condition: **CIVIL-2.**
- ☑ For earthquake safety of major structures, foundations, supports, anchorages, and tanks, the Project Owner will submit appropriate lateral force calculations, designs and plans to the Chief Building Official for approval. In addition, to ensure the safety of storage tanks, some of which contain hazardous materials, the Project Owner will submit plans and specifications to the Chief Building Official for approval. Conditions: **STRUC-1** through **STRUC-4**.
- ☑ To ensure the safety of piping and pressure vessels, some of which transport or store hazardous materials, SMUD will submit plans and specifications to the Chief Building Official for approval. Heating and air conditioning equipment, as well as plumbing, will be reviewed and inspected by the Chief Building Official. Conditions: **MECH-1** through **MECH-3**.
- ☑ For electric systems or components of 480 volts or higher, SMUD shall submit plans to the Chief Building Official for approval. Conditions: **ELEC-1** & **ELEC-2**.

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to facility design and related engineering fields.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect each phase of the project in accordance with the currently applicable edition of the California Building Standards Code (CBSC), which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval. (The CBSC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously.)

In the event that the initial engineering designs are submitted to the CBO when a successor to the currently applicable edition of the CBSC is in effect, the CBSC provisions identified herein shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. All transmission facilities (lines, switchyards, switching stations, and substations) Conditions of Certification are addressed in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

Verification: Within 30 days after receipt of the Certificate of Occupancy, the project owner shall submit to the CPM a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [CBC, Section 109 – Certificate of Occupancy].

GEN-2 Prior to submittal of the initial engineering designs for CBO review, the project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List and a Master Specifications List. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM when requested.

Verification: At least 60 days (or project owner and CBO approved alternative timeframe) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the Master Drawing List, and the Master Specifications List of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent

design documents for the major structures and equipment listed in **Facility Design Table 1** below. Major structures and equipment shall be added to or deleted from the table only with CPM approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Facility Design Table 1
Major Structures and Equipment List for Phases 1 and 2

Equipment/System	Quantity (Plant)
Combustion Turbine & Generator (CTG) Foundation and Connections	4
Steam Turbine & Generator (STG) Foundation and Connections	2
Heat Recovery Steam Generator (HRSG) & Stack Structure, Foundation and Connections	4
CTG Main Transformer Foundation and Connections	4
STG Main Transformer Foundation and Connections	2
CTG Air Inlet Filter Foundation and Connections	4
CEMS Enclosure Structure, Foundation and Connections	4
Blowdown Tank Foundation and Connections	4
HRSG Boiler Feed-water Pump Foundation and Connections	4
Ammonia Injection Skid Foundation and Connections	4
Circulating Water Pumps Foundation and Connections	2
Cooling Tower Structure, Foundation and Connections	2
Service/Fire Water Storage Tank and Service Water Pumps Foundations and Connections	2
Demineralized Water Storage Tank and Pumps Foundation and Connections	2
Admin/Maintenance/Warehouse & Water Treatment Building Structure, Foundation and Connections	1
Ammonia Storage Tank Foundation and Connections	1
Accessory Module (Lube Oil, Hydraulics and Liquid Fuel) Foundations and Connections	4
STG Lube Oil Module Foundation and Connections	2
Electrical Control Panel Foundation and Connections	4
Isolation and Excitation Transformer Foundation and Connections	4
Electrical Building Structure, Foundation and Connections	2
Water Wash Skid Foundation and Connections	4
Air Process Skid Foundation and Connections	4
Oil/Water Separator Skid Foundation and Connections	1
Cooling Tower Chemical Feed System Foundation and Connections	1
Switchyard Building Structure, Foundation and Connections	1
Auxiliary Transformer Foundation and Connections	4
CO2 Tank Foundation and Connections for CTGs	4
Generator Auxiliary and Static Starter Foundation and Connections	4
Acid and Caustic Tank Foundation and Connections for Zero Liquid Discharge (ZLD)	1
Gas Metering Station Structure, Foundation and Connections	1
HRSG Chemical Feed System Foundation and Connections	4

Equipment/System	Quantity (Plant)
Waste Water Sump Structure and Foundation	1
Emergency Backup Transformer Foundation and Connections	1
Fire Water Pump Foundation and Connections	1
Gas Compressor Recycle Cooler Foundation and Connections	1
Condensate Pumps Foundation and Connections	3
ZLD Building Structure, Foundation and Connections	2
Brine Concentrator System Structure, Foundation and Connections	2
Crystallizer System Structure, Foundation and Connections	2
Distillate Storage Tanks Structure, Foundation and Connections	2
Brine Holding Tanks Structure, Foundation and Connections	4
Oil Conditioner Skid Foundation and Connections	2
Solid Handling Building Structure, Foundation and Connections	2
Potable Water Systems	1 Lot
Drainage Systems (including sanitary drain and waste)	1 Lot
High Pressure and Large Diameter Piping	1 Lot
HVAC and Refrigeration Systems	1 Lot
Temperature Control and Ventilation Systems (including water and sewer connections)	1 Lot
Building Energy Conservation Systems	1 Lot
Substation/Switchyard, Buses and Towers	2 Lots
Electrical Duct Banks	1 Lot
Site Earth Work, Grading & Drainage	1 Lot
Station Switchgear & Connections greater than 480 volts	1 Lot
Grounding System	1 Lot
Pipe Rack	1 Lot
Fire Protection Systems	1 Lot
Natural Gas Pipeline	1 Lot

GEN-3 The project owner shall make payments to the CBO for design review, plan check, and construction inspection based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the currently applicable edition of the CBC [Chapter 1, Section 107 and Table 1-A, Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A, Grading Plan Review Fees; and Table A-33-B, Grading Permit Fees], adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be as otherwise agreed by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California registered architect, structural engineer, or civil engineer as a resident engineer (RE) to be in general responsible charge of the project (Cal. Code Regs., tit. 24, § 4-209, Designation of Responsibilities).

The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part. All transmission facilities (lines, switchyards, switching stations, and substations) Conditions of Certification are addressed in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

The RE shall:

1. Monitor construction progress of work requiring CBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all the facilities subject to CBO design review and inspection conforms in every material respect to the applicable LORS, these Conditions of Certification, approved plans, and specifications;
3. Prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;
4. Be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work, if the work does not conform to applicable requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: A) a civil engineer; B) a soils engineer, or a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; and C) an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: D) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; E) a mechanical engineer; and F) an electrical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730, 6731, and 6736 requires state registration to practice as a civil engineer or structural engineer in California.] All transmission facilities (lines, switchyards, switching stations, and substations) Conditions of Certification are addressed in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project [CBC, Section 104.2, Powers and Duties of Building Official].

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

    1. Review the Foundation Investigations Report, Geotechnical Report or Soils Report prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
    2. Design, or be responsible for design, stamp, and sign all plans, calculations and specifications for proposed site work, civil works and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes in the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;
2. Prepare the Foundation Investigations Report, Geotechnical Report or Soils Report containing field exploration reports, laboratory tests and engineering analysis detailing the nature and extent of the soils that may be susceptible to iquefaction, rapid settlement or collapse when saturated under load [CBC, Appendix Chapter 33, Section 3309.5, Soils Engineering Report; Section 3309.6, Engineering Geology Report; and Chapter 18, Section 1804, Foundation Investigations];
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the currently applicable edition of the 1998 CBC, Appendix Chapter 33; Section 3317, Grading Inspections; (depending on the site conditions, this may be the responsibility of either the soils engineer or engineering geologist or both, as set forth in the currently applicable edition of the CBC, Appendix Chapter 33; Section 3317.1, General); and
4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to predicted conditions used as a basis for design of earthwork or foundations [CBC, section 104.2.4, Stop orders].

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the currently applicable edition of the CBC, Appendix Chapter 33; Section 3317, Grading Inspections; (depending on the site conditions, this may be the responsibility of either the soils engineer or engineering geologist or both, as set forth in the currently applicable edition of the CBC, Appendix Chapter 33; Section 3317.1, General).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with engineering LORS;
4. Evaluate and recommend necessary changes in design; and

5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the CBC, Chapter 17 [Section 1701, Special Inspections; Section 1701.5, Type of Work (requiring special inspection)]; and Section 106.3.5, Inspection and observation program. All transmission facilities (lines, switchyards, switching stations, and substations) Conditions of Certification are addressed in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.
The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Observe the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if

uncorrected, to the CBO and the CPM for corrective action [CBC, Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector]; and

4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable provisions of the applicable edition of the CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks, and pressure vessels).

Verification: At least 15 days (or project owner and CBO approved alternative timeframe) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend the corrective action required [CBC, Chapter 1, Section 108.4, Approval Required; Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance]. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this Condition of Certification and, if appropriate, the applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next Monthly Compliance Report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings [CBC, Section

108, Inspections]. The project owner shall retain one set of approved engineering plans, specifications, and calculations at the project site or at another accessible location during the operating life of the project [CBC, Section 106.4.2, Retention of Plans].

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next Monthly Compliance Report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing final approved engineering plans, specifications, and calculations as described above, the project owner shall submit to the CPM a letter stating that the above documents have been stored and indicate the storage location of such documents.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils report, Geotechnical Report or Foundation Investigations Report required by the CBC [Appendix Chapter 33, Section 3309.5, Soils Engineering Report; Section 3309.6, Engineering Geology Report; and Chapter 18, Section 1804, Foundation Investigations].

Verification: At least 15 days (or project owner and CBO approved alternative timeframe) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area [CBC, Section 104.2.4, Stop orders].

Verification: The project owner shall notify the CPM within 24 hours, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the currently applicable edition of the CBC, Chapter 1, Section 108, Inspections; Chapter 17, Section 1701.6, Continuous and Periodic Special Inspection; and Appendix Chapter 33, Section 3317, Grading Inspection. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO and the CPM [CBC, Appendix Chapter 33, Section 3317.7, Notification of Noncompliance]. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five (5) days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a Non-Conformance Report (NCR) and the proposed corrective action. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following Monthly Compliance Report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans and final "as-built" plans for the erosion and sedimentation control facilities [CBC, Section 109, Certificate of Occupancy].

Verification: Within 30 days of the completion of the erosion and sediment control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

STRUC-1 Prior to the start of any increment of construction of any major structure or component listed in **Facility Design Table 1** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO for design review and approval the proposed lateral force procedures for project structures and the applicable designs, plans and drawings for project structures. Proposed lateral force procedures, designs, plans and drawings shall be those for the following items (from **Facility Design Table 1**, above):

1. Major project structures;
2. Major foundations, equipment supports and anchorage;
3. Large field fabricated tanks;
4. Turbine/generator pedestal; and
5. Switchyard structures.

Construction of any structure or component shall not commence until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;

2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications [CBC, Section 108.4, Approval Required];
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [CBC, Section 106.4.2, Retention of plans; and Section 106.3.2, Submittal documents]; and
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer [CBC, Section 106.3.4, Architect or Engineer of Record].

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of any increment of construction of any structure or component listed in **Facility Design Table 1** of Condition of Certification **GEN-2** above, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications, and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

If the CBO discovers non-conformance with the stated requirements, the project owner shall resubmit the corrected plans to the CBO within 20 days of receipt of the non-conforming submittal with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);

4. Field weld inspection reports, including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description, or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the currently applicable edition of the CBC, Chapter 17, Section 1701, Special Inspections; Section 1701.5, Type of Work (requiring special inspection); Section 1702, Structural Observation and Section 1703, Nondestructive Testing.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM [CBC, Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector]. The NCR shall reference the Condition(s) of Certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.
The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the CBC, Chapter 1, Section 106.3.2, Submittal documents and Section 106.3.3, Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the currently applicable edition of the CBC shall, at a minimum, be designed to comply with the requirements of this Chapter.

Verification: At least 30 days (or project owner and CBO approved alternate timeframe) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-1 The project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations for each plant major piping and plumbing system listed in **Facility Design Table 1**, Condition of Certification **GEN-2**, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of said construction [CBC, Section 106.3.2, Submittal Documents; Section 108.3, Inspection Requests; Section 108.4, Approval Required; California Plumbing Code, Section 103.5.4, Inspection Request; Section 301.1.1, Approval].

The responsible mechanical engineer shall stamp and sign all plans, drawings and calculations for the major piping and plumbing systems subject to the CBO design review and approval, and submit a signed statement to the CBO when the said proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards [Section 106.3.4, Architect or Engineer of Record], which may include, but not be limited to:

American National Standards Institute (ANSI) B31.1 (Power Piping Code);

ANSI B31.2 (Fuel Gas Piping Code);

ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);

ANSI B31.8 (Gas Transmission and Distribution Piping Code);

Title 24, California Code of Regulations, Part 5 (California Plumbing Code);

Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);

Title 24, California Code of Regulations, Part 2 (California Building Code); and

Specific County (local) code.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency [CBC, Section 104.2.2, Deputies].

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of any increment of major piping or plumbing construction listed in **Facility Design Table 1**, Condition of Certification **GEN-2** above, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

The project owner shall transmit to the CPM, in the Monthly Compliance Report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to

operation, the code certification papers and other documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation [CBC, Section 108.3, Inspection Requests].

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the Monthly Compliance Report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of said construction. The final plans, specifications, and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with the applicable LORS [CBC, Section 108.7, Other Inspections; Section 106.3.4, Architect or Engineer of Record].

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible

mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for electrical equipment and systems 480 volts and higher, listed below, with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations [CBC, Section 106.3.2, Submittal documents]. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS [CBC, Section 108.4, Approval Required, and Section 108.3, Inspection Requests]. All transmission facilities (lines, switchyards, switching stations, and substations) Conditions of Certification are addressed in the **TRANSMISSION SYSTEM ENGINEERING** section of this document.

A. Final plant design plans to include:
   1. one-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems; and
   2. system grounding drawings.

B. Final plant calculations to establish:
   1. short-circuit ratings of plant equipment;
   2. ampacity of feeder cables;
   3. voltage drop in feeder cables;
   4. system grounding requirements;
   5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8 kV, 4.16 kV, and 480 V systems;
   6. system grounding requirements; and
   7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the Monthly Compliance Report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least 30 days (or project owner and CBO approved alternative timeframe) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible

electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report

LAWS, ORDINANCES, REGULATIONS & STANDARDS

FACILITY DESIGN

APPLICABLE LAW	DESCRIPTION
Title 24, California Code of Regulations, which adopts the current edition of the California Building Code (CBC); the 1998 CBC for design of structures; American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code; and National Electrical Manufacturers Association (NEMA) standards.	The applicable LORS for each engineering discipline, civil, structural, mechanical and electrical, are included in the application as part of the engineering appendix, Appendix N.

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RELIABILITY

RELIABILITY - GENERAL

Presently, there are no laws, ordinances, regulations or standards (LORS) that establish either power plant reliability criteria or procedures for attaining reliable operation. However, the Energy Commission must make findings as to the manner in which the project is to be designed, sited and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752(c)). In past proceedings, the Commission has taken the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is to be connected. Thus, a project should exhibit reliability at least equal to that of other power plants on that system.

Plant Availability

The North American Electric Reliability Council (NERC) keeps industry statistics for availability factors. NERC continually polls utility companies throughout the North American continent on project reliability. In 1999, NERC reported an availability factor of 91.49 percent for combined cycle units of all sizes. The gas turbines that will be employed in the project have been on the market for several years, and can be expected to exhibit typically high availability. In fact, these new, large machines can be expected to outperform the fleet of various, mostly older and smaller, gas turbines that make up the NERC statistics.

SMUD proposes to operate the project full time with only a scheduled shutdown annually for maintenance. Based on SMUD's assessment, the project would have an availability factor in the range of 92 to 98 percent. This is well above industry norms for typical power plant operations. (AFC § 10.2.2)

Acceptable reliability can be accomplished by providing adequate redundancy of critical components. Equipment availability will be ensured by use of SMUD's quality assurance/ quality control (QA/QC) programs during design, procurement, construction and operation of the plant, and by providing for adequate maintenance and repair of the equipment and systems.

SMUD has provided an outline of the expectations for quality control from the design concept phase through project commissioning. Qualified engineers, licensed in California, will perform design. Equipment will be purchased from qualified suppliers that employ an approved QC program. Designs will be checked and equipment inspected upon receipt; installation will be inspected and systems tested. To ensure such implementation, appropriate Conditions of Certification are included in **FACILITY DESIGN**.

Maintainability

A generating facility called on to operate in baseload service for long periods of time must be capable of being maintained while operating. A typical approach for achieving this is to

provide redundant examples of those pieces of equipment most likely to require service or repair. SMUD plans to provide appropriate redundancy of function for the project. The fact that the project consists of two phases of gas turbine generators/HRSGs provides inherent reliability. Failure of a non-redundant component of one train should not cause the other train to fail, thus allowing the plant to continue to generate electricity. (SA Reliability, pp. 5.4-3, 4.)

SMUD proposes to establish a plant maintenance program typical of the industry. Equipment manufacturers provide maintenance recommendations with their products; SMUD will base its maintenance program on these recommendations. In light of these plans, the project will be adequately maintained to ensure acceptable reliability. SMUD's operating experience with its three existing cogeneration power plants lends confidence that the maintenance plan developed for the project would result in a plant adequately maintained to ensure acceptable reliability. (SA Reliability, p. 5.4-4.)

Fuel Availability

The CPP would burn natural gas from the Pacific Gas and Electric Company (PG&E) gas transmission system. The PG&E natural gas system represents a resource of considerable capacity. This system offers access to adequate supplies of gas adequate to meet the project's needs. (AFC § 2.4.3; SA Reliability, p. 5.4-4.)

Water Availability

SMUD proposes to obtain project water from the federal Bureau of Reclamation via the Folsom-South Canal for plant cooling, process makeup, general plant service, stored firewater and potable water needs**)**. This should provide an adequately reliable source of water. However, since the use of inland fresh water for these purposes is less preferred, SMUD is required by Condition **WATER RESOURCES-2** to investigate a wastewater source for phase 2 of the project. (SA Reliability, p. 5.4-4.)

Natural Disasters

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves) will not likely represent a hazard for this project, but flooding and seismic shaking (earthquake) present credible threats to reliable operation. The project site lies at an elevation of approximately 150 feet above mean sea level, with approximately 15% (the northeastern corner) of the site lying within the 100-year floodplain. With sufficient preventive measures taken to ensure that the 100-year floodplain does not affect the site, flooding does not present a credible threat to the project

The site lies within Seismic Zone 3. The project will be designed and constructed to the latest appropriate seismic design criteria of the California version of the Uniform Building Code. By being constructed to built to the latest, upgraded seismic design criteria, this project will likely perform at least as well as, and perhaps better than, existing plants in the

electric power system. This Decision contains Conditions of Certification to ensure the project is constructed in conformity with the latest California Building Code. See also **FACILITY DESIGN**. (SA Reliability, p. 5.4-5)

Finding

Without Conditions of Certification, the project conforms to applicable laws related to reliability.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

RELIABILITY

APPLICABLE LAW	DESCRIPTION
None	

TRANSMISSION LINE SAFETY

TRANSMISSION LINE SAFETY & NUISANCE – GENERAL

The Warren-Alquist Act requires the Commission to "prepare a written decision" … which includes:

- Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety, [and]

- (d)(1) Findings regarding the conformity of the proposed site and related facilities…with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws…" (Pub. Resources Code, § 25523).

The energy from both phases (1 and 2) of the proposed project would be delivered to the SMUD transmission system through a new double-circuit 230 kV, overhead transmission line running 0.4 miles from the plant's 230 kV switchyard to the main switchyard at SMUD's adjacent, decommissioned Rancho Seco Nuclear Power Plant. This Rancho Seco Switchyard serves as a major energy distribution hub for the SMUD system and would be used to distribute the project-generated energy into the SMUD system and into Pacific Gas and Electric Company's (PG&E) northern California power grid. Since the proposed interconnection line would be owned and operated by SMUD, it would be designed and built according to standard SMUD practices that ensure compliance with existing health and safety laws, ordinances, regulations, and standards.

Electric & Magnetic Fields

The possibility of health effects from exposure to electric and magnetic fields has increased public concern in recent years about living near high-voltage lines. Both fields occur together whenever electricity flows, hence the general practice of considering exposure to both as EMF exposure. The available evidence, as evaluated by California Public Utilities Commission (CPUC) and other regulatory agencies, has not established that such fields pose a significant health hazard to exposed humans.

However, the Energy Commission considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Therefore, in light of present uncertainty, it is appropriate to reduce such fields where feasible, until the issue is better understood.

In California, CPUC (Decision 93-11-013) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields below levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each electric utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within

their respective service areas. SMUD, as a municipal utility not within the jurisdiction of the CPUC, voluntarily complies with these CPUC requirements.

Since the proposed project's generating capacity of 1,000MW is similar to the decommissioned Rancho Seco Plant and would also be transmitted using the existing electrical distribution infrastructure at the Rancho Seco Plant, the electric and magnetic fields generated by the project on these existing lines would be the same as those generated by the Rancho Seco Plant in the past.

The only new project transmission line construction is the 0.4-mile transmission line connecting the project to the Rancho Seco Switchyard, all within SMUD's property lines and not accessible to the public. SMUD has identified the field-reducing approaches in their current guidelines that will be applied to this transmission line. Condition TLSN-4 provides for validation of the reduction efficiency attributable to the proposed line design. (AFC § 5.6.2.1-5.6.2.5; SA T-line Safety & Nuisance, p. 4.10-5, 9 & 10.)

CONDITION:

- ☑ SMUD shall construct the transmission line in accordance with the CPUC's EMF-reducing guidelines. Condition: **TSLN-1.**
- ☑ SMUD will conduct before and after field strength measurements to ensure EMF-reducing guidelines are met. Condition: **TLSN-4.**

Aviation Safety

The proposed transmission line would not pose a collision hazard to any area aircraft when judged according to current Federal Aviation Administration (FAA) criteria regarding distance and direction from the primary runway. Furthermore, the line's support towers would (at a maximum height of 125 feet) not be sufficiently tall to pose a potential collision hazard to area aircraft using FAA criteria. The same lack of a collision hazard has been true for the existing 230 kV PG&E Rancho Seco-Bellotta line, running alongside the proposed line. While an FAA "Notice of Construction or Alteration" would not be required for the proposed line, SMUD would contact the FAA about the current proposal, as is standard industry practice. (AFC § 5.6.3; SA T-line Safety & Nuisance, p. 4.10-8)

Radio & TV Interference

Radio and TV interference is most commonly caused buy irregularities (such as nicks and scrapes on the conductor surface), sharp edges on suspension hardware and other irregularities around the conductor surface. Such interference is usually only a concern for lines of 345 kV or greater. SMUD's proposed 230 kV transmission line would use a low corona conductor design, construction, and maintenance methods that should minimize the potential for such interference.

No significant communications interference is expected, as with the existing SMUD 230 kV lines designed according to SMUD guidelines. Since the proposed lines are to be located

entirely on-site, away from area residences, no communication interference is expected from the project. Nonetheless, Federal Communications Commission (FCC) regulations require each project owner to ensure mitigation of any such communication interference, if it occurs, to the satisfaction of the affected individual. See Condition **TLSN-3**. (AFC § 5.6.2; SA T-line Safety & Nuisance pp. 4.10-2, 3 & 9)

Audible Noise

As with radio and TV interference, the low-corona conductor proposed for the SMUD line will minimize the potential for audible noise. Thus, the new transmission line will not add significantly to existing background noise levels in the project area. (AFC § 5.6.2.2; SA T-line Safety & Nuisance p.p. 4.10-2, 3 & 9)

Fire Hazard

Standard fire prevention and suppression measures for all SMUD lines would be implemented for the proposed line. SMUD's intended compliance with the clearance-related aspects of the CPUC's General Order 95 (GO-95) would be an important part of this compliance approach. Moreover, the route for the proposed interconnection line would mostly be undeveloped land with no trees or brush that would pose a significant hazard of contact-related line fires. SMUD's fire prevention practices for high-voltage lines would be implemented in compliance with Title 14, Section 1250 of the California Code of Regulations. (AFC 5.6.4; SA T-line Safety & Nuisance, p. 4.10-9)

Shocks

SMUD intents to construct the new lines according to the CPUC's GO-95 requirements against hazardous shocks from direct or indirect contact by utility workers or the public with the overhead energized line. Since the proposed transmission line will be grounded according to SCE requirements, they do not pose a significant risk of on-site nuisance shock. Ensuring GO-95-required ground clearance, as with all SMUD lines, will minimize the potential for electrical charging for which such grounding is necessary. Therefore, the proposed transmission line does not pose a hazardous or nuisance shock risk on site. Conditions **TLSN-1** and **TLSN-2** ensure implementation of the necessary mitigation measures. (AFC § 5.6.1; SA T-line Safety & Nuisance p.p. 4.10-9)

Cumulative Impacts

The strengths of electric and magnetic fields from the proposed line were calculated (and will be required) to be measured to factor in the interactive effects of all area lines. These calculated field strengths, therefore, reflect the cumulative exposure of an individual to fields from all lines within the impact area of the proposed lines. They reflect the implementation of the field-reducing guidelines incorporated in SMUD field designs. The actual contribution

from the proposed line will be assessed from field strength measurements required in Condition **TLSN-**4. Thus, there are no significant impacts. (SA T-line Safety & Nuisance p.p. 4.10-10)

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to transmission line safety.

CONDITIONS OF CERTIFICATION

ELECTRIC & MAGNETIC FIELDS MITIGATION

TLSN-1: The Project Owner shall construct the proposed project transmission line according to the requirements of CPUC's GO-95, GO-52, Title 8, Section 2700 et seq. of the California Code of Regulations, and PG&E's EMF reduction guidelines arising from CPUC Decision 93-11-013.

Verification: Thirty days before start of transmission line construction, the Project Owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the transmission line will be constructed according the foregoing requirements.

TLSN-2 The Project Owner shall ensure that all metallic objects along the route of the overhead section are grounded according to industry standards.

Verification: At least 30 days before the lines are energized, The Project Owner shall transmit to the CPM a letter confirming compliance with this condition.

TLSN-3 The Project Owner shall take reasonable steps to resolve any complaints of interference with radio or television signals from operation of the proposed line.

Verification: Any reports of line-related complaints shall be summarized only for the first year along with related mitigation measures, and provided to the CPM in the Annual Compliance Report.

TLSN-4 The Project Owner shall measure the strengths of the line electric and magnetic fields from the proposed transmission line before and after it is energized. Measurements shall be made at representative points (on-site and along the line route as defined by IEEE protocols) as necessary to identify the maximum field exposures possible during operations. The CPM will assess the need to recommend further mitigation through comparison with fields from SMUD lines of the same voltage and current-carrying capacity.

Verification: The Project Owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE

APPLICABLE LAW	DESCRIPTION
FEDERAL	
14 CFR Part 77 – Objects Affecting the Navigation Space	Provides regulates that specify the criteria used by the FAA for determining whether a Notice of Proposed Construction or Alteration is required for potential obstruction hazards.
Title 47 CFR §15.25	Prohibits operation of any devices producing force fields that interfere with radio communications, even if such devices are not intentionally designed to produce radio-frequency energy.
STATE	
CPUC General Order 52	Governs the construction and operation of power and communications lines
CPUC General Order 95	Specifies criteria for overhead line construction, clearance, grounding for shock protection and tree trimming requirements for fire protection.
Title 14 CCR §1250	Specifies utility-related measures for fire protection.
Title 8 CCR, §2700 et seq.	Establishes requirements and standards for safely installing, operating and maintaining electrical installations and equipment.
LOCAL	
There are no applicable Local LORS for this area.	

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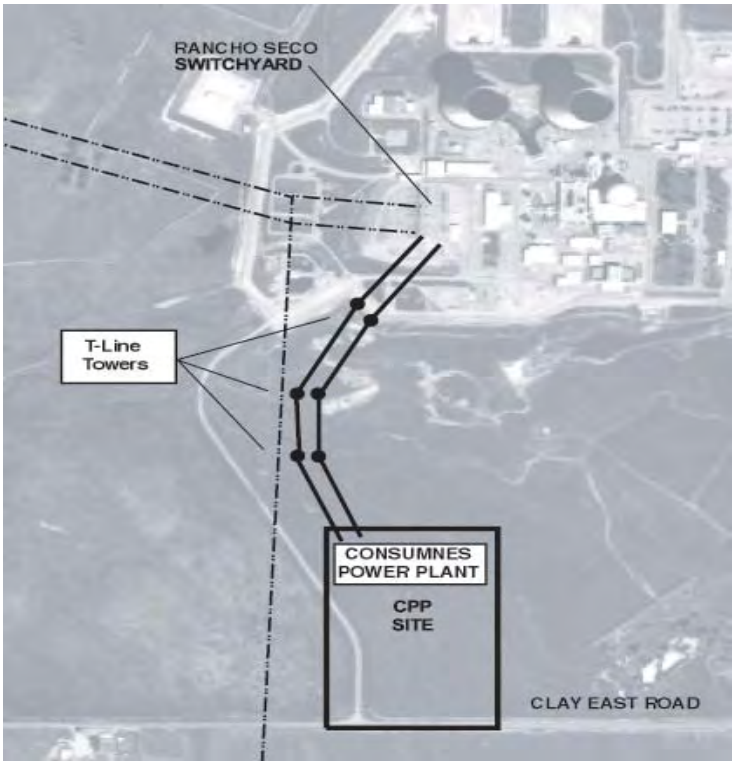
TRANSMISSION SYSTEM ENGINEERING

TRANSMISSION SYSTEM ENGINEERING – GENERAL

The Transmission System Engineering (TSE) analysis identifies whether the transmission facilities associated with the proposed project conform to all applicable laws, ordinances, regulations, and standards required for safe and reliable electric power transmission. It also assesses whether the applicant has accurately identified all interconnection facilities required as a result of the project.

Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," that may include any new or modified transmission facilities required for the project's interconnection to the electric grid but not within the licensing jurisdiction of the Energy Commission.

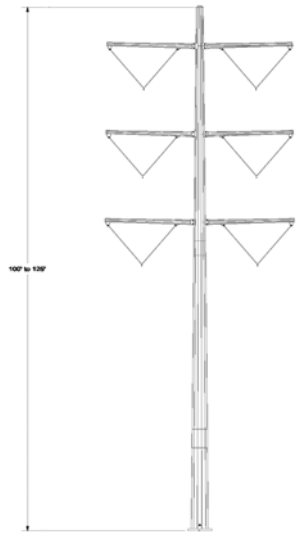
The SMUD transmission system is not a part of the California Independent System Operator (Cal-ISO) grid, consequently, the Cal-ISO is not directly responsible for ensuring electric system reliability for the generator interconnection and will not provide analysis as it generally does for other projects reviewed by the Energy Commission.



For CEQA purposes, the Energy Commission's review considers both 500 MW phases of the project. However, the actual, and largely engineering, impacts of the second phase will depend upon the condition of the grid and the status of other projects at the time it is proposed. Therefore, a precise identification of impacts and mitigation measures for the second 500 MW would be provided during an AFC proceeding for the second phase of the project.

The project would use two General Electric 7FA combustion turbine generators per phase, each producing approximately 170 MW at baseload under average ambient conditions. Approximately 190 MW would be produced by the steam turbine under the same conditions. All generators would be connected to a dedicated 3-phase 18/230 kV step-up transformer that would be connected to the project's new 230-kV switchyard.

A new 0.4-mile 230-kV double circuit line and a single circuit line would connect the new project switchyard to the existing Rancho Seco Nuclear Power Plant switchyard via 0.4 miles of new transmission lines comprising three overhead circuits. Two circuits would be carried on three tubular steel towers while the remaining circuit occupies one side of similar tubular towers. The towers are proposed to be 100 to 125 feet tall (125 feet maximum). SMUD is proposing the three circuits so that the project's full generating capacity, which requires two circuits, goes into the grid in the event one circuit is out for maintenance or should fail. (AFC pp. 5-1-9; FSA pp. 5.5-1-15)



Grid Planning

SMUD performed a System Impact Study (SIS) for connecting a new power plant to the existing power system grid to determine the alternate and preferred interconnection facilities to the grid, downstream transmission system impacts, and mitigation measures to conform with system performance levels as required in utility reliability criteria, NERC planning standards, WECC reliability criteria, and Cal-ISO reliability criteria. Using a computer model, the study compares the grid with and without the project and assesses both positive and negative effects. If a violation of the reliability criteria is found, the study identifies the alternate and preferred additional transmission facilities or other mitigation measures.

The study normally includes a Load Flow study, Transient Stability study, Post-transient Load Flow study, and Short Circuit study. The study is focused on thermal overloads, voltage deviations, system stability (evaluating excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), and short circuit duties. The study must include normal conditions (i.e., non-emergency) and also account for all credible contingency/emergency conditions. Emergency conditions include the loss of a single system element (N-1) such as a transmission line, transformer, or a generator and the simultaneous loss of two system elements (N-2), such as two transmission lines or a transmission line and a generator. In addition to the above analysis, the studies may be performed to verify whether sufficient active or reactive power is available in the area system or area sub-system to which the new generator project would be interconnected. The SIS is followed by supplemental studies conducted by the transmission owner with details provided in a Final Facility Study and a thermal contingency analysis with and without the project for 2005 *heavy* summer and spring conditions. No significant negative impacts with the project operating at 1,000 MW were identified for heavy summer normal and contingency operation conditions. Thus, adding the first 500 MW phase of CPP would not cause overloads.

However, the following adverse impacts due to overloads with the project operating at 1,000 MW were identified for *light* spring conditions:

- Under normal conditions with no outages, with the project operating at 1,000 MW, the flow on the Riverbank Junction to Manteca 115 kV line increases from 76.4% to

100.1% of its normal rating. Thus adding the first 500 MW phase of the project would not cause an overload of this line.

- The Hurley to Proctor, Hedge to Proctor, Westley to Tracy, and both Hurley to Tracy 230 kV Western Area Power Authority (Western) lines overload for a double contingency outage of both Rancho Seco to Bellotta 230 kV lines when the project is operated at 1,000 MW. These overloads are not a concern when the first 500 MW phase of the project is added.

SMUD conducted an additional thermal contingency analysis to study project impacts to the existing Northern California transmission system if there were 500 kV line outages during both summer and spring conditions. No overloads attributable to the project were identified when it is operated at 1000 MW. Thus, operating the first 500 MW phase would not cause overloads for the 500 kV line outages studied. (AFC pp. 5-1-9, Appendix 5A; FSA pp. 5.5-1-15)

Operating Reliability & Safety

SMUD's fault duty impact study results show that adding the project's first 500 MW phase causes fault currents at two Hedge circuit breakers in excess of breaker fault duty capability. These two breakers would need to be replaced before the first 500 MW phase is operated. If 1,000 MW is added at the project, fault currents at seven Hedge circuit breakers exceed breaker fault duty capability, and must be replaced. These breaker replacements are within the existing fence line of the Hedge switchyard, and therefore replacement of the breakers would not result in any environmental impacts.

SMUD performed a Sacramento Area voltage support study and a further sensitivity analysis which show that adding local generation at the project tends to improve local area voltage support, and would not cause adverse voltage support impacts. The project's addition of dynamic voltage support in the SMUD area is a local system benefit. (AFC pp. 5-1-9, Appendix 5A; FSA pp. 5.5-1-15)

CONDITION:

- ☑ SMUD shall construct its transmission facilities in accordance with CPUC GO – 95 or an equivalent standard and utility industry/Cal-ISO standards. Conditions: **TSE-1 to TSE-4.**

Cumulative Impacts

The only remaining proposed power plant in Northern California currently being reviewed by the Energy Commission that may cause cumulative impacts in conjunction with the SMUD project is the East Altamont Energy Center Project (01-AFC-4). The East Altamont Energy Center Project would be connected to the Western transmission system near the Tracy substation, which would be south of this project.

SMUD performed a revised sensitivity study to account for the termination of licensing proceedings for several generation projects. While accounting for the proposed East Altamont Energy Center Project, no significant negative impacts were attributed to the project at either 500 MW (first phase) or 1,000 MW (second phase) during projected 2005 heavy summer normal conditions and during the single and double contingencies studied. (FSA pp. 5.5-1-15)

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to transmission system engineering.

CONDITIONS OF CERTIFICATION

TSE-1 The owner of the power plant switchyard and outlet facilities shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS including the requirements a) through g) listed below. The substitution of Compliance Project Manager (CPM) approved "equivalent" equipment and an equivalent substation configuration is acceptable.

a) The CPP Phase 1 (500 MW) outlet facilities shall consist of three 18 kV/230 kV transformers, disconnect switches, and takeoff structures for three 230 kV circuits.

b) The power plant switchyard and outlet lines shall meet or exceed the electrical, mechanical, civil, and structural requirements of SMUD interconnection standards, CPUC General Orders 95 (GO-95) or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders", National Electric Code (NEC), and related industry standards.

c) Breakers and buses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

d) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

e) Termination facilities at the plant switchyard shall comply with applicable SMUD interconnection standards.

f) The project conductors shall be sized to accommodate the full output from the project.

g) The owner of the power plant switchyard and outlet facilities shall provide:

   i) Any modified Detailed Facility Interconnection Study (DFIS) including a description of facility upgrades, operational mitigation measures, and/or Remedial Action Scheme (RAS) or Special Protection System (SPS) sequencing and timing if applicable,

Verification: At least 60 days prior to the start of rough grading of transmission facilities, the owner of the power plant switchyard and outlet facilities shall submit to the CPM for approval:

a) Electrical one line diagrams signed and sealed by a registered professional electrical engineer in responsible charge (or other approval acceptable to the CPM), a route map, and an engineering description of equipment and the configurations covered by the requirements a) through g) above.

b) The Detailed Facilities Study (if modified) (if it has not otherwise previously been provided to the Energy Commission) and a signed letter from the owner of the power plant Switchyard and Outlet facilities stating that the mitigation measures are acceptable. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CPM approval.

TSE-2 The owner of the power plant switchyard and outlet facilities shall request approval to implement any changes that may not conform to the requirements a) through g) of **TSE-1**, and have not received CPM approval. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the owner of the power plant switchyard and outlet facilities shall inform the CPM of any impending changes that may not conform to requirements a) through g) of **TSE-1** and request approval to implement such changes.

TSE-3 The project owner shall provide notice to the Cal-ISO prior to synchronizing the facility with the California Transmission system:

a) At least one week prior to synchronizing the facility with the grid for testing, provide the Cal-ISO a letter stating the proposed date of synchronization; and

b) At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the Cal-ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the Cal-ISO letter to the CPM when it is sent to the Cal-ISO one week prior to initial synchronization with the grid. The project owner shall contact the Cal-ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the Cal-ISO Outage Coordination Department shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-4 The owner of the power plant switchyard and outlet facilities shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM approved changes thereto, to ensure conformance with CPUC GO-95 or

NESC, Title 8 of the California Code of Regulations, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders", Western's interconnection standards, NEC, related industry standards and these conditions. In case of non-conformance, the project owner shall inform the CPM in writing, within 10 days of discovering such non-conformance, and describe the proposed corrective actions.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM:

a) "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards, and these conditions shall be provided concurrently.

b) An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the responsible registered engineer in charge.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

TRANSMISSION SYSTEM ENGINEERING

APPLICABLE LAW	DESCRIPTION
FEDERAL	
There are no applicable Federal LORS	
STATE	
CPUC General Order 95, Rules for Overhead Electric Line Construction.	Formulates uniform requirements for construction of overhead lines
Western Electricity Coordinating Council (WECC)	Provides the performance standards used in assessing reliability of the interconnected system.
North American Electric Reliability Council (NERC)	Provides policies, standards, principles and guides to assure the adequacy and security of the electric transmission system.
Cal-ISO Reliability Criteria	Provides policies, standards, principles and guides to assure the adequacy and security of the California interconnected electric transmission system
LOCAL	
There are no applicable Local LORS for this area.	

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WORKER SAFETY

WORKER SAFETY - GENERAL

The requirements for worker and fire protection are enforced through Federal, State, and local regulations. The State of California Department of Industrial Relations is charged with the responsibility for administering the Cal/OSHA plan. Effective implementation of worker safety programs at a facility is essential to the protection of workers from workplace hazards. These programs are documented through project-specific worker safety plans. Industrial workers at the proposed facility will operate equipment, handle hazardous materials, and face other workplace hazards that may result in accidents or serious injury. The worker safety and fire protection measures proposed for this project are designed to either eliminate or minimize such hazards through special training, use of protective equipment or implementation of procedural controls.

Fire support services to the site would be under the jurisdiction of the Herald Fire District. The closest fire station is located at 11620 Clay Station Road in Herald, which is approximately 2 miles away. The response time to the project site is estimated to be less than 10 minutes. Backup fire suppression support would be provided by the station located at 12746 Ivie Road in Herald, with a response time of about 15 minutes.

The City of Sacramento Hazardous Materials Team Station 7 is assigned as the off-site hazardous materials first responder for the project. Station 7 is located north of Elk Grove, and their response time is estimated to be 30 minutes.

Fire Protection

Staff reviewed the information provided in the AFC regarding available fire protection services and equipment to determine if the project would adequately protect workers and if it would affect the fire protection services in the area. The project would rely on both onsite fire protection systems and local fire protection services. The onsite fire protection system provides the first line of defense for small fires. Incipient fires would first be responded to by plant personnel who will be trained to the 40-hour OSHA Responder Training level. In the event of a major fire, fire support services including trained (volunteer) firefighters and equipment for a sustained response would be required from the Herald Fire District. As necessary, the Galt Fire Department and Sacramento County would provide backup firefighting services.

During construction, an interim fire protection system would be in place. The permanent facility fire protection system would be placed in service as early as possible during the construction phase.

Permanent fire suppression elements include both fixed and portable fire extinguishing systems. The Rancho Seco Reservoir would supply firewater for the project site, via connection to an existing 48” water pipe. Backup water would be provided by on-site firewater storage supply consisting of a minimum of 180,000-gallons in raw water storage tanks. The firewater pumping system consists of two fire pumps driven by electric motors.

This system would provide more than an adequate quantity of fire-fighting water to yard hydrants, hose stations, and water spray and sprinkler systems. Fire hydrants and fixed suppression systems would be supplied from the underground firewater loop piping system (AFC, § 2.2.12).

This fire water supply and an on-site electric fire-water pumping system would provide more than an adequate quantity of fire-fighting water to yard hydrants, hose stations, and water spray and sprinkler systems. The motor driven fire pump would be capable of supplying maximum water demand for any automatic sprinkler system plus water for fire hydrants and hose stations. There are redundant systems for providing electric power to the fire-water pumps from the project and from the Rancho Seco switchyard.

An FM 200 fire protection system would be provided for the combustion turbine generator (CTG) and accessory equipment. FM 200 is a non-halon chemical fire retardant approved by the US EPA for use in occupied structures.

Fire hydrants and hose stations would supplement the plant fire protection system using water from the plant underground firewater system. Fire hydrants with hose houses would be placed in accordance with NFPA 10 and local fire codes.

SMUD would be required to provide the final Fire Protection and Prevention Program to the CPM and to the Herald Fire District, prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures. (SA Worker Safety/Fire Protection, p. 4.15-9)

The Committee requested SMUD to provide additional information regarding the adequacy of resources and equipment available for a serious on-site hazardous materials incident or fire. SMUD presented a public agency safety panel composed of Elise Rothschild, Hazmat Coordinator for Sacramento County, Glenn Hendrickson, Chief of the Herald Fire Department, James Templeton, Chief of the Galt Fire District, Richard Holmes, Battalion Chief of the Elk Grove Fire Department, and Charlton Atwood, Fire Captain and Hazmat Coordinator for the Sacramento City Fire Department. This panel described the integrated and seamless communication and response capabilities of the Sacramento area firefighting and hazmat incident resources, which have the ability, beginning with the enhanced 911 dispatch, to mobilize area resources from initial responders to a massive multi-jurisdictional response. As described, this little-known to the public, but impressive integrated response capability reassured the Committee that once these resources were mobilized, the situation would be in capable hands.

In addition, SMUD further described the training to be given its on-site personnel, which will include 40 hours of hazmat training for all personnel and 8-hour incident commander training for one operator per shift. (5/12 RT 118) SMUD also testified that it has an exemplary record, safety-wise, in the operation of its four gas-fired power plants due to preventive procedures and training. (3/13 RT 250-251)

CONDITION:

- ☑ SMUD shall submit fire protection plans for the construction and operation of the project. Conditions**: WORKER SAFETY-1, WORKER SAFETY-2**.

Safety & Injury Prevention

Industrial environments are potentially dangerous. Workers could be exposed to chemical spills, hazardous waste, fires, moving equipment, and confined space entry and egress problems. It is important to have well-defined facility-specific policies and procedures, training, and hazard recognition and control to minimize work place hazards and to protect workers from unavoidable hazards. Energy Commission staff has reviewed SMUD's proposed measures for protection of workers during construction and operation of the proposed project. These measures are described below. These measures are adequate to protect workers from work place hazards associated with the proposed project and to comply with applicable laws.

Construction: During the construction phase of the project, workers will be exposed to hazards typical of construction of a gas-fired combined cycle facility. Construction Safety Orders are published at Title 8 of the California Code of Regulations beginning with section 1502 (8 CCR § 1502, et seq.). These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Injury and Illness Prevention Program will include the following:

A Construction Safety Program;

A Construction Personal Protective Equipment Program;

A Construction Exposure Monitoring Program;

A Construction Emergency Action Plan; and

A Construction Fire Protection and Prevention Plan.

Additional programs include General Industry Safety Orders (8 CCR § 3200-6184), Electrical Safety Orders (8 CCR §2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR § 450-544). The AFC includes adequate outlines of each of the above programs. Prior to construction of the project, detailed programs and plans will be provided pursuant to the condition of certification **WORKER SAFETY-1**.

CONDITION:

- ☑ SMUD shall prepare a Construction Safety and Health Program for the review and approval of Cal/OSHA. Condition: **WORKER SAFETY-1.**

Operation: Upon completion of construction and prior to operation, SMUD shall prepare the Operations and Maintenance Safety and Health Program pursuant to regulatory requirements of Title 8 of the California Code of Regulations, which will include the following programs and plans:

An Operation Injury and Illness Prevention Plan;

An Emergency Action Plan;

Hazardous Materials Management Program;

Operations and Maintenance Safety Program;

Fire Protection and Prevention Program (8 CCR § 3221); and;

Personal Protective Equipment Program (8 CCR §§ 3401-3411

Additional programs also include General Industry Safety Orders (8 CCR § 3200-6184), Electrical Safety Orders (8 CCR §2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR § 450-544). The AFC includes adequate outlines of each of the above programs. Cal/OSHA will review SMUD's program and provide comments as a result of a consultation request. A Cal/OSHA representative will complete a physical survey of the site, analyze work practices, and assess those practices that may likely result in illness or injury.

CONDITION:

- ☑ SMUD shall prepare an Operations Safety and Health Program for the review and approval of Cal/OSHA. Condition: **WORKER SAFETY-2.**

Noise

Construction: SMUD acknowledges the need to protect construction workers from noise hazards as well as the applicable laws and regulations relating to worker health and safety. The California Occupational Safety and Health Administration regulations provide the maximum noise level over an 8-hour work period is 90 dBA. Areas above 85 dBA need to be posted as high noise level areas and appropriate hearing protection will be provided. SMUD will also adopt a hearing conservation program in accordance with the Cal-OSHA § 5097 Hearing Conservation Program.

CONDITION:

- ☑ SMUD shall institute an occupational noise control program to reduce exposure to high levels of construction noise. Condition: **WORKER SAFETY-3.**

Operation: SMUD recognizes the need to protect plant operating and maintenance personnel from noise hazards, and to comply with applicable laws and regulations. A measure to be implemented for noise-related impacts includes a Hearing Conservation Program.

CONDITION:

- ☑ SMUD shall conduct an occupational noise survey to identify noise hazardous areas and, if necessary, prepare mitigation in consultation with Cal/OSHA to reduce noise to prescribed limits. Condition: **WORKER SAFETY-4.**

Finding

With the implementation of the Conditions of Certification, below, the project conforms to applicable laws related to worker safety.

CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program, containing the following:

1. A Construction Injury and Illness Prevention Program
2. A Construction Fire Protection and Prevention Plan
3. A Personal Protective Equipment Program

The Construction Injury and Illness Prevention Program and the Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, if appropriate, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Construction Fire Protection and Prevention Plan shall be submitted to the CPM for review and approval and to the Herald Fire District for review and comment.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program, the Personal Protective Equipment Program and the Construction Fire Protection and Prevention Plan, including a copy of the cover letter transmitting the Programs to Cal/OSHA's Consultation Service, if appropriate.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operation Safety and Health Program containing the following:

1. Operation Injury and Illness Prevention Program
2. Emergency Action Plan
3. Operation Fire Protection Program
4. Personal Protective Equipment Program

The Operation Injury and Illness Prevention Program, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, as appropriate, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Operation Fire Protection Program and the Emergency Action Plan shall be submitted to the fire protection agency serving the project for review and comment.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operation Safety & Health Program. The document shall incorporate Cal/OSHA's Consultation Service comments, if any, regarding its review and acceptance of the specified elements of the proposed Operation Safety and Health Plan.

The project owner shall notify the CPM that the Project Operation Safety and Health Program, including all records and files on accidents and incidents, is present onsite.

WORKER NOISE CONTROL PROGRAM

WORKER SAFETY-3: The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

WORKER NOISE SURVEY

WORKER SAFETY-4: Following Phase 1 first achieving a sustained output of 80 percent or greater of rated capacity, and again following Phase 2, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

LAWS, ORDINANCES, REGULATIONS & STANDARDS

WORKER SAFETY AND FIRE PROTECTION

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Title 29 CFR §651 et seq.	Established the Occupational Safety and Health Act of 1970 to protect the health and safety of workers
Title 29 CFR §1910 et seq.	Contains the minimum occupational health and safety standards for general industry in the U.S.
Title 29 CFR §1926 et seq.	Contains the minimum occupational health and safety standards for construction industry in the U.S.
Title 29 CFR §1952.170-1952-175 et seq.	Gives California full enforcement responsibility for relevant federal occupational health and safety standards.
Title 49 CFR §192	U.S. Department of Transportation Pipeline Safety Regulations. Adopted by the California Public Utility Commission. Governs the California utilities on design, construction, testing, maintenance, and operation of piping systems.

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GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

INTRODUCTION

The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of elements that:

1. set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
2. set forth the requirements for handling confidential records and maintaining the compliance record;
3. state procedures for settling disputes and making post-certification changes;
4. state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions;
5. establish requirements for facility closure plans; and
6. specify conditions of certification that follow each technical area that contain the measures required to mitigate any and all potential adverse project impacts associated with construction, operation, and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

GENERAL CONDITIONS OF CERTIFICATION

DEFINITIONS

To ensure consistency, continuity, and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

SITE MOBILIZATION

Site mobilization is defined as moving trailers and related equipment onto the site, usually accompanied by min or ground disturbance, grading for the trailers and limited vehicle parking, trenching for construction utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking

for the occupants. Site mobilization is for temporary facilities and is, therefore, not considered construction.

GROUND DISTURBANCE

Ground disturbance is an onsite activity that results in the removal of soil or vegetation, boring, trenching, or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

GRADING

Grading is an onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

CONSTRUCTION

Construction is onsite work to install permanent equipment or structures for any facility. [Warren-Alquist Act section 25105] Construction does **not** include the following:

a. the installation of environmental monitoring equipment;

b. a soil or geological investigation;

c. a topographical survey;

d. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; or

e. any work to provide access to the site for any of the purposes specified in a., b., c., or d.

START OF COMMERCIAL OPERATION[1]

For compliance monitoring purposes, "commercial operation" is that phase of project development which begins after the completion of start-up and commissioning, where the power plant has reached steady-state production of electricity with reliability at the rated capacity.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

A Compliance Project Manager (CPM) will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;
4. documenting and tracking compliance filings; and

[1] A different definition of "Start of Commercial Operation," may be included in the Air Quality (AQ) section (per District Rules or Federal Regulations). In that event, the definition included in the AQ section would only apply to that section.

5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate staff and management.

The Energy Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Energy Commission about power plant construction or operation-related questions, complaints or concerns.

Pre-Construction and Pre-Operation Compliance Meeting

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

Energy Commission Record

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. all monthly and annual compliance reports filed by the project owner;
3. all complaints of noncompliance filed with the Energy Commission; and
4. all petitions for project or condition changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general compliance conditions may

result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate.

COM-1, Unrestricted Access

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the files and records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time. All visitors must follow the Owner's standard safety requirements such as wearing appropriate equipment and observing safety rules when inspecting the site.

COM-2, Compliance Record

The project owner shall maintain project files onsite, or at an alternative site approved by the CPM, for the life of the project unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all "as-built" drawings, all documents submitted as verification for conditions, and all other project-related documents.

COM-3, Compliance Verification Submittals

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. A variety of procedures are used, including:

1. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
2. providing appropriate letters from delegate agencies verifying compliance;
3. Energy Commission staff audits of project records; and/or
4. Energy Commission staff inspections of mitigation or other evidence of mitigation.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

Compliance Project Manager
[Enter Project name & Docket number]
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

If the project owner desires Energy Commission staff action by a specific date, the owner shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

COM-4, Pre-Construction Matrix and Tasks Prior to Start of Construction
The project owner shall submit to the CPM, prior to commencing construction, a compliance matrix addressing only those conditions that must be fulfilled before the start of construction. This matrix shall be included with the project owner's **first** compliance submittal, and shall be submitted prior to the first pre-construction meeting, if one is held. It will be in the same format as the compliance matrix referenced below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times (e.g., 30, 60, 90 days) for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project construction.

Verification lead times (e.g., 90, 60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

It is important that the project owner understand that the submittal of compliance documents prior to project certification is at the owner's own risk. In such a situation, any approval by Energy Commission staff is subject to change based upon the Commission Decision

COMPLIANCE REPORTING

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent shall submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

COM-5, Compliance Matrix

A compliance matrix shall be submitted to the CPM with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable;
7. the compliance status of each condition (e.g., "not started," "in progress" or "completed" (include the date); and
8. the project's preconstruction and construction milestones, including dates and status (if milestones are required).

Satisfied conditions do not need to be included in the compliance matrix after they have been identified as satisfied in at least one monthly or annual compliance report.

COM-6, Monthly Compliance Report

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the **Key Events List,** at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies (or amount specified by CPM) of the Monthly Compliance Report within 10 working days after the end of each reporting month to the CPM. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of certification;

4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a listing of the month's additions to the on-site compliance file;
10. any requests, with justification, to dispose of items that are required to be maintained in the project owner's compliance file; and
11. a listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolutions of any resolved complaints, and the status of any unresolved complaints.

COM-7, Annual Compliance Report

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;
4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings made to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;

8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section]; and
10. a listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved complaints, and the status of any unresolved complaints.

COM-8, Construction and Operation Security Plan

Thirty (30) days prior to commencing construction, a site-specific Security Plan for the construction phase shall be developed and maintained at the project site. At least sixty (60) days prior to the initial receipt of hazardous materials on-site, a site-specific Security Plan and Vulnerability Assessment for the operational phase shall be developed and maintained at the project site. The project owner shall notify the CPM in writing that the Plan is available for review and approval at the project site. Only Energy Commission personnel who have proper training and proper security clearance, as determined by the Energy Commission, after consultation with the project owner, shall review and approve the plan.

COM-9, Confidential Information

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

COM-10, Department of Fish and Game Filing Fee

Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of $850. The payment instrument shall be provided to the Energy Commission's Project Manager (PM), not the CPM, at the time of project certification and shall be made payable to the California Department of Fish and Game. The PM will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

COM-11, Reporting of Complaints, Notices, and Citations

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project site and the linear facilities notifying them of a telephone number to contact project representatives with questions, complaints, or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering system with date and time stamp recording. All recorded inquiries shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:

http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

Any changes to the telephone number shall be submitted immediately to the CPM who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt to the CPM. Complaints shall be logged and numbered. All complaints shall be recorded on the complaint form (**Attachment A**).

GENERAL CONDITIONS FOR FACILITY CLOSURE

COM-12, Planned Closure

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable LORS and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops. The Energy Commission may also hold public hearings as part of the approval procedure for the facility closure plan.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the

environment, but shall not commence any other closure activities until Energy Commission approval of the facility closure plan is obtained.

COM-13, Unplanned Temporary Closure/On-Site Contingency Plan
In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, shall update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner shall review the on-site contingency plan and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)

The nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure for either Phase I or II is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed. The plan shall be submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

COM-14, Unplanned Permanent Closure/On-Site Contingency Plan
The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure for both phases of the project. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment of either phase.

In the event of an unplanned permanent closure of either phase, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan for either Phase 1 or 2, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure (or another period of time agreed to by the CPM).

CBO DELEGATION AND AGENCY COOPERATION

In performing construction monitoring of the project, Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Commission staff retains CBO authority when selecting a delegate CBO including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Commission staff may also seek the cooperation of state, regional, and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific factors identified in Public Resources Code section 25534.1(e). Moreover, to ensure compliance with the terms and conditions of certification and applicable LORS, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et seq. In many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future laws or regulations.

Informal Dispute Resolution Procedure

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

REQUEST FOR INFORMAL INVESTIGATION

Any individual, group, or agency may request that the Energy Commission conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and, within seven (7) working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within 48 hours, followed by a written report filed within seven (7) days.

REQUEST FOR INFORMAL MEETING

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and
4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et seq.

Formal Dispute Resolution Procedure-Complaints and Investigations
If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results or the progress of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et seq.

The Energy Commission Chairperson, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Energy Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Cal. Code Regs., tit. 20, §§ 1232-1236).

POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES, AND VERIFICATION CHANGES

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209.

AMENDMENTS

A proposed project modification will be processed as an amendment if it alters the intent or purpose of a condition of certification, has potential for significant adverse environmental impact, or may violate applicable laws, ordinances, regulations or standards. The full Commission must approve formal amendments. The project owner shall file a petition in accordance with Title 20, California Code of Regulations, section 1769 (a).

Change of ownership or operational control also requires that the project owner files a petition, and obtains full Commission approval, pursuant to section 1769 (b).

INSIGNIFICANT PROJECT CHANGES

If a proposed modification does not alter the intent or purpose of a condition of certification, does not have potential for significant adverse environmental impact, does not violate applicable laws, ordinances, regulations, or standards, or does not result in an ownership change, it will be processed in accordance with Section 1769(a)(2). In this regard, as specified in Section 1769(a)(2), Commission approval is not required.

The CPM shall file a statement that staff has made such a determination with the Commission Docket and mail a copy of the statement to every person on the project's post-certification mailing list.

Any person may file an objection to staff's determination within 14 days of service on the grounds that the modification does not meet the criteria in section 1769 (a) (2). If an objection is received, the petition must be processed as a formal amendment to the final decision and must be approved by the full Commission at a noticed business meeting or hearing.

VERIFICATION CHANGES

The proposed change will be processed as a verification change if it involves only the language in the verification portion of the condition of certification. This procedure can only be used to change verification requirements that are of an administrative nature, usually the timing of a required action. In the unlikely event that verification language contains technical requirements, the proposed change must be processed as an amendment. The CPM may initiate a verification change.

COM-6, KEY EVENTS LIST

PROJECT: **Cosumnes Power Plant Project**

DOCKET #:**01-AFC-19**

COMPLIANCE PROJECT MANAGER:

EVENT DESCRIPTION	DATE
Certification Date/Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

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ADOPTION ORDER

The Commission adopts this Decision on the SMUD Cosumnes Project and incorporates the Presiding Member's Proposed Decision. This Decision is based upon the record of the proceeding (Docket No. 01-AFC-19).

The Commission hereby adopts the following findings in addition to those contained in the accompanying text:

1. The Conditions of Certification contained in this Decision, if implemented by the project owner, ensure that the whole of the project will be designed, sited and operated in conformity with applicable local, regional, state, and federal laws, ordinances, regulations, and standards, including applicable public health and safety standards, and air and water quality standards.

2. Implementation of the Conditions of Certification contained in the accompanying text will ensure protection of environmental quality and assure reasonably safe and reliable operation of the facility. The Conditions of Certification also assure that the project will neither result in, nor contribute substantially to, any significant direct, indirect, or cumulative adverse environmental impacts.

3. Existing governmental land use restrictions are sufficient to adequately control population density in the area surrounding the facility and may be reasonably expected to ensure public health and safety.

4. The record does not establish the existence of any environmentally superior alternative site.

5. The record assesses all potential environmental impacts associated with the Phase 1 and Phase 2 (except air quality for Phase 2), 1,000 MW project configuration.

6. This Decision contains measures to ensure that the planned, temporary, or unexpected closure of the project will occur in conformance with applicable laws, ordinances, regulations, and standards.

7. The proceedings leading to this Decision have been conducted in conformity with the applicable provisions of Commission regulations governing the consideration of an Application for Certification and thereby meet the requirements of Public Resources Code, sections 21000 et seq., and 25500 et seq.

Therefore, the Commission **ORDERS** the following:

1. The Application for Certification of the Sacramento Municipal Utility District, as described in this Decision, is hereby approved, and a certificate to construct and operate the project is hereby granted.

2. The approval of the Application for Certification is subject to the timely performance of the Conditions of Certification and Compliance Verifications enumerated in the accompanying text. The Conditions and Compliance Verifications are integrated with this Decision and are not severable therefrom. While the project owner may delegate the performance of a Condition or Verification, the duty to ensure adequate performance of a Condition or Verification may not be delegated.

3. The Commission hereby adopts the Conditions of Certification, Compliance Verifications, and associated dispute resolution procedures as part of this Decision in order to implement the compliance monitoring program required by Public Resources Code section 25532. All Conditions in this Decision take effect immediately and apply to all construction and site preparation activities including, but not limited to, ground disturbance, site preparation, and permanent structure construction.

4. This Decision is adopted, issued, effective, and final on September 9, 2003.

5. Reconsideration of this Decision is governed by Public Resources Code section 25530.

6. Judicial review of this Decision is governed by Public Resources Code section 25531. The applicable statute of limitations for seeking judicial review is provided by Public Resources Code section 25901.

7. The Executive Director of the Commission or delegatee shall transmit a copy of this Decision and appropriate accompanying documents as provided by Public Resources Code section 25537 and California Code of Regulations, title 20, section 1768.

Dated: September 9, 2003

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

WILLIAM J. KEESE
Chairman

ROBERT PERNELL
Commissioner

JOHN L. GEESMAN
Commissioner

Commissioners Rosenfeld and Boyd were absent.