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STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the matter of:	)	**Docket No. 01-AFC-19C**
	)	
SMUD Cosumnes Power Plant	)	**SFA'S PETITION FOR POST**
Project Licensing Case	)	**CERTIFICATION PROJECT**
Compliance	)	**MODIFICATION**
	)	

The Sacramento Municipal Utility District Financing Authority ("SFA") hereby submits this Petition for Post Certification Project Modification ("Petition") for the SMUD Cosumnes Power Plant ("CPP") project ("Project") Licensing Case Compliance pursuant to Section 1769(a), Title 20, California Code of Regulations, to the California Energy Commission ("CEC"). By this Petition, SFA requests approval to modify the project description specified in the Commission's Decision, to describe the new OnePass filter addition and zero liquid discharge system (ZLD) modification.

As an officer of SFA, I hereby attest, under penalty of perjury, under the laws of the State of California, that the contents of this Petition are truthful and accurate to the best of my knowledge and belief.

SACRAMENTO MUNICIPAL UTILITY DISTRICT
FINANCING AUTHORITY

Respectfully submitted,

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Dated: 02/10/09

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PETITION FOR POST CERTIFICATION PROJECT MODIFICATION

SMUD COSUMNES POWER PLANT

WATER TREATMENT MODIFICATION

Sacramento Municipal Utility District Financing Authority

CPP ZLD Project Modification
Docket No. 01-AFC-19C

February 2009

Prepared for:

Sacramento Municipal Utility
District Financing Authority

Prepared by:

URS

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LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

AF	acre feet
AFC	Application for Certification
AFY	acre feet per year
CAPCOA	California Air Pollution Control Officer's Association
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Inventory System
CPP	Cosumnes Power Plant
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
dBA	decibels Leq
DEIR/S	Draft Environmental Impact Report/ Statement
EBMUD	East Bay Municipal Utility District
EDTA	ethylenediaminetetraacetic acid
ESA	Environmental Site Assessment
FRWA	Freeport Regional Water Authority
FRWP	Freeport Regional Water Project
FSC	Folsom South Canal
HRSG	heat recovery steam generator
lbs	pounds
lb/hr	pounds per hour
LORS	laws, ordinances, regulations and standards
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mgd	million gallons per day
NTU	nephelometric turbidity units
PEIS	Programmatic Environmental Impact Statement
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SFA	Sacramento Municipal Utility District Financing Authority
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
T-BACT	Toxic Best Available Control Technology
TDS	total dissolved solids

TSS	total suspended solids
USBR	United States Bureau of Reclamation (Bureau)
ZLD	zero liquid discharge

1.1 Summary

Pursuant to Section 1769(a) of the California Energy Commission's (CEC) siting regulations[1], Sacramento Municipal Utility District Financing Authority (SFA) respectfully submits this petition for post-certification license modification for the Cosumnes Power Plant (CPP). The petition is to modify the CPP project description specified in the Commission's Decision, to describe the new OnePass filter addition and zero liquid discharge system (ZLD) modification. These activities are necessitated by a change in water quality supplied to the CPP, as a result of the Freeport Regional Water Authority (FRWA) project. No additional Conditions of Certification are required and existing Conditions are adequate to protect environmental resources.

1.2 Organization of the Petition

This petition for post certification license modification (petition) is based on the requirements of Title 20, California Code of Regulations (CCR), section 1769(a), describing the contents of post certification amendments. The petition provides the following:

- A complete description of the modifications, including new language for any conditions that will be affected;
- A discussion of the necessity of the proposed modification;
- An explanation that the modification was not known at the time of the certification;
- An explanation that the information was not known, and why the change should be permitted;
- An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts, if appropriate;
- A discussion of how the modification may impact the facility's ability to comply with applicable laws and regulations;
- A discussion of how the modification affects the public;
- A list of property owners potentially affected by the modification; and
- A discussion of the potential effect on nearby property owners, the public and parties in the application proceedings.

This petition is based on the Sacramento Municipal Utility District's (SMUD's) determination that environmental impact concerns of the ZLD upgrade would not differ substantially from the original project evaluated in 2001-2003.

1.3 Project Location

CPP is located approximately 1,000 feet south of the decommissioned Rancho Seco Nuclear Plant, and 25 miles southeast of the City of Sacramento, in Sacramento County. The OnePass filter addition would encompass less than 0.25 acre of the approximate 30-acre CPP compound, which is a small portion of the overall 2,480-acre site owned by SMUD. The ZLD system modification would

[1] Title 20, California Code of Regulations §§1001, et seq.

occupy approximately 0.1 acre modified within the existing paved and graveled area in the CPP compound. The local setting is shown on Figure 1-1. The ZLD system modification is located in the center of the power block and is screened by other plant equipment, tanks and buildings. The new OnePass filter addition would be installed just north of the two large water storage tanks located north of the current ZLD (Figure 1-2).

1.4 Project Background

The CPP project was certified for operation in 2003. The Application for Certification (AFC) described the regional setting, project description, laws ordinances, regulations and standards (LORS), and potential impacts of the project. All of the existing information in the AFC and subsequent addenda is applicable and relevant to the current project, and incorporated here by reference.

The Freeport Regional Water Authority (FRWA) is proceeding with construction of an outtake structure and piping system that will convey Sacramento River water to the Folsom South Canal (FSC). FSC historically conveyed water from the American River to the now-decommissioned Rancho Seco Nuclear Power Plant and Rancho Seco Reservoir. Water from FSC also provides raw water to CPP for cooling and service water. Introduction of Sacramento River water will significantly alter the current and historical constituents of the plant's raw water, and engineering studies have determined at least two modifications must be made to the plant to accommodate the change in water quality. These changes include installing a new aboveground 22 feet x 55 feet x 35 feet (W x L x H) single-pass water filter system ("OnePass"), and installing a larger, high alloy crystallizer and appurtenances in the existing ZLD system (Figure 1-3). To implement these modifications, a Petition for Project Modification or license amendment must be prepared and submitted to the CEC for review and approval. The installation must be complete by the end of November 2009 to be prepared for operations from FRWA as early as January 2010.

All the work necessary to install the new OnePass filter addition and modify the current ZLD system will occur within the paved and graveled CPP compound. The footprint of the project will not be changed and there will be no construction or activities outside the present project boundaries. The emissions from generation equipment will remain the same, as will be the amount of power generated. There will be no changes to the gas line supply quantity, routing or use and similarly no change in operations or structures for transmission lines. There will be no increase in the water used by CPP.

The only characteristics to be changed as a result of this petition would be the added filter equipment and its operation, enhanced corrosion resistance and size of the ZLD system crystallizer, and increase in the resulting quantity of salt waste that would be removed. There would be temporary and minor increases in dust, noise, and volatile organic compounds resulting from construction and installation of the new OnePass equipment and ZLD modification, as well as temporary increases in traffic from additional workers and waste generation from waste steel and packing materials. The primary need for a Petition to Modify Project Description is to revise the project description in the certified license to include the new water treatment system and to update the resulting water quality and salt waste generation information. We believe that the mitigation measures proposed in the original AFC would be sufficient to protect the environment in all areas. Therefore, the following

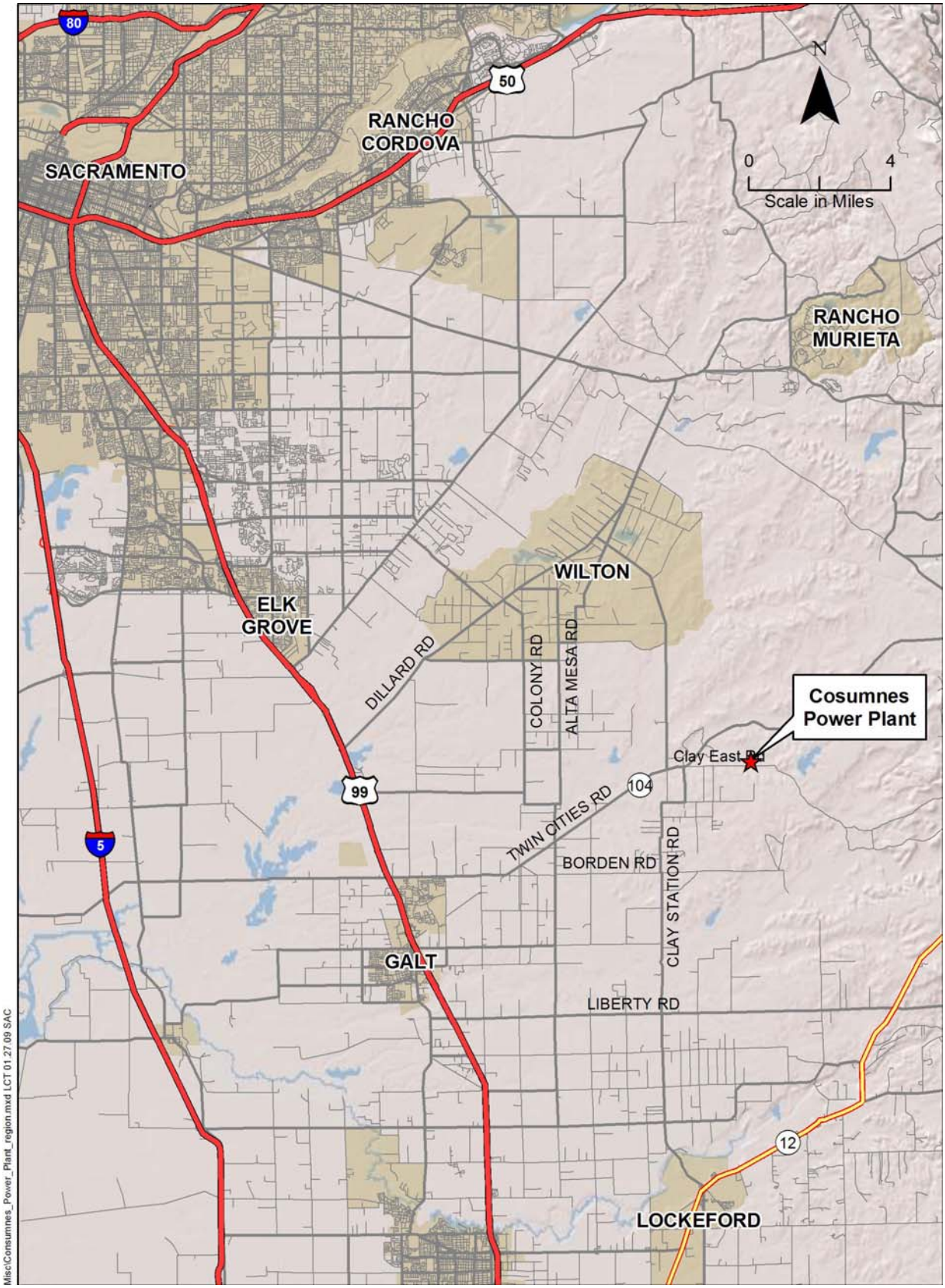

Figure 1-1. Local Setting

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Figure 1-2. Site Aerial View

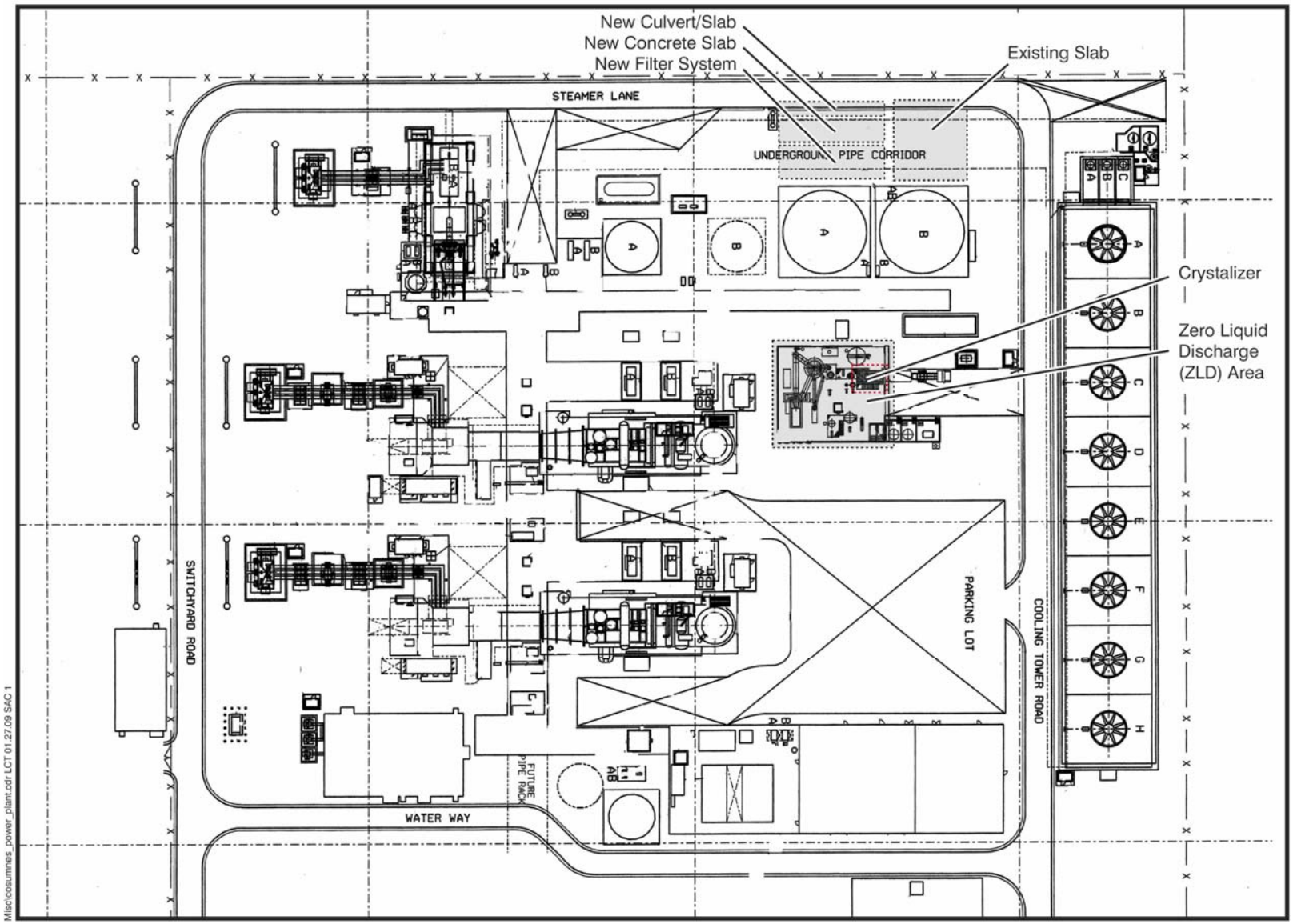

Figure 1-3. Location of CPP ZLD Filter Modification and OnePass Filter Addition

analysis focuses primarily on describing the new OnePass filter and modified ZLD system and the differences in incoming water quality, and on the changes in quality and quantity expected for salt waste generation. The other 12 disciplines rely largely on the existing AFC for compliance.

Water for cooling, power augmentation and emissions control at CPP is supplied by the U.S. Bureau of Reclamation (USBR or Bureau) under contract to SMUD.

1.5 Description of Proposed Changes

1.5.1 Present Water Treatment Equipment

Under present operations, the water supply from FSC does not require pretreatment or filtration before being circulated as cooling water. FSC water is not pretreated before entering an on-site filtration system to produce demineralized water for turbine inlet cooling and heat recovery steam generator (HRSG) makeup water. There is another treatment system for potable domestic water. Under present operation, circulating water system blowdown, water from FSC, various process waste streams, and residues of anti-seize compounds and anti-biofouling chemicals are processed by a brine concentrator and crystallizer to produce a dry salt cake product. The salt cake is hauled off site to a landfill.

Under the proposed modification, the incoming water would be pre-treated in a simple filter to remove total dissolved solids (TDS) and total suspended solids (TSS). This filter requires pre-feeding a mix tank with perlite and is called the "OnePass" filter system. In addition, the existing ZLD crystallizer would be replaced with a high alloy, higher efficiency unit that can accommodate the greater quantity of salts (TDS) in incoming feedwater.

Non-contact stormwater runoff from the project discharges to an on-site detention basin and from there to Clay Creek, upon verification of water quality.

1.5.2 CPP Water Treatment Upgrade Components

Modifying the ZLD system and adding the OnePass filter would consist of the following components:

ZLD:

- Replace ZLD 316 SS crystallizer with a larger crystallizer made of A625 material
- Replace Oberlin pressure filter to increase capacity
- Add larger motor and conductor for improved circulation

"OnePass" Filter:

- Foundation for filter skid and booster pumps
- Piping to incoming raw water system
- Support structure for tanks and filters

- Shutoff valves, bypass valves, control valves, controllers and conductor
- Precoat/bodyfeed tank
- Membrane filters (3)
- 125-HP booster feed pump (2)
- Backwash air tank
- Body feed handling system (perlite tank)
- Roll-off bin for salt cake storage
- Drilled piers to support filter foundations (8 to 12)
- Concrete slab to contain and support filter components
- Culvert to route stormwater away from new filter area
- Container to store perlite

1.5.2.1 Construction Area

The OnePass filter addition will require approximately 0.25 acre, within the existing CPP compound (Figure 1-3). The location would be between the existing water storage tanks and the fence line in the northeast corner of the fenced compound. All construction would be within previously graded, leveled, paved and graveled areas.

1.5.2.2 Construction Procedure

The CPP OnePass filter addition and ZLD system upgrade would consist of the following steps:

- Install drilled piers and foundations for OnePass filter system
- Install new OnePass filter system, perlite storage tank and bins, pumps, conductor, and controls
- Remove accumulated salt waste and drain tanks from existing ZLD system
- Remove old crystallizer
- Modify anchor bolt footprint and steel to accommodate new crystallizer
- Install new crystallizer and pressure filter
- Fill, test, and commission new crystallizer
- Connect OnePass filter to raw water inlet piping, test and commission new OnePass system.

1.5.3 Construction Vehicles and Equipment

The actual equipment used to remove and transport the CPP OnePass filter addition and ZLD system modification will be determined once the project is awarded, but is expected to be similar to that listed in Table 1-1.

Table 1-1: Estimated Vehicles And Equipment Needed For CPP Water Treatment Upgrade

Vehicles and Equipment	Number of Vehicles	Construction Activity
Personal transport vehicles	10 per day	Transport workers to project construction site
Truck-mounted welding units	1 to 2	Site manufacturing
Flatbed truck/tractor trailer	8	Delivers crystallizer, steel, filter components, storage tanks, bins
Wheeled grade-all	1	Unload and maneuver parts
Bucket loader	1	Move gravel for concrete formwork
Drill rig	1	Drill piers
Wheeled crane	1	Lift steel and tanks into position
Concrete Truck	5 to 7	Install pump and OnePass filter foundation

1.5.4 Construction Schedule

The OnePass filter piers, foundation and filter system is proposed to be installed in April-May 2009. The ZLD crystallizer is proposed to be installed in October and November 2009. SFA plans to upgrade the OnePass filter and ZLD crystallizer as scheduled in Table 1-2.

Table 1-2: Proposed Schedule of CPP OnePass Filter and ZLD Upgrade

Activity	Date
Install drilled piers and foundation for OnePass filter system	April 2009
Install support structure, steel, tanks, conduit and controls for OnePass filter system	April-May 2009
Planned plant power outage for maintenance	October-November 2009
Remove accumulated waste and drain tanks	October 2009
Remove crystallizer,and modify anchor bolt locations and steel	October 2009
Install new crystallizer and new Oberlin pressure filter	November 2009
Connect OnePass filter piping to incoming raw water pipe	November 2009
Fill, test and commission new crystallizer and OnePass filter system	November 2009

SMUD has determined that spring and fall electrical loads are lowest and, therefore, supportable from external sources. SFA typically plans CPP's outages for maintenance, repairs or upgrades during October or November to minimize the potential effects of lower power generation.

1.6 Necessity of the Modification

The modification is necessary to adapt the CPP to the increased TSS and TDS in the new influent from FSC. The modification will allow CPP to continue operating according to the terms of its approved license and permits. Absent the modification, additional TSS in the feedwater may

overwhelm filters and damage equipment in the facility, leading to lowered reliability and power production.

1.7 Modification was not Known at the Time of the Certification

The proposed project modification was not known and could not have been known at the time of the AFC submittal in 2001 or when the CEC approved Phase 1 of the CPP projects in 2003. SMUD, as the project applicant, understood that the FRWA proposal was speculative and, therefore, the CPP plant was not designed to use the higher TSS and TDS source water from that project. SMUD was aware that project modifications might be necessary should the FRWA project be implemented.

1.8 Why the Change Should be Permitted

The change should be permitted to allow CPP to continue providing electrical energy to service the SMUD service territory, using the cleanest available fuels and technology. The change will allow CPP to continue reliable operation, while collaborating with the needs of FRWA to use FSC to deliver water. Environmental resources will continue to be protected under the proposed change, to balance the needs of both the human and natural environment.

2.1 Air Quality

The proposed upgrade to the CPP water treatment system will generate short-term construction emissions including fugitive dust and construction equipment combustion emissions. Also, emissions from construction workers commuting to the site will occur. The Commission Decision for the construction of the CPP noted that the project construction-related emissions would be temporary and that implementation of Conditions of Certification would mitigate the air quality impacts to insignificant levels. The Conditions of Certification included specific mitigation measures to reduce construction related emissions.

The proposed water treatment upgrade construction duration is estimated at approximately eight weeks both spring and fall 2009. A list of the estimated construction equipment is provided in Appendix B. The size of the proposed water treatment upgrade is small compared to the original CPP construction. Therefore, the emissions and impacts associated with the proposed water treatment upgrade will be considerably less than the original project. All the work necessary to replace the crystallizer and install the new OnePass filter system will occur within the paved and graveled CPP compound.

The CPP is located in southeastern Sacramento County, which is currently classified as non-attainment for the federal ozone and PM_{10} (particulate matter less than 10 microns) ambient air quality standards and non-attainment for the state ozone, PM_{10} and $PM_{2.5}$ standards.

Since the original Commission Decision, the Sacramento Metropolitan Air Quality Management District (SMAQMD) has published the *Guide to Air Quality Assessment in Sacramento County* (SMAQMD, 2004). The primary purpose of the guide is to provide a means to quickly identify proposed development projects that may have a significant adverse effect on air quality. The document also provides a measure of mitigation that developers can use to reduce the air quality impacts of projects. Chapter 3 of the SMAQMD guide discusses construction air quality impacts.

SMAQMD has adopted a construction emission threshold of significance of 85 pounds per day (lbs/day) of NO_x emissions. NO_x is a precursor to ozone formation. SMAQMD has not established a threshold of significance for PM_{10} emissions.

The SMAQMD guide recommends the use of the Roadway Construction Emissions Model for estimating NO_x emissions from road construction, road widening, bridge and overpass construction and pipeline construction projects because of the ability to use manual calculations and because the URBEMIS model has shortcomings for these types of projects. (SMAQMD, 2004, page 3-3). The Roadway Construction Emissions Model, an Excel-based spreadsheet model, was commissioned by the air districts of the Sacramento Region to provide a methodology specifically for quantifying the emissions impacts of road construction projects. The model estimates emissions for load hauling, worker commute trips, construction site fugitive PM10 dust, and off-road construction vehicles and equipment.

The results of applying this model are presented in Attachment B and indicate that total emissions over the entire construction period will be less than one ton for all pollutants, including both on-site construction activities and the associated off-site vehicle trips. Maximum daily on-site fugitive dust emissions are estimated to be no more than 20 lbs/day for PM_{10} and 4.2 lbs/day for $PM_{2.5}$. Since the

intensity and duration of the proposed construction work will be far less than projected in the AFC for the total power plant, it is concluded that the proposed modification to the water treatment facilities at the CPP will be well below a level of significance.

2.2 Public Health

2.2.1 Public Health - General

Constructing the water treatment modifications would produce some combustion products and possibly expose the general public and workers to these pollutants, as well as toxic chemicals associated with other aspects of facility operations. The purpose of the public health analysis is to determine whether a significant health risk would result from public exposure to these chemicals and combustion by-products emitted during project construction.

Construction may result in emissions of both criteria and non-criteria pollutants. Criteria pollutants are those for which ambient air quality standards have been established, and which may contribute to total pollutant exposure in an area. Non-criteria pollutants are those air pollutants or air toxins for which no air quality standards have been established. The same control technologies may be effective for controlling both types of pollutants when emitted from the same source.

2.2.2 Construction Health Risks

Potential air quality impacts from construction are those from human exposure to:

- Windblown dust from gravel disturbance and other construction-related activities, and
- Emissions from heavy equipment and vehicles used in construction.

Under terms of the Commission Decision, SFA is subject to the Conditions of Certification to address construction equipment emissions. The procedures for minimizing dust generation are addressed by Air Quality Conditions AQ-SC3 and AQ-SC4 in the Commission Decision. AQ-SC3 requires preparation of a construction mitigation report that demonstrates compliance with dust control and sediment-tracking measures. AQ-SC4 requires that no visible dust emissions be allowed at or beyond the project site fenced property boundary, and prohibits dust plumes exceeding 20 percent opacity at any location on the site.

Because 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 exhaust emissions of concern in this analysis. Mitigation measures specified in Condition AQ-SC3 and AQ-SC4 are sufficient to reduce these potential acute health effects to insignificance.

2.2.3 Cancer Risks

According to present understanding, cancer from carcinogenic exposure results from biological effects at the molecular level. Such effects are currently assumed possible for every exposure to a carcinogen. Therefore, CEC 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 one million as the *de minimis* level, which is the level below which the related exposure is negligible (meaning that the 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. The 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 risk. The actual risk likely would be much lower. Thus, when a screening level analysis is less than one 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 one million, at a location 0.19 miles northeast of the project, for all the project's carcinogens from this screening level analysis. CEC's independent estimate for the maximum theoretical cancer risk is 0.67 in one 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 one million which staff considers a trigger for recommending mitigation above the applied toxic-best available control technology for Toxic Best Available Control Technology (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. The risk estimate is also below both of the one-in-one-million screenings considered significant for this type of project.

2.2.4 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 at 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.

The CPP OnePass filter addition and ZLD crystallizer modification will not add to criteria air pollutants described in the 2003 Commission Decision. With the Conditions of Certification, the project conforms with applicable laws related to public health.

2.3 Hazardous Materials Management

The 2003 Commission Decision described and analyzed risks to the public from hazardous materials. During construction of the CPP OnePass filter addition and ZLD crystallizer modification, the only hazardous materials proposed for use include gasoline, fuel oil, hydraulic fluid, lubricants,

solvents, cleaners, sealants, welding flux, paint, and paint thinner. Any impacts of spills or other releases of these materials would be limited to the site due to the small quantities involved. A Phase 1 Environmental Site Assessment (ESA) had been conducted on the site determining that there was no expectation for hazardous or buried materials to be encountered during soil disturbance.

Except as discussed above, during operation, hazardous materials at CPP pose a minimal potential for off-site impact as they will be stored in a solid form, in smaller quantities, have low mobility, or have low toxicity.

The ZLD would require nine chemicals (calcium sulfate, calcium chloride, sodium sulfate, polypropylene glycol CAS 25322-69-4, sodium chloride, hydrotreated light distillate, ethylenediaminetetraacetic acid (EDTA), polyacrylate, and possibly other scale inhibitors and an increase in the use of three others (sodium hydroxide, sulfuric acid, and sodium carbonate) at the site. 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.

The 2003 Commission Decision requires hazardous waste generated by CPP to be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. Hazardous wastes will be transported off site as authorized under a hazardous waste manifest, copies of which will be maintained for three years.

As noted in Section 2.4, Waste Management, during operation, the quantity of waste generated would be increased slightly from current operation. Waste generation will vary based on changes in water quality delivered through FSC; at present, CPP generates approximately 300 lbs/hr of mixed salts from the ZLD system. Under the modified operation, the OnePass filter and ZLD are estimated to produce a maximum of 775 lbs of salt and silt per hour. The ZLD is now expected to produce approximately 502 lbs/hr, which is estimated to be 48 percent $CaSO_4$, 25 percent NaCl, and 27 percent $3Na2SO_4$-$MgSO_4$. The OnePass filter will produce approximately 225 lbs/hr which is estimated to be 56 percent Perlite and 44 percent TSS (basically, the dirt in the feedwater). During 2007, 430 tons of salt cake was removed for the entire year. In 2008, 416 tons of salt cake was removed.

The Commission Decision describes the project to process all wastewater streams with a ZLD system that results in a residual cake solid waste. Condition of Certification Water Quality-7 required that at least 60 days prior to the start of project operation, the project owner would submit a description of the final design of the ZLD and associated schematics.

Condition of Certification Waste-6 requires that SFA test the salt cake from the crystallizer for presence of hazardous levels of metals. If levels are below 10 times the soluble threshold level concentration 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 California Health & Safety Code Section 25100 *et seq.*

Since beginning operation, the plant has repeatedly tested the salt cake from the ZLD system. When it tests as non-hazardous, the salt cake is sent to a Class III landfill in Altamont Pass, California. When the salt cake tests hazardous, it is sent to a Class I landfill at Kettleman City, California. The concentrations of metals have never been below 10 times the soluble threshold level concentration. In the most recent compliance report for operating year 2008 (to be submitted February 2009), the plant will show shipments going to both facilities.

In 2008, 326 tons of non-hazardous ZLD salt cake was landfilled and 90 tons of non-Resource Conservation and Recovery Act (RCRA) California Hazardous waste was sent to Chemical Waste Management in Kettleman City.

After OnePass filter addition and ZLD system modification, CPP intends to continue the practice of testing the salt cake for appropriate disposal. Implementation of Conditions Water Quality-7 and Waste-6 will ensure the plant continues to operate without adverse impact to the environment. The project conforms to applicable laws related to hazardous materials management and adverse impacts related to hazardous materials.

2.4 Waste Management

Waste management was analyzed in the Commission Decision for the CPP project. The analysis noted that different wastes would be generated during construction and operation, and needed to be managed appropriately to minimize the potential for adverse human and environmental impacts. The analysis addressed both hazardous and non-hazardous waste. Construction waste generated from the power plant would be segregated for recycling, where practical. Wastes that cannot be recycled would be placed in covered containers and removed on a regular basis for disposal. The amount of waste generated during construction is estimated to be less than 40 yards per week and to last no longer than 8 weeks in spring and 8 weeks in fall. Because the amount is small and the generation is temporary, the increase in waste generation from construction is considered insignificant.

During operations, the quantity of waste generated would be increased slightly from the existing conditions. The amount of waste will vary based on changes in water quality delivered through FSC; at present, CPP generates approximately 300 lbs/hr of mixed salts from the ZLD system. Under the modified operation, ZLD is estimated to produce approximately 502 lb/hr, which is estimated to be 48 percent Ca SO_4, 25 percent NaCl, and 27 percent 3Na2 SO_4-Mg SO_4. The OnePass filter will produce approximately 225 lbs/hr that is estimated to be 56 percent Perlite and 44 percent TSS (basically, the dirt in the feedwater). During 2007, 430 tons of salt cake was removed for the entire year. During 2008, 416 tons of salt cake was removed.

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In 2008, 326 tons of non-hazardous ZLD salt cake was landfilled and 90 tons of non-Resource Conservation and Recovery Act (RCRA) California Hazardous waste was sent to CWM in Kettleman City.

After water treatment modification, CPP intends to continue the practice of testing the salt cake for appropriate disposal. Implementation of Conditions Water Quality-7 and Waste-6 will ensure the plant continues to operate without adverse impact to the environment.

The implementation of the existing conditions would be adequate to prevent adverse impacts from waste-generation impacts.

2.5 Noise

Constructing the water treatment modifications would cause a short-term increase in noise generation. The highest noise would result from crane operations during pier drilling. The OnePass filter and ZLD modifications would produce no excess noise when in operation.

Construction noise is a temporary phenomenon. Construction noise heard off site would vary from hour to hour and day to day, depending on the equipment in use and the operation 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 cluster of permanent residences approximately 5,100 feet west of the power plant.

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 hourly average construction noise level during the day were to exceed 60 decibels (dBA) Leq in an outdoor activity area near a residence, the construction noise would begin to interfere with speech communication.

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

The Sacramento County Noise Performance Standards exempt construction noise from otherwise applicable daytime limitations. SFA estimates, and SFA 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 of affected residents are mitigated to a level of insignificance (AFC p. 8.5-10; SA Noise, p.4.6.8).

2.5.1 Vibration

A potential source of significant vibration is pile driving; therefore, drilled piers will be used instead for foundation load distribution. Because of the distance of the nearest residents no vibration effects would be likely during pier drilling.

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

2.6 Water Resources

In the AFC, SMUD proposed to use approximately 8,000 acre-feet per year (AFY) of water from FSC for both Phase 1 and 2 of the project, largely for cooling purposes. SMUD has water rights to use 15,000 acre feet of American River water and an existing water service contract to use 60,000 AFY of Central Valley Project (CVP) water with the USBR, dating back to 1970. In accordance with this contract, the USBR was to deliver the total of 75,000 AFY of Municipal and Industrial water which was to be used for thermal generation at Rancho Seco. The water service contract was amended in 2006 where a partial assignment of entitlement to CVP water was agreed to between SMUD and the Sacramento County Water Agency. SMUD assigned one-half or 30,000 AFY of its CVP water to the County of Sacramento. The County of Sacramento will use this assigned water will be used by the County of Sacramento in the area known as Zone 40. That water will be delivered by Freeport Regional Water Project (FRWP).

FSC 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 to Hadselville Creek. FSC water is also used 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). CVPIA amends previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses. Also, CVPIA recognizes fish and wildlife enhancement as having equal priority with power generation.

SMUD originally proposed to construct a new 0.5-mile, 12-inch pipeline to the project from the existing 66-inch pipeline supplying Rancho Seco Nuclear Power Plant. A subsequent AFC supplement proposed a reduction in environmental impacts by installing a 20-inch pipe just 200 feet northeast of CPP to connect to the 48-inch pipe supplying Rancho Seco reservoir. An on-site water

treatment plant treats the incoming water for potable domestic water system, plant service water, HRSG makeup water, and turbine inlet air cooling. The project would not use any groundwater for any purposes.

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 CEC staff related to concerns over the use of potable water for cooling and environmental effects of discharging to area surface waters, SMUD revised the project to use a ZLD system, which avoids discharges to Hadselville Creek and reduces water consumption from 4,000 AFY per phase to approximately 2,663 AFY. When FRWP comes on line in late 2010, the water in FSC will no longer be provided solely from the American River.

FRWP is a cooperative effort of SCWA and East Bay Municipal Utility District (EBMUD) to supply surface water from the Sacramento River to customers in central Sacramento County and the East Bay of California. FRWP will provide SCWA with up to 85 million gallons of water per day (mgd). Project-related diversions from the Sacramento River will be delivered to FSC approximately at its midpoint and conveyed approximately 15 miles to the terminus of FSC and a new canal pumping facility. The water in FSC from the discharge point to the terminus of the canal will contain a blend of Sacramento River water and American River water. Currently, SMUD is the only water user of the lower portion of FSC. The concentrations of some physical and chemical constituents in the Sacramento River water are generally higher than in American River water. Consequently, the quality of water delivered to SMUD will change when FRWA project-related deliveries to EBMUD occur.

Currently the water quality in FSC reflects the water quality of the American River. FSC is free of sediment even after continual operation since 1973. Importation of water from Sacramento River into FSC will impact the current raw water quality. The magnitude of changes that can reasonably be expected to occur based on available historical data are shown in Table 2-1. The predicted values are based on a mass balance assessment of the maximum EBMUD delivery rate and information provided from SMUD on current and projected uses during the peak use summer period. EBMUD's portion of the diversions at Freeport would occur at a maximum rate of 100 million gallons a day (mgd); SMUD's current peak summer water use rate is approximately 13 mgd (for Rancho Seco) and would increase to about 19 mgd (Rancho Seco and CPP I and CPP II) when CPP is fully constructed. The blended water during peak summer conditions of FRWA diversions and SMUD use would consist of about 16 percent American River water and 84 percent Sacramento River water.

In general, the blended Sacramento River water and American River water will be very low in all constituents and not adversely affect existing beneficial uses or preclude the use of FSC water for any other designated beneficial uses. However, constituent concentrations in FSC will increase, and transport TSS and turbidity would likely increase. Fine sediment would remain in suspension and be transported to downstream users (i.e., SMUD). The fate and transport of suspended sediment conveyed from the point of diversion at the Sacramento River to the terminus of FSC was modeled to estimated amounts and locations of sediment deposition (CH2M HILL, 2002). The analysis indicates that a substantial portion (approximately 28 percent) of the suspended sediment diverted at the FRWA pumping facility will be immediately removed at the intake. Approximately 56 percent of the suspended sediment delivered to FSC will settle to the bottom of the canal. Removal of suspended sediment at the Freeport intake facility and through settling in FSC combined is

approximately 67 percent. Accumulation estimates show that it would take approximately 25 years for sediment buildup to reach approximately 1 foot deep for the first mile of the canal's FRWP inlet point, and many more years for suspended quantities of sediment to settle out in the remainder of the canal.

Table 2-1: Existing and Project Folsom South Canal Water Quality Conditions

Constituent	Regulatory Objective	River Conditions		Project FSC Conditions[1]	
		American River/ Folsom South Canal	Sacramento River	Current Flows	Future Flows
TDS [3] (mg/L)	Narrative [b] 500 mg/L [d]	42	99	93	91
TSS (mg/L)	Narrative [b] 30 mg/L monthly average 45 mg/L weekly average 60 mg/L daily maximum [c]	1.5 [3]	93 [5]	28	27
Turbidity (NTU)	<20% increase in receiving water body [a]	0.7 [2]	16 [3]	4.3 [4]	4.1 [4]
Inorganic nitrogen [6,7] (mg/L N)	NO3 <10 mg/L [3]	0.08	0.18	0.17	0.16
Dissolved orthophosphorus [6] (mg/L P)	N/A	0.027	0.030	0.030	0.030
Total phosphorus [6] (mg/L P)	N/A	0.019	0.061	0.056	0.055

Notes:

1 Blended concentrations for all parameters except turbidity and TSS are based on full EBMUD delivery rate of 100 mgd in combination with current average January–November SMUD delivery rate of 12.3 mgd and future delivery of 17.1 mgd. Blended turbidity and TSS concentrations based on sediment transport analysis (CH2M HILL 2002) for March with EBMUD delivery rate of 100 mgd and SMUD current and future delivery rate of 11.8 mgd and 16.6 mgd, respectively.

2 EBMUD data prepared for SMUD (unpublished) for terminus of FSC for July 1997–October 2001.

3 Sacramento Coordinated Monitoring Program 2002: synoptic data for Sacrament River at Freeport and lower American River at Nimbus for December 1992–June 2002.

4 Blended turbidity concentration in FSC based on suspended sediment fraction remaining after settling with FSC based on CH2M HILL (2002) analysis. Turbidity reduced in equal proportion to the removal rate of settleable material; colloidal material assumed to not settle.

5 Source is CH2M HILL (2002); TSS value is median concentration in Sacramento River during March based on US Geological Service data for 1973–2001.

6 Merritt-Smith Consulting 2001: summary of USGS data from Sacramento River at Freeport for dry years only (1984, 1987–1992, and 1994); American River at Nimbus for July 1997–October 2001.

7 Comprising of dissolved ammonia, nitrate, and nitrogen.

a Basin Plan Water Quality Objective—change resulting from controllable factor should be less than 1 nephelometric turbidity units (NTU) for background less than 5 NTU; change less than 20% for background value between 5 and 50 NTU.

b Basin Plan—water shall not contain constituent in concentrations that would cause nuisance or adversely affect beneficial uses.

c Existing permit limit included in SMUD's Waste Discharge Requirements issued by the Regional Water Quality Control Board (RWQCB).

d Secondary drinking water Maximum contaminant level (MCL).

e Primary drinking water MCL.

Water quality delivered to other FSC water users and downstream receiving waters (i.e., Rancho Seco Reservoir and Hadselville Creek) will most likely change on a seasonal basis. Potential water quality changes in FSC were estimated by calculating the blended average concentration of constituents that would result through a combination of the two water sources (i.e., American River and Sacramento River). The data indicate that the blended water passing downstream in FSC will have very good water quality. However, estimated FSC water quality conditions in March that representing typical EBMUD delivery and peak average TSS concentrations in the Sacramento River indicate that TSS would increase when blended.

Nutrient levels are also higher in the Sacramento River seasonally. A preliminary analysis of potential effects of nutrients (Merrittt-Smith Consulting, 2002) indicated that the blend of water sources could increase attached algae growth in FSC. However, the estimated nutrient changes are relatively small and are not expected to appreciably change conditions in Rancho Seco Reservoir or Clay Creek. There is also the possibility of intermittent increases in other constituents, such as trace metals, pesticides, and coliform bacteria.

Phase 1 and Phase 2 would each use ZLD, and each consume approximately 2,664 AFY of water based on an average consumption of 2.5 mgd, with a peak consumption of 3.5 mgd.

Implementation of the OnePass water filter and modified ZLD system would not increase water use at CPP. Therefore, no impacts to water resources are expected from this modification.

2.7 Soil Resources

All work necessary to remove and install the new water treatment system modification system will occur within the paved and graveled CPP compound. The footprint of the project will not be changed and there will be no construction or activities outside of the present project boundaries.

With the implementation of the Conditions of Certification, the project conforms to applicable LORS related to soil resources and all potential soil impacts will be avoided.

2.8 Biological Resources

The potential biological impacts of installing a new OnePass filter system and upgrading the CPP ZLD system were analyzed by reviewing the project description and identifying actions that would potentially affect biological resources. The 2003 Commission Decision was primarily concerned with converting biological species habitat into industrial habitat. The CPP water treatment system modification would change the equipment within an existing power plant and would not convert any habitat from natural condition. For this reason, no direct impacts to biological resources or wetlands from habitat changes could be identified. With the implementation of the Conditions of Certification, the project conforms to applicable LORS related to biological resources and all potential noise impacts will be mitigated to insignificance.

2.9 Socioeconomics

In the 2003 Commission Decision, the socioeconomic impact analysis evaluated 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 County, and Lodi and Stockton in San Joaquin County.

The OnePass filter addition and ZLD system modification would not cause a significant adverse direct or cumulative impact on housing, employment, schools, public services or utilities. The project conforms to applicable LORS related to socioeconomic matters and all potential socioeconomic impacts will be insignificant.

2.10 Land Use

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 CPP water treatment filter modification does not affect the conditions of use presented in the Land Use analysis nor the Findings of the Commission Decision. The proposed water treatment filter modification is proposed to occur in the developed area and structures of the existing CPP facility. Short-term construction-related impacts would involve additional truck traffic and equipment movement. No adverse land use impacts are expected during the upgrade, and no changes in post-construction land use are anticipated.

The existing Conditions of Certification are adequate to protect land use resources.

2.11 Visual Resources

The California Environmental Quality Act (CEQA) Guidelines define a "significant effect" on the environment to mean a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by the project including…objects of historic or aesthetic significance (Cal. Code Regs., tit. 14, subsection 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:

1. Would the project have a substantial adverse effect on a scenic vista?

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

2.11.1 Objectionable Appearance

Construction of the proposed OnePass filter addition and ZLD system modification could cause adverse visual impacts due to the presence of equipment, materials, and workforce if these aspects are visible to the public. Construction would involve the use of cranes, heavy construction equipment, temporary storage facilities, and temporary laydown/staging areas. Construction could include pier drilling.

Project construction would span a period of two months during April and May 2009 and two months in October and November 2009. The project construction and activities would occur on the north side of the CPP project. Views of the construction area are entirely blocked to the south by the water storage tanks and intervening office buildings and warehouse facilities. Views from the southwest and west (residential area) are largely shielded by the HRSGs, turbines and intervening pipe racks. North of the project is the decommissioned Rancho Seco Nuclear Facility, in which there are neither residents nor other potential observers. The project may be slightly visible from Rancho Seco Reservoir several miles to the east, but direct view is shielded by the cooling tower and is against a backdrop of the storage tanks, pipe racks, ZLD system and offices. Therefore, the construction is not likely to be noticeable.

Also, due largely to the short-term nature of project construction, the adverse visual impacts that would occur during construction would not be significant.

While most construction activities would occur during the 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. To ensure that significant construction lighting impacts do not occur, Conditions of Certification VIS-4 requires minimum brightness, shielding, and use of motion detectors, all consistent with worker safety.

When the water treatment filter modification is completed, it will be located in the northeast corner of the existing CPP with only a slight increase in diameter and height. The water treatment filter modification will be obscured from views from the north by the Rancho Seco Nuclear Plant, from the south by the water tanks, from the east by the cooling towers, and from the west by the steam turbine and turbine pedestal.

With the implementation of the Conditions of Certification, the project conforms to applicable LORS related to visual resources.

2.12 Cultural, Paleontological, and Historic Resources

The potential cultural, paleontological, and historical resources impacts of the project were analyzed by reviewing the Cultural Resources Post Construction Report and the Paleontological Resources Post-Construction Report for the Cosumnes Power Plant, Gas Pipeline. Required mitigation measures to reduce impacts to cultural, paleontological, and historical resources are outlined in the Commission Decision. All of the work necessary to install the new OnePass filter and ZLD system modification will occur within the paved and gravel areas of the CPP pad site and will require earth-moving and/or excavation activities.

Several cultural resource studies were prepared prior to and during construction at the CPP project. These studies ranged in dates from April 11, 2001, to October 5, 2004. Literature and record searches were performed by Garcia and Associates in 2001 and were followed up by cultural resources reconnaissance surveys conducted by CH2M Hill in July of the same year. As a result of these various studies, a number of prehistoric archaeological, historical, and other identified sites were discovered. Presence/absence testing and remote sensing of the CPP pad site, laydown area and adjacent project areas were completed prior to ground disturbance and no cultural material was found.

Garcia and Associates conducted Native American consultation included a sacred lands search through the Native American Heritage Commission in March of 2001 and local Native American contacts were also notified about the project in May of 2001. Both the Native American Heritage Commission and the Tribal Historic Preservation Committee had no information regarding historic sites in the project area. No other tribal entities responded to the request for information. Also, the record search conducted at the North Central Information Center of California Historical Resources Inventory System (CHRIS) by Garcia and Associates, indicated that there was no presence of any Native American traditional cultural properties at the project site.

SWCA Environmental Consultants monitored earth-disturbing activities including the Test Pile Program, Phase I construction at the CPP pad site and laydown area, as well as the access road. Monitoring took place from August 13, 2003, through September 20, 2006. Auguring to drive production piles at the plant was also monitored in accordance with the Conditions of Certification specified in the Commissions Decision.

From these surveys, four cultural resources were identified on the CPP project. Two of these findings were prehistoric lithic tools, one was a historic feature and the last was a historic artifact. A historic resource was also identified outside the CPP pad site south of the power plant.

For paleontological resources, SWCA Environmental Consultants reviewed published and unpublished geological and paleontological literature. The review concluded that no documented fossils were located within the same geologic unit as what is underlying the project site.

Preliminary paleontological study revealed no fossils on the surface with in the boundary of the CPP project site; however, nearby rocks of the same geologic unit known to underlay the CPP project site revealed previously undocumented fossil locations.

SWCA Environmental Consultants performed paleontological monitoring and mitigation from August 13, 2003, to September 24, 2004. All field surveys, monitoring, and mitigation procedure were conducted in accordance with Society of Vertebrate Paleontology 1995 guidelines by a CEC-approved paleontologist. Results of these surveys, monitoring, and mitigation was provided in the Paleontological Resources Post-Construction Report.

The report determined that although fragments of petrified wood were found at the CPP pad site in the Riverbank formation, they were not significant. The fossils were described, documented, and then discarded according to standard protocol. The petrified wood was found on the west side of the project site.

The Cultural Resources Post Construction Report recommends that a qualified archaeologist monitor ground-disturbing activity in native soils or sediments at the CPP pad site. In addition, the Paleontological Resources Post-Construction Report recommends that a qualified paleontologist be used for any future excavation that may impact paleontological sensitive geologic units (such as the Riverbank formation) at the CPP project site. Because the new water treatment system may require drilled piers to be installed, paleontological monitoring consistent with the Conditions of the Commission Decision will be followed.

2.13 Traffic and Transportation

The water treatment filter modification will cause short-term construction-related impacts and would involve additional truck traffic and equipment movement. Also, there would be a slight increase in the number of trips to the landfill for waste disposal. The increase in traffic is considered to be negligible. With the implementation of the Conditions of Certification, the project conforms to applicable LORS related to transportation.

2.14 Geological Hazards and Resources

The 2003 Commission Decision notes that no active or potentially active faults are known to cross the CPP footprint or the associated linear facilities. The project is located in Seismic Zone 3 as shown on Figure 16-2 of the 1998 edition of the California Building Code. 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 fault is associated with the San Andreas Fault system, the Greenville, 53 miles west, and the San Andreas itself is 90 miles west. Both are 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, CEC staff visited the project location and did not observe any evidence of surface faulting. Previous investigations at the site performed near the decommissioned Rancho Seco Nuclear Power Plant found no faults crossing the project site. The potential for surface rupture on a fault at the CPP footprint is considered to be very low, as 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 micro-seismicity is known at the site.

The Commission Decision noted that the California Department of Mines and Geology (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.

Subsurface geotechnical investigations at the Rancho Seco site 0.6 miles to the north, found that groundwater was approximately 150 feet below the surface. This indicates that soils and sediments occurring in the vicinity of the CPP 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.

The CPP 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 water treatment modification would be constructed to meet the ambient seismic hazards according to the Uniform Building Code and the AFC. Implementation of the Conditions of Certification will be adequate to prevent environmental impacts from geological hazards.

2.14.1 Floods

Stormwater runoff typically increases with new construction activities. The OnePass filter addition and ZLD system modification would not increase the size of the foundation of the power plant. The water treatment filter modification will occur within the boundaries of the current CPP, and would have a negligible effect on stormwater flows of Clay Creek or downstream rivers.

With the implementation of the Conditions of Certification, the project conforms to applicable LORS related to geological resources and the public will not be exposed to geological hazards.

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3.1 Impacts the Modification May Have on the Facilities' Ability to Comply with Applicable Laws, Ordinances, Regulations and Standards

The project modification, as proposed, would have no adverse effect on the ability of the certified facility to comply with applicable LORS. The project would allow the CPP facility to continue to run efficiently, and to meet environmental goals and the current demand for electricity. The project would continue to operate in compliance with all applicable LORS.

3.2 How the Modification Affects the Public

With implementation of the modification as proposed, the upgrade would have no immediately detectable affect on the public. The project would increase the amount of salt and silt waste from CPP, resulting in small increases to waste transport traffic and landfill materials. However, this change, while measurable, is practically undetectable to the public.

3.3 Property Owners Potentially Affected by the Modification

No impacts to any proximate or distant property owners could be identified. Property owners within 1,000 feet of the project are listed in Appendix A.

3.4 Potential Effects on Nearby Property Owners, the Public and Parties in the Proceedings

Activities conducted at ground level are generally not visible to residential property owners and the general public in the project area. Because the project area is largely agricultural and the OnePass filter addition and ZLD system modification is located in the northeast corner of CPP. The water treatment filter modification is obscured from view by the decommissioned Rancho Seco Nuclear Power Plant to the north, the cooling towers to the east, the water tanks to the south, and the HRSGs, gas turbines and steam turbine on the west. With the exception of cranes used to lift components of the water treatment filter modification into place and trucks brought in to carry water treatment filter material, it is unlikely that nearby owners or the public would see or notice any unusual activity at the project site.

Construction could cause some temporary increase in noise. However, this activity is expected to be brief and the nearest home is approximately 5,100 feet from CPP.

The project would not change the footprint, visible conditions, noise or any other visible part of the project operation and, thus, is expected to have no detectable effect on nearby property owners.

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APPENDIX A

Property Owners within 1,000 Feet of the CPP Project

PROPERTY OWNERS WITHIN 1,000 FEET OF THE CPP PROJECT

Owner Name	Owner Name 2	Tax Billing Address	Tax Billing City & State	Tax Billing Zip
SMUD		PO Box 15830	Sacramento, CA	95852
SMUD		PO Box 15830	Sacramento, CA	95852
Frank A Loretz		10884 Franklin Blvd	Elk Grove, CA	95757
SMUD		Po Box 15830	Sacramento, CA	95852

APPENDIX B

Roadway Model Input Screens and Results

Road Construction Emissions Model

Version 6.3.1

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells C10 through C25.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	SMUD CPP ZLD	
Construction Start Year	2009	Enter a Year between 2005 and 2025 (inclusive)
Project Type	3	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	1.5	months
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.1	miles
Total Project Area	2.0	acres
Maximum Area Disturbed/Day	1.0	acres
Water Trucks Used?	2	1. Yes 2. No
Soil Imported	0.0	yd^3/day
Soil Exported	0.0	yd^3/day
Average Truck Capacity	20.0	yd^3 (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of Construction Months	Program Calculated Months	2005	%	2006	%	2007
Grubbing/Land Clearing	0.00	0.15	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	1.50	0.60	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.53	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.23	0.00	0.00	0.00	0.00	0.00
Totals	1.50	1.50					

Hauling emission default values can be overridden in cells C45 through C46.

Soil Hauling Emissions	User Override of

User Input	Soil Hauling Defaults	Default Values
Miles/round trip	50.00	30
Round trips/day	8.00	0
Vehicle miles traveled/day (calculated)		400

Hauling Emissions	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate (grams/mile)	1.19	15.82	8.52	0.62	0.53	1847.96
Emission rate (grams/trip)	12.14	8.36	214.37	0.02	0.01	229.92
Pounds per day	1.1	13.9	7.5	0.5	0.5	1628.2
Tons per contruction period	0.02	0.23	0.12	0.01	0.01	26.86

Worker commute default values can be overridden in cells C60 through C65.

Worker Commute Emissions

	User Override of Worker Commute Default Values	Default Values
Miles/ one-way trip	25.00	20
One-way trips/day	2.00	2
No. of employees: Grubbing/Land Clearing	0.00	1
No. of employees: Grading/Excavation	10.00	4
No. of employees: Drainage/Utilities/Sub-Grade	0.00	3
No. of employees: Paving	0.00	4

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grading/Excavation (grams/mile)	0.195	0.332	3.340	0.034	0.019	426.170
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Paving (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grubbing/Land Clearing (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grading/Excavation (grams/trip)	1.048	0.435	10.085	0.120	0.011	190.980
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Paving (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Grubbing/Land Clearing	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Grub/Land Clear	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Grading/Excavation	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Grading/Excavation	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Drainage/Utilities/Sub-Grade	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Drain/Util/Sub-Grade	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Paving	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Paving	0.000	0.000	0.000	0.000	0.000	0.000
tons per construction period	0.000	0.000	0.000	0.000	0.000	0.000

Water truck default values can be overriden in cells C91 through C93 and E91 through E93.

Water Truck Emissions

	User Override of	Program Estimate of	User Override of Truck	Default Values

Water Truck Emissions

	Default # Water Trucks	Number of Water Trucks	Miles Traveled/Day	Miles Traveled/Day
Grubbing/Land Clearing - Exhaust	0.00	0		0
Grading/Excavation - Exhaust	0.00	0		0
Drainage/Utilities/Subgrade	0.00	0		0

	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00
Emission rate - Grading/Excavation (grams/mile)	1.19	15.82	8.52	0.62	0.53	1847.96
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grub/Land Clear	0.00	0.00	0.00	0.00	0.00	0.00
Pound per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00
Pound per day - Drainage/Utilities/Subgrade	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Subgrade	0.00	0.00	0.00	0.00	0.00	0.00

Fugitive dust default values can be overridden in cells C110 through C112.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0	0.0	0.0	0.0	0.0
Fugitive Dust - Grading/Excavation		1	20.0	0.1	4.2	0.0
Fugitive Dust - Drainage/Utilities/Subgrade		0	0.0	0.0	0.0	0.0

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00

		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00
	1	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00
	1	Scrapers	0.00	0.00	0.00	0.00	0.00
	0	Signal Boards	0.00	0.00	0.00	0.00	0.00
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	pounds per day	0.0	0.0	0.0	0.0	0.0
	Grubbing/Land Clearing	tons per phase	0.0	0.0	0.0	0.0	0.0

	Default						
Grading/Excavation	Number of Vehicles		ROG	CO	NOx	PM10	PM2.5
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00
1.00		Bore/Drill Rigs	0.83	2.97	10.68	0.34	0.31
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00
1.00	1	Cranes	0.83	3.18	8.16	0.32	0.29
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00
0.00	1	Excavators	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00
1.00	1	Graders	1.02	3.91	8.00	0.45	0.42
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00
	0	Other Construction Equipment	0.06	0.20	0.35	0.03	0.03
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00

		Rollers	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00
	1	Rubber Tired Loaders	0.72	2.75	5.63	0.32	0.29
	1	Scrapers	2.01	9.02	19.18	0.78	0.71
	0	Signal Boards	0.11	0.27	0.26	0.03	0.02
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00
2.00		Welders	0.93	2.19	1.97	0.22	0.20
	Grading/Excavation	pounds per day	6.5	24.5	54.2	2.5	2.3
	Grading	tons per phase	0.1	0.4	0.9	0.0	0.0

Drainage/Utilities/Subgrade	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5
Override of Default Number of Vehicles	*Program-estimate*		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00
	1	Graders	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00
	1	Plate Compactors	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00
	1	Scrapers	0.00	0.00	0.00	0.00	0.00
	0	Signal Boards	0.00	0.00	0.00	0.00	0.00

		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00
	1	Trenchers	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00
	Drainage	pounds per day	0.0	0.0	0.0	0.0	0.0
	Drainage	tons per phase	0.0	0.0	0.0	0.0	0.0

Paving	Default Number of Vehicles		ROG	CO	NOx	PM10	PM2.5
Override of Default Number of Vehicles	*Program-estimate*	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00
	1	Pavers	0.00	0.00	0.00	0.00	0.00
	1	Paving Equipment	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00
	1	Rollers	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00
		Scrapers	0.00	0.00	0.00	0.00	0.00
	0	Signal Boards	0.00	0.00	0.00	0.00	0.00
		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.0	0.0	0.0	0.0	0.0
Paving	tons per phase	0.0	0.0	0.0	0.0	0.0
Total Emissions all Phases (tons per construction period) =>		0.1	0.4	0.9	0.0	0.0

Road Construction Emissions Model, Version 6.3.1

Emission Estimates for -> SMUD CPP ZLD Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	7.6	32.0	68.2	23.0	3.0	20.0	6.9	2.7	4.2	6,977.8
Drainage/Utilities/Sub-Grade	-	-	-	-	-	-	-	-	-	-
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (pounds/day)	7.6	32.0	68.2	23.0	3.0	20.0	6.9	2.7	4.2	6,977.8
Total (tons/construction project)	0.1	0.5	1.1	0.2	0.0	0.1	0.1	0.0	0.0	115.1

Notes:

Project Start Year ->	2009
Project Length (months) ->	2
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Total Soil Imported/Exported (yd^3/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> SMUD CPP ZLD Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	3.4	14.5	31.0	10.5	1.4	9.1	3.1	1.2	1.9	3,171.7
Drainage/Utilities/Sub-Grade	-	-	-	-	-	-	-	-	-	-
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	3.4	14.5	31.0	10.5	1.4	9.1	3.1	1.2	1.9	3,171.7
Total (megagrams/construction project)	0.1	0.5	1.0	0.2	0.0	0.1	0.1	0.0	0.0	104.4

Notes:

Project Start Year ->	2009
Project Length (months) ->	2
Total Project Area (hectares) ->	1
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported ($meters^3$/day)->	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.