5.13 WASTE MANAGEMENT

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5.13.1 Affected Environment

In California, wastes are classified according to their physical nature (liquid or solid) and their degree of hazardous characteristics. The California Environmental Protection Agency (CAL/EPA), Department of Toxic Substances Control (DTSC) and the California State Water Resources Control Board (SWRCB) share the responsibility of classifying and regulating wastes in California. Wastes are classified according to regulations set forth in the California Code of Regulations (CCR), Titles 22 and 23. The classifications used by the DTSC reflect this agency's mandate to protect public health and the environment, while the classifications established by the SWRCB are designed to protect the beneficial uses of water.

Nonhazardous waste is a waste that does not contain soluble pollutants in concentrations that would cause degradation of water quality. Nonhazardous wastes may be disposed of at Class III waste disposal facilities. According to the SWRCB, nonhazardous wastes are further divided into solid wastes that contain substantial quantities of degradable material (i.e., common municipal solid waste) and inert wastes, which do not contain degradable materials. Solid waste disposal is also regulated by the California Integrated Waste Management Board (CIWMB) and in the general area of the proposed site for the Tesla Power Project (TPP), by the Alameda County Waste Management Authority.

Hazardous waste is defined as any waste whose hazardous nature exceeds criteria for toxicity, corrosivity, ignitability, or reactivity as established by the DTSC. Hazardous waste also includes specific listed wastes as identified in 22 CCR Section 66261. Most hazardous wastes may be disposed of only at Class I waste disposal sites approved by the DTSC. Certain hazardous wastes classified as restricted hazardous wastes are banned entirely from land disposal, because they pose a high threat to public health and the environment. Land disposal restrictions are provided in 22 CCR Section 66268.

Designated wastes are either: 1) a hazardous waste for which the generator has been granted a variance by the DTSC; or 2) a nonhazardous waste that contains pollutants that could be released into the environment in concentrations that could cause degradation of water quality. Designated waste may be disposed of only at Class I or Class II waste disposal facilities.

An Environmental Site Assessment (ESA) was conducted by Foster Wheeler Environmental Corporation for the proposed TPP site which is incorporated into this application by reference and included in Appendix H using methods prescribed by the American Society for Testing and Materials (ASTM). A discussion of the existing site conditions is provided in the ESA report. The report concluded there was no visual evidence of hazardous or toxic wastes onsite. In addition, the project site was not listed by any agency database as having the potential for hazardous or toxic wastes onsite.

The following sections identify and discuss the available capacity of nearby disposal facilities for nonhazardous, liquid and hazardous wastes to be generated by the TPP. Specific wastes generated by the construction and operation of the facility are presented in Section 3.4.7 and

discussed further in the following subsections. Temporary and permanent facility closure is discussed in Section 3.9.

5.13.1.1 Nonhazardous Waste Disposal Sites (Class III)

Solid Waste Disposal Sites

The Alameda County Waste Management Authority regulates solid waste management in Alameda County.

Existing nonhazardous solid waste disposal (Class II/III) facilities within 50 miles of the project site that will accept nonhazardous wastes generated by the project are listed in Table 5.13-1. The four landfills listed in Table 5.13-1 accept nonhazardous wastes and inert solid wastes, including construction/demolition waste. Liquid wastes are not accepted at any of the three landfills listed. Industrial process solid waste is accepted by these landfills on a case-by-case basis. No significant enforcement actions or violations against these facilities have been identified (California Integrated Waste Management Board, 2000).

Table 5.13-1. Nonhazardous Solid Waste Disposal Sites (Class II and III)

Landfill Disposal Site Name	Location	Current (2000) Daily Usage (tons)	Remaining Capacity (cubic yards)	Anticipated Year of Closure	Approximate Distance from Site (miles)
Vasco Road Landfill Class III	Livermore	2503	10,900,000	2015	8
Altamont Landfill Class II/III	Livermore	6000	69,100,000	2024+	4
Pleasanton Transfer Station Class III	Pleasanton	325	NA	NA	16
Tri-Cities Recycling and Disposal Class II/III	Fremont	2100	1,300,000	2001	24
	TOTAL	10,928	81,300,000		

5.13.1.2 Hazardous Waste Disposal Sites

There are three major hazardous waste (Class I) landfills in California. These three landfills are:

- Safety-Kleen Buttonwillow Inc. (Kern County), on Lokern Road between State Highways 33 and 58. This is a treatment, storage and disposal (TSD) facility that accepts Class I solid wastes, such as wastewater sludge, oil field waste, contaminated soil, and Class II liquid wastes. The permitted capacity of this landfill is 13.25 million cubic yards with a remaining capacity of 10.9 million cubic yards. This landfill has an estimated 50 years of operational life remaining. The EPA Identification Number for this facility is CAD980675276.
- Chemical Waste Management Landfill in Kettleman Hills (Kings County) on State Highway 41 about 2 miles west of Interstate 5. The Class I portion of this landfill has

approximately 6.7 million cubic yards remaining capacity of a total permitted capacity of 10.7 million cubic yards. The remaining life of this landfill is approximately 25 years (Vasquez, 2000). The EPA Identification Number for this facility is CAD000646117.

- Safety-Kleen Superstition Hills Landfill in Imperial County. The estimated remaining capacity of this landfill is 2.4 million cubic yards with an operational life of 50 years (Yadvich, 2000). The EPA Identification Number for this facility is CAD000633164.

In addition to landfills, there are numerous offsite commercial hazardous waste treatment and recycling facilities in California. (For example, Safety-Kleen has 11 branch offices, two accumulation centers, two service centers, and one recycling center in California.) These facilities have sufficient capacity to recycle and/or treat hazardous waste generated in California. Most hazardous waste generated at the TPP site will be generated from the flushing and cleaning of pipelines and the heat recovery steam generator (HRSG) prior to facility startup. All hazardous waste will be removed and delivered to a TSD facility. Used oil will be collected by a permitted oil recycler.

5.13.2 Environmental Impacts

The following sections describe the types of waste that are expected to be generated during the construction and operation of the project, and how nonhazardous solid waste, wastewater, and hazardous wastes will be disposed.

5.13.2.1 Nonhazardous Solid Waste (Class III)

Construction

During construction of the power plant and associated linear facilities, up to 1,200 tons of nonhazardous solid waste will be generated. The types of nonhazardous wastes generated during construction include minor vegetation debris from site grading and excavation, excess concrete, lumber, scrap metal, insulation, packaging and empty nonhazardous chemical containers. Paper, wood, glass, and plastic waste will be generated from packing materials, excess lumber, and insulation. Wastes will be placed in a covered dumpster and removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill.

Waste metal generated during construction may include steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers. Aluminum wastes from packing materials and electrical wiring waste also will be generated. Metal wastes will be separated, where practical, for salvaging/recycling. Non-recyclable metal waste will be disposed of at a Class III landfill.

During construction activities, material will be excavated and compacted to accomplish final grade. It is assumed that the excavated materials will be suitable for backfill. Although it is not anticipated, if unsuitable backfill material is encountered it will be removed from the site and disposed of at an acceptable location. It is expected that this would be a Class III landfill, unless contamination is encountered, as discussed in Section 5.13.2.3 below.

Drilling mud will be used as part of the horizontal directional drilled process to lubricate and cool the drill. The mud will be non-toxic bentonite. The excess drilling mud will be collected at the directional drilling site. It will then be disposed of at a Class III landfill.

Overall, solid wastes generated during construction will not have a significant impact on the available capacity of landfills or recycling or treatment facilities.

Operation

Nonhazardous solid wastes (Class III) generated during operation of the power plant will include routine maintenance solid waste, office waste and oily rags. Oily rags will be treated and recycled on a regular basis by an industrial cleaning service. Office paper, newsprint, aluminum cans, plastic, and glass containers and other nonhazardous solid waste material will be recycled to the extent practical. The remaining solid wastes will be removed on a regular basis by a permitted waste hauler for disposal at a Class III landfill.

Approximately 80 tons of solid waste from routine maintenance and operation will be generated from the project on an annual basis. Additionally, the zero liquid discharge (ZLD) system will generate approximately 1200 tons per year of solid waste from the crystallizer unit. This waste product has proven to be a commercially salable product in similar applications. If this product cannot be sold it will be disposed of at a Class III landfill. It is anticipated that disposal of 1280 tons per year of solid waste from the project will represent only a nominal increase (approximately 0.05 percent relative to current annual total combined disposal quantities at the four landfills delineated in Table 5.13-1. The Class III waste quantities from the project will not adversely impact available landfill capacity and can be considered insignificant.

5.13.2.2 Wastewater

Construction

During construction, wastewater generated at the construction sites will include sanitary wastes and may include storm water runoff and equipment wash water. Construction-related sanitary wastes, collected in portable self-contained chemical toilets, will be pumped periodically and transported by licensed hauler to a sanitary wastewater treatment facility. Storm water runoff, which may be generated during construction activities, will be managed by implementing Best Management Practices (BMP) in accordance with state and local regulatory requirements and the storm water National Pollutant Discharge Elimination System (NPDES) construction permit requirements applicable to the project (see Section 5.4 Water Resources). Equipment wash water will be generated at designated wash areas and transported to a wastewater treatment facility by a licensed vacuum truck hauler.

Implementation of BMPs and adherence to NPDES permit requirements will reduce potential impacts of construction wastewater to a level of insignificance.

Operation

A process wastewater collection system will provide for the collection, treatment, and disposal of wastewater produced from the combined project equipment and facilities. All process wastewater will be treated using a zero-discharge system. Stormwater runoff from plant facilities will be directed to the site detention basin (see Figure 3.3-1). Plant and equipment drains in areas potentially contaminated by oil or chemicals will be contained and routed through an oil water separator prior to discharge.

Table 5.13-2 summarizes the types and quantities of operational wastewater to be generated by the TPP Project:

Table 5.13-2. Summary of Operational Wastewaters Generated by Project

Wastewater Type	Estimated Quantity* Per Day (gallons)	Operational Process	Disposal or Treatment Method
Cooling Tower Blowdown	300,000	Blowdown from cooling tower, and HRSG units	Processed by zero-discharge system
Floor Drains	7,500	Oily water pretreated in oil-water separator	Processed by zero-discharge system
Storm Runoff	Minimal	Runoff from plant pretreated in oil-water separator	Discharge to detention basin; flows to natural drainage
Sanitary Wastewater	7,200	Sanitary wastewater plus potable water drains	Discharge to septic tank and leach field system

*Based on 62°F fired operation; for other cases refer to Table 3.4-10.

Implementation of the zero-discharge water treatment system for process wastewater will eliminate the potential for impacts to off-site water resources or wastewater treatment facilities. Sanitary wastewater will be directed to an on-site septic tank and leach field system designed to handle daily flows of approximately 7,200 gpd. Stormwater runoff from plant facilities will be processed in an oil-water separator and directed to an on-site detention basin for leaching or discharge to the natural site drainage at the southeast corner of the site. Overall, impacts of wastewater from project operation will not be significant.

Solids generated in the crystallizers of the zero liquid discharge system will consist of dried solids from the raw water along with dried water treatment chemicals. The tried treatment chemicals are predominantly sulfates from the use of sulfuric acid to maximize cooling tower cycles of concentration along with trace amounts of dispersants and non-metal based corrosion inhibitors. Estimation of the composition of the ZLD waste solids are shown on Table 3.4-16. The metals concentration calculations are based on DWR records for the California Aqueduct over the period of 1998-2001. Both mean and peak values from those records were used to estimate the potential for the ZLD solids to exceed either Federal Toxicity Characteristic Leaching Procedure (TCLP) or state STLC limits. None of the metal concentrations expected in the ZLD solids come close to the TCLP (total) limits. Assuming total citrate solubility on the STLC test and using maximum values, only cadmium and

mercury approach the STLC limits, each at about 85 percent. Due to moves by the DWR to better control metals concentrations on recent years, we expect the California Aqueduct water to continue to improve and accordingly this historical data represents a worst-case basis for evaluation.

5.13.2.3 Hazardous Wastes

Site Preparation

Based on the ESA and soil and groundwater investigation that have been conducted, contaminated soil is not expected to be encountered during site preparation or grading activities. In the event that contaminated soil is encountered, the soil will be segregated, sampled, and tested in order to determine appropriate disposal/treatment options. If the soil is classified as hazardous (according to Resource Conservation and Recovery Act or CCR Title 22), the soil will be excavated and hauled to a Class I landfill or other appropriate soil treatment and/or recycling facility.

Construction

Small quantities of waste oil and miscellaneous hazardous wastes will likely be generated over the course of construction. These may include waste paint, spent solvents, and spent welding materials. All hazardous wastes generated during construction will be handled and disposed of in accordance with applicable LORS. Hazardous wastes will be either recycled or disposed of in a licensed hazardous waste treatment or disposal facility. Managed and disposed of properly, these wastes will not cause significant environmental or health and safety impacts.

The Applicant will be considered the generator of waste oil and miscellaneous hazardous waste produced during facility construction and will be ultimately responsible for compliance with applicable state and federal regulations regarding hazardous waste, including licensing, personnel training, accumulation limits, reporting requirements, and record keeping. Hazardous waste will be collected in hazardous waste accumulation containers near the point of generation. The accumulation containers, once full, will be hauled to the construction contractor's 90-day hazardous waste storage area and will be disposed of by a licensed hazardous waste disposal service.

Operation

The following hazardous wastes will be generated during operation:

- Oily Wastes: Approximately 3600 gallons per year of used crankcase oil and hydraulic oil will be generated. Waste oil will be stored and maintained in a secured hazardous waste storage area with secondary containment. Used oil and other oily wastes will be recycled, whenever possible. Waste oil and recovered oil from the oil/water separator will be recycled by a licensed oil recycler. Oily rags and oil absorbent (used to contain small spills) will be generated as a normal part of maintenance activities. These wastes will be collected near the point of generation in a hazardous waste accumulation container. The oil absorbent will be collected and

disposed of in a hazardous waste landfill. The oily rags may be sent to an authorized industrial cleaning service for recycling or disposed of in accordance with LORS at a Class I landfill.

- Selective Catalytic Reduction (SCR) Catalyst: Spent catalyst containing heavy metals (approximately 240,000 pounds every 3 to 5 years) will be returned to the manufacturer for metals reclamation and/or disposal.
- Cleaning Solutions: Periodic turbine washing and chemical cleaning of the HRSGs will be conducted by a licensed contractor. Typically, turbine wash water effluent will be temporarily stored onsite in portable tanks. The effluent will be tested to determine its characteristics (i.e., hazardous or nonhazardous) and disposed of offsite by the licensed chemical cleaning contractor at an appropriate offsite treatment or disposal facility depending on test results. HRSG cleaning solutions will be collected by the contractor and disposed offsite.

The hazardous waste quantities generated by the facility are expected to be minimal. The facility will likely be classified as a small quantity generator (less than 1,000 kg [2,205 lb] of waste during any month in the calendar year). An estimated 3600 gallons (approximately 14 tons) of used oil is expected to be generated by the plant annually and will be transported to existing oil petroleum recycling facilities in California, which have an estimated capacity of 187,263 tons per year (DTSC, 1993). Hazardous waste generated during operation of the power plant will not have significant impacts upon available hazardous waste treatment and disposal capacity. Onsite storage timeframes will comply with state and federal regulations.

5.13.3 Mitigation Measures

Generation of nonhazardous solid waste during the construction phase will be both temporary and minimal. Nonhazardous solid wastes from facility operations also will be minimal and will require no further mitigation. Nonhazardous solid wastes will either be recycled (paper, glass, metals, etc.) or disposed of at the local sanitary landfills. Hazardous waste generated during operation of the power plant will not have significant impacts upon available hazardous waste treatment and disposal capacity. Purchasing and inventory controls will be used to limit the amounts, within safe operating limits, of hazardous and/or non-hazardous materials brought onsite, which will in turn limit the amounts of wastes generated for offsite disposal. No significant impacts are anticipated and no additional mitigations are necessary.

5.13.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated from project construction or operation.

5.13.5 Cumulative Impacts

Wastes generated by construction and operation of the project will not cause or contribute to a significant cumulative impact.

The TPP facility will generate non-hazardous solid waste that will add to the total waste generated in Alameda County and in California. However, there is adequate recycling and landfill capacity in Alameda County to recycle and dispose of the waste for the next 30 years. It is anticipated that disposal of 1280 tons per year of solid waste from the project will represent only a nominal increase (approximately 0.05 percent) relative to current annual combined disposal quantities at the four nearby landfills. Therefore, the impact of the project on solid waste recycling and disposal capability is not significant.

Hazardous waste generated consists of waste turbine oil, SCR catalysts, and fluids used to clean the HRSGs and piping. The waste turbine oil and SCR catalysts will be recycled. Cleaning and flushing fluids will be removed and either treated to a non-hazardous condition or disposed of in a Class I landfill. Cleaning and flushing will occur only periodically. Hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, the effect of TPP on hazardous waste recycling, treatment, and disposal capability is not significant.

5.13.6 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction and operation of the TPP including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to waste management issues.

The following LORS are applicable or potentially applicable to the proposed project in the context of non-hazardous waste management.

5.13.6.1 Federal Authorities and Administering Agencies

40 CFR, Parts 144, 145, and 146. The regulations in these parts establish minimum requirements for Underground Injection Control (UIC) programs including State UIC program requirements (Part 145) and technical criteria and standards for the UIC program (Part 146).

The administering agencies for the above authority are the EPA and RWQCB (Central Valley Region).

5.13.6.2 State Authorities and Administering Agencies

California Porter-Cologne Water Quality Control Act; California Water Code § 13260 -13269; 23 CCR § 2510 Article 9 et seq. These code and regulation sections address waste discharge requirements of the RWQCB, Central Valley Region and will apply to any storage or disposal of solid and liquid wastes by the TPP to the extent that such action may affect the quality of the waters of the state.

The administering agencies for the above authority are the RWQCB, Central Valley Region and the State Water Resources Control Board.

5.13.6.3 TPP Compliance with Non-Hazardous Waste Management LORS

The project will comply with all handling and reporting requirements specified by the above-referenced LORS. A summary of project compliance with LORS is provided in Table 6.1-1.

5.13.7 Involved Agencies and Agency Contacts

Contacts for agencies directly involved with regulatory requirements for TPP are presented in Table 5.13-3.

Table 5.13-3. Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Alameda County Waste Management Authority 777 Davis Street, Suite 100 San Leandro, CA 94577	Lois Clarke Program Manager (510) 614-1699	Assistance with waste management facilities and similar information. Solid waste planning and source reduction.
Alameda County Environmental Health Department, Hazardous Materials Division 1131 Harbor Bay Parkway Alameda, CA 94502	Karen Moroz, Rob Weston Sr. Hazardous Materials Specialist (510) 567-6757	Issues Consolidated Hazardous Materials Permit (covers hazardous waste) after review and acceptance of Hazardous Materials Business Plan and solid waste issues.
Regional Water Quality Control Board Central Valley Region 3443 Routier Road Suite A Sacramento, CA 95827	Leo Sarmiento Senior Water Resources Control Engineer (916) 255-3049 Sue O'Connell, Patricia Leary (916) 255-3000/3023	Storm Water Permit for General Construction and Industrial Activities.
Department of Toxic Substances Control 400 P Street P.O. Box 806 Sacramento, CA 95812-0806	EPA ID Center (916) 324-1781	Application for EPA Identification Number.

5.13.8 Permits Required and Permit Schedule

Permits required and permit schedule for matters dealing with hazardous waste for the TPP are provided in Table 5.13-4.

Table 5.13-4. Permits Required and Permit Schedule

Permit/Approval Required	Schedule
NPDES Permit for Construction Activities	30 days prior to start of construction.
Obtain EPA ID No. and Register as a Hazardous Waste Generator	30 days prior to start of operations.
Hazardous Materials Inventory and Emergency Business Plan	30 days prior to start of operations.
NPDES Permit for Industrial Activities	60 days prior to start of operation.

5.13.9 References

California Regional Water Quality Control Board, San Francisco Bay Region.

California Integrated Waste Management Board. 2000. Downloaded information from website: www.ciwmb.ca.gov. October 27, 2000.

State of California Department of Toxic Substances Control (DTSC). 1993. Phase I Capacity Assurance Submittal to the United States Environmental Protection Agency.

Vasquez, E. 2000. Chemical Waste Management. Personal communication with Edward Vasquez, Customer Service. November 7, 2000.

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