8.5 HAZARDOUS MATERIALS HANDLING

This section presents an evaluation of potential impacts to human health and the environment from the storage and use of hazardous materials in conjunction with the Pico Power Project (PPP). A full description of the project is presented in Section 2. Closure of the PPP is discussed in Section 4.

Section 8.5.1 describes the existing environment that the project may affect. Section 8.5.2 identifies potential impacts on the environment and human health from development of the project. Section 8.5.3 investigates potential cumulative impacts. Section 8.5.4 presents proposed mitigation measures, and Section 8.5.5 presents the laws, ordinances, regulations, and standards (LORS) applicable to hazardous materials. Section 8.5.6 describes the agencies involved and provides agency contacts, and Section 8.5.7 describes permits required. Section 8.5.8 provides the references used to develop this section.

8.5.1 Affected Environment

The project site is located within the City of Santa Clara. Land use in the vicinity of this site is zoned for commercial and light industrial use. The City of Santa Clara Kifer Receiving Station bounds the property on the south. Other commercial light industrial buildings are located to the north, west, and east. There are 5 sensitive receptors (such as schools, hospitals, daycare facilities, convalescent centers, or emergency response facilities) within a 1-mile radius of the PPP (see Table 8.5-1). These sensitive receptors and those within a six-mile radius are depicted graphically on Figure 8.9-1. The nearest residence is located 0.39 miles from the site. The nearest residential area is 0.51 miles from the site. The nearest school is 0.5 from the project site.

Table 8.5-1. Sensitive receptors within one mile of the site.

Name	Address	Distance
Valley House Care Center	991 Clyde Avenue, Santa Clara	0.88
Granada Islamic School	3003 Scott Boulevard, Santa Clara	0.50
MCA Week-End School	3003 Scott Boulevard, Santa Clara	0.50
Montague Elementary School	750 Laurie Avenue, Santa Clara	0.84
Starstudent Com	2062 Walsh Avenue, Santa Clara	0.78

Hazardous materials will be stored at the PPP during operation of these facilities. Storage locations are described in Table 8.5-2.

Acutely hazardous materials as defined under California's La Follette Bill (California Health and Safety Code 25531 et seq.) will not be used during construction or operation of the PPP or the associated facilities or linear routes. Therefore, no discussion of acutely hazardous materials storage or handling is included in this section.

8.5.1.1 Construction Phase

Hazardous materials used during construction of the PPP and associated linear facilities will include gasoline, diesel fuel, motor oil, hydraulic fluid, certain solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and the manufacturer's requirements for coating.

The most likely incidents involving these hazardous materials would be associated with minor spills or drips. Impacts from such incidents will be mitigated by thoroughly cleaning up minor spills as soon as they occur. In the case of a large spill of hazardous material, any contaminated soil will be excavated and stored in drums or roll-off bins for off-site disposal as a hazardous waste.

8.5.1.2 Operation Phase

Power Plant Site

A number of hazardous materials will be stored at the generating site during operation of the PPP. Some of these materials will be stored at the generating station site continuously, others will be brought on-site, used and not brought back on-site for a number of years, while still others will be on-site for startup purposes only. Table 8.5-2 is a comprehensive list of hazardous materials that will be used or stored continuously at the PPP site during the operations phase, and their storage locations. Material safety data sheets (MSDS) are included in Appendix 8.5-A.

The following hazardous and acutely hazardous materials will be used and/or stored at the PPP site during the operation phase:

Continuously On-Site

- Aqueous Ammonia (19 percent)—to control nitrogen oxides (NOx) emissions through selective catalytic reduction (10,000 gallons, liquid)
- Sulfuric Acid—for circulating water pH control (cooling tower treatment) (2,000 gallons, liquid, 93 percent solution)
- Sodium Hypochlorite—biocide for condenser cooling water system (400 gallons, liquid, 10 percent solution)
- NALCO 7342 (sodium bromide) - biocide for condenser cooling water system (200 gallons)
- NALCO 7208 (phosphate)—for boiler water pH and scale control (400 gallons, liquid)
- NALCO TRASAR 23263 (non-hazardous)—Circulating water scale control (400 gallons)
- NALCO 8305+ (sodium tolytriazole)—Circulating water corrosion control (400 gallons)
- NALCO 7396 (tetrapotassium pyrophosphate)—Circulating water corrosion control (400 gallons)
- NALCO 1336 (sodium tolytriazole)—Circulating water heat exchanger yellow metal corrosion control (400 gallons)
- NALCO ELIMIN-OX (carbohydrazide)—oxygen scavenger in process feedwater to HRSG (400 gallons, liquid)
- Sodium bisulfite—oxygen scavenger upstream of reverse osmosis unit (200 gallons, liquid)
- Mineral Insulating Oil—contained within transformers (25,000 gallons total for all 6 transformers combined, liquid)
- Mineral Lubrication Oil—for gas turbine generator and steam turbine generator (2,500 gallons total for all three generators combined, liquid)
- Synthetic Lubrication Oil—for combustion turbine bearings (300 gallons)
- Hydraulic Oil—for steam turbine generator (375 gallons)

- Propylene Glycol – for freeze protection within chilled water and closed loop cooling water systems (approximately 20,000 gallons, 15% solution)
- Various Detergents—combustion turbine compressor periodic cleaning (100 gallons, liquid)
- Various Laboratory Reagents—for water analysis

Table 8.5-2. PPP hazardous materials storage locations.

Chemical	Use	Storage Location[1]
Aqueous Ammonia (19% NH_3 +81% H_2O)	Controls nitrogen oxides (NOx) emissions through selective catalytic reduction	Outdoors in the ammonia unloading/storage area (45)
Sulfuric Acid (H_2SO_4) (93%)	Circulating water pH control (cooling water treatment)	Outdoors near cooling tower (46)
Sodium Hypochlorite (NaOCL) (Industrial Bleach)	Circulating water biological control	Outdoors near cooling tower (47)
Sodium Bromide NALCO 7342	Circulating water biological control	Outdoors near cooling tower (47)
NALCO TRASAR 23263	Circulating water scale control	Outdoors near cooling tower (47)
Sodium Tolyltriazole NALCO 8305+	Circulating water corrosion control	Outdoors near cooling tower (47)
Tetrapotassium Pyrophosphate NALCO 7396	Circulating water corrosion control	Outdoors near cooling tower (47)
Sodium Tolyltriazole NALCO 1336	Circulating water heat exchanger yellow metal corrosion control	Outdoors near cooling tower (47)
Phosphate NALCO 7208	HRSG steam side pH and scale control	Outdoors near HRSG (25)
NALCO ELIMIN-OX	Steam side oxygen scavenger for corrosion control	Outdoors near HRSG (25)
Sodium Bisulfite	Oxygen scavenger upstream of reverse osmosis unit	Outdoors near HRSG (25)
Lubricating oil (synthetic and mineral)	Rotating equipment	Contained within equipment and associated storage tanks (1,34,39)
Mineral Insulating Oil	Step-up and auxiliary transformers	Contained within transformers (23)
Propylene Glycol	Anti-freeze for chilled water and closed loop cooling water systems	Contained within cooling system piping (31, 33)
Various cleaning chemicals	Chemical cleaning of HRSG (note: chemical cleaning of HRSG is not permanent)	Water treatment building/laboratory (26)
Various laboratory reagents	Laboratory water analysis	Water treatment sample lab enclosure (26)

[1]The numerical references in parentheses are keyed to the site plan included in Appendix 8.5-C.

Periodically On-Site

- Hydrochloric Acid—for chemical cleaning of heat recovery steam generator (HRSG) (4,000 pounds initially, and once every 10 years, liquid, 30 percent solution)
- Ammonium Bifluoride—for chemical cleaning of HRSG (100 pounds initially, and once every 10 years, solid crystals)
- Citric Acid—for chemical cleaning of HRSG (50 pounds initially, and once every 10 years, solid powder)
- Sodium Carbonate—for chemical cleaning of HRSG and neutralization (200 pounds initially, and once every 10 years, solid powder)
- Sodium Nitrate—for chemical cleaning of HRSG (200 pounds initially, and once every 10 years, solid crystals)

On-Site During Commissioning Only

- Hydroxyacetic Acid—for chemical cleaning of HRSG feedwater system (400 pounds prior to start-up, solid crystals)
- Formic Acid—for chemical cleaning of HRSG feedwater system (250 pounds prior to start-up, liquid)

Information about these materials is presented in Table 8.5-3, including trade and chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities on-site, hazardous characteristics, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) Title III reportable quantities (RQ), La Follette Bill threshold planning quantities (TPQ) and Proposition 65 listing status. Proposition 65 chemicals are those known to be carcinogenic or cause reproductive problems in humans.

In addition to the chemicals noted in Table 8.5-3, small quantities (less than 5 gallons) of paints, oils, solvent, pesticides and cleaners, typical of those purchased at a retail hardware store, may also be used at the PPP facility.

The hazardous materials to be stored include such incompatible chemicals as sodium hypochlorite and ammonia, or sodium hydroxide, sodium hypochlorite and sulfuric acid. Mixing of these chemicals could generate toxic gases. Measures to keep incompatible chemicals separated include separate storage and containment areas and/or berms.

The materials listed in Table 8.5-3 are hazardous materials. The toxic effects and other characteristics of each hazardous material are summarized in Table 8.5-4.

Natural Gas Compressor Station

The only hazardous that will be stored at the compressor station during operations is lubrication oil; the total storage quantity will be 55 gallons or less.

Natural Gas Pipeline

With the exception of the natural gas contained within the pipeline, no hazardous materials will be stored at the pipeline facilities during operations.

Table 8.5-3. PPP chemical inventory.

Trade Name	Chemical Name	CAS[1] Number	Maximum Quantity Onsite	Hazardous Characteristics	RQ[2]	TPQ[3]	Prop 65
Hazardous Materials:							
Aqueous Ammonia (19% solution)	Ammonium Hydroxide	1336-21-6	10,000-gal.	Corrosive Volatile	1000 lb.		No
Sulfuric Acid	Sulfuric Acid	7664-93-9	2,000 gal.	Corrosive	1,000 lb.	1,000 lb.	No
Bleach	Sodium Hypochlorite	7681-52-9	400 gal.	Corrosive	100 lb.		No
NALCO 7342	Sodium bromide	7647-15-6	200 gal.	Corrosive	(4)		No
NALCO TRASAR 23263		None	400 gal.	Non-hazardous	(4)		No
NALCO 7208	Sodium Hydroxide	1310-73-2	400 gal.	Toxic	(4)		No
NALCO 8305+	Sodium Tolyltriazole	64665-57-2	800 gal.	Toxic	(4)		No
NALCO 7396	Tetrapotassium Pyrophosphate	7320-34-5	400 gal.	Corrosive	(4)		No
NALCO 1336	Sodium Tolyltriazole	64665-57-2	400 gal.	Corrosive	()		No
Hydrochloric Acid	Hydrochloric Acid	7647-01-0	4,000 lbs.	Corrosive	5,000 lb.		No
Citric Acid	Hydroxy-propionic-tricarboxylic Acid	77-92-9	50 lbs.	Corrosive	(4)		No
Hydroxyacetic Acid	Gyrolic Acid	79-14-1	400 lbs.	Corrosive	(4)		No
Formic Acid	Methanoic Acid	64-18-6	250 lbs.	Corrosive	5,000 lb.		No
ELIMIN-OX	Carbohydrazide	497-18-7	400 gal.	Non-Hazardous			No
Sodium Bisulfite	Sodium Bisulfite (90-100%)	7631-90-5	200 gal.	Corrosive	5,000 lb.		No
Mineral Insulating Oil	Oil	None	25,000 gal. (total)	Combustible	42 gal.[5]		Yes

Table 8.5-3. (continued).

Trade Name	Chemical Name	CAS[a] Number	Maximum Quantity Onsite	Hazardous Characteristics	RQ[b]	TPQ[c]	Prop 65
Lubrication Oil	Oil	None	2,800 gal. (all turbines)	Combustible	42 gal.[5]		Yes
Anti-freeze	Propylene glycol	57-55-6	20,000 gal.	Toxic	(4)		No
Detergents	Various	None	100 gal.	Toxic	(4)		--
Lab Reagents (liquid)	Various	None	10 gal.	Toxic	(4)		--
Lab Reagents (solid)	Various	None	50 lbs.	Toxic	(4)		--
Ammonium Bifluoride	Ammonium Bifluoride	1341-19-7	100 lbs.	Toxic, Corrosive	100		No
Sodium Carbonate	Sodium Carbonate	497-19-8	200 lbs.	Corrosive	(4)		No
Sodium Nitrate	Sodium Nitrate	7631-99-4	200 lbs.	Corrosive	(4)		No

[1] Chemical Abstract Service.
[2] Reportable Quantity per CERCLA. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.
[3] Threshold Planning Quantity. For hazardous materials, the TPQ is 10,000 lb.
[4] No reporting requirement.
[5] Must report if does or will reach California state waters, or if quantity released is a "harmful quantity."

Table 8.5-4. Characteristics of PPP hazardous materials.

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Aqueous Ammonia	Colorless solution with pungent odor	Corrosive. Irritation to permanent damage from vapor inhalation, ingestion, and skin contact.	Acids, halogens, strong oxidizers, salts of silver and zinc.	Vapor combustible, but difficult to burn.
Sulfuric Acid	Colorless, dense, oily liquid	Strongly corrosive. Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Not combustible
Sodium Hypochlorite	Pale green; sweet, disagreeable odor. Usually in solution with H_2O or sodium hydroxide.	Corrosive. Toxic by ingestion. Strong irritant to tissue.	Ammonia and organic materials	Fire risk when in contact with organic materials
Sodium Hydroxide (NALCO 7208)	Hazy light yellow liquid	Eye and skin irritant	Strong acids	Non-flammable
Sodium Bromide (NALCO 7342)	Colorless liquid	Harmful if swallowed or absorbed through skin. Eye irritant.	Strong acids, oxidizers, reducing agents	Non-flammable
NALCO TRASAR 23263	Clear amber liquid	None	Non.	Non-flammable
Sodium Tolyltriazole (NALCO 8305+)	Light yellow liquid, sweet organic odor	Irritant to eyes, skin, and respiratory tract	Strong oxidizers, strong acids, and reactive metals	Non-flammable
Tetrapotassium Pyrophosphate (NALCO 7396)	Colorless liquid	Minor	None	Non-flammable
Sodium Tolytriazole	Light amber liquid	Corrosive. Toxic by ingestion. Causes tissue damage to eyes and skin.	Strong acids	Non-flammable
Hydrochloric Acid	Colorless, pungent, fuming liquid	Highly corrosive. Toxic by ingestion. Strong irritant to eyes and skin	Metals, hydroxides, amines, alkalis	Non-flammable
Citric Acid	Translucent crystals	None	None	Non-flammable
Hydroxyacetic Acid	Colorless crystals	Corrosive Toxic. Toxic by inhalation, ingestion, and dermal contact.	Strong bases, strong reducing and oxidizing agents	Non-flammable
Formic Acid	Colorless, fuming liquid	Corrosive. Corrosive to skin and tissue.	Strong oxidizers, strong caustics, concentrated sulfuric acid	Combustible
ELIMIN-OX Carbohydrazide	Colorless liquid	Slightly toxic. Low human hazard.	Mineral acids, nitrites, and strong oxidizers	Non-flammable
Sodium Bisulfite	Yellow liquid	Corrosive. Irritation to eyes, skin, and lungs. May be harmful if digested.	Strong acids and oxidizers	Non-flammable

Table 8.5-4. (continued).

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Propylene Glycol (antifreeze)	Colorless viscous liquid	Irritant	Strong oxidizers	Non-flammable
Mineral Oil	Oily, clear liquid	Minor	Sodium hypochlorite	May be combustible
Lubrication Oil (synthetic and mineral)	Oily liquid	Ingestion hazardous	Sodium hypochlorite	May be combustible
Ammonium Bifluoride	White crystals	May be fatal if swallowed or inhaled. Affects respiratory system, heart, skeleton, circulatory system, CNS, and kidneys.	Strong acids	Non-flammable
Sodium Carbonate	White powder or granules	Harmful if swallowed or inhaled. Irritation to skin and respiratory tract.	Acids	Non-flammable
Sodium Nitrate	White crystals	Toxic and corrosive. Irritation to eyes, skin, and lungs. Harmful if digested.	Strong acids	Non-flammable

Waste Water Discharge Pipeline

There are no separate facilities associated with the waste water discharge pipeline; therefore, no hazardous materials will be stored at this location during operations.

8.5.2 Environmental Consequences

8.5.2.1 Significance Criteria

The project could have a significant effect on the environment if it would do the following (California Energy Commission 2002):

- Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

This portion of the AFC addresses these issues and demonstrates that the PPP will not cause a significant adverse impact to the environment in relation to the handling of hazardous materials. The discussion includes: a) a description of the plans and procedures that Silicon Valley Power will implement to ensure the safety of the public and environment during routine transport of hazardous materials (this discussion is found in Section 8.5.4, Mitigation Measures); b) an off-site consequences analysis (computer model of a worst-case hazardous materials release scenario) that demonstrates the low level of public risk associated with the project's use of hazardous materials and a description of plans and procedures that Silicon Valley Power will use to ensure that a reasonably foreseeable upset or accident will not create a significant hazard for the public or environment. As discussed in Section 8.5.1, there are no schools within one quarter-mile of the project site. The off-site consequence analysis is described below,

followed by discussions of cumulative impacts and the measures to be used during construction and operation to mitigate the risks of using hazardous materials.

8.5.2.2 Off-site Consequences Analysis

The only hazardous material that has the potential to result in an offsite impact is aqueous ammonia, which is used in the selective catalytic reduction (SCR) system to control nitrogen oxides (NOx) emissions. Anhydrous (pure gaseous) ammonia (NH_3), which may be used off site to make aqueous ammonia, is an industrial chemical in widespread use in industrial areas as well as in rural areas for crop fertilization. Ammonia can form a vapor that spreads from a potential release point (tank rupture or tank refilling hose failure, for example), when exposed to the atmosphere. This vapor can be irritating to the mucous membranes in low concentrations and is toxic and potentially fatal in sufficiently high concentrations.

The most commonly accepted method of controlling ammonia vapor is to add water to the undiluted ammonia to make aqueous ammonia. Though more costly to use (energy is expended to evaporate the water), aqueous ammonia greatly reduces handling risks. The PPP project will use a highly diluted form of aqueous ammonia that will be 19 percent (by weight) ammonia and 81 percent water in order to reduce ammonia handling hazards. Aqueous ammonia, or ammonium hydroxide, is a water-based solution, which can be mixed and delivered, in a wide variety of solution ratios. Solution mix ratios less than 30% (weight basis) are the most common. Aqueous ammonia solutions typically have a boiling point of approximately 83 deg F.

When spilled, aqueous ammonia solutions will slowly vaporize, releasing ammonia vapors. According to data prepared for the CEC by Ebasco (*Ammonia Release Risk Mitigation Guidance for Power Plants-Draft Report, November 1989*), when ammonia is diluted with water to solutions of less than or equal to 20% by volume, evaporation of ammonia gas from the fluid becomes negligible. The guidance further states that when ammonia is diluted with water at ambient temperatures to solutions less than 25% by weight, ammonia vapor pressure is reduced to atmospheric pressure, i.e., the evaporation of ammonia gas from the fluid would be negligible.

Accidental releases of ammonia (all forms) in industrial use situations are rare. Statistics compiled on the normalized accident rates for RMP chemicals for the years 1994-1999 from *Chemical Accident Risks in U.S. Industry-A Preliminary Analysis of Accident Risk Data from U.S. Hazardous Chemical Facilities, J. C. Belke, Sept 2000,* indicates that ammonia averages 0.017 accidental releases per process per year, and 0.018 accidental releases per million pounds stored per year. Data derived from *The Center for Chemical Process Safety, 1989*, indicates the following accidental release scenarios and probabilities for ammonia in general (Table 8.5-5).

The CEC requires that an applicant for a six-month license conduct an Off-Site Consequence Analysis (OCA) to assess the risk from a potential spill or rupture of an ammonia tank on their project site. This analysis simulates the release of ammonia from the project's storage tank, assuming a catastrophic containment failure or the rupture of a tanker hose during refilling of the ammonia storage tank and assesses potential exposures per distance from the accident site and the associated human health risk.

Table 8.5-5. Ammonia accidental release probabilities.

Accident Scenario	Failure Probability
Onsite Truck Release	0.0000022
Loading Line Failure	0.005
Storage Tank Failure	0.000095
Process Line Failure	0.00053
Evaporator Failure	0.00015

Methods

The PPP will store aqueous ammonia in a single stationary horizontal steel storage tank. The tank capacity will be approximately 10,000 gallons. The tanks will be enclosed by a containment berm capable of containing the full contents of the tanks as well as incidental rainwater. The approximate berm dimensions are as follows:

- Length 26.5 ft.
- Width 15.5 ft.
- Depth 4.0 ft.
- Capacity = 12,289 gallons

The surface area of the bermed area will be 411 ft^2 (38.1 m^2), and the volume will be approximately 12,289 gallons. Maximum tank storage will be administratively limited to 9000 gallons. The delivery truck vessel is anticipated to have a capacity of 6000 gallons, with two (2) deliveries every three weeks.

An OCA was performed for the release scenario involving the complete failure and discharge of the storage tank contents into the secondary containment area. In addition, an alternative release scenario was also evaluated, i.e., failure of the truck unloading hose with a resultant spill forming a pool on the truck unloading pad. Table 8.5-6 shows the meteorological data values used in the modeling scenarios.

A total of six (6) modeling runs were conducted, i.e., tank failure and truck unloading hose failure for the meterological scenarios listed in Table 8.5.6, and the action levels as follows:

- CalARP RMP Toxic Endpoint (TE) of 201 ppm (1 hour average)
- ERPG-2 level of 150 ppm (1 hour average)
- CEC LOC of 75 ppm (30 min average)

OCA modeling was conducted using the SLAB model. A complete description of the SLAB model is available in *User's Manual for SLAB: An Atmospheric Dispersion Model for Denser-Than-Air-Releases, D. E. Ermak, Lawrence Livermore National Laboratory, June 1990*. The current version of SLAB is accompanied by an external substance database that includes chemical specific data for ammonia. This data was used in all modeling runs without exception or modification except for the initial liquid mass fraction (CMEDO) value that was conservatively calculated (0.95) for each release scenario.

Table 8.5-6. Meteorological data for release scenarios.

Parameter	Worst Case Met	Alternate Case Met
Wind Speed (m/sec)	1.5	3
Stability Class	F	D
Relative Humidity (%)	50	50
Ambient Temperature (deg. C)	42.78[1]	25

[1]San Jose Station #047821, Highest Annual Temperature, Western Regional Climatic Center.

Emissions of ammonia from the aqueous ammonia solution were calculated pursuant to the equations and guidance given in *RMP Offsite Consequence Analysis Guidance, EPA, April 1999*. The equation used to predict the emissions is as follows:

$$QR = (1.4)(LFA)(A)$$

Where QR = emissions rate, lbs/min
LFA = liquid factor ambient (0.015, 20% solution)
A = diked surface area, ft^2

Unadjusted emissions for the tank rupture scenario would be as follows:

$$QR = (1.4)(0.015)(410.75)$$
$$= 8.63 \text{ lbs/min}$$

Emissions for a 10 minute release would equal:

$$= 8.63 \text{ lbs/min} \times 10 \text{ min} = 86.3 \text{ lbs/10 minutes}$$

Emissions adjusted for the temperature correction factor (TCF) of 1.935 for the worst-case scenario would be:

TCF = 1.935
8.63 lbs/min x 1.935
= 16.7 lbs/min
= 167 lbs/10 minutes

Please note that per *Risk Management Program Guidance for WWTPs, EPA-OSWER, October 1998*, ammonia emissions from the diked area are only calculated for the first 10 minutes of the spill life. EPA states that the release of ammonia from the aqueous solution should only be used for the first 10 minutes after which the ammonia in the pool (diked area) will be more dilute than it was initially and will be evaporating much less rapidly. This assumption applies to both release scenarios.

Emissions for the truck unloading hose failure scenario would be as follows:

Hose length = 25 ft.
Hose diameter (ID) = 2 in.
Hose volume = 0.546 cu. ft. or 4.1 gallons

For conservative purposes, the hose volume was doubled to account for truck drainage losses.

Total product spilled = 8.2 gallons

@ ~7.5 lbs/gal
= 63.63 lbs. spilled to truck pad surface

Truck unloading pad dimensions are as follows:

Length = 74 ft.
Width = 20 ft.

Emissions from the truck pad are assumed (for purposes of a conservative alternate release analysis) to be 100% loss rate of ammonia from the spilled solution. Emissions would be as follows:

63.63 lbs/spilled @ 19% ammonia by weight = 12.09 lbs/ammonia (per 10 minute period)

The specified action level values for ammonia were delineated above. These values are based on either a one-hour or 30-minute exposure, therefore, the modeling concentrations at all offsite receptors will be given in terms of one-hour or 30 minute exposure averages dependent upon the action level being evaluated.

Modeling output presented in Appendix 8.5-B shows the individual scenario results in terms of concentration vs. downwind distance for each of the scenarios and action levels delineated above. The ammonia storage and unloading area is located approximately 70 feet (21.33m) from the closest fenceline. As shown in the figures, ammonia concentrations are less than or equal to 1 ppm at distances less than the fenceline distance for the worst-case release scenario. For the alternate scenario, both the CalARP RMP Toxic Endpoint concentration (201 ppm averaged over one hour) and the ERPG-2 level concentration (150 ppm averaged over one hour) would occur within the facility boundary. The CEC LOC concentration (75 ppm, 30 minute average) extends offsite approximately 30 meters. Since no known sensitive receptors were identified within this radius distance, impacts from the alternate scenario are insignificant. The levels of exposure from the both release scenarios is considered insignificant, and would result in no known or discernable health impacts to any member of the surrounding population. Appendix 8.5-B, Off-Site Consequence Analysis, contains copies of the emissions calculations for each release scenario as well as the climatic data (highest daily temperature data) used in the modeling analysis for the worst case.

8.5.2.3 Fire and Explosion Risk

As shown in Tables 8.5-5, many of the hazardous materials to be stored and used at the PPP are non-combustible. Aqueous ammonia, which constitutes the largest quantity of hazardous materials on-site (except for the mineral oil in the transformers and lubrication oil for the gas turbine and steam turbine bearings), can release ammonia vapor that is combustible within a very narrow range of concentration and is therefore not easy to burn. Both hydroxyacetic acid and formic acid are combustible, but will be used at the site only during commissioning, and will be handled by the HRSG chemical cleaning contractor. The lubrication oil may be combustible and will be handled in accordance with a Hazardous Materials Business Plan to be approved by the City of Santa Clara Fire Department Hazardous Materials Division. With proper storage and handling of flammable materials in accordance with the plan, the risk of fire and explosion at the generating facility should be minimal.

The topics to be covered in the plan are:

- Facility Identification
- Emergency Contacts

- Inventory Information (for every hazardous material)
- Material Safety Data Sheets (MSDS) for every hazardous material
- Site Map
- Emergency Notification Data
- Procedures to Control Actual or Threatened Releases
- Emergency Response Procedures
- Training Procedures
- Certification

The natural gas fuel for the PPP combustion turbines and duct burners is flammable, and could leak from the in-plant supply piping or from the gas pipeline. The risk of leakage will be minimized by proper design, construction, and maintenance of the in plant piping and supply pipeline in accordance with applicable LORS.

8.5.3 Cumulative Impacts

The primary potential cumulative impact from the use and storage of hazardous materials would be from a simultaneous release from two or more sites of a chemical or chemicals that would migrate offsite. Potentially, the two or more migrating releases could combine and thereby pose a greater threat to the offsite population than would a single release by any one site.

Hazardous materials that do not migrate, such as sulfuric acid, would not present a potential cumulative impact. The only hazardous material that has the potential to migrate offsite from the PPP is ammonia vapor released from spilled aqueous ammonia. Based on the results of the OCA, offsite ammonia vapor concentrations would only occur at low levels. In the unlikely event that an aqueous ammonia spill occurred at the PPP simultaneously to a chemical spill at another nearby industrial facility, offsite ammonia levels from the PPP will not be sufficient to cause cumulative impacts.

8.5.4 Proposed Mitigation Measures

The following subsections describe measures that SVP plans to take during both the construction and operating phases of the project to mitigate the risk in handling hazardous materials, particularly the risk of inadvertent spills or leaks that might pose a hazard to human health or the environment.

8.5.4.1 Construction Phase

During construction, hazardous materials stored on-site will be limited to small quantities of paint and thinner, solvents, cleaners, sealants, lubricants, and 5-gallon emergency fuel containers. Paint, thinner, solvents, cleaners, sealants, and lubricants will be stored in a locked utility building, handled per the manufacturer's directions, and replenished as needed. Non-hazardous paint will be used if possible. The emergency fuel containers will be Department of Transportation (DOT) approved 5-gallon safety containers secured to the construction equipment. The emergency fuel will be used when regular vehicle fueling is unavailable.

Fuel, oil, and hydraulic fluids will be transferred directly from a service truck to construction equipment tanks and will not otherwise be stored on-site. Fueling will be performed by designated and trained service personnel either prior to the start of the work day or at completion of the work day. Service personnel and construction contractors will follow standard operating procedures (SOPs) for filling and

servicing construction equipment and vehicles. The SOPs are designed to reduce the potential for incidents involving the hazardous materials and include:

- Refueling and maintenance of vehicles and equipment will occur only in designated areas that are either bermed or covered with concrete or asphalt to control potential spills.
- Vehicle and equipment service and maintenance will be conducted only by authorized personnel.
- Refueling will only be conducted with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual liquids in the hose.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- When refueling is completed, the service truck will leave the project site.
- Service trucks will be provided with fire extinguishers and spill containment equipment, such as adsorbents.
- In the event a spill contaminates soil, the soil will be containerized and disposed of as a hazardous waste.
- All containers used to store hazardous materials will be inspected at a minimum of once per week for signs of leaking or failure. All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook, which will be maintained on-site.

Small spills will be contained and cleaned up immediately by trained, on-site personnel. Larger spills will be reported via emergency phone numbers (9-1-1) to obtain help from the City of Santa Clara Hazardous Materials Response Team. All personnel working on the project during the construction phase will be trained in handling hazardous materials and the danger associated with hazardous materials.

An on-site health and safety person will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary. Material Safety Data Sheets (MSDSs) for each on-site chemical will be maintained. Employees will be made aware of the chemicals and the location of MSDS sheets.

8.5.4.2 Operation Phase

Hazardous materials will be stored and handled at the PPP in accordance with all local, state and federal regulations and codes. A safety program will be implemented including safety training programs for contractors and operations personnel, respectively. A Hazardous Materials Business Plan will be prepared for approval by the CEC CPM and the City of Santa Clara Fire Department Hazardous Materials Division, which is the local Certified Unified Program Agency (CUPA).

A fire protection system will be included to detect, alarm, and suppress a fire, in accordance with the applicable laws, ordinances, regulations, and standards.

Table 8.5-5 describes the toxicity of hazardous materials that will be stored at the PPP. Of the hazardous materials that are continuously on-site, two merit individual mention because of the quantity of material stored.

Aqueous Ammonia

The aqueous ammonia storage and handling facilities will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, and excess flow and emergency block valves. Pressure-relief valves and excess flow control valves on the tank fill connections will also be provided. Secondary containment will be provided by a diked containment basin around the tank. Therefore any potential inadvertent release from the storage tank will be contained. Ammonia vapor detectors will be installed around the aqueous ammonia storage tanks and truck unloading area to generate alarm signals in the plant control room that will alert the operators to potential leaks.

A 6,000-gallon tanker truck will make approximately 2 deliveries of aqueous ammonia to the PPP every 3 weeks. The 10,000-gallon aqueous ammonia tank, which will have a maximum working capacity of 9,000 gallons, will not be drawn below 1,000 gallons remaining volume before it is refilled by the tanker truck.

Sodium Hypochlorite

Sodium hypochlorite (NaOCl) is used as a biocide for the PPP condenser cooling water (circulating water) system. The system will consist of a storage tank, two full capacity chemical feed pumps, a leak detection system, and an alarm system.

Other Hazardous Materials

All hazardous materials will be handled and stored in accordance with applicable codes and regulations. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Containment areas may drain to a collection area, such as an oil/water separator or a waste collection tank. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

A worker safety plan, in compliance with applicable regulations, will be implemented and will include training for both contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous materials systems, proper use of personal protective equipment, fire safety, and emergency communication and response procedures. All plant personnel will be trained in emergency procedures including plant evacuation and fire prevention. In addition, designated personnel will be trained as a plant hazardous material response team and receive first responder and hazardous material technical training as the Hazardous Materials Business Plan will describe (Section 8.5.6.4). However, in the event of an emergency, plant personnel will defer to the City of Santa Clara Hazardous Materials Response Team.

8.5.4.3 Transportation/Delivery of Hazardous Materials

Hazardous materials will be delivered periodically to the PPP. Transportation will comply with all DOT, U.S. Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and the California State Fire Marshal regulations for the transportation of hazardous materials. Under the California Vehicle Code, the CHP has authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery. The only hazardous material posing an inhalation hazard that will be delivered to the PPP is aqueous ammonia. The Vehicle Code has special regulations for the transportation of hazardous materials that pose an inhalation hazard (Vehicle Code Section 32100.5). The PPP will comply with these regulations.

8.5.4.4 Hazardous Materials Plans

Hazardous materials handling and storage, and training in the handling of hazardous materials, will be set forth in more detail in hazardous materials plans that the applicant will develop.

Hazardous Materials Business Plan

An HMBP is required by the California Code of Regulations (Title 19) and the Health and Safety Code (Section 25504). This plan will include an inventory and location map of hazardous materials on-site and an emergency response plan for hazardous materials incidents. The topics to be covered in the plans are:

- Facility Identification
- Emergency Contacts
- Inventory Information (for every hazardous material)
- Material Safety Data Sheets (MSDS) for every hazardous material
- Site Map
- Emergency Notification Data
- Procedures to Control Actual or Threatened Releases
- Emergency Response Procedures
- Training Procedures
- Certification

Risk Management Plan

The Code of Federal Regulations 40 (CFR) Part 68, and the California Code of Regulations (CCR), Division 2, Chapter 4.5 regulate the potential accidental release of hazardous materials. CCR Article 8, Section 2770.5 includes tables of federally and state regulated substances including threshold quantities for regulation under the accidental release prevention program. Because the PPP will store ammonia in excess of 500 pounds, the facility is required to have a written Risk Management Plan and complete an Off-site Consequence Analysis (OCA). Federal RMP requirements will not be triggered because the ammonia concentration will be less than 20 percent by weight.

The RMP will be filed with and administered by the area's Certified Unified Program Agency (CUPA) which is the City of Santa Clara Fire Department Hazardous Materials Division. The RMP is in addition to the HMBP and covers listed hazardous materials that can produce toxic clouds when inadvertently released. Included in the RMP is a hazard assessment to evaluate the potential effects of accidental releases, a program for preventing accidental releases, and a program for responding to accidental releases in order to protect human health and the environment. The basic elements of a RMP are:

Description of the Facility

- Accident History of the Facility
- History of Equipment Used at the Facility
- Design and Operation of the Facility
- Site Map(s) of the Facility
- Piping and Instrument Diagrams of the Facility
- Seismic Analysis

- Hazard and Operability Study
- Prevention Program
- Consequence Analysis
- Off-site Consequence Analysis
- Emergency Response
- Auditing and Inspection
- Record Keeping
- Training
- Certification

Spill Prevention Control and Countermeasure Plan

Federal and State of California regulations require a Spill Prevention Control and Countermeasure (SPCC) plan if petroleum products above certain quantities are stored in aboveground storage tanks (ASTs). Both federal and state laws apply only to petroleum products that might be discharged to navigable waters. If quantities equal to or greater than 660 gallons for a single tank, or equal to or greater than 1,320 gallons total are stored, a SPCC must be prepared. The key elements of a SPCC are:

- Name, location, and telephone number of the facility
- Spill record of the facility and lessons learned
- Analysis of the facility, including:
  - A description of the facilities and engineering calculations
  - A map of the site
  - Storage tanks and containment areas
  - Fuel transfer and storage and facility drainage
  - Prediction and prevention of potential spills
- Spill response procedures
- Agency notification
- Personnel training and spill prevention

The PPP will have up to 2,800 gallons of turbine lubrication oil and 25,000 gallons of mineral insulating oil on-site and will, therefore, have to prepare a SPCC plan.

8.5.4.5 Monitoring

An extensive monitoring program will not be required because environmental effects during the construction and operation phases of the facility are expected to be minimal. However, sufficient monitoring will be performed during both phases to ensure that the proposed mitigation measures are complied with and that they are effective in mitigating any potential environmental effects.

Visual monitoring during construction and operation will be performed to determine compliance with and the effectiveness of the proposed mitigation measures. Written records of all monitoring events will be kept, including observations, actions taken, persons involved, and any recommendations.

8.5.5 Applicable Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials at the PPP is governed by federal, sate, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination, and protection of facility workers and the surrounding community from exposure to hazardous materials. The applicable laws, ordinances, regulations, and standards (LORS) are summarized in Table 8.5-7.

8.5.5.1 Federal

Hazardous materials are governed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the CAA, and the Clean Water Act (CWA).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

An amendment to CERCLA, the Superfund Amendments and Reauthorization Act of 1986 (SARA) governs hazardous materials. The applicable part of SARA for the NEC is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous materials present at facilities in local communities. The law primarily provides for planning, reporting and notification concerning hazardous materials. Key sections of the law are:

- Section 302—Requires that certain emergency planning activities be conducted when Extremely Hazardous Substances (EHS) are present in excess of their TPQs. EHSs and their TPQs are found in Appendices A and B to 40 CFR Part 355.
- Section 304—When there is a release of a hazardous material in excess of its RQ, Section 304 requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response committee (SERC). If the release is of a RQ of a CERCLA-listed hazardous substance, notification must also be provided to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notification provided to the local emergency response team or fire personnel.
- Section 311—Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and the local fire department.
- Section 313—Requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

Table 8.5-7. LORS applicable to hazardous materials management.

LORS	Applicability	Conformance (Section No.)
Federal:		
CERCLA/SARA		
Section 302	Requires reporting and certain planning activities when EHS are present in excess of TPQs.	A HMBP will be submitted to report EHS.
Section 304	Requires notification when there is a release of hazardous material in excess of its RQ.	A HMBP will be prepared which will describe notification and reporting procedures. (Section 8.5.6.4).
Section 311	Requires MSDS for every hazardous material to be kept on-site and submitted to SERC, LEPC, and the local fire department.	The HMBP that will be prepared will include MSDSs and procedures for submission to agencies. (Section 8.5.6.4).
Section 313	Requires annual reporting of releases of hazardous materials.	The HMBP that will be prepared will describe reporting procedures. (Section 8.5.6.4).
CAA	Requires a RMP if listed hazardous materials at or above a TQ are stored.	A RMP will be prepared. (Section 8.5.6.4).
CWA	Requires preparation of SPCC plan if oil is stored above certain quantities.	A SPCC will be prepared. (Section 8.5.6.4).
California:		
Waters Bill	Requires preparation of a HMBP if hazardous materials are handled or stored in excess of threshold quantities.	A HMBP will be prepared. (Section 8.5.6.4).
La Follette Bill	Requires registration with local CUPA or lead agency and preparation of a RMP if acutely hazardous materials handled or stored in excess of TPQs.	A HMBP will be prepared which will describe procedures for registration with local authorities. (Section 8.5.6.4).
Aboveground Petroleum Storage Act	Requires entities that store petroleum in ASTs in excess of certain quantities to prepare a SPCC.	A SPCC will be prepared. (Section 8.5.6.4).
Safe Drinking Water and Toxics Enforcement Act (Proposition 65)	Requires warning to persons exposed to list of carcinogenic and reproductive toxins and protection of drinking water from same toxins.	The site will be appropriately labeled for chemicals on the Proposition 65 list.

Clean Air Act (CAA)

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. These regulations require facilities that store a TQ or greater of listed hazardous materials to develop a RMP, including hazard assessments and response programs to prevent accidental releases of certain chemicals. Section 112(r)(5) of the CAA discusses the chemicals regulated. These chemicals are listed in 40 CFR 68.130 of the regulations. Aqueous ammonia is a listed substance and its TQ for solutions of 20 percent or greater is 20,000 pounds. Therefore, the Federal RMP requirement will not apply to the PPP.

Clean Water Act (CWA)

The SPCC program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations (40 CFR 112) under the CWA requires facilities to prepare a written SPCC if they have a single aboveground oil storage tank with a capacity greater than 660 gallons, total aboveground tank storage greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons, and that poses a threat to navigable waters.

8.5.5.2 State of California

California laws and regulations relevant to hazardous materials handling at the PPP include the Waters Bill (hazardous materials), the La Follette Bill (acutely hazardous materials), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

Waters Bill

This law is found in the California Health and Safety Code, Section 25500 et seq. and the regulations to the law in 19 California Code of Regulations (CCR) Section 2620 et seq. The law requires local governments to regulate local businesses' storage of hazardous materials if in excess of certain threshold quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a HMBP to their local administering agency (AA) and to report releases to their AA and the Governor's Office of Emergency Services. The threshold quantities for hazardous materials are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

La Follette Bill

Found in the California Health and Safety Code, Section 25531 et seq., this law regulates the registration and handling of acutely hazardous materials. Acutely hazardous materials are any chemicals designated as an extremely hazardous substance by the USEPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 expands the programs mandated by the Waters Bill and overlaps or may duplicate some of the requirements of SARA and the CAA. Facilities handling or storage of acutely hazardous materials at or above TPQs requires registration with local AA and preparation of a RMP, formerly known as a Risk Management and Prevention Program (RMPP).

Aboveground Petroleum Storage Act

This law is found in the Health and Safety Code at sections 25270 to 25270.13 and is intended to ensure compliance with the federal CWA. The law applies if a facility has an aboveground storage tank with capacity greater than 660 gallons or combined AST capacity greater than 1,320 gallons and there is a reasonable possibility that the tank(s) may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare a SPCC. The law does not cover AST design, engineering, construction and other technical requirements, which are usually determined by local fire departments.

Safe Drinking Water and Toxics Enforcement Act (Proposition 65)

This law identifies chemicals that cause cancer and reproductive toxicity, informs the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by the state Office of Environmental Health Hazard Assessment. Some of the chemicals planned to be used at the PPP are on the cancer causing and reproductive toxicity lists of the Act.

8.5.5.3 Local

Local AAs usually have the responsibility for administering hazardous materials requirements and insuring compliance with federal and state laws. The City of Santa Clara Fire Department Hazardous Materials Division is the AA for the PPP.

8.5.5.4 Codes

The design, engineering, and construction of hazardous materials storage and dispensing systems will be in accordance with all applicable codes and standards, including:

- California Vehicle Code, 13 CCR Section 1160 et seq.—provides the California Highway Patrol with authority to adopt regulations for the transportation of hazardous materials in California.
- The Uniform Fire Code, Article 80—Article 80 is the hazardous materials section of the Fire Code. Local fire agencies or departments enforce this code and can require that a Hazardous Materials Management Plan and a Hazardous Materials Inventory Statement be prepared. This requirement and the Waters Bill requirement for a Hazardous Materials Business Plan can usually be satisfied in a single combined document.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949—This code incorporates the Uniform Building Code, Uniform Fire Code, and Uniform Plumbing Code.
- The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII.
- The American National Standards Institute (ANSI) K61.1

8.5.6 Involved Agencies and Agency Contacts

There are a number of agencies that regulate hazardous waste that will be involved in regulation of the waste generated by the Pico Power project. At the federal level is the USEPA, and at the state level is the California Environmental Protection Agency (CalEPA). The administration and enforcement of the hazardous materials laws, however, is primarily through a local agency. For the PPP plant, the local agency is the City of Santa Clara Fire Department Hazardous Materials Division. The person to contact is shown in Table 8.5-8.

Table 8.5-8. Agency contacts.

Type Material	Agency	Contact	Title	Telephone
All hazardous materials	City of Santa Clara Fire Department, Hazardous Materials Division	Dave Parker	Hazardous Materials Program Administrator	(408) 615-4961
All hazardous materials RMP, HMBP	City of Santa Clara Fire Department, Hazardous Materials Division			(408) 615-4960
Hazardous Materials Emergency Response Team	City of Santa Clara Fire Department, Hazardous Materials Division	Dave Parker	Hazardous Materials Program Administrator	(408) 615-4961

8.5.7 Permits Required and Schedule

Applicable hazardous material permits and plans required for the project are listed in Table 8.5-9. Information required to obtain each permit is also included.

Table 8.5-9. Permits required and permit schedule.

Permit/Approval Required	Schedule
Welding and Cutting Operations Permit • Description of work to be performed • Name of company and person(s) performing the job • Availability of fire extinguishers or other fire suppression equipment • Checklist to ensure conditions are safe for the planned activity	Prior to initiation of construction welding or cutting operations
Consolidated Permit/HMBP • Business Owner/Operator Identification Unified Program Consolidated Form (UPCF). Contains owner and operator contact information. • Business Activities UPCF—Provides a summary of hazardous material usage and hazardous waste generation. • Hazardous Materials Inventory—Chemical Description UPCF. Provides detailed information for each hazardous material and hazardous waste on-site above threshold quantities. • Material Safety Data Sheets • Hazardous materials storage location map • Emergency contact information • Emergency response procedures • Training procedures	Prior to storage of hazardous materials at the site
RMP • RMP Certification • Off-Site Consequences Analysis • Prevention Program information • Emergency Response Program information • Hazard assessment	Prior to start-up
SPCC • Facility location and site description • Petroleum storage quantities and areas • Spill scenarios • Spill containment measures • Spill response/contingency plan notification procedures • Emergency response actions • Training plan	Prior to start-up

Welding and Cutting Operations Permit—to conduct welding and cutting operations in any occupancy or temporary job site involving construction permitted and regulated by the City. These permits will be

obtained prior to initiation of welding or cutting operations. These permits are not submitted to an agency; however, they must be prepared an approved on-site prior to initiation of welding or cutting operations.

Consolidated Permit—will cover hazardous materials storage. A Hazardous Materials Business Plan must be submitted as part of the application for the permit. The permit will be obtained prior to storage of hazardous materials at the site.

In addition, several plans must be prepared, including a HMBP, a RMP, and a SPCC. It is possible that these plans could be combined into a single plan that would meet all requirements. The plan or plans will be developed after filing of the AFC and prior to start-up.

8.5.8 References

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Ermak, D.E. 1990. User's Manual for SLAB: An Atmospheric Dispersion Model for Denser-Than-Air-Releases.

Parker, D. 2002. Personal communication between Jennifer Stiltz (Foster Wheeler Environmental Corporation) and Dave Parker (Hazardous Materials Program Administrator, City of Santa Clara Fire Department, Hazardous Materials Division), June 12, 2002.

U.S. Environmental Protection Agency (EPA). 1999. RMP offsite consequence analysis guidance.

U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response. 1998. Risk Management Program Guidance for WWTPs.