7.12 HAZARDOUS MATERIALS HANDLING

This section describes the hazardous materials to be used in conjunction with the construction and operation of the proposed Marsh Landing Generating Station (MLGS). The MLGS will consist of new natural gas-fired generation facilities and ancillary systems. The new units are to be constructed wholly within the site of Mirant's existing Contra Costa Power Plant (CCPP). The discussion includes information on the applicable laws, ordinances, regulations, and standards (LORS) and includes an evaluation of potential public health impacts resulting from the storage and handling of hazardous materials. A list of known chemicals associated with the project is provided, as well as a description of the storage facilities and handling equipment for hazardous materials that have been designed to ensure that potential impacts will be below designated thresholds of significance, even in the unlikely event of a worst-case accidental release of a hazardous material.

To minimize the risks and offsite consequences from accidental releases of hazardous materials, a federal program was established in 1990 as described in Section 112 (r) of the Clean Air Act. The California Office of Emergency Services established the California Accidental Release Prevention (CalARP) Program to prevent the accidental releases of regulated substances and develop plans for minimizing the impacts of such releases should they occur. The CalARP Program specifies regulated substances, oversees the federal and state requirements, and determines the requirements for the preparation of a Risk Management Plan (RMP) and offsite consequence analysis for accidental releases of hazardous chemicals. Much of the analysis presented in this section has been designed to produce the information that would be included in an RMP for the MLGS,

The construction and operation of the MLGS requires a number of hazardous materials to be handled and stored on site. Aqueous ammonia (used as a reagent for the Selective Catalytic Reduction [SCR] emission control system to reduce turbine emissions of NO_x) will be present in a concentration below the Federal Threshold Quantity, which pertains to aqueous solutions of 20 percent or more. However, onsite storage of 40,000 gallons of aqueous ammonia is sufficient to trigger the State Threshold Quantity for volume and will require preparation of a Risk Management Plan.

7.12.1 Affected Environment

7.12.1.1 Plant Site

The CCPP and MLGS are approximately 1/10 mile from the City of Antioch's limits, on the banks of the San Joaquin River in Contra Costa County. The plant is in an area that includes industrial facilities, recreational boating, agricultural lands, and sparse residences. The location of the MLGS is shown in Figure 2.2-1 in Section 2.0, Project Description.

Sensitive receptors within 3 miles of the MLGS site, including schools, hospitals, daycare facilities and long-term health care facilities, are shown in Figure 7.6-1. Thirty-six schools, 11 daycare facilities, one hospital, 14 long-term care facilities, and 30 parks/recreation centers are located in the vicinity of the plant (see Table 7.12-1). The nearest public receptors are situated in the marina immediately east of the plant. The nearest residence is a caretaker's residence approximately 1,700 feet east of the easternmost Simple Cycle unit (near the Sportsman Yacht Club); this is considered a nonconforming residence in an industrial area. The nearest residential neighborhood is approximately 2,000 feet from the proposed MLGS site boundary to the southwest. The commercial building nearest to the MLGS is also in the marina area, approximately 2,000 feet northeast of the proposed location of the eastern aqueous ammonia storage tank (as measured from the center of that ammonia storage area). The park closest to the MLGS straddles State Route (SR) 160, approximately 2,900 feet east of the plant. The nearest industrial buildings, other than the CCPP itself, are located about 400 yards due south of existing Tank 5.

The MLGS site is not in the 100-year floodplain and no structure will be sited within the floodplain. All proposed structures will be located at elevations ranging from approximately 10 feet to 16 feet above mean sea level, which is well above the 100-year flood elevation of 7 feet. All proposed structures will be designed in accordance with the Contra Costa County Building Code. The proposed ammonia storage facilities will be at an elevation of 10 feet, and hence do not need to be designed to accommodate possible flooding.

The MLGS site is located in Seismic Design Category D. All project structures will be designed in conformance with International Building Standards Code (IBC, 2006) to ensure safety for operating personnel and adequate protection against structural and equipment damage.

Land uses nearest to the power plant site include:

- North: Existing CCPP and San Joaquin River;
- East: Existing CCPP and existing PG&E switchyard;
- South: Existing PG&E switchyard and CCPP tank farm; and
- West: Currently vacant heavy industrial area.

The surrounding area is primarily undeveloped land, commercial and industrial areas, and residential areas. Buildings closest to the project site include nonconforming caretaker residences approximately 1,700 feet to the east in the marina area and a residential neighborhood approximately 2,000 feet from the project boundary to the southwest. Approximately 92 sensitive receptors (childcare facilities, schools, hospitals, long-term care facilities, and parks) are identified within a 3-mile radius of the project site.

7.12.1.2 Existing Hazardous Materials

An inventory of hazardous materials currently stored or handled at the CCPP was obtained from the Chemical Inventory in the Business Plan/Contingency Plan/SARA Title III report, which was submitted to the Contra Costa County Health Services Department Hazardous Materials Division (CCCHSD-HMD) in accordance with the California Code of Regulations (CCR) Title 22 requirements. Table 7.12-2 lists the known existing hazardous materials, along with their individual uses, maximum quantities, locations, characteristics and regulatory limits.

The existing CCPP water treatment system requires the use of sulfuric acid. A maximum quantity of 12,000 pounds may be stored onsite for this purpose. Although this quantity is larger than the CalARP threshold quantity of 1,000 pounds, it does not qualify as a State Regulated Substance, since the sulfuric acid is not concentrated with greater than 100 pounds of sulfur trioxide. Due to the small quantities of the other hazardous materials currently at CCPP, the CCCHSD-HMD has not required preparation of an RMP for any of the existing hazardous materials, with one exception. Aqueous ammonia is used and stored on the CCPP site for the NO_x control systems for the CCPP Unit 7 and GGS. Therefore, aqueous ammonia (29 percent) is already stored on the CCPP site in sufficient quantities and concentration to trigger CalARP requirements. An RMP for these facilities has been submitted to the CCCHSD-HMP and is updated annually.

Emergency response policies and procedures outlined in the Business Plan/Contingency Plan describe the necessary actions to be taken by facility personnel in the event of a hazardous materials release to the air, soil, or surface waters in the plant vicinity. These procedures include a notification checklist with contact information for CCPP qualified individuals, emergency response agencies, regulatory agencies, police, fire, hospital, and ambulance services.

To minimize impacts from accidental releases, workers are trained in methods for safe handling of hazardous materials, use of response equipment, procedures for mitigation of a release, and coordination with local emergency response organizations. More importantly, to avoid or minimize impacts from the accidental releases of hazardous materials, non-hazardous or less hazardous materials are used where possible, or engineering controls are implemented.

7.12.2 Environmental Consequences

The criteria used to determine the significance of potential impacts from hazardous materials used at the MLGS were based on the Environmental Checklist Form of the California Environmental Quality Act (CEQA) Guidelines and on standards and thresholds adopted by the relevant agencies involved with this Application for Certification (AFC). Under CEQA Guidelines, an impact may be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would create a significant hazard to the public or the environment; and
- Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Operational procedures for the safe transport, use, and disposal of hazardous materials will avoid or minimize significant impacts from potential accidental releases. Potential impacts from hypothetical worst-case accidental releases of ammonia described below under Offsite Consequence Analysis have been demonstrated to be below a level of significance due to the mitigation measures incorporated in the proposed design of the facility.

An accidental release can only occur if hazardous materials are handled improperly, or if a catastrophic event occurs. Although the probability of such events occurring is extremely low, passive design features have been included in the project design to minimize potential impacts in the event of a release. Hence, additional mitigation measures are not required (see Section 7.12.4, Mitigation Measures).

An offsite consequence analysis must be performed to evaluate potential offsite impacts in terms of the predicted maximum ground-level concentration of each hazardous material that qualifies as a state-regulated substance under the CalARP Program, or a federal-regulated substance under Section 112(r) of the Clean Air Act. For the project, aqueous ammonia is the only substance that will be stored and used on site in sufficient quantity to qualify as a state-regulated substance. Thus, an offsite consequence analysis is required for aqueous ammonia. The model simulations of the atmospheric dispersion of ammonia during the worst-case release scenarios will partially determine which RMP Program level will be required.

In the analysis of potential offsite consequences of the hypothesized worst-case accidental ammonia release, a significant impact would occur if a concentration of ammonia were predicted to equal or exceed the toxic endpoint at the distance of the nearest public receptor. The toxic endpoint is designated by the U.S. Environmental Protection Agency (U.S. EPA) in 40 Code of Federal Regulations (CFR) Part 68, Appendix A, as 200 parts per million by volume (ppmv). This concentration was formerly equivalent to the Emergency Response Planning Guideline Level 2 (ERPG-2) concentration, although the current ERPG-2 concentration limit has since been reduced to 150 ppmv.

The California Energy Commission (CEC) routinely uses a more stringent significance criterion for ammonia; specifically, a concentration equal to or greater than 75 ppmv averaged over 30 minutes, which corresponds to the Short-Term Public Emergency Limit (STPEL) established by the National Research Council.

CCCHSD-HMP is the designated Certified Unified Program Agency (CUPA) for the project area, and will be responsible for approving the RMP for the aqueous ammonia facilities of the project.

7.12.2.1 Hazardous Materials Introduced During the Construction of the MLGS

Hazardous materials used during the construction of the MLGS and demolition of existing facilities would be limited to small volumes of specific chemicals. The chemicals that will be brought on site to support the demolition activities will be generally the same as those used for facility construction and will include the following: flushing and cleaning fluids (phosphate or nitrate solutions), unleaded gasoline, oil, lubricants (i.e., motor oil, transmission fluid, and hydraulic fluid), adhesives, painting materials, cleaning solvents, paint wastes, antifreeze, and pesticides. These substances are listed in Table 7.12-3. These hazardous materials are expected to be stored on the 27-acre project site as well as the 14 acres of construction laydown areas on the CCPP site but outside the MLGS. An area is designated for the majority of hazardous material storage and handling during construction and demolition as shown on Figure 2.7-3. No hazardous materials are planned to be stored in any other areas during construction. Debris containing hazardous materials resulting from demolition activities, such as asbestos and lead paints, will be treated and removed from the site, as appropriate. This aspect of the project is addressed in Section 7.13, Waste Management.

The demolition/construction contractor or contractors would be considered the generator of hazardous construction waste, and would be responsible for proper handling of such wastes in accordance with all applicable federal, state, and local laws and regulations, including licensing, personnel training, waste accumulation limits and times, reporting, and recordkeeping. Any hazardous wastes generated during construction would be collected in hazardous waste containers near the point of generation and moved daily to the contractor's 90-day hazardous waste storage area located on the site. The accumulated waste would be subsequently delivered to an authorized waste management facility. A Hazardous Materials Business Emergency Plan and a Chemical Inventory Program will be developed by the demolition/construction contractor or contractors. The contractors will outline hazardous materials handling, storage spill response, and reporting procedures for all hazardous substances used on site during construction.

Material Safety Data Sheets for each onsite chemical would be kept at the MLGS and CCPP sites, and construction employees would be made aware of their location and content.

There is minimal potential for significant environmental impacts from hazardous material incidents during demolition and construction. Small volumes of hazardous materials will be on site during construction. These materials will be used by trained maintenance and service personnel. The most likely incidents involving these materials are dripping of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles or equipment. An accident involving the release of one of these materials from a service vehicle during equipment maintenance or fueling is the worst-case scenario. The risk of such an occurrence will be minimized through the emergency response training program and procedures that will be implemented during construction (discussed in more detail in Section 7.7, Worker Safety and Health). However, Mitigation Measure HAZMAT-1, discussed in Section 7.12.4.1, would further ensure that impacts from fueling and maintenance of construction vehicles and equipment would be less than significant.

As shown on Table 7.12-3, the hazardous materials that will be used during construction of the project have low acute toxicities. Any long-term impacts would be avoided by cleaning up spills when they occur. Soil that is contaminated during a cleanup of a spill will be placed into drums or trucks by service personnel for offsite disposal at a permitted hazardous waste, transfer, storage, and disposal facility. In the event of a spill or leak into the environment of hazardous materials in an amount equal to or greater than the specific reportable quantity (e.g., 25 gallons for petroleum products), federal, state, and local reporting requirements will be adhered to. In particular, the CCCHSD-HMP will be notified. The Contra Costa County Fire Protection District will be called in the event of a fire or injury. Contractors will be expected to implement best management practices with regard to hazardous materials storage, handling, emergency spill response, and reporting procedures. Mitigation Measures HM-1 through HM-3 will ensure that proper procedures are followed in the event of a hazardous materials spill. With implementation of the mitigation measures identified in Section 7.12.4, impacts from hazardous materials handling during construction are expected to be less than significant.

7.12.2.2 Hazardous Materials Introduced by the Operation of MLGS

A number of hazardous materials will be used by the MLGS in support of operation of the gas turbines and SCR systems. These hazardous materials will be stored on the CCPP site in an existing designated hazardous materials storage facility to be shared with the CCPP. Table 7.12-4 lists the hazardous and nonhazardous materials that would be used or stored on site during operation of the project. Information provided in this table for each material includes the maximum quantity stored on site, Chemical Abstract Service (CAS) number, anticipated usage quantity, location, nature of the associated hazard, and state/federal threshold quantities. Figure 7.12-1 shows the locations at which the listed hazardous materials would be stored on the MLGS site. Chemicals used for MLGS operations would be stored separately from those associated with ongoing CCPP operations.

Emergency response policies and procedures will be outlined in an Emergency Action Plan that will be prepared prior to commencement of project operations. This plan will describe the necessary actions to be taken by facility personnel in the event of a hazardous material release to the air, soil, or surface waters in the plant vicinity. These procedures will include a notification checklist with contact information for MLGS qualified individuals, emergency response agencies, regulatory agencies, police, fire, hospital, and ambulance services (40 CFR 355).

Waste lubricating materials would be periodically generated during the operation and maintenance of the generating units. These materials will be collected and stored in appropriately designed and labeled storage containers. Waste lubricants will be recycled by an approved contractor in compliance with applicable regulations.

Combustion exhaust catalysts would be used as part of the air quality control systems associated with the new generating units. These catalyst materials, which contain vanadium and other hazardous materials, are expected to last approximately three to five years and will be replaced periodically. The manufacturer will recycle spent catalysts, if possible. If necessary, these materials will be disposed of in an appropriate manner at an approved Class I landfill.

Solvents may be used for parts cleaning and other maintenance activities. The use of solvents on site would be minimized. All solvents will be stored in appropriate containers, within labeled areas with secondary containment. Spent solvents will be recycled, if practical, or will be disposed of in an appropriate manner.

Curbs, berms, and concrete pits will be used where accidental releases of hazardous and acutely hazardous materials could occur. All containment areas will be constructed in accordance with applicable laws, ordinances, regulations, and standards. Containment areas will be drained to appropriate collection areas or neutralization tanks for recycling or offsite disposal. Traffic barriers will protect piping and tanks from potential traffic hazards.

To minimize impacts from accidental releases, workers will be trained in methods for safe handling of hazardous materials, use of response equipment, procedures for mitigation of a release, and coordination with local emergency response organizations. More importantly, to avoid or minimize impacts from the accidental releases of hazardous materials, nonhazardous or less hazardous materials will be used where possible, or engineering controls will be implemented. For example, aqueous ammonia was selected as the preferred reagent for the SCR emission control system over anhydrous ammonia, because it is less hazardous in the event of an onsite release. In addition, hazardous materials storage areas will be regularly inspected.

The most probable accidents involving hazardous materials include small-scale spills of waste oil or other chemicals from product or satellite storage areas. To avoid potential impacts, all spills will be cleaned up immediately.

The quantities of individual hazardous and acutely hazardous chemicals that trigger federal evaluation of potential offsite consequences for an accidental release are listed in 40 CFR 68.115. The corresponding state thresholds under the CalARP program are provided in the California Code of Regulations, Title 19 (Public Safety), Division 2, Chapter 4.5, Sections 2735 – 2785.

None of the chemicals at the MLGS would be stored in quantities above the federal thresholds, and only aqueous ammonia would be stored on the site in a quantity that is greater than the CalARP threshold quantity. Aqueous ammonia would be used as the reagent in the SCR emission control system to reduce NO_X compounds from the exhaust of the gas turbine and heat recovery steam generator (HRSG) units. Figure 2.6-3 show the proposed ammonia storage tanks that will be constructed for the MLGS project. Figure 2.5-1c and Figure 2.5-1d show the proposed location of the ammonia storage facilities on the site plan, as well as the storage or usage locations for other hazardous materials.

Tanker trucks with a capacity of up to about 8,000 gallons will deliver aqueous ammonia to the facility from suppliers in Northern or Central California. Such deliveries will be made as necessary (approximately twice a week during peak operation). The most likely routes for aqueous ammonia deliveries to the MLGS site would be from either the eastbound or westbound lanes of SR 4, exiting north onto SR 160, exiting and turning west at Wilbur Avenue, and entering the CCPP site at the main gate. Upon reaching the CCPP site, the delivery truck will proceed through the plant site to the ammonia unloading areas along a route that will be chosen to minimize the potential for collisions with site vehicles and to avoid passing near chemical storage areas that may contain substances that are incompatible with ammonia. Speed limits within the site will be clearly posted.

Aqueous Ammonia

The project will be a 930-megawatt (MW) power plant, using SCR technology to reduce emissions of NO_x, from the project's simple-cycle and combined-cycle gas turbines. The new generating facility will be constructed on a site located within unincorporated Contra Costa County, approximately two miles east of the center of Antioch, California. The SCR system that will be operated at the project site will consist of a post-combustion flue gas NO_x emission control technology that removes NO_x from the flue gas. A reducing agent is used to reduce NO_X emissions, primarily nitric oxide (NO) and nitrogen dioxide (NO_2), by oxidation-reduction reactions in the presence of a catalyst. The most common reducing agent (reagent) used with SCR is ammonia. Injection of the correct ammonia/air mixture into the combustion exhaust stream before the catalyst initiates the reactions and achieves the desired removal of NO_x emissions upstream from the stack. The project will provide storage for 333,000 pounds (40,000 gallons) of 19 percent aqueous ammonia for its SCR technology.

Ammonia Storage Area. The 19 percent aqueous ammonia to be used at the MLGS will be stored in two 20,000-gallon aboveground storage tanks (ASTs) at the project site. There will be one AST for each pair of generating units at the site. For the two Simple Cycle units, there will be one 19 percent aqueous ammonia AST located approximately 25 feet northwest of the stack of the westernmost generating unit. For the two combined-cycle units, one 19 percent aqueous ammonia AST will be installed approximately 25 feet northwest of the westernmost unit's stack. Both ammonia ASTs will be single-walled carbon steel tanks. Each ammonia AST will also be equipped with primary and secondary containment structures to contain any spills from the ammonia tanks. A concrete containment wall surrounding each tank will slope steeply to a 42-inch-diameter (or equivalent) drain centered below each tank that will feed into an underground sump enclosure. A separate enclosure for each tanker truck unloading area will be provided with a drain leading to the same underground sump enclosure. In the event of a tank failure or a release during truck unloading, the spilled ammonia will drain into the covered sump by way of these drains. In addition, the ammonia-handling facility at the project site will be equipped with ammonia detection and alarm systems to protect workers and equipment in the event of a malfunction anywhere in the system.

Ammonia Delivery. Aqueous ammonia is expected to be delivered to the project site by a local ammonia supply company. Deliveries will be made up to 120 times a year in 8,000-gallon capacity California Department of Transportation (Caltrans)-certified trucks that are designated for ammonia transport and operated by a trained driver. The trucks will travel along public roads permitted for hazardous materials transport. Specifically, it is anticipated that trucks traveling from either the eastbound or westbound lanes of SR 4 will exit north onto SR 160, and turn west at Wilbur Avenue to enter the CCPP site at the main gate. Trucks will then enter the MLGS site and continue north and then west to the 19 percent aqueous ammonia storage sites. The aqueous ammonia transport truck loading/unloading zones will be adjacent to the ASTs and sloped toward a drainage system leading to an underground containment area or tank such that any spill occurring during loading/unloading operations at the site will drain into the concrete containment area. The containment area will be large enough to contain a spill of the entire contents of a tanker truck.

Offsite Consequence Analysis

Aqueous ammonia would be the only hazardous substance present on site in a sufficient quantity to be considered a state- or federal-regulated substance subject to the requirements of the CalARP program. Aqueous ammonia would be used in the SCR system to reduce NO_X emissions from the generating units. The 19 percent aqueous ammonia solution would be stored in two ASTs each holding a maximum of 20,000 gallons. The tanks will be refilled periodically by offloading from ammonia tanker trucks.

This section outlines the contents of an offsite consequence analysis (OCA) to evaluate potential acute public health impacts from an accidental release of aqueous ammonia. Details of the calculations for this analysis are included below under Model Parameters.

The offsite consequence analysis was performed for two hypothetical accidental release scenarios: "worst-case," and "alternative." The U.S. EPA has specified (40 CFR §68.3) that the worst-case release scenario must be "the release of the largest quantity of a regulated substance from a vessel or process line failure that results in the greatest distance to an endpoint." The alternative scenario is considered to be more realistic, while the worst-case scenario is so conservative as to be almost impossible. However, the probability of occurrence for the alternative scenario is also extremely low.

For each scenario, distances to specified concentrations (end points) of ammonia were estimated through calculation of emission rates and use of a computer model to predict airborne dispersion and resulting ground-level concentrations. If a specified "level of concern" concentration were predicted to reach off site, then the corresponding potential short-term health effects would be evaluated.

Four levels of concern are used to evaluate public health impacts associated with a hypothetical release of aqueous ammonia:

- **Lethal**. The lethal concentration is 2,000 ppmv averaged over 30 minutes.
- **Immediately Dangerous to Life and Health (IDLH).** The IDLH concentration is 300 ppmv, averaged over 30 minutes (National Institute of Occupational Safety and Health [NIOSH], 1997). This concentration was chosen by NIOSH to ensure that workers can escape without injury or irreversible health effects from an IDLH exposure. Exposure to ammonia at or above the IDLH poses a threat of death or immediate or delayed permanent adverse health effects or prevents escape from the impacted environment.
- **U.S. EPA/CalARP Toxic Endpoint.** The CalARP toxic end point concentration, based on U.S. EPA 40 CFR 68, is 200 ppmv averaged over 1 hour. This concentration was formerly equivalent to the ERPG-2 concentration, and is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.
- **CEC Significance Value.** The CEC uses a more stringent significance value of 75 parts per million (ppm) of ammonia averaged over 30 minutes, based on public short-term limits set by the National Research Council. The CEC uses this concentration as a screening guideline to determine the potential for significant impact. CEC has determined that exposure above this level poses a potentially significant risk of adverse health impacts on sensitive members of the general public.

In the present analysis, the potential offsite impact of an accidental release of ammonia is considered to be less than significant if the CEC concentration does not reach a public receptor. If concentrations at the CalARP level do not extend off site, then significant concentrations cannot reach any public receptors. Accordingly, a Program 1 RMP would most likely be appropriate and the impact would be considered less than significant. If concentrations greater than the CalARP toxic endpoint of 200 ppm are predicted off site, a Program 2 RMP must be considered.

The OCA includes four components. The first is descriptions of the release scenarios, including passive features designed to minimize emissions, in enough detail to allow quantitative analysis. The second component of the OCA is the estimation of emission rates associated with each scenario. The third component is the use of atmospheric dispersion modeling to predict the maximum distances to the ammonia concentration levels of concern in each scenario. The fourth component is an assessment of the potential degree and extent of offsite consequences in terms of the concentrations computed by the dispersion modeling.

The following subsections describe: (1) the assumptions used to characterize the worst-case release scenario; (2) the assumptions used to characterize the alternative release scenario; (3) the development of input parameters for the modeling analyses conducted for these scenarios; (4) the selected atmospheric dispersion modeling methodology; and (5) the results of the modeling analysis, including an exposure assessment for potential receptors in the vicinity of the MLGS.

Worst-Case Release Scenario. Potential accidental releases of aqueous ammonia at the MLGS could involve a spill due to the failure of the storage tank or a spill during the unloading of a tanker truck to a storage tank.

An ammonia spill resulting from failure of a storage tank would result in 20,000 gallons of aqueous ammonia spilling into a concrete containment area. An ammonia spill from the unloading of a tanker truck would potentially release up to 8,000 gallons of aqueous ammonia into a containment berm. The RMP guidance developed by the U.S. EPA requires that the worst-case release be the release of the largest quantity of a regulated substance from a vessel or process line failure. At the MLGS, the hypothetical worst-case accidental release of ammonia is from the failure of the storage tank, resulting in the immediate release of as much as 20,000 gallons. The circumstances under which this scenario was assumed to occur are very conservative and have an extremely low probability of occurrence.

The underground sump will be designed to hold the entire contents of a 20,000-gallon storage tank, plus the maximum rainfall that could collect within the containment over a 24–hour maximum recorded rainfall (3.4 inches, Antioch 1E Station Western Regional Climate Center [WRCC] 1948-1975). The release rate of the ammonia resulting from tank failure is estimated as the rate of evaporation from the exposed surface area of ammonia, which would be the 42-inch drain under each storage tank.

Alternative Release Scenario. The alternative scenario is considered to be a more realistic accidental release event compared with the extremely conservative worst-case scenario. However, the probability of the alternative scenario actually occurring is also very low. The alternative scenario would involve a spill of aqueous ammonia during the transfer of ammonia from a tanker truck to the storage tank due either to a break or disconnection of the hose at the beginning of an unloading operation. The containment area is sized to contain the entire contents of the tanker truck (8,000 gallons), and will also be drained to the same underground sump that is located under the ammonia storage tanks. The release rate of the ammonia resulting from a spill during the transfer of ammonia is estimated as the rate of evaporation from the exposed surface area of ammonia. Assumptions and detailed calculations are provided below.

Note that a spill of aqueous ammonia in the piping between the storage tanks and the ammonia injection skids for the respective simple-cycle and combined-cycle turbines was considered but not included in an OCA modeling scenario. All such aboveground piping will include an outer PVC pipe surrounding the inner steel pipe. The probability of any release to the atmosphere from this source is considered negligibly small.

Model Parameters. The calculations to determine the emission rate of ammonia vapor from an aqueous solution used the following equation, as recommended by the U.S. EPA in the *RMP Guidance for Offsite Consequence Analysis* (1999):

$$QR = \frac{0.284U^{0.78}MW^{2/3}A \times VP}{82.05T} \qquad \text{(Equation 7.12-1)}$$

where: QR = emission rate of ammonia (pounds per minute)
U = wind speed (meters per second)
MW = molecular weight of ammonia (grams per gram-mole)

A = surface area of spilled liquid pool (square feet)
VP = vapor pressure of ammonia above solution (millimeters of mercury)
T = temperature of liquid (degrees Kelvin)

This equation is valid for analysis at 77º Celsius. In order to adjust for the parameters given in the worst-case and alternate scenarios the vapor pressure of the ammonia solution is corrected to the corresponding temperatures for the worst-case and alternative scenarios.

This equation determines the emission rate of the ammonia alone; the evaporative rate of the water in the solution is ignored. The emission rate per unit area required for the selected dispersion model was calculated using the following equation:

$$E = \frac{QR_C}{A} \qquad \text{(Equation 7.12-2)}$$

where: E = emission rate of ammonia (grams per second per square meter)
QR_C = temperature corrected emission rate of ammonia (grams per second)
A = surface area of spilled liquid pool (square meters)

The surface area of the spilled pool used in Equations 7.12-1 and 7.12-2 is the area of ammonia that is exposed to the atmosphere while in the containment area. The containment area for the storage tanks is estimated to be 66 feet by 31 feet by 36 inches deep; however, the ammonia will drain immediately into the underground sump with a 42-inch drain. The containment berm for the unloading area has been sized to collect the entire contents of the tanker truck and direct the liquid ammonia into the containment sump, the ammonia will drain into the underground sump with a drain of 24 inches.

The wind speed used in Equation 7.12-1 is taken from CalARP RMP guidance to be 1.5 meters per second for the worst-case scenario and 3.0 meters per second for the alternative scenario. Low wind speed results in a low volatilization rate, as can be seen in Equation 7.12-1, but also corresponds to a low rate of dispersion of the vapor as it is carried downwind.

The temperature of the released aqueous ammonia is assumed to be 9 degrees Fahrenheit (°F) warmer than the air temperature to compensate for the maximum potential increase of temperature within the tank. The CalARP guidance requires the maximum air temperature observed on site in the previous three years; however, discussions with CEC staff have indicated this approach is not realistic. CEC staff has instead recommended using the highest average daily temperature over the entire period of record at the Antioch 1E meteorological station (1971-2000). The highest average daily temperature (88.0°F is the highest daily maximum for day 209 between 1971 and 2000) was used for the worst-case scenario modeling (WRCC, 1971-2000). The mean air temperature during 1971-2000 of 60.2°F (WRCC, 1971-2000) was used in the alternative scenario modeling per the CalARP guidance.

Atmospheric stability is an important meteorological parameter used in modeling the dispersion of the ammonia vapor that vaporizes from the liquid. The worst-case scenario requires the assumption of stability class F, which is the most stable classification. In a stable atmosphere there is little turbulent motion, and very little mixing occurs, so the ammonia concentration in the plume from a spill would remain high as the vapor is carried downwind under these conditions.

The combination of the maximum observed temperature and extreme atmospheric stability that was assumed for the worst-case modeling scenario is conservative to the point that it never actually occurs. Maximum temperature occurs during the mid-afternoon hours when the air is typically unstable or neutral (stability classes A through D). In contrast, stability class F occurs during nighttime or early morning before sunrise. Atmospheric stability class D (neutral stability) is used in the alternative scenario.

Table 7.12-6 shows the parameters used to model the ammonia dispersion for the worst-case and alternative release scenarios.

Modeling Methodology. To examine the impacts from a hypothetical spill of aqueous ammonia, the U.S. EPA–approved atmospheric dispersion model SCREEN3 was employed. SCREEN3 is a Gaussian plume model that incorporates continuous source and meteorological parameters to estimate hourly concentrations of materials released to the atmosphere.

An accidental aqueous ammonia release would pool in the containment area where ammonia gas will evaporate via laminar mass transfer from the exposed aqueous ammonia that spilled into the containment from either a failed storage tank or a spill during the unloading of the tanker truck. Ammonia gas is lighter than air — it has a molecular weight of 17.03 grams/gram•mole, whereas air has a molecular weight of about 29 grams/gram•mole. For the ammonia release scenarios examined in this assessment, a dense gas model, such as SLAB or DEGADIS, would be inappropriate. Only one meteorological condition, a single stability class and wind speed, needs to be examined per scenario. The greatest distance to the toxic endpoint must be determined regardless of wind direction; hence, SCREEN3 is an appropriate model for the required analysis.

In the area source mode of SCREEN3, the ammonia source resulting from either a storage tank rupture or spill during unloading is represented as a rectangular source, the area of which is equal to the combined areas of the 42-inch-diameter drain under the storage tanks plus the 24-inch drain in the tanker truck unloading area. Thus the source representation is very similar for both the worst-case and alternative modeling scenarios. Receptor distances in the dispersion model simulations for both cases were measured from the center of the ammonia tank enclosure.

Modeling Results. It has been assumed that there is an equal probability of the ammonia dispersing in any direction. Thus, the model results for the worst-case scenario and the alternative scenario, shown in Figures 7.12-2 and 7.12-3, respectively, are represented as circles of equal predicted ammonia concentration around the source. The radii of the circles represent the distances to each "level of concern" concentration used as public health effects thresholds. The modeling results are summarized below:

Predicted Ammonia Concentrations at Sensitive Receptor Locations

Scenario	Nearest Public Receptor (Marina Park)	Nearest Residence
Worst-Case Scenario[1] Concentration (ppm)	4.4	3.4
Alternative Scenario[2] Concentration (ppm)	1.8	1.4
Distance from Ammonia storage facility (feet)	1,968	2,300

Notes:
1. Worst-case scenario represents storage tank spill into containment area.
2. Alternative scenario represents spill from tanker truck unloading.

Predicted Distances to Ammonia Levels of Concern			
Levels of Concern	**Threshold Limit (ppm)**	**Worst-Case Scenario Distance to Threshold (feet)**	**Alternative Scenario Distance to Threshold (feet)**
Lethal	2,000	56	34
IDLH	300	169	101
CalARP	200	214	127
CEC	75	375	221

Neither of the scenarios analyzed here results in a predicted impact exceeding any of the toxic endpoint concentrations at the nearest offsite receptor locations. None of the threshold circles extend beyond the facility fenceline in the worst-case scenario (i.e., there are no human receptors to be exposed to a health risk). Therefore, the potential impacts of these hypothesized accidental release scenarios would be less than significant.

Model input and output files generated by the Offsite Consequence Analysis are provided in Appendix Q.

The MLGS will be eligible for the CalARP Program 1 level of analysis because it will meet the following requirements:

- The distance to a toxic endpoint or flammable endpoint for an ammonia release is less than the distance to any public receptor. The toxic endpoint (i.e., U.S. EPA/CalARP concentration) is 200 ppmv for ammonia.
- For the 5 years prior to the submission of a RMP, the existing Mirant CCPP facility has not had an accidental release of a regulated substance in which exposure to the substance, its reaction products, overpressure generated by an explosion involving the substance, or radiant heat generated by a fire involving the substance has led to any of the following offsite consequences:
  - Death;
  - Injury; or
  - Response or restoration activities for an exposure of an environmental receptor.
- Emergency response procedures have been coordinated between the stationary source and the local emergency planning and response organizations.

No significant consequences are expected to occur at offsite receptors from either of the analyzed release scenarios, due to the design features of the project, which reduce the likelihood and potential consequences of accidental ammonia releases. Workers at the facility will be trained to avoid and respond to accidental releases of hazardous materials, including ammonia. Hence, project design and worker training will limit the safety hazard due to an accidental aqueous ammonia release to an acceptable level.

Fire and Explosion Risk

Natural Gas. Natural gas will be used as a fuel for the facility. Natural gas poses a fire and explosion risk because it is flammable. While natural gas will be used in significant quantities, it will be continuously delivered to the project site through a pressurized natural gas pipeline and will not be stored on site. The pipeline would be buried except for small, essential portions that would be above ground at the pressure metering station and gas turbine generators. Keeping the pipeline underground reduces the risk of the line being struck by a vehicle. Because of this passive mitigation measure, the potential impacts presented by the use of the natural gas pipeline would be less than significant.

The risk of a fire and/or explosion will be minimized through adherence to applicable codes and the continued implementation of effective safety management practices. U.S. Department of Transportation (U.S. DOT) rules that govern gas pipeline operations reduce the fire and explosion risk.

Other Gases. Gases typically used for maintenance activities, such as shop welding and emissions monitoring, will also be stored and used at the facility. These gases include acetylene, argon, nitrogen, carbon dioxide, and oxygen. The potential impacts from the use of these gases are considered less than significant based on the following:

- A limited quantity of each gas will be stored at the facility;
- All compressed gas cylinders will be labeled to clearly identify the gas content with either the chemical or the trade name of the gas. Durable labels will be used to avoid detachment and removal;
- The gases will be stored in U.S. DOT–approved safety cylinders. All gas cylinders will be placed in an upright position and secured by chains to fixed support properly at all time to prevent them from falling, rolling, or tipping;
- Incompatible gases (e.g., flammable gases and oxidizers) will be stored separately;
- The gases will be stored in multiple, standard-sized portable cylinders, rather than larger cylinders, generally limiting the quantity released from failure of an individual cylinder to less than 200 cubic feet; and
- The gas compressor area will be properly labeled and placed in an area that is not close to any ignition sources.

Miscellaneous Chemicals

Lubrication oil, hydraulic fluid, hydraulic oil, mineral oil, and transmission fluid are hydrocarbon-based chemicals with low flammability. In accordance with Article 80 of the California Fire Code, the storage area for these hydrocarbon fluids will be equipped with a fire extinguishing system and will be handled in accordance with a Hazardous Materials Business Plan (HMBP) approved by the CCCHSD-HMP and the CEC. With proper storage and handling of flammable materials in accordance with the California Fire Code and the site-specific HMBP, the risk of fire and explosion at the generating facility would be minimal.

The project site is served by the Contra Costa County Fire Prevention District (CCCFPD). The fire station closest to the project site is at 315 West 10th Street, Antioch (approximately 3 miles southwest of the project site).

7.12.3 Cumulative Impacts

The hypothetical accidental releases of aqueous ammonia that have been evaluated for the project are described in the Offsite Consequence Analysis, above. The site borders an existing PG&E switchyard and CCPP-owned land to the south and east, a vacant industrial area to the west, and the existing CCPP and San Joaquin River to the north. The Gateway Generating Station (GGS), which is east of, but not adjacent to the MLGS, is the only facility (in addition to the existing CCPP) that would have hazardous materials on site. The CCPP and GGS currently have aqueous ammonia storage facilities on site in addition to similar chemicals that are projected for the proposed MLGS. However, only nominal quantities of oils, cleaners, gases, and other hazardous materials are stored at the GGS and CCPP. The majority of these materials are stored inside buildings, which would provide containment in the event of a release. The impacts of an ammonia release at the MLGS alone have been determined to be less than significant. Table 7.12-2 lists the chemicals stored at the existing CCPP.

Only a natural disaster such as a major earthquake could cause simultaneous accidental releases at any combination of these facilities. Simultaneous releases of aqueous ammonia from the existing CCPP or GGS and the proposed MLGS project could potentially cause cumulative impacts if the migrating clouds merged. However, based on the OCA, it is unlikely that even under a worst-case scenario, the ammonia plume generated by the project would migrate off site in concentrations above 75 ppm. Therefore, it is determined that no probable significant offsite impacts would occur from potential aqueous ammonia releases at CCPP, GGS, or MLGS. Due to the negligible risk of a release from any of the facilities listed above, there is virtually no potential for hazardous materials from all facilities to produce combined impacts off site.

7.12.4 Mitigation Measures

Each of the materials identified in Tables 7.12-2 through 7.12-4 is hazardous in some respect. The three main hazards presented by these materials are toxicity, corrosion, and flammability/explosion. Several listed materials have toxic qualities, but no flammable or explosive characteristics. Other materials are highly flammable or explosive, due to either their own chemical composition or the form in which the material is stored (i.e., under pressure), but show little to no signs of being toxic. The sections below detail the mitigation measures that will be established at the project site to properly control the hazardous properties of the identified hazardous materials during all project phases.

7.12.4.1 Project Construction Phase

The following mitigation measures will be implemented during project construction.

HM-1 Construction Vehicle and Equipment Maintenance and Fueling

The following measures will be implemented related to fueling and maintenance of construction vehicles and equipment:

- No smoking, open flames, or welding will be allowed in the fueling/services areas.
- Servicing and fueling of vehicles and equipment will occur only in designated areas.
- Fueling service and maintenance will be conducted only by authorized, trained personnel.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.

- All disconnected hoses will be handled in a manner to prevent residual fuel and fluids from being released into the environment.

- Catchpans will be placed under equipment/hose connections to catch potential spills during fueling and servicing.

- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents, shovels, and containers.

- Service trucks will not remain on the job site after fueling and service are complete.

- Spills that occur during vehicle maintenance will be cleaned up immediately, and contaminated soil will be containerized and sent for subsequent evaluation and offsite disposal. A log will be maintained of all spills and cleanup actions.

HM-2 Emergency Contact Information

Emergency telephone numbers will be available on site for the fire department, police, local hospitals, ambulance service(s), and environmental regulatory agencies.

HM-3 Containerized Materials (Construction)

Containers used to store hazardous materials will be properly labeled and kept in good condition.

7.12.4.2 Project Operations Phase

The following mitigation measures will be implemented during operation of the MLGS.

HM-4 Containerized Materials (Operations)

Containerized materials will typically consist of returnable tanks (approximately 100-gallon capacity), 55-gallon drums, or 5-gallon pails of lubricants and oils, and smaller containers of paints and solvents. These materials will be managed as described below to mitigate potential releases.

- Hazardous materials will be stored in accordance with applicable regulations and codes (i.e., the Uniform Fire Code).

- Trucks delivering hazardous materials will be parked adjacent to the usage area or storage area where the chemicals are to be stored to minimize potential unloading and transportation accidents.

- Incompatible materials will be stored separately per local fire code requirements.

- Containerized hazardous materials will be stored in original containers appropriately designed for the individual characteristics of the contained material. Containers will be labeled with contents and identification of fire hazards as required by National Fire Protection Association 704.

- Containers of flammable materials will be stored in inflammable storage cabinet(s) when not in use.

- Hazardous materials will be stored within structures equipped with secondary containment structures, typically constructed of sealed concrete. These structures will have capacity for the contents of the largest container. Alternatively, containerized hazardous materials may also be stored in commercially available hazardous materials storage sheds with built-in secondary containment.

- Commercially available secondary containment pallets may also be used for containers stored in warehouse facilities to augment other spill control measures.

- Empty containers, especially portable tanks and drums, will be emptied, drained, and returned to the supplier for reuse to the maximum extent possible or recycled off site.

- Pollution prevention efforts such as replacement of hazardous materials with less hazardous materials, reduction of hazardous waste generation volumes, and recycling will be employed at the facility, as practicable.

HM-5 Bulk Hazardous Materials

Bulk hazardous materials at the facility will consist primarily of aqueous ammonia for emissions control of the SCR system. This material will be stored in two aboveground storage tanks with secondary containment enclosure capable of storing 100 percent of the tanks contents plus rainwater from the greatest 24-hour rainfall event, for the entire period of record (1948-2007). These design features will reduce potential offsite impacts in the event of an accidental ammonia release to a less-than-significant level; therefore, additional mitigation measures will not be required.

In addition, hazardous materials will also be managed as described below to mitigate the potential for releases to the environment. Each bulk chemical storage tank will be equipped with a local level gauge and a level switch. The level switch is interlocked with the storage tank high- and low-level alarms and the metering pump controls. The storage tank high-level alarm will ring at the local common alarm panel when the storage tank level reaches the high-level set point. The storage tank low-level alarm will ring at the local feed system control panel when the storage tank liquid level reaches the low-level set point. Associated skid-mounted equipment includes the feed pumps, valves, interconnecting piping, and controls. A separate control panel is mounted on each chemical equipment skid. Controls, instrumentation, and interlocks are provided for safe operation of the equipment during all modes of operation. The metering pumps will also be located within the secondary containment and will be elevated to prevent flooding during rainstorms. Aqueous ammonia (19 percent) will be stored on site in two 20,000-gallon tanks, one for the Simple Cycle units and one for the combined-cycle units. The tanks will be single-walled, enclosed within a surrounding berm and equipped with a secondary containment underground sump, which will collect any ammonia spills. Approximate capacity for each of the underground sumps will be at least 23,000 gallons. The aqueous ammonia will be delivered to the facility in tanker trucks. Secondary containment that is outdoors will be equipped with a valve to empty rainwater, after a visual inspection to evaluate potential for contamination. The valve will be equipped with a lock and will remain locked shut unless rainwater is being actively emptied. Contaminated water will run through the oil-water separator and be discharged with the plant's process wastewater to the local sanitation district or will be disposed of off site, as appropriate.

Tank trucks will be unloaded in the tank truck unloading areas. This unloading area will be paved with concrete and be equipped with an underground secondary containment vault, with sufficient capacity to hold the contents of the worst-case release scenario.

The ammonia truck unloading areas will be drained to the underground containment vault below the storage tanks. The containment vault will be sealed with a nonreactive concrete coating to minimize potential migration of liquids from the vault into the surrounding soil. This vault will be emptied using a vacuum truck after a spill event has occurred. The truck pad will be covered to prevent rainwater from accumulating in the vault.

Seismic loads for hazardous materials storage and containment areas will be determined by the static lateral force procedures of the Uniform Building Code, and site-specific design features will be incorporated into these storage facilities. These structures will be designed and constructed in accordance with applicable codes, regulations, and standards.

HM-6 Personnel Training and Equipment

Personnel working with chemicals will be trained in proper handling and emergency response to chemical spills or accidental releases. Additionally, designated personnel will be trained as a plant hazardous materials response team.

Safety equipment will be provided for use as required during chemical containment and cleanup activities, and will include safety showers and eyewash stations. Service water hose connections will be provided near chemical usage and storage areas to allow flushing of chemical spills, if needed.

HM-7 Hazardous Materials Management – Plans and Procedures

Several programs will address hazardous materials storage locations: emergency response procedures; employee training requirements; hazard recognition fire safety; first-aid/emergency medical procedures; hazardous materials release containment/control procedures; hazard communication training; personnel protective equipment training; and release reporting requirements. These programs will include the Hazardous Materials Business Plan (HMBP), worker safety program, fire response program, plant safety program, and facility standard operating procedures. The HMBP will include procedures on hazardous materials handling, use, and storage; emergency response, spill prevention, and control; and training, record keeping, and reporting. An RMP will also be prepared for aqueous ammonia.

HM-8 Spill Response Procedures

The following describes the general spill response procedures for the project. Personnel will be trained in spill response reporting and cleanup procedures. The facility will maintain on site spill response kits in vulnerable areas. These kits will contain absorbents appropriate for the hazardous materials kept on site and each kit will be clearly designated as to the type of spilled material it should be used for. Typically these kits contain a barrel, shovel, and absorbents. In addition, the facility will maintain a supply of gloves and protective clothing for use during spill response events.

Personnel discovering a spill will report to the on-shift Control Room Operator. The Control Room Operator will notify the Operations Supervisor and Plant Manager. The Supervisor or Manager will function as the Onsite Coordinator and will be in charge of activities related to spill containment, control, and cleanup, and regulatory agency reporting, if needed. The Onsite Coordinator will assess the situation, contain the leak or spill, begin cleanup operations with onsite staff or offsite contractors, as needed, and collect information for reporting, if needed. The following information will be needed for reporting:

- Type of chemical released;
- Amount of release or spill, i.e., volume and description, liquid, vapor, etc.;
- Direction of release and distance traveled if the release is outside the secondary containment;
- Cause of spill or release;
- Potential hazard to offsite personnel and local water bodies, including groundwater; and
- Actions undertaken to mitigate the spill or release.

If the situation is identified by the Onsite Coordinator as requiring the response organization of an Incident Command (IC), an IC operation will be established and response will be carried out as trained.

7.12.5 Applicable Laws, Ordinances, Regulations, and Standards

The laws, ordinances, regulations, and standards (LORS) applicable to hazardous materials handling at the project are discussed in this section. The project will comply with all LORS pertaining to hazardous materials.

The storage and use of hazardous materials and acutely hazardous materials at the MLGS project site is governed by federal, state, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination, and facility workers and the surrounding community from exposure to hazardous and acutely hazardous materials. The applicable LORS related to hazardous materials handling are summarized in Table 7.12-6.

7.12.5.1 Federal

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

CERCLA

The Superfund Amendments and Reauthorization Act (SARA), which amended CERCLA, provides the regulatory framework for managing hazardous substances. The part of SARA applicable for the project 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 substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances. Key sections of the law are:

- Section 302, which requires certain planning activities (RMP and HMBP) when hazardous substances are present in excess of their respective threshold planning quantities (TPQs).

- Section 304, which requires the immediate notification to the local emergency planning committee (LEPC) and the state emergency response commission (SERC) when a hazardous material is released. In addition, notification must also be given to the National Response Center in Washington, D.C., if a hazardous material is released in quantities equal to or in excess of their respective reportable quantities.

- Section 311, which requires that material safety data sheets (MSDSs) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.

- Section 313, which requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

The project will develop and implement, in concurrence with federal authorities, a chemical emergency preparedness plan for all applicable hazardous materials on site. In doing so, the project will provide appropriate notification of all extremely hazardous substances that are present in excess of their respective TPQs and MSDSs for all hazardous materials. In addition, the project facility will provide immediate notification to the LEPC and the SERC when a hazardous material is released, along with regular an annual report of any hazardous materials released into the environment.

Clean Air Act

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop an RMP, including hazard assessments and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in 40 CFR 68.130. Aqueous ammonia is a listed substance, and its TQ for solutions of 20 percent and greater is 20,000 pounds of solution. The project facility will not store ammonia in quantities greater than the TQ, because the proposed MLGS will use 19 percent ammonia solution.

Clean Water Act

The Spill Prevention, Control, and Countermeasures (SPCC) program is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations (40 CFR 112) require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters. The SPCC program is applicable if a facility has a single oil aboveground storage tank (AST) with a capacity greater than 660 gallons, total petroleum storage (including AST, oil-filled equipment and drums) greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons.

Other related federal laws that address hazardous materials but do not specifically address their handling at a power generation facility are the Resource Conservation and Recovery Act (RCRA), which is discussed in Section 7.13, Waste Management, and the Occupational Safety and Health Act, which is discussed in Section 7.7, Worker Safety and Health. The project facility will develop and apply an SPCC program for all of the hydrocarbon-based products it intends to store on site.

Natural Gas Pipeline Construction and Safety

Title 49 of the Code of Federal Regulations, Parts 190 through 192, specifies safety and construction requirements for natural gas pipelines. This regulation is enforced by the U.S. Department of Transportation. Part 190 outlines pipeline safety procedures, Part 191 requires a written report for any reportable incident, and Part 192 specifies minimum safety requirements for pipelines. The project site will receive natural gas via gas lines being fed into the facility. All gas lines going into the project site will be compliant with pertinent regulations.

7.12.5.2 State

Health and Safety Code Section 25500

The California Health and Safety Code, Section 25500, requires companies that handle quantities of hazardous materials above specified levels to develop an HMBP. The facility will develop a HMBP that includes the basic information on the location, type, quantity, and health risks of hazardous materials handled, stored, used or disposed of that could be accidentally released into the environment. It will also include a plan for training new personnel, for annual training of all personnel in safety procedures to follow in the event of a release of hazardous materials, as well as an emergency response plan that identifies the business representative able to assist emergency personnel in the event of a release. The project will comply with Health and Safety Code (HSC) 25500 through the development and registration of a Hazardous Material Business Plan. The facilities Hazardous Material Business Plan will be submitted to the CCCHSD-HMP and the Department of Toxic Substances Control.

Health and Safety Code Section 25531 (California Accidental Release Program)

The California Health and Safety Code, Section 25531, directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop an RMP and submit it to appropriate local authorities, the U.S. EPA, and the designated local Administering Agency for review and approval. The RMP includes an evaluation of the potential impacts associated with an accidental release; the likelihood of occurrence of an accidental release, the magnitude of potential human exposure; any pre-existing evaluations or studies of the material; the likelihood of the substance being handled in the manner indicated, and the accident history of the material. The MLGS project will develop an RMP for its facility to comply with HSC 25531.

The CalARP Program defines three program levels with differing requirements, depending upon the complexity, accident history, and potential impact of releases of regulated substances. The program requires that the owner or operator of an affected facility coordinate closely with the local administering agency to determine the appropriate level of documentation required for an RMP.

To fulfill the Program 1 requirements, the following actions are required (U.S. EPA, 1999):

- Analyze the worst-case release scenario and include it in the RMP;
- Document that the nearest public receptor is beyond the distance to a toxic or flammable endpoint;
- Document, and submit with the RMP, information related to any hazardous material accidents on the affected site in the past 5 years;
- Ensure that response actions have been coordinated with local emergency planning and response agencies; and
- Certify in the RMP that “no additional measures are necessary to prevent offsite impacts from accidental releases.”

If the facility triggers a Program 2 or Program 3 RMP, additional actions will be required, such as:

- Describing the site’s accidental release prevention program and chemical-specific prevention steps. (Ensure that response actions have been coordinated with local emergency planning and response agencies.)
- Developing and describing the facility’s prevention program, including the safety program, facility hazard review program, operating procedures, training program, maintenance program, compliance, and facility incident investigation program.
- Describing the site’s emergency response program.

As described previously, the MLGS is expected to qualify as a Program 1 facility.

Pollution Prevention Plans (SB 14)

Senate Bill (SB) 14 was passed in 1989 to add source reduction planning and reporting requirements for generators subject to the Hazardous Waste Control Law. SB 14 source reduction requirements passed into law as Article 11.9, under Chapter 6.5, Division 20 of the Health and Safety Code. SB 14 named Article 11.9 the "Hazardous Waste Source Reduction and Management Review Act of 1989." The Department of Toxic Substances Control adopted regulations to carry forward the intent and mandate of SB 14. The regulations provide generators the flexibility to use their knowledge of their own operations and procedures to reduce hazardous waste generation and prevent the release of pollutants to the environment. The regulations specify the format for documenting a careful review and evaluation of potential source reduction measures, rather than the waste management actions that must be taken.

SB 14 requires generators to prepare SB 14 documents on or before September 1, 1991, and every four years thereafter, when the generation of hazardous waste or extremely hazardous waste exceeds the corresponding applicability threshold during a reporting year. SB 14 applies to a generator that, by site, routinely generates, through ongoing processes and operations, more than 12,000 kilograms of hazardous waste in a reporting year, or more than 12 kilograms of extremely hazardous waste in a reporting year. It includes hazardous waste regulated by Title 40 CFR, as legislated in the RCRA. It also includes non-RCRA California-only hazardous waste. The non-RCRA waste is regulated as hazardous not by 40 CFR, but by Title 22, CCR. The generator must sum the total hazardous waste generated on site during the reporting year, excluding wastes that are exempted, not routinely generated, or excluded per recycling law. If the total non-exempt wastes exceed either SB 14 threshold, the generator must prepare the following documents for each reporting year:

- Source Reduction Evaluation Review and Plan
- Hazardous Waste Management Performance Report
- Summary Progress Report

Aboveground Petroleum Storage Act

Health and Safety Code Sections 25270 to 25270.13 ensure compliance with the federal Clean Water Act regulations. The law applies to facilities that operate petroleum ASTs with a capacity greater than 660 gallons, or combined ASTs with capacity greater than 1,320 gallons, or oil-filled equipment where there is a reasonable possibility that the tanks or equipment may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility meets these criteria, it must prepare an SPCC plan. The project facility will prepare and implement an SPCC plan for the onsite storage of its petroleum products.

California Code of Regulations, Title 8, Section 5189

The California Code of Regulations (CCR), Title 8, Section 5189, requires facility owners to develop and implement effective Safety Management Plans to ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process. The project will be in compliance with 8 CCR 5189 and will implement safety management plans along with process safety management plans.

California Government Code Section 65850.2

California Government Code Section 65850.2 states that a city or county shall not issue a final certificate of occupancy unless there is verification that the Applicant has met the applicable requirements of Health and Safety Code, Section 25531 and requirements, if any, for a permit from the air pollution control district. The project will comply with all government requirements in order to secure a certificate of occupancy.

California Uniform Building Code

The California Uniform Building Code contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit. The project facility will follow all California Uniform Building Code requirements for the storage and handling of hazardous materials on site.

Natural Gas Pipeline Construction and Safety

The California Public Utilities Commission enforces General Order No. 58-A specifying standards for natural gas service in the State of California, and General Order No. 112-E specifying rules governing the design, construction, testing, operation, and maintenance of natural gas gathering, transmission, and distribution piping systems. All pertinent gas line regulatory requirements have been followed for lines going into the project site.

7.12.5.3 Local

Contra Costa County Ordinance 651.2 requires new or modified businesses to complete a Hazardous Materials Business Emergency Plan and Chemical Inventory Forms prior to final approval of a land use permit for a new business or modification of an existing business. Because certain quantities of acutely hazardous materials could pose a threat to the public health and safety and the environment, CCCHSD requires a conditional use permit for all businesses or government facilities handling acutely hazardous materials in excess of 55 gallons, 500 pounds, or 200 cubic feet.

The designated Certified Unified Program Agency for the project site is the CCCHSD-HMP. The CCCHSD regulates (1) the implementation of the hazardous material inventory and emergency response plan; and (2) the storage of hazardous materials in underground storage tanks and cleanup of petroleum releases. The CCCHSD as well as the Contra Costa County Fire Prevention District shall be contacted in the event of a release of hazardous wastes or materials to the environment. The CCCHSD also assumes enforcement responsibility for the implementation of CCR, Title 23. The project will work with local authorities to properly register and handle all hazardous materials on site.

7.12.5.4 Industry Standards

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. The latest edition (1994) of Article 80 was extensively revised. These articles contain requirements that are generally similar to those contained in the California Health and Safety Code Section 25531 et seq. The UFC does, however, contain unique requirements for secondary containment, monitoring, and treatment of toxic gases emitted through emergency venting. These unique requirements are generally restricted to extremely hazardous materials. All extremely hazardous materials (i.e., sulfuric acid) will be handled in accordance to the pertinent UFC provisions.

7.12.5.5 Application of Risk Management Plan

The project will operate a 930-MW power plant with SCR technology to reduce emissions of NO_x, on a site located within unincorporated Contra Costa County, California. The SCR system requires the use of ammonia as the reagent for the reactions that achieve NO_x control. The project will continuously store and operate up to 40,000 gallons of 19 percent aqueous ammonia for its SCR technology.

Due to the hazardous nature of the ammonia, the project will be required to comply with specific regulatory requirements, as enforced by the local, state, and federal government agencies. The project facility is required to develop an RMP, conduct a Process Hazard Analysis (PHA), develop a Process Safety Management (PSM) plan, and conduct a Seismic Analysis (SA) of the facilities, operations, and equipment. Requirements for the project are primarily dictated by the CalARP Program and the Risk Management Program. The regulatory requirements pertaining to the use of the 19 percent aqueous ammonia solution for the operations at the project are found within:

- Title 19 Division 2 Chapter 4.5 Sections 2735.1 – 2785.1 of the California Code of Regulations (19 CCR §2735.1 – §2785.1).
- Title 40 Part 68 of the Code of Federal Regulations (40 CFR 68).
- Title 42 Chapter 85 Subchapter I Part A Section 7412(r) of the U.S. Code (42 USC §7412(r));
- Title 20 Section 1910.119 of the Code of Federal Regulations (20 CFR §1910.119).
- Sections 25531 through 25543.3 of the California Health and Safety Code (HSC §§25531 – 25543.3).

Regulatory requirements presented in 19 CCR §2735.1 through §2785.1 and 40 CFR 68 provide the majority of the compliance elements for the RMP. 42 USC §7412(r) is the U.S. Code law that supports regulation 40 CFR 68. 20 CFR §1910.119 provides an amendment to 40 CFR 68 titled *Accidental Release Prevention Requirements: Risk Management Program Requirements Under Clean Air Act Section 112(r)(7); Amendments to the Submission Schedule and Data Requirements*, which provides the latest changes and specifications to the U.S. EPA Chemical Accident Prevention Provisions. Lastly, HSC §§25531 – 25543.3 provides the California statute authorizing the CalARP program.

Enforcement of the CalARP Program for the project site will be provided by the local administering agency, while the U.S. EPA will enforce all federal RMP regulatory requirements. Within Contra Costa County, the Administrative Agency is the Contra Costa County Health Services Division – Hazardous Materials Program (CCCHMD-HMP), which also serves as the local Certified Unified Program Agency. Participation of CCCHMD officials would be required through the development of an RMP for the project site. Once the facility is nearly operational and before ammonia is brought on site, the RMP would be submitted to the Administrative Agency. When deemed complete, the RMP takes effect, and must be updated as required by regulation.

7.12.6 Involved Agencies and Agency Contacts

Involved agencies and agency contacts are listed in Table 7.12-7.

7.12.7 Permits Required and Permit Schedule

MLGS will develop a Hazardous Materials Business Emergency Plan and Chemical Inventory Forms prior to the startup of operation. MLGS will also make sure that it is in full compliance with all regulations prior to the commencement of any activities on site. The potential permit requirements that need to be fulfilled prior to any operations activities being conducted on site are listed in Table 7.12-8.

7.12.8 References

California Office of Emergency Services, 1998. *California Code of Regulations, Title 19. Public Safety, California Accidental Release Prevention Program*, November 1998.

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Table 7.12-1
Marsh Landing Generating Station
Sensitive Land Uses Within 3 Miles
(Page 1 of 3)

Schools

1. Prospects High School
2. Bidwell High School
3. Antioch High School
4. Live Oak Continuation High School
5. Antioch Middle School
6. Holy Rosary Elementary School
7. Kimball Elementary School
8. Belshaw Elementary School
9. Vintage Parkway Elementary School
10. Jack London Elementary School
11. Carmen Dragon Elementary School
12. Antioch Charter Academy
13. Antioch Adult School
14. Antioch Unified School District
15. Hilltop Christian School
16. Cornerstone Christian School
17. Starlight Academy
18. La Petite Academy
19. Mission Elementary School
20. Park Middle School
21. Sutter Elementary School
22. Grant Elementary School
23. John Muir Elementary School
24. Marsh Elementary School
25. Fremont Elementary School
26. Black Diamond Middle School
27. Oakley Elementary School
28. O’Hara Park Middle School
29. The Child Day School
30. Our Yard Preschool
31. Little Lulu Christian Preschool
32. Little Angels Preschool
33. Bridgeway Preschool
34. Harbor Light Preschool
35. Steppingstones Academy
36. A Jump Ahead

Table 7.12-1
Marsh Landing Generating Station
Sensitive Land Uses Within 3 Miles
(Page 2 of 3)

Day Care Facilities	
1.	Kindercare Learning Center
2.	Sunshine House
3.	Little Sandbox Daycare
4.	Los Arboles Children's Center
5.	Joyland Preschool & Daycare
6.	Sandy's Play and Learn Childcare
7.	Pearlite Montessori House
8.	Y Child Care at Kimball
9.	KinderCare Learning Center
10.	Children's World Learning Centers
11.	Busy Kids Christian Child Care
Parks & Recreation Facilities	
1.	Barbara Price Marina Park
2.	Williamson Ranch Park
3.	Country Manor Park
4.	Fairview Park
5.	Oak View Memorial Park
6.	City Park
7.	Antioch Paintball Park
8.	Prosserville Park
9.	Meadow Brooks Park
10.	Memorial Park
11.	Mountainaire Park
12.	Harbour Park
13.	Chichibu Park
14.	Sunny Ridge Park
15.	Antioch Community Park
16.	Eagleridge Park
17.	Deerfield Park
18.	Prewett Family Park
19.	Knoll Park
20.	Meadow Creek Estates Park
21.	Hillcrest Park
22.	Almondridge Park
23.	Antioch Regional Shoreline

Table 7.12-1 Marsh Landing Generating Station Sensitive Land Uses Within 3 Miles (Page 3 of 3)	
24.	Crockett Park
25.	Vintage Parkway
26.	Oakley Park
27.	Oakley Parks and Recreation
28.	Harbor Park
29.	Memorial Park
30.	Williamson Park
Hospitals	
1.	Sutter Delta Medical Center
Long-Term Care Facilities	
1.	Country Place Assisted Living and Alzheimer's Care
2.	Friendship Care Home
3.	Antioch Convalescent Hospital
4.	East Bay Avalon Home Care
5.	Summerfield Homes
6.	Antioch Hillcrest Terrace
7.	Quail Lodge Retirement
8.	Lone Tree Convalescent Hospital
9.	Lake Alhambra Retirement Center
10.	Foster Retirement Care
11.	Antioch Serenity Care Home
12.	Cypress Meadows
13.	The Commons at Dallas Ranch
14.	Home Care Gardens

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 1 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Battery electrolyte (sulfuric acid 29 percent)	7664-93-9	Battery rooms 1–3, 4-5, 6-7	Corrosive	651 pounds 3,478 pounds 3,478 pounds	1,000	1,000	1,000	–
Aqueous ammonia (29.4 percent)	7664-41-7	SCR AST	Corrosive	40,000 gallons	500	100	500	20,000
Carbon dioxide	124-38-9	CO_2 Tank 4-5, 6-7	Toxic	8,000 pounds 8,000 pounds	–	–	–	–
Nitrogen	7727-37-9	Unit 6 Boiler CEMS	Toxic	34 pounds	–	–	–	–
Oxygen	7782-44-7	9-10 Boiler CEMS	Toxic	89 pounds				
Nitric oxide and nitrogen mixture	10102-43-9 7727-37-9	Unit 6 CEMS, Unit 7 CEMS	Toxic	44 pounds 44 pounds	100	–	–	10,000
Carbon monoxide, nitrogen, oxygen	630-08-0 7727-37-9 7782-44-7	Unit 7 CEMS, Unit 6 CEMS	Toxic	43 pounds 45 pounds	–	–	–	–
Argon and carbon dioxide mixture	7440-37-1 124-38-9	Quonset hut	Toxic	250 pounds	–	–	–	–
Carbon monoxide	630-08-0	9-10 Boiler CEMS	Toxic	86 pounds	–	–	–	–
Argon	7440-37-1	Chemical lab	Toxic	18 pounds	–	–	–	–
Sodium carbonate	497-19-8	Boiler chemical storage area	Corrosive	2,000 pounds	–	–	–	–
Oxygen scavenger (carbohydrazide 70 percent)	497-18-7	Instrument shop - east	Toxic	110 gallons	–	–	–	–

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 2 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Sodium hydroxide	1310-73-2	Boiler chemical storage area, water treatment system	Corrosive	1,600 pounds 22,000 pounds	–	–	–	–
Enamel paint		I&C yard 1–3	Toxic	200 gallons	–	–	–	–
Lubricating oil		Hazardous materials storage area 4–5, Machine shop	Toxic	30,514 pounds 2,296 pounds 460 pounds 918 pounds	–	–	–	–
Heavy duty lubricating oil		Hazardous materials storage area 4-5, Machine shop	Toxic	1,835 pounds 30,600 pounds 460 pounds 460 pounds 918 pounds 918 pounds	–	–	–	–
Desiccant (Aluminum oxide)	1344-28-1	Boiler chemical storage area	Toxic	600 pounds (10% wt)	–	–	–	–
Latex paint (ethylene glycol and titanium dioxide)	107-21-1 13463-67-7	I&C yard 1–3	Toxic	300 gallons	–	–	–	–
Liquid power wash		Machine shop	Toxic	55 gallons	–	–	–	–
Asbestos	W1	Hazardous waste storage area	Toxic	2,640 pounds	–	–	–	–

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 3 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Kerosene	8008-20-6	Water treatment	Toxic	900 pounds	–	–	–	–
Insulating oil	–	Electrical shop, Unit 6 startup, RO building transformer, Unit 6-7 intake, Load center #3, Load center 1-2	Toxic	459 pounds 42,800 pounds 1,600 pounds 21,600 pounds 10,720 pounds 22,350 pounds	–	–	–	–
#6 fuel oil	68476-30-2	Tank farm	Carcinogenic	55,666,842 pound s	–	–	–	–
Diesel fuel	68476-34-6	Tank farm, Diesel firehouse	Toxic	500 gallons 250 gallons	–	–	–	–
Waste refractory	W7	Hazardous materials storage area	Toxic	3,252 pounds	–	–	–	–
Chemsearch SS-25 (perchloroethylene)	127-18-4	Electrical shop	Toxic	110 gallons (5% wt)	–	–	–	–
Waste latex paint		I&C yard 1–3	Toxic	71 pounds	–	–	–	–
Spectrus NX 1100	52-51-7 10377-60-3 26172-55-4 7786-30-3	Closed loop cooling water	Toxic	10 gallons	–	–	–	–
Corrshield MD4106 (sodium molybdate)	7775-19-1 7431-95-0	Closed loop cooling water	Toxic	55 gallons	–	–	–	–

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 4 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Waste Oil	–	Water treatment system	Toxic	40,000 pounds (95-99% wt)	–	–	–	–
Sodium bisulfite	7631-90-5	Water treatment system	Toxic	100 gallons (25% wt)	–	–	–	–
Pretreatment PC-191	10102-40-6 107-21-1 12170-04-3 7632-00-0	Water treatment system	Irritant	80 gallons	–	–	–	–
Sodium hydroxide	1310-73-2	Water treatment system	Toxic	500 gallons (50 % wt)	–	–	–	–
Nalclear 7768	64742-47-8 68434-50-9	Warehouse	Toxic	50 gallons	–	–	–	–
NALCO 7157 Ultrion	1327-41-9 13530-50-2	Water treatment system	Toxic	150 gallons	–	–	–	–
NALCO 1355	1330-43-4 2992-26-4 7632-00-0	Unit 6–7 Area	Toxic	75 gallons 75 gallons	–	–	–	–
NALCO BT 3000 (Sodium hydroxide)	1310-73-2	Unit 6–7 Area	Toxic	400 gallons (5% wt)	–	–	–	–
NALCO 8735 (Potassium hydroxide and sodium hydroxide)	1310-58-3 1310-73-2	Unit 6–7 Area	Corrosive	613 pounds (40 % wt & 20 % wt)	–	–	–	–
Di-Isopropylamine	108-18-9	Unit 6-7	Irritant	5 gallons	–	–	–	–

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 5 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Lubricating oil	–	Unit 4-5 reserve, Unit 6-7 reserve	Toxic	72,975 pounds 112,500 pounds	–	–	–	–
Insulating oil	–	Unit 1-3 AST, Unit 4-5 AST, Unit 6-7 AST, VSD building 4-5, VSD building 6-7	Toxic	451,900 pounds 346,400 pounds 357,440 pounds 1,200 gallons 1,600 gallons	–	–	–	–
Acetylene	74-86-2	Warehouse	Toxic	1,694 cu ft (124 pounds)	–	–	–	10,000
Fire resistant hydraulic fluid	115-86-6 25155-23-1	Unit 6-7		440 pounds 440 pounds	–	–	–	–
Liquid nitrogen	7727-37-9	Warehouse	Toxic	790 pounds	–	–	–	–
Nitrogen	7727-37-9	Warehouse, Unit 6 Startup, Unit 1-3, Unit 4-5, Unit 6-7, Water treatment system	Toxic	395 pounds 18 pounds 36 pounds 54 pounds 18 pounds 18 pounds	–	–	–	–
Helium	7440-59-7	Warehouse, Unit 6-7	Toxic	19 pounds 6 pounds	–	–	–	–
Argon	7440-37-1	Warehouse, Welding shop	Toxic	180 pounds 56 pounds	–	–	–	–
Carbon dioxide and Argon mixture	124-38-9 7440-37-1	Warehouse	Toxic	100 pounds (25%/75%) 56 pounds (75%/25%)	–	–	–	–

Table 7.12-2
Existing Hazardous Materials Used at CCPP
(Page 6 of 6)

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (Pounds)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Hydrogen	1333-74-0	Storage trailer U7		237 pounds	–	–	–	10,000
Oxygen	7782-44-7	Warehouse, Welding shop, Unit 6-7	Toxic	230 pounds 39 pounds 21 pounds	–	–	–	–
Carbon dioxide, carbon monoxide, nitrogen mixture	124-38-9 630-08-0 7727-37-9	Warehouse	Toxic	137 pounds	–	–	–	–
Carbon monoxide, oxygen, nitrogen mixture	630-08-0 7782-44-7 7727-37-9	Warehouse	Toxic	64.5 pounds	–	–	–	–
Oxygen, nitrogen mixture	7782-44-7 7727-37-9	Warehouse	Toxic	47 pounds	–	–	–	–
Hydraulic fluid	–	Hazardous materials storage area 4-5, Machine shop	Toxic	1,836 pounds 110 gallons	–	–	–	–
Kerosene	8008-20-6	Hazardous waste storage area	Toxic	2,014 pounds	–	–	–	–
Thread cutting oil	–	Machine shop	Toxic	460 pounds	–	–	–	–
Waste sand blast sand	–	Sandblast building	Toxic	4,192 pounds	–	–	–	–
Naclear 7744 anionic polymer	–	NALCO tanks	Irritant	457 pounds	–	–	–	–
NALCO 8735	–	Hazardous waste storage area	Corrosive	1,000 pounds	–	–	–	–

Source: Contra Costa County Health Services Division, Hazardous Materials Program. 2007. Mirant Delta, LLC, Contra Costa Power Plant Facility (ID No. 735376) AB 2185 Business Plan/Contingency Plan/SARA Title III Submittal, February 2007.

Notes:
ARP = Accidental Release Program
CAS = Chemical Abstracts Service
RQ = Reportable Quantities
TPQ = Threshold Planning Quantity
TQ = Threshold Quantity

Table 7.12-3
Summary of Anticipated Construction Waste Streams and Management Methods
(Page 1 of 2)

Waste Stream	Anticipated Waste Stream Classification	Estimated Quantity	Estimated Frequency of Generation	Waste Management Method	
				Onsite	Offsite Treatment
Demolition (4-6 months duration)					
Exterior tank insulation	Class 3 Waste	200 tons	Once	N/A	Class II/III disposal
Metal	Scrap	3,000/tons	Once	N/A	Recycle at offsite metal reclamation plants
Fuel oil tank pump and motor concrete pads	Recyclable	1,500 cubic yards	Once	N/A	Recycle at offsite concrete crushing plants
Asbestos waste	California Hazardous	1,416 cubic yards	Once	N/A	Dispose of in licensed landfill facility
Fuel oil tank residual	Nonhazardous	883,424 gallons	Once	N/A	Local recyclers
Residual pipe fuel oil	Nonhazardous	3,000 to 5,000 gallons	Once	N/A	Local recyclers
Asphalt from tank berms	Nonhazardous	12,920 cubic yards	Once	N/A	Local recyclers or disposal
Construction (33-month duration)					
Scrap wood, steel, glass, plastic, paper, calcium silicate insulation, mineral wool insulation, cardboard and corrugated packaging	Nonhazardous solids	120 cubic yards	Weekly	Containerize, housekeeping	Recycle and/or Class II/III landfill disposal

Table 7.12-3
Summary of Anticipated Construction Waste Streams and Management Methods
(Page 2 of 2)

Waste Stream	Anticipated Waste Stream Classification	Estimated Quantity	Estimated Frequency of Generation	Waste Management Method	
				Onsite	Offsite Treatment
Empty hazardous material containers	Hazardous solids	1 cubic yard	Weekly	Store for less than 90 days	Recycle and/or Class I/II landfill disposal
Spent welding materials	Hazardous solid	Less than 1 cubic yard	Monthly	Containerize	Dispose at Class I landfill
Waste oil filters	Hazardous solid	100 pounds	Monthly	Containerize	Dispose at Class I landfill
Used and waste lube oil during CTG and STG lube oil flushes	Hazardous or nonhazardous liquids	20,000 gallons	360 drums over life of construction	Store for less than 90 days	Oil will be used for first fill after CTG and STG flushes are complete.
Oil rags, oil absorbent generated during normal construction activities excluding lube oil flushes	Hazardous solids	Less than 2 cubic yards	Monthly	Store for less than 90 days	Oily rags would be recycled. Class I landfill disposal for other solids.
Solvents, paint, adhesives	Hazardous liquids	2 drums	Monthly	Store for less than 90 days	Recycle or disposal at TSDF.
Spent lead acid batteries	Hazardous solids	2 batteries	Yearly	Store for less than 1 year	Recycle

Note:
NA = not applicable

Table 7.12-4
Hazardous Materials to be Added at MLGS During Operational Phase
(Page 1 of 5)

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type
Acetylene	Welding	TBD	TBD	Cylinder
Paint	Painting	TBD	TBD	Can
Aqueous ammonia (19 percent)	NO_x reduction in SCR	40,000 gallons	40,000 gallons	Two aboveground tanks
Power Cycle Water Treatment Chemicals for Two Siemens Flex Plant 10 Units				
Aqueous ammonia (NH_4OH – 60.5 percent weight)	CO_2 neutralization within steam power cycle.	34 gallons	400 gallons	Stackable tote bins inside containment
Microfiltration and Reverse Osmosis Treatment Chemicals				
Dibromo-nitrolo-propionamide (DBNPA)	Primary non-oxidizing biocide for RO system	30 gallons	100 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Isothiazolone	Secondary non-oxidizing biocide	30 gallons	100 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Acrylic acid-based polymer	Tricalcium phosphate and calcite dispersant	60 gallons	180 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Sodium hydroxide (50 percent wt)	Conversion of CO_2 in second-pass of RO to HCO_3	16 gallons	500 gallons	Bulk tank inside containment
Non-oxidizing biocide	Biocide for RO	As needed	5 gallons	Manufacturer standard bucket/drum/tote inside secondary containment

Table 7.12-4
Hazardous Materials to be Added at MLGS During Operational Phase
(Page 2 of 5)

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type
Microfiltration and RO Clean-In-Place Chemicals				
Citric acid (2 percent wt)	Cleaning of RO membranes	10 gallons	30	Drum inside containment
Sodium hypochlorite (12.5 percent weight, Trade)	Cleaning of RO membranes	0.3 gallon	Included in source water chemical storage	Included in source water chemical storage
Caustic soda	Cleaning of RO membranes	2 gallons	Stored Elsewhere	
Source Water Supply Disinfection Booster Chemical				
Sodium hypochlorite (12.5% weight, Trade)	Biocide/biofilm control for service water system and raw water tank	240 gallons	240 gallons	Aboveground tank inside secondary containment
Dispersant/corrosion inhibitor (neat)	Scale/corrosion control (circulating water)	350 gallons	400 gallons	Aboveground container
Ferric chloride (38%)	Coagulant (MF system)	150 gallons	200 gallons	Aboveground container
Sodium hydroxide (25%)	Alkalinity control (MF system)	15,000 gallons	20,000 gallons	Carboy
Sodium carbonate (99%, solid)	Alkalinity control (MF system)	40,000 pounds	25 tons	Aboveground container
Other Materials				
Natural gas	Fuel for power plant	As needed	As needed	Pipeline
Mineral oil	Transformers	80,000 gallons, initial fill	80,000 gallons	Steel drum
Nitrogen	Turbine blanket	5,400 gallons	6,000 gallons	Aboveground tank

Table 7.12-4
Hazardous Materials to be Added at MLGS During Operational Phase
(Page 3 of 5)

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type
Sulfur hexafluoride	Switchyard breakers	600 pounds	600 pounds	Within equipment
Turbine and generator lube oil	Rotating equipment	50,000 gallons	50,000 gallons	Steel drum
Hydraulic oil	Rotating equipment	1,000 gallons	1,000 gallons	Steel drum
Hydraulic fluid	Construction vehicles and equipment	10 gallons per week	250 gallons	Drums inside secondary containment
Transmission fluid	Construction vehicles and equipment	5 gallons per week	250 gallons	Drums within secondary containment
Unleaded gasoline	Construction vehicles	300 gallons per week	500 gallons	Tank with secondary containments
Motor oil	Construction vehicles and equipment	5 gallons per week	250 gallons	Drums inside secondary containment
Propane		300 pounds per month	500 pounds	Cylinder
Propylene-glycol	Auxiliary cooling closed cooling water system	As needed	60,000 gallons Initial fill	Closed cooling water system.
Non-oxidizing biocide	Biocide for cooling system	As needed	5 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Dryer desiccant	Instrument air	1,000 pounds over 3 to 5 years	1,000 pounds	Instrument air dryer
Various detergents	Combustion turbine cleaning	1,000 pounds, before startup; Periodic short-term storage 500 lbs	1,000 pounds	Manufacturer container

Table 7.12-4
Hazardous Materials to be Added at MLGS During Operational Phase
(Page 4 of 5)

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type
Magnesium sulfate (30 percent)	Silica removal (MF system)	2,900 gallons	3,500 gallons	Tank
Hydrochloric acid (38 percent)	MF membrane cleaning	300 gallons	400 gallons	Tank
Antiscalant (neat)	RO system	60 gallons	180 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Sodium bisulfite (38 percent)	Dechlorination (RO system)	760 gallons	4,000 gallons	4,000-gallon tank inside secondary containment
Polymer thickening aid (neat)	Gravity thickener (MF system)	2 gallons	5 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
RO membrane cleaners (neat)	Detergent for RO system	2 gallons	5 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Tri-sodium phosphate	HRSG	30 gallons	200 gallons	Two 200-gallon totes inside secondary containment
Neutralizing amine	HRSG	150 gallons	800 gallons	Two 400-gallon totes inside secondary containment
Oxygen scavenger	HRSG	120 gallons	800 gallons	Two 400-gallon totes inside secondary containment
Polysilicate-borax formulation	Closed cooling water corrosion inhibitor	<5 gallons	30 gallons	Manufacturer standard bucket/drum/tote inside secondary containment

Table 7.12-4
Hazardous Materials to be Added at MLGS During Operational Phase
(Page 5 of 5)

Hazardous Material	Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type
Polysilicate	Corrosion inhibitor for service water system	60 gallons	400 gallons	Manufacturer standard bucket/drum/tote inside secondary containment
Carbon dioxide	Instrument air	TBD	TBD	Cylinder
Nitrogen	Instrument air	TBD	TBD	Cylinder
Oxygen	Instrument air, welding	TBD	TBD	Cylinder
Nitric oxide	Instrument air	TBD	TBD	Cylinder
Helium and nitrogen mix	Instrument air	TBD	TBD	Cylinder
Carbon monoxide	Instrument air	TBD	TBD	Cylinder
Argon	Instrument air	TBD	TBD	Cylinder

Note:
TBD – To be determined.

Table 7.12-5
Dispersion Modeling Parameters

Parameter	Worst-Case Scenario	Alternative Scenario
Ambient temperature (°F)	88.0	60.2
Aqueous ammonia release temperature (°F)	97.0	69.2
Atmospheric stability class	F	D
Wind speed (m/s)	1.5	3.0
Ammonia gas release area (ft^2)	10.85	10.85

Notes:
°F = degrees Fahrenheit
ft^2 = square feet
m/s = meters per second

Table 7.12-6
Applicable Hazardous Materials Handling Laws, Ordinances, Regulations, and Standards

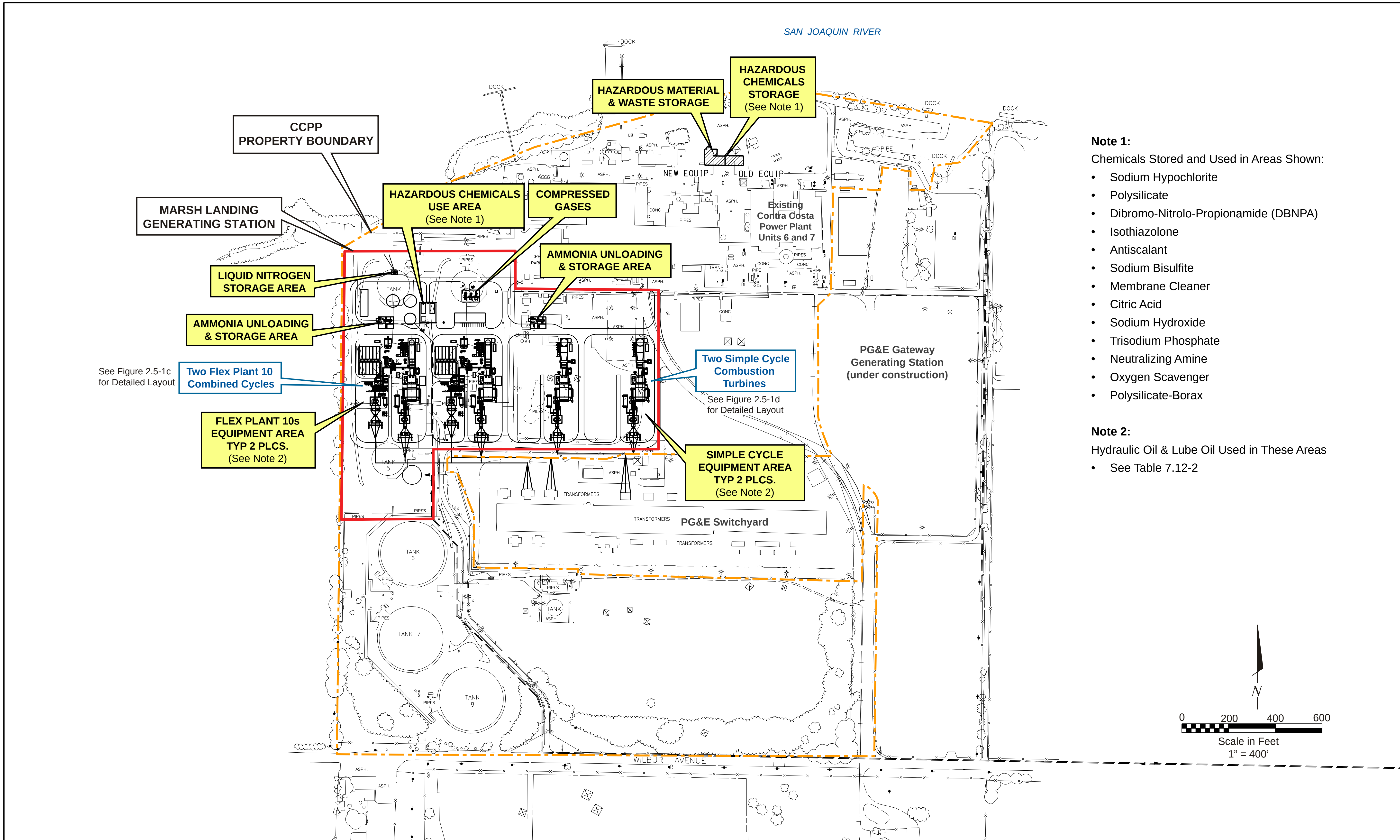
LORS	Applicability	Administering Agency	AFC Section
Federal			
CERCLA/SARA 40 CFR Part 68.115, part F	Reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely hazardous materials.	U.S. EPA	7.12.2
29 CFR Sections 1910 and 1926	Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	U.S. EPA, California Office of Safety and Health Administration (Cal/OSHA)	7.12
State			
California Health & Safety Code 25531-25543.3; Cal/ARP 2735-2785; CAA Section 112(r)	Preparation of a Risk Management Plan for regulated substances on site and a Hazardous Materials Plan.	State Department of Toxic Substances Control, State Regulatory Programs Division	7.12
SB 14, the Hazardous Waste Source Reduction and Management Review Act of 1989, and Article 11.9, Chapter 6.5, Division 20 of the California Health and Safety Code	Preparation and periodic updating of Source Reduction Evaluation Review and Plan, Hazardous Waste Management Performance Report and Summary Progress Report.	State Department of Toxic Substances Control, Office of Pollution Prevention and Technology Development	7.12 and 7.13
Local			
California Code of Regulations Title 8 Section 5189	Develop and implement safety management plans.	Contra Costa Health Services Department, Hazardous Materials Program	7.12
Contra Costa County Zoning Ordinance 98-48	Requires a Safety Plan and an RMP.	Contra Costa County Planning Department	7.12
Uniform Fire Code Article 79 and 80	Require secondary containment, monitoring and treatment for accidental releases of toxic gases.	Contra Costa Fire Protection District Antioch Fire Protection Station	7.12.4

Table 7.12-7
Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Risk Management Plans	Contra Costa County Health Services Division - Hazardous Materials Program	Randall Sawyer Director 4333 Pacheco Dr Martinez, CA 925-646-2286	(925) 646-1112 (925) 646-2286
Hazardous Materials Business Plans	Contra Costa County Health Services Division - Hazardous Materials Program	Randall Sawyer Director 4333 Pacheco Dr Martinez, CA 925-646-2286	(925) 646-1112 (925) 646-2286
Administering agencies for Contra Costa County	Contra Costa County Health Services Division - Hazardous Materials Program	Randall Sawyer Director 4333 Pacheco Dr Martinez, CA 925-646-2286	(925) 646-1112 (925) 646-2286
Contact CCFPD for Response	Contra Costa County Fire Protection District	Chief Keith Richter	911 (925) 757-1313 (925) 757-1303 Admin. (925) 930-5501 (non-emergency
Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	Cal/OSHA	On-Call Specialist or Jay Scklon Area Manager Oakland	(510) 286-7000 (510) 622-2891
		State Department of Toxic Substances Control, State Regulatory Programs Division	(916) 322-7527

Table 7.12-8
Permits Required

Responsible Agency	Permit/Approval	Schedule
Contra Costa County Health Services	Risk Management Plan	To be submitted prior to project operations
Contra Costa County Health Services	Hazardous Materials Business Emergency Plan and Chemical Inventory Forms	To be obtained before hazardous materials have arrived on the site



Note 1:

Chemicals Stored and Used in Areas Shown:

- Sodium Hypochlorite
- Polysilicate
- Dibromo-Nitrolo-Propionamide (DBNPA)
- Isothiazolone
- Antiscalant
- Sodium Bisulfite
- Membrane Cleaner
- Citric Acid
- Sodium Hydroxide
- Trisodium Phosphate
- Neutralizing Amine
- Oxygen Scavenger
- Polysilicate-Borax

Note 2:

Hydraulic Oil & Lube Oil Used in These Areas

- See Table 7.12-2

Source:
CH2MHill Lockwood Greene; General Arrangement Marsh Landing Generating Station,
Location of Stored & Used Areas of Hazardous Materials;
Drawing No: MR-GA-ML-01-22 (Rev. A, 05/09/08)

LOCATIONS OF HAZARDOUS MATERIALS

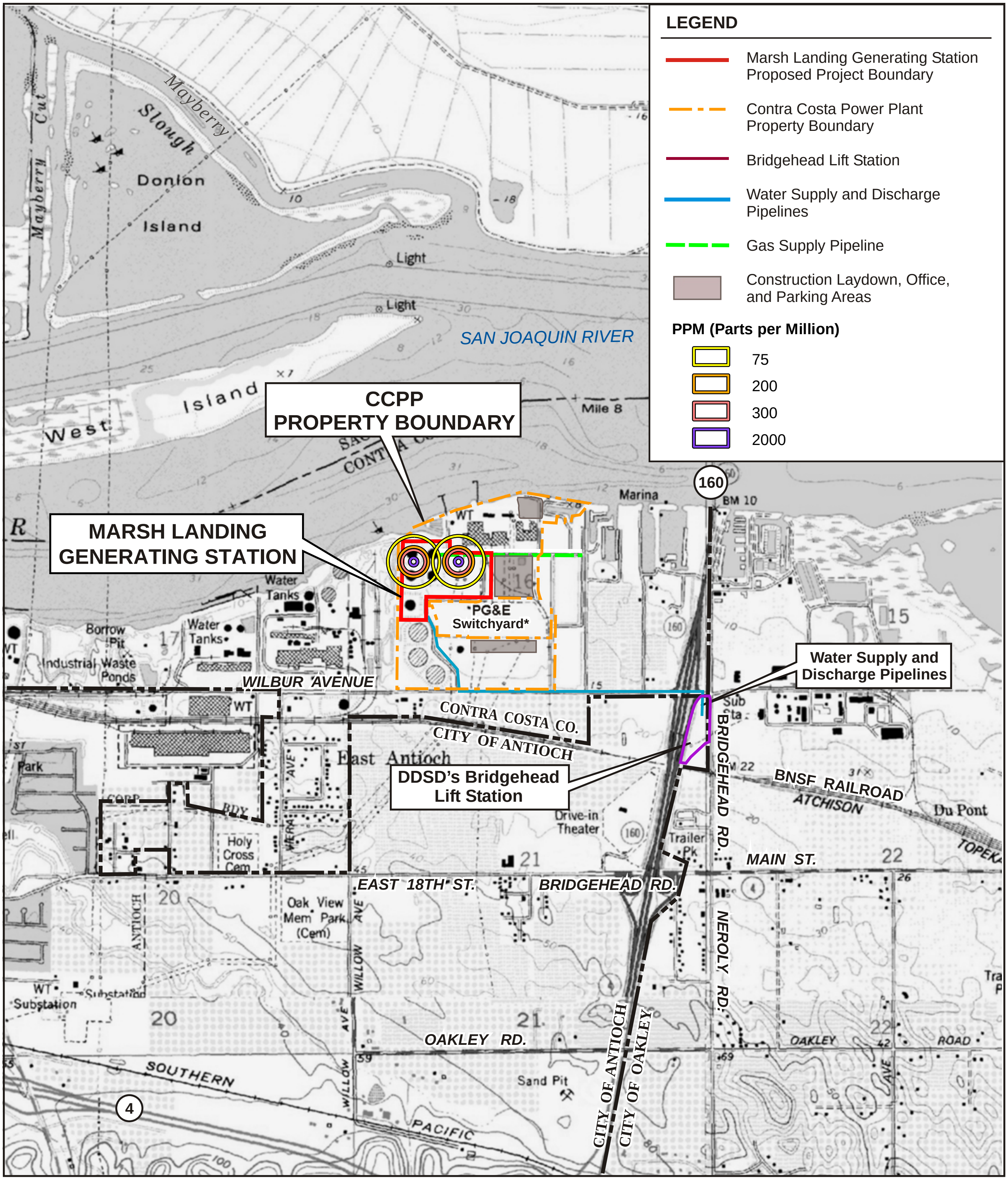
Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

URS

FIGURE 7.12-1

5/22/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.12 Hazmat\7.12-1_locs hazmat.ai



Source:
USGS Topographic Maps, 7.5 Minute Series:
Antioch North, California, 1978
Antioch South, California, 1980
Jersey Island, California, 1978
Brentwood, California, 1978

* The PG&E Switchyard and PG&E Gateway Project are not part of the Mirant Property.

0 2000 4000
Scale in Feet
1:24,000

N

WORST-CASE SCENARIO
PREDICTED AMMONIA CONCENTRATION

May 2008
28067344

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

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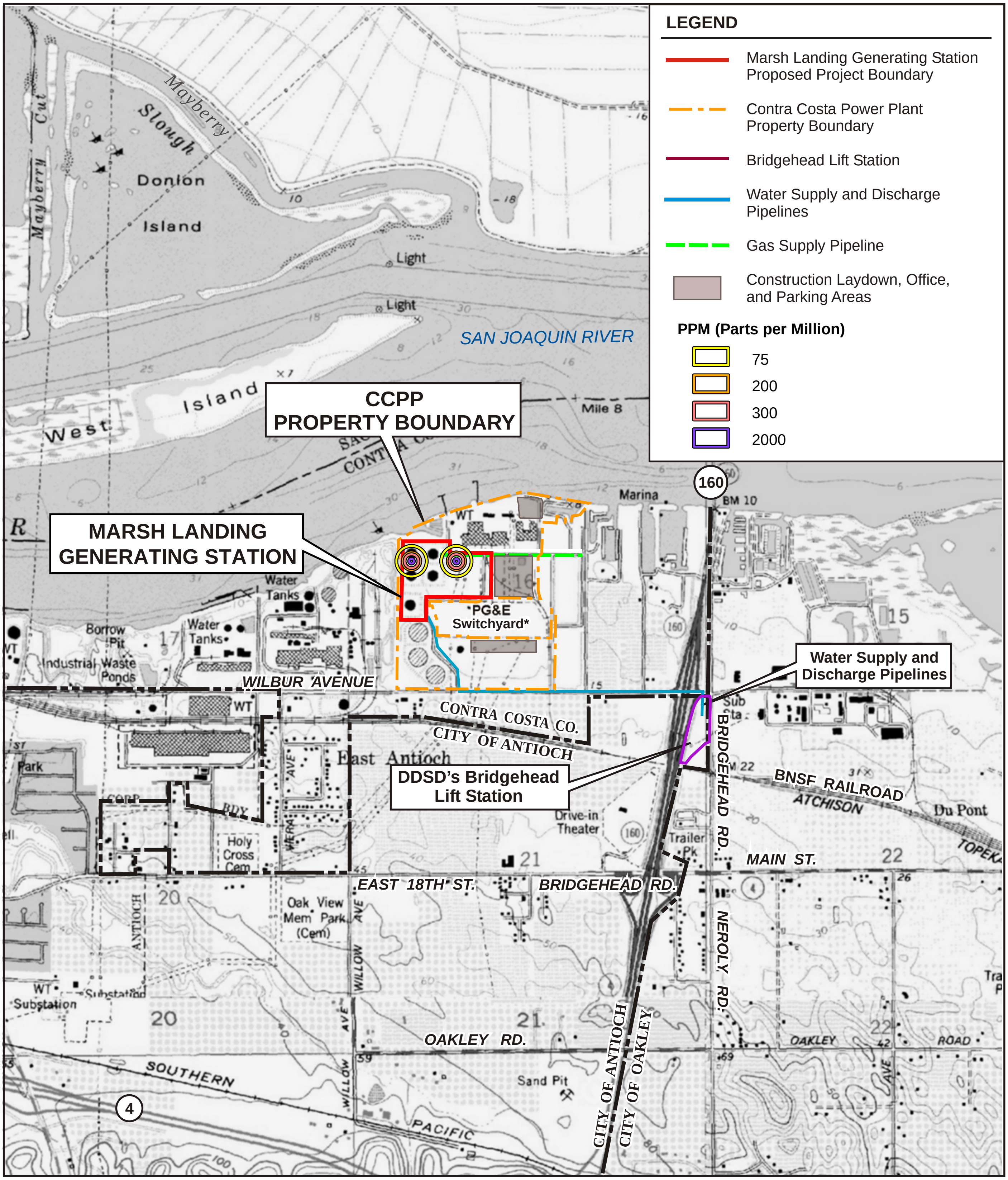
FIGURE 7.12-2

5/22/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.12 Hazmat\7.12-2_worst-case_V2.ai



Source:
USGS Topographic Maps, 7.5 Minute Series:
Antioch North, California, 1978
Antioch South, California, 1980
Jersey Island, California, 1978
Brentwood, California, 1978

* The PG&E Switchyard and PG&E Gateway Project are not part of the Mirant Property.

0 2000 4000

Scale in Feet
1:24,000

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ALTERNATIVE SCENARIO
PREDICTED AMMONIA CONCENTRATION

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Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

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FIGURE 7.12-3

5/22/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.12 Hazmat\7.12-3_alt scen_V2.ai