5.15 HAZARDOUS MATERIALS HANDLING

This section discusses the potential impacts from storage and use of hazardous materials during construction and operation of the proposed Project. Design features have been incorporated into the SJS 1&2 site regarding the use of hazardous materials—specifically, storage procedures—in order to keep maximum potential impacts below defined thresholds of significance. Hazardous waste generation and management are further discussed in Section 5.14, Waste Management.

The discussion below includes the existing conditions; the environmental consequences associated with hazardous materials usage during the Project construction, operation and maintenance; cumulative impacts; mitigation measures; and applicable LORS.

5.15.1 Affected Environment

The SJS 1&2 site includes the construction, operation and maintenance of two 53.4 MW solar hybrid power stations and associated ancillary systems.

The Project site is located on West Jayne Avenue, approximately 6 miles east of Coalinga and approximately 3 miles west of Interstate 5, in an agricultural area of Fresno County, California. The Project site will be situated on one section of land, approximately 640 acres.

The Project site is located in an area zoned for agricultural uses as specified in the Fresno County General Land Use Plan. Surrounding land uses include agricultural fields to the north; agricultural lands to the south; the Guirjarral Hills Oil Field to the east; and the Coalinga State Hospital agricultural land to the west. Sensitive receptors (e.g., schools, hospitals, playgrounds, daycare centers, residences, etc.) were identified within the immediate vicinity of the SJS 1&2 site. See Section 5.16 (Public Health) for additional information on sensitive receptors.

The two components of each Plant are the solar field and the biomass facilities. Each solar field has the heat generating capacity to fully load its respective turbine to produce 53.4 MW net. Each biomass facility will be used to maximize the turbine's energy output during shoulder solar hours (as the sun rises and sets) and will operate at night to produce up to 40 MW of energy.

The solar field design will use parabolic solar collectors to concentrate the sun's radiant energy on HCE that contain a circulating HTF. Hot HTF is then conveyed to a heat exchanger to produce steam in a conventional reboiler for expansion in a reheat steam turbine generator.

The biomass facility will use fluidized bed combustion technology to burn orchard waste and municipal greenwaste. The biomass component will run up to 24 hours a day in winter months when solar intensity is less. During summer, the biomass plant will start up as the sun approaches the horizon, run all night, then ramp down as the sun rises the next day. Incorporating the biomass facility in this manner increases the power plant's total energy output and maximizes turbine use. The biomass combustion process will produce ash equal to approximately 5% of the biomass consumed.

Ancillary facilities will include buildings and facilities for assembly, maintenance and operations, as well as the gathering lines required to transmit electricity from the field to the substation.

Temporary onsite construction parking, offices, warehouse and construction laydown areas will be required during the SJS 1&2 construction phases. The soil in the laydown area will be covered with protective gravel along the access roadways, parking and vehicle marshalling areas, and construction materials storage areas.

A Phase I ESA of the proposed SJS 1&2 site has been prepared in accordance with ASTM Practice E 1527-05. The objective of the Phase I Environmental Site Assessment was to identify RECs that may exist on the SJS 1&2 site. No RECs were identified in connection with current or historical operations at the subject property. Based on the historical use of the property for oil development, there is the potential for subsurface soils to be impacted with petroleum hydrocarbons. Limited oil staining was observed on the soil near onsite diesel storage ASTs. The Phase I ESA is included as Appendix M-1.

5.15.2 Environmental Consequences

Criteria used to determine the significance of potential impacts from hazardous materials used at SJS 1&2 were based on the Environmental Checklist Form of CEQA guidelines and on standards and thresholds adopted by the relevant agencies involved with this AFC.

According to CEQA significance criteria, the proposed project would result in a significant impact if it 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 hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, create a significant hazard to the public or environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

5.15.2.1 Construction Phase

Hazardous materials to be used during construction include gasoline, diesel fuel, oil, and small amounts lubricants cleaners, solvents and adhesives. There are no feasible alternatives to these materials for construction or operation of construction vehicles and equipment. No AHMs will be used or stored on site during construction. No storage of hazardous materials is planned outside of the plant site or laydown area. A summary of hazardous materials to be used and stored for construction of the SJS 1&2 site is provided in Table 5.15-1, Hazardous Materials Usage and Storage During Construction.

Table 5.15-1
Hazardous Materials Usage
and Storage During Construction[1]

Material	Purpose	Storage Location	Maximum Stored	Storage Type
Diesel Fuel	Refueling construction vehicles and equipment	Laydown Area	1,000 gallons	Tank
Diesel Fuel	Refueling Truck	Laydown Area/Mobile	1,320 gallons	Truck
Gasoline	Refueling construction vehicles and equipment	Laydown Area	1,000 gallons	Tank or truck
Cleaning Chemicals/Detergents	Periodic cleaning	Warehouse/Shop Area	132 gallons	Drums or small containers
Lubricating Oil	Lubricate rotating equipment (e.g., STG lube oil systems)	Contained in storage tanks on equipment skids	1,500 gallons each	Tanks
Hydraulic Oil	Lubricating equipment parts	Warehouse/Shop Area	TBD	Tanks
Grease	Lubricating equipment parts	Warehouse/Shop Area	TBD	Drum
Glycol	Coolants	Warehouse/Shop Area	TBD	Tanks
Acetylene	Welding	Warehouse/Shop Area	TBD	Cylinders
Oxygen	Welding	Warehouse/Shop Area	TBD	Cylinders
Waste solvents, used oils, paint, oily rags, adhesives	Construction-Hazardous Waste	Hazardous waste storage area	176 gallons removed every 90 days	55-gallon drums
Spent Batteries – Lead acid, alkaline type	Construction-Hazardous Waste	Hazardous waste storage area	40 batteries disposed of every 4 years	Spent battery stored in hazardous waste storage area

Source: Project Description
[1]All numbers are approximate.
Note:
STG = steam turbine generator

In general, construction contractors will utilize fuel, lubricating oils, and other hazardous materials during construction of SJS 1&2. The contractor will be responsible for assuring that the use, storage, and handling of these materials will be in compliance with applicable federal, state, and local LORS, including licensing, personnel training, accumulation limits, reporting requirements, and recordkeeping. A HMBP outlining hazardous materials handling, storage spill response, and reporting procedures will be prepared prior to construction activities.

The following site services will also be either provided, by separate contract or incorporated into individual construction subcontracts for the SJS 1&2 site:

- Environmental health and safety training;
- Site security;
- Site first aid;
- Construction testing (*e.g.,* soil, concrete);
- Furnishing and servicing of sanitary facilities;
- Trash collection and disposal; and
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations.

Small quantities of spilled fuel oil and lubricant/grease drippings from construction equipment may occur during construction. Such materials generally have a low relative risk to human health and the environment. If a large spill occurs, the spill area will be bermed or controlled as quickly as practical to minimize the spill's footprint. Contaminated soil produced during spill cleanup will stored, transported, and disposed of in accordance with local, state and federal regulations. If a spill or leak into the environment involves hazardous materials equal to or greater than the specific reportable quantity, federal, state, and local reporting requirements will be adhered to. In particular, the FCDCH, Environmental Health Division CUPA will be notified. The Fresno County Fire Protection District, Coalinga Fire Department will also be called in the event of a fire or injury. Contractors will be expected to implement best management practices consistent with hazardous materials storage, handling, emergency spill response, and reporting specified in the HMBP. Impacts associated with the use of hazardous materials during construction will be less than significant as a result of the applicant implementing the above procedures and mitigation measures HAZMAT-1 through HAZMAT-4, as discussed in Section 5.15.4, Mitigation Measures.

5.15.2.2 Operation and Maintenance

Hazardous materials to be used and stored on site for operation of SJS 1&2 are summarized in Table 5.15-2, Hazardous Materials Usage and Storage During Operations.

Table 5.15-2
Hazardous Materials Usage
and Storage During Operations[1]

Chemical	Use	Storage Location	Maximum Stored	Storage Type
Aqueous ammonia ([19%] NH_4 (OH))	NO_x emissions control	SCR Unit	40,000 gallons for each plant	Aboveground tank
Heat Transfer Fluid (Therminol VP-1)	Transfers energy from solar field and biomass system to power block	Plant System, Power Block Area	185,000 gallons for each plan	Vessels within the plant circulation loop system
Chlorine	Water treatment	Water Treatment Area	500 gallons for each plant	Tank
Hydrochloric Acid	Water treatment	Water Treatment Area	TBD	Tank
Cation and Anion Beads	Water treatment	Water Treatment Area	TBD	TBD
Diesel Fuel	Firewater pump driver	Firewater Skid	300 gallons for each plant	Tank
Cleaning Chemicals/Detergents	Periodic cleaning	Warehouse/shop area	500 liters for each plant	55-gallon drums and small containers
Water treatment Chemicals	Oxygen scavenger	Water Treatment Building	10,000 gallons for each plant	Tank
Lubricating Oil	Lubricate rotating equipment (e.g., STG lube oil systems)	Contained in storage tanks on equipment skids	1,585 gallons each plant 3,170 gallons total	Tanks
Laboratory Reagents	Water laboratory analysis	Water Treatment Building	4 liters	Small containers
Mineral Transformer Insulating Oil	Generator Step-Up (GSU) transformers	Transformer Area	11,000 gallons per GSU 22,000 gallons total	Contained within transformers and electrical switches
Mineral Transformer Insulating Oil	Standby Transformer	Standby Transformer Area	4,000 gallons	Contained within transformers and electrical switches
Mineral Transformer Insulating Oil	Auxiliary Transformers	Auxiliary Transformer Area	3,000 gallon per auxiliary transformer	Contained within transformers and electrical switches
Propylene Glycol	Coolant Antifreeze	Power Block	55 gallons for each plant	Drum

Table 5.15-2
Hazardous Materials Usage
and Storage During Operations[1]
(Continued)

Chemical	Use	Storage Location	Maximum Stored	Storage Type
Acetylene, Oxygen, Other Welding Gases	Maintenance Welding	Shop/warehouse	TBD	Cylinders of various volumes
Spent batteries – Lead Acid, Alkaline	Hazardous Waste	Hazardous Waste Storage Area	Intermittent	Batteries stored in waste storage area
Oily Absorbent	Hazardous Waste	Hazardous Waste Storage Area	55 gallons per month for each plant	Drum
Waste Oil/Sludge – from Oil/Water separator	Hazardous Waste	Hazardous Waste Storage Area	500 gallons for each plant	Oil/Water Separator

Source: Project Description

Notes:

[1]All numbers are approximate.

STG = steam turbine generator

The following potential hazards associated with the storage of hazardous or acutely hazardous materials were identified:

Fire and Explosion Risks

Flammable materials that will be used at the site during the operational phase include propane, welding gases, and gasoline fuel for the operations vehicles. Additionally, other flammable materials that are difficult to ignite will be used at the site during the operations phase: HTF, transformer insulating oil and diesel fuel for the operations vehicles. The risk of a fire and/or explosion will be minimized through adherence to applicable codes and the implementation of effective safety management practices.

Welding Gases

The potential impacts presented by the use of welding gases at the facility do not appear to be significant, based on the following:

- A limited quantity of each gas will be stored at the facility.
- The gases will be stored in U.S. Department of Transportation (DOT)-approved safety cylinders secured to prevent upset and physical damage.
- 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 in larger cylinders), generally limiting the potential quantity of gas released from an individual cylinder failure to less than 200 cubic feet.

Transformer Oil

Transformer oil will not be stored on site except in the transformers. Nearly the only risk of fire would be the unlikely event of a catastrophic transformer failure. Such a failure would require an emergency response from the Fresno County Fire Protection District, Coalinga Fire Department. The potential impacts presented by the use of transformer oil at the facility do not appear to be significant.

Heat Transfer Fluid (HTF) Storage

SJS 1&2 includes a HTF system to transfer energy from the solar collectors and from the biomass system to the steam power cycle to generate electricity. The system will include offloading facilities, a make-up storage tank, an expansion tank, circulating pumps, and piping to and from the solar field and the biomass system. The offloading facilities, storage tank, expansion tank and circulating pumps will have secondary containment. The potential impacts presented by the use of HTF at the facility do not appear to be significant.

Acutely Hazardous Materials

The chemicals proposed for use at the SJS 1&2 site are not Regulated Substances subject to the requirements of the CalARP Program and process safety management (PSM), with the exception of aqueous ammonia.

In September 1996, Senate Bill (SB) 1889 was enacted to change the California Health and Safety Code (CHSC) § 25531 *et seq*., replacing the Risk Management and Prevention Program requirements with the Risk Management Plan (RMP) requirements established pursuant to Section 112(r) of the federal Clean Air Act (CAA) (42 USC Section 7412). Pursuant to SB 1889, the California Office of Emergency Services (OES) is required to adopt implementing regulations, initially as emergency regulations, and to seek and maintain delegation of the federal program. The CalARP Program merges federal and state programs for the prevention of accidental releases of toxic and flammable substances. The goal was to eliminate the need for two separate and distinct chemical risk management programs. The CalARP Phase I Final Regulations were approved on 16 November 1998.

The CalARP Program final regulations (CCR Title 19, Division 12, Chapter 4.5) provide two sets of lists of Regulated Substances: one for Federal Regulated Substances and one for State Regulated Substances.

- Section 2770.5 – Tables 1 and 2 of Section 2770.5 list Federal Regulated Substances and threshold quantities for accidental release prevention, including flammable substances. Aqueous ammonia and hydrochloric acid are on the list but do not exceed the threshold quantity limits and therefore, are not regulated substances in this setting.
- Section 2770.5 – Table 3 of Section 2770.5 lists State Regulated Substances and threshold quantities for accidental release prevention. Hydrochloric acid is on the list, but does not exceed

the threshold quantity limits and therefore is not a regulated substance in this setting. Aqueous ammonia is included on this list and exceeds the threshold quantity limits.

No special regulatory requirements or management practices related to the storage or use of hydrochloric acid is anticipated.

An Offsite Consequences Analysis (OCA) for accidental release of aqueous ammonia has been conducted in accordance with CEC regulations. The analysis is included in Section 5.15.2.3, Offsite Consequence Analysis.

Based on the above regulations and the future use of aqueous ammonia at the SJS 1&2 site, an RMP is required and will be submitted to the FCDCH, Environmental Health Division.

Other Hazardous Materials

No adverse environmental impacts related to other hazardous materials used at the facility are anticipated. Only small quantities of hazardous materials will be present during facility operation. Long-term or cumulative impacts will be avoided by cleaning up any accidental leaks or spills of these materials as soon as they occur.

Hazardous Materials Business Plan

The Project will maintain and implement an HMBP in addition to BMPs consistent with the hazardous materials handling, emergency spill response, and reporting as specified in the HMBP. If there is a spill or release of hazardous materials during operations, the spill area will be bermed or otherwise controlled as quickly as practical to minimize the footprint of the spill. Contaminated soil produced during spill cleanup will stored, transported, and disposed of in accordance with local, state and federal regulations. If a spill or leak into the environment involves hazardous materials equal to or greater than the specific reportable quantity, federal, state, and local reporting requirements will be adhered to. In particular, the FCDCH, Environmental Health Division will be notified. The FCFPD, Coalinga Fire Department will also be called in the event of a fire or injury. Long-term or cumulative impacts will be avoided by cleaning up any accidental leaks or spills of these materials as soon as they occur.

Long-term or cumulative impacts will be avoided by cleaning up any accidental leaks or spills of these materials as soon as they occur.

Material Safety Data Sheets

Material safety data sheets (MSDSs) for the hazardous materials will be kept on site as required by 29 CFR 1910, OSHA Hazard Communication rules and regulations.

5.15.3 Offsite Consequence Analysis

Aqueous ammonia would be present in sufficient quantity and concentration to be a state regulated substance that would require the development of a RMP. Aqueous ammonia would be used in the SNCR

and SCR units to reduce NOx emissions. The 19.1 percent aqueous ammonia solution would be stored in two storage tanks for each Plant that each hold a maximum of 20,000 gallons.

The offsite consequence analysis was performed for two hypothetical accidental release scenarios: worst-case, and alternative. The USEPA has specified (40CFR §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," which in this case would be the failure of one 20,000-gallon storage tank. It is assumed that the worst-case release occurs under a set of meteorological conditions that would lead to the highest possible impact concentrations. 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 the alternative scenario actually happening is also extremely low. The alternative scenario (which in this case is a spill from the piping between the storage tank and the process equipment) occurs under more common meteorological conditions.

For each scenario, distances to specified concentrations of ammonia were estimated through calculation of emission rates and the 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 offsite, then potential short-term health effects would be evaluated.

Three levels of concern are utilized to evaluate public health impacts associated with hypothetical releases of aqueous ammonia:

- Lethal. The lethal concentration is 2,000 parts per million by volume (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 the 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.
- EPA prescribed Toxic Endpoint Concentration (EPA-TEC). This value is based on the former Emergency Response Planning Guideline Level 2 [ERPG-2 (American Industrial Hygiene Association [AIHA]) 40CFR68.22] The ERPG-2 concentration was formerly 200 ppmv averaged over 1 hour. ERPG-2 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. Although the current ERPG-2 level has changed, the EPA prescribed Toxic Endpoint Concentration remains at 200 ppmv.

If concentrations at the EPA-TEC level do not extend offsite, substantial concentrations cannot reach any public receptors, hence a Program 1 RMP is most likely appropriate and the impact is considered to be less than significant. If concentrations greater than the EPA-TEC level are determined to be offsite, a Program 2 RMP must be considered.

The offsite consequence analysis includes four components. The first is to describe the scenario, including passive features designed to minimize emissions, in enough detail to allow quantitative analysis. The second component of the offsite consequence analysis is to estimate emission rates associated with each scenario. The third component is to use atmospheric dispersion modeling to predict the maximum distances to the levels of concern in each scenario. The fourth component assesses the potential degree and extent of offsite consequences (if any) 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 of 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 San Joaquin Solar 1 & 2.

5.15.3.1 Worst-Case Release Scenario

Potential accidental releases of aqueous ammonia at the Project could involve the failure of a storage tank, spills from a tanker truck, or a release from the lines that deliver ammonia from the storage tanks to the SNCR and SCR systems.

Emergency systems have been designed to stop the flow of ammonia during the transfer from the storage tank to the SNCR and SCR systems if a release were detected. Hence, the potential release quantity of ammonia would be much smaller than from the spill associated with the failure of the storage tank or a release during tanker truck unloading operations. Since the truck unloading area and the tank storage area drain to a common underground sump at each Plant, a spill from a tank rupture or during truck unloading result in the same release scenario, which is assumed to be the worst-case release.

The Risk Management Plan guidance developed by the USEPA requires that the worst-case release be the release of the largest quantity of a regulated substance from a vessel or process line failure. The hypothetical worst-case accidental release of ammonia examined for the Project is a failure of one 20,000-gallon ammonia storage tank, releasing 100% of its contents instantly. The circumstances under which this scenario was assumed to occur are so conservative as to be virtually impossible.

A bermed containment area would surround the ammonia storage tank area. The truck unloading operation is a bermed containment area with a drain that flows to the sump under the tank storage area. A spill in either area would follow the slope of the floor and drain quickly into the sump. The sump would be sized large enough to hold the entire contents of two 20,000-gallon ammonia storage tanks and the maximum rainfall recorded in a 24-hour period in the past 65 years (3.74 inches, WRCC 1942-2008). The release rate of the ammonia is estimated as the rate of evaporation from the total exposed drain area above the sump.

5.15.3.2 Alternative-Case 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 extremely low. The alternative scenario would involve a spill of ammonia from a rupture

in the piping between the storage tank and process units. This spill would occur outside a containment area. It is assumed that the ammonia spreads to a puddle approximately one centimeter deep. The volume of ammonia spilled is assumed to equal the fluid volume in a one inch pipe between isolation valves located 420 feet apart. The release rate of the ammonia is estimated as the rate of evaporation from the puddle.

5.15.3.3 Modeling Methodology

To examine the impacts from a hypothetical spill of aqueous ammonia, the USEPA approved atmospheric dispersion model SCREEN3 was employed. SCREEN3 is a Gaussian plume model that incorporates continuous source and meteorological parameters.

An accidental aqueous ammonia release would pool in the sump where ammonia gas would evaporate via the open drain area. The ammonia gas is lighter than air with a molecular weight of 17.03 g/gram-mole, whereas air has a molecular weight of about 29g/gram-mole. For the ammonia release scenario examined, a dense gas model, such as SLAB or DEGADIS, would be inappropriate. Only one meteorological condition, a single stability class and wind speed (regardless of wind direction), needs to be examined. Therefore, the complexity of a dispersion model such as AERMOD is not necessary in this case. SCREEN3 is an appropriate model for the required analysis.

In the area source mode of SCREEN3, the source is represented by a rectangular area. In both scenarios, the area of the exposed drain is the modeled area.

5.15.3.4 Model Parameters

The calculation to determine the emission rate of ammonia vapor from an aqueous solution involves the following equation, as recommended by the USEPA in the *RMP Guidance for Offsite Consequence Analysis 1999:*

$$QR = \frac{0.284 U^{0.78} MW^{2/3} A \times VP}{82.05T} \qquad \text{(Eqn. 5.15-1)}$$

where QR = evaporation rate of ammonia (pounds minute-1)
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 liquid (millimeters of Mercury)

Note: The vapor pressure used in the worst-case scenario was adjusted based on the elevated temperature of the ammonia used for this calculation.

T = temperature of liquid (degrees Kelvin)

Equation 5.15-1 is used to calculate the evaporation rate (QR) of ammonia vapor rising out of the drains that go to the sump for both the worst-case and alternative-case scenarios. The surface area of the drain used in Equation 2-1 is the additive area of the two drains that feed the sump. The tank area drain is approximately 48 inches by 48 inches square, the truck unloading drain is approximately 12 inches by 12 inches. The wind speed used in Equation 5.15-1 is to be taken from measurements made at the standard

height of 10 meters (33 feet). Federal RMP guidance requires that the wind speed be 1.5 m/s for the worst-case scenario and 3.0 m/s for the alternative case scenario. Low wind speeds can result in a low rate of volatilization, but also results in a low rate of dispersion of the vapor as it is carried downwind.

The Cal-ARP guidance requires that the worst case scenario utilize the maximum air temperature observed on-site in the previous three years. However, to be conservative, the highest measured daily temperature of 114°F at the Coalinga Station 041864 (WRCC 1942-2008) over the entire period of record was used. The normal air temperature of 77°F was used in the alternative-case scenario, per EPA's guidelines.

Atmospheric stability is an important meteorological parameter used in modeling the dispersion of the ammonia vapor. The worst-case scenario requires Stability Class F, which is the most stable classification. In a stable atmosphere there is little turbulent motion, hence very little mixing occurs, so the ammonia concentration would remain high as the vapor is carried downwind. Atmospheric Stability Class D (neutral stability) is used in the alternative-case scenario.

The combination of the maximum observed temperature and extreme atmospheric stability that was assumed for the worst-case modeling scenario is so conservative that it never occurs. Maximum temperatures occur during the afternoon hours when the air is unstable (Stability Class A, B or C). In contrast, F stability occurs during nighttime or early morning before sunrise.

Table 5.15-3 shows the parameters used to model the ammonia dispersion for both modeled scenarios. Detailed input parameters and supportive calculations are presented in Appendix M-2.

Table 5.15-3
Dispersion Model Parameters

	Worst-Case Scenario	Alternative-Case Scenario
Aqueous Ammonia Release Temperature (F)	114	77
Atmospheric Stability Class	F	D
Wind Speed (m/s)	1.5	3.0
Vapor Pressure (mmHg)	698	294
Release Area (m^2)	1.342	6.78
Ammonia Gas Release Rate (g/s)	2.04	14.78

5.15.3.5 Modeling Results

It has been assumed that the ammonia has an equal probability to disperse in any direction. Thus, the model results in Figures 5.15-1 and 5.15-2 are shown as circles of equal predicted ammonia concentration around the source. The circles represent the distance to each "level of concern" concentration used as public health effects thresholds. The following table summarizes the modeling results:

Table 5.15-4
Dispersion Model Results

Thresholds		Worst Case	Alternative Case
Distance to Threshold Concentration	Lethal (2,000 ppm)	14 meters	13 meters
	IDLH (300 ppm)	42 meters	40 meters
	EPA-TEC (200 ppm)	53 meters	50 meters
Concentration at Fenceline		2.5 ppm	2.0 ppm
Concentration at Nearest Residence (approx. 1300 meters from source)		0.9 ppm	0.7 ppm

The passive site design features implemented at the aqueous ammonia facility would successfully keep the distance to the EPA-TEC level on-site in the case of an accidental release. Therefore, the potential impacts of the hypothesized accidental release scenario would be less than significant.

This facility would be eligible for an EPA Program 1 RMP because it would meet the following requirements:

The distance to a toxic endpoint or flammable endpoint for a worst-case release is less than the distance to any public receptor. The toxic endpoint (*i.e.,* EPA-TEC concentration) is 200 ppmv for ammonia.

San Joaquin Solar 1 & 2 is currently proposed, and therefore, the site has no history of accidental releases. The facility may certify that for the 5 years prior to the submission of an RMP, the process (ammonia storage and handling) has not had an accidental release of a regulated substance where 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 will be coordinated between the stationary source and local emergency planning and response organizations.

No substantial consequences are expected to occur at offsite receptors from the worst-case or alternative-case release scenarios, due to the design features of the proposed Project which reduces the likelihood and potential consequences of accidental ammonia releases. Workers would be trained to avoid and respond to accidental releases of hazardous materials, including aqueous ammonia. Hence, proposed Project design and worker training would limit the safety hazard due to an accidental ammonia release to an acceptable level.

5.15.4 Abandonment/Closure

Premature closure or unexpected cessation of plant operations will be outlined in the facility's closure plan. The plan will outline steps to secure hazardous and non-hazardous materials and wastes. Such steps will be consistent with BMPs, the HMBP, the RMP, and in accordance with applicable LORS. The plan will include monitoring vessels and receptacles of hazardous material and wastes, safe cessation of processes using hazardous materials or hazardous wastes, and inspection of secondary containment structures.

Planned permanent closure impacts will be incorporated into the facility closure plan and evaluated at the end of the generating stations' economic operation. The facility closure plan will document non-hazardous and hazardous waste management practices, including the inventory, management, and disposal of hazardous materials and wastes, and permanent closure of permitted hazardous materials and waste storage units.

5.15.5 Cumulative Impacts

Based on land uses in the surrounding area and the limited amount and type of hazardous materials to be used as part of the SJS 1&2 area, no significant cumulative impacts due to hazardous material handling are expected from future projects in combination with SJS 1&2.

5.15.6 Mitigation Measures

The CEC standard conditions provide appropriate mitigation and compliance conditions that ensure that SJS 1&2 utilizes hazardous materials in a manner that complies with all applicable LORS and that ensures no significant environmental impacts.

5.15.6.1 Construction Phase

During construction, hazardous materials to be stored on site will be limited to small quantities of paint, coatings, adhesives, and emergency refueling containers. A listing of anticipated hazardous materials to be used on site can be found in Table 5.15-1, Hazardous Materials Usage and Storage During Construction. These materials will be stored in a locked utility shed or in a secured fenced area with secondary containment. It is anticipated that fuels, lubricants, and other various fluids needed for construction equipment operation will be transported to the construction site as needed, by equipment service trucks. Personnel working on the Project during construction will be trained in handling hazardous materials, and will be alerted to dangers associated with these materials. An onsite safety officer will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary.

Construction contractors for the Project will be required to develop standard operating procedures (SOPs) for servicing and fueling construction equipment. These procedures will, at a minimum, include the following:

HAZMAT-1: The following measures will be implemented related to fueling and maintenance of 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 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.
- Catch pans 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.

HAZMAT-2: 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 in accordance with applicable regulations. A log of all spills and cleanup actions will be maintained.

HAZMAT-3: Emergency telephone numbers will be available on site for the fire department, police, local hospitals, ambulance service(s), and environmental regulatory agencies.

HAZMAT-4: Containers used to store hazardous materials will be properly labeled and kept in good condition.

It is anticipated that these SOPs will minimize the potential for incidents involving hazardous materials during construction.

5.15.6.2 Operation and Maintenance

A listing of anticipated hazardous materials to be used on site can be found in Table 5.15-2, Hazardous Materials Usage and Storage during Operations.

5.15.6.3 General Mitigation Measures

HAZMAT-5: Containerized Materials

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 (UFC).

- 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.
- 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 NFPA 704.
- Containers of flammable materials will be stored in inflammable storage cabinet(s) when not in use.
- Hazardous materials will be stored within secondary containment structures, typically constructed of sealed concrete. These structures will have capacity for the largest container, plus an allowance for rainwater equivalent to a 24-hour, 25-year storm event if the area is outdoors. 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 practical.

HAZMAT-6: Bulk Hazardous Materials

Hazardous materials will 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 rings at the local common alarm panel when the storage tank level reaches the high-level set point. The storage tank low-level alarm rings 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, controls, etc. 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.

Out-of-doors secondary containment will employ a valve to empty contained 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 from the secondary containment. Contaminated water will run through the oil/water separator or will be disposed of off site, as appropriate.

Tank trucks will be unloaded in a designated tank truck unloading area. This unloading area will be paved with concrete and have sufficient secondary containment to hold the contents of the worst-case release scenario.

Seismic loads for hazardous materials storage and containment areas will be determined by the static lateral force procedures of the Uniform Building Code (UBC), 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.

Underground piping and piping runs outside of secondary containment structures will be constructed with single-wall (secondary containment) piping to minimize the potential for releases and enable the facility staff to detect leaks; when and if they should occur.

Aqueous Ammonia

Aqueous ammonia will be stored in an AST with secondary containment. Aqueous ammonia (19 percent) will be stored on site in two 20,000-gallon tanks, with an outside berm providing secondary containment at each Plant. The aqueous ammonia will be delivered to the site in trucks.

The sump will be sized to contain 100% of two aqueous ammonia tanks, plus an allowance for rainwater for a 24-hour, 25-year storm. The ammonia tank storage area will be equipped with an underground sump. This sump will be specifically designed for minimization of ammonia evaporation in case of aqueous ammonia spills.

The underground sump will be sealed with a non-reactive concrete coating to minimize potential migration of liquids from the vault into the surrounding soil. This sump will be emptied using a vacuum truck after a spill event has occurred. The truck pad will be covered to prevent the accumulation of rainwater in the vault.

HAZMAT-7: 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 plant hazardous materials First Responders.

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.

HAZMAT-8: 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 HMBP, workers safety program, fire response program, plant health and 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, training, record keeping, and reporting.

As discussed previously, an RMP for aqueous ammonia will also be prepared.

HAZMAT-9: Spill Response Procedures

The following describes the general spill response procedures for the SJS 1&2 site. Personnel will be trained in spill response reporting and cleanup procedures. The facility will maintain one or more spill response kits on site. These kits will contain absorbents appropriate for the hazardous materials kept on site and each kit will be clearly designated as to what type of spilled material it should be used for. Typically, spill response 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.

Following a spill, 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, *e.g.,* 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.

Outside authorities will be contacted if required by laws and regulations, or as deemed necessary by the onsite coordinator.

In the case of a small liquid hazardous materials spill involving 55 gallons or less, the spill would typically be retained by a secondary containment structure. This type of spill would be confined to as small a space as possible using absorbent pigs or pillows, and be cleaned up with properly trained employees using absorbents available on site. Similarly, small spills outside of secondary containment structures could be cleaned up by trained employees with onsite spill kit equipment.

Larger spills would normally be contained within secondary containment and would be cleaned up by outside contractors using trained spill response personnel if onsite employees could not handle the spill using available onsite spill response equipment.

Waste generated from spill cleanup will be placed in closed, labeled containers, typically 55-gallon drums or roll-off containers. Labeling will include the facility name (SJS 1&2), date of start of accumulation,

name of the spilled material, and hazardous waste identification language from CCR 22 66262.32, and the established DOT shipping name, as needed.

Collected waste would be properly disposed of off site at an approved recycling, landfill, or other appropriate disposal facility. Offsite transportation of spill wastes will be contracted with a licensed hazardous materials transportation company. Hazardous waste spill cleanup residues will be properly manifested.

5.15.7 LORS Compliance

The Project construction and operation will be in accordance with all applicable LORS pertaining to hazardous materials. 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.

5.15.7.1 Federal

The Superfund Amendments and Reauthorization Act (SARA) of 1968 Title Ill (Sections 302, 304, 311, and 313) and regulations pursuant to the CAA of 1990 (40 CFR 68) established a nation-wide emergency planning and response program, and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. The Acts require the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility (see 40 CFR, Section 68.115). The requirements of these Acts are reflected in the CHSC, Section 25531 *et seq*. The Project will comply with these requirements as discussed below in Section 5.15.5.2, State.

Title 49, CFR, Parts 171-177, govern the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.

5.15.7.2 State

The CHSC, Section 25500, requires companies that handle hazardous materials in sufficient quantities to develop an HMBP. The HMBP includes 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 also includes a plan for training new personnel, and for annual training of all personnel in safety procedures to follow in the event of a hazardous materials release. It also includes an emergency response plan and identifies the business representative able to assist emergency personnel in the event of a release.

An HMBP will be developed prior to construction and operation of the SJS 1&2 site.

The CHSC, Section 25531, directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop a RMP and submit it to appropriate local authorities, USEPA, 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 an accidental release occurring, 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. This recently developed program supersedes the California Risk Management and Prevention Plan and is known as the CalARP Program. The SJS 1&2 operators are required to prepare an RMP for the storage of aqueous ammonia prior to operation of the facility.

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.

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 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.

5.15.7.3 Local

The designated certified unified program agency for the Project site is the FCDCH, Environmental Health Division, which is responsible for (1) the implementation of the HMBP and emergency response plan and (2) the storage of hazardous materials in underground storage tanks (USTs) and cleanup of petroleum releases.

The FCDCH, Environmental Health Division, CUPA will be contacted in the event of a release of hazardous wastes or materials to the environment.

5.15.7.4 Industry Standards

UFC contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. Article 80 was extensively revised in the latest edition (1994). These articles contain requirements that are generally similar to those contained in CHSC 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, which are not being used by this Project.

The applicable LORS related to hazardous materials handling are summarized in Table 5.15-5, Summary of LORS – Hazardous Materials Handling.

Table 5.15-5
Summary of LORS – Hazardous Materials Handling

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Federal Jurisdiction				
U.S. DOT Regulations, 49 CFR 171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.	Section 5.15.5.1	DOT Federal Motor Carrier Safety Administration (FMCSA)	California Division 916-930-2760
State Jurisdiction				
Health and Safety Code Section 25500, *et seq.* (Waters Bill)	Requires preparation of an HMBP if hazardous materials are handled or stored in excess of TQ.	Section 5.15.5.2	DTSC	DTSC Duty Officer Clovis Field Office (559) 297-3901
Health and Safety Code Section 25531, *et seq*. (La Follette Bill)	Requires registration of the facility with local authorities and preparation of an RMP if hazardous materials stored or handled in excess of TQ.	Section 5.15.5.2	DTSC	DTSC Duty Officer Clovis Field Office (559) 297-3901
CCR, Title 8, Section 5189	Facility owners are required to implement safety management plans to ensure safe handling of hazardous materials.	Section 5.15.5.2	DTSC	DTSC Duty Officer Clovis Field Office (559) 297-3901
California Uniform Building Code	Requirements regarding the storage and handling of hazardous materials.	Section 5.15.5.2	Fresno County Department of Public Works and Planning	559-262-4078
California Government Code Section 65850.2	Restricts issuance of COD until the facility has submitted an RMP.	Section 5.15.5.2	DTSC	DTSC Duty Officer Clovis Field Office (559) 297-3901
Local Jurisdiction				
FCDCH, Environmental Health Division	Requires new/modified businesses to complete a hazardous materials business prior to final plan/permit approval.	Section 5.15.5.3	FCDCH, Environmental Health Division, CUPA	559-455-3217
Industry Standards Jurisdiction				
UFC (Articles 79 and 80)	Requirements for secondary containment, monitoring, etc., for extremely hazardous materials.	Section 5.15.5.4	Fresno County Fire Protection District, Coalinga Fire Department	Dan Hernandez Fire Chief 559-935-0756

Table 5.15-5
Summary of LORS – Hazardous Materials Handling
(Continued)

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact

Source: California Department of Toxic Substances Control, 2008; Cal/EPA, Fresno County Fire Protection District, 2008; Fresno County Public Works and Planning, 2008, FCDCH, Environmental Health Division, 2008.

Notes:

CCR = California Code of Regulations
CFR = Code of Federal Regulations
CUPA = Certified Unified Program Agency
DOT = Department of Transportation
DTSC = Department of Toxic Substances Control
HMBP = Hazardous Materials Business Plan
LORS = laws, ordinances, regulations, and standards
RMP = Risk Management Plan
TQ = Threshold Quantity
U.S. = United States
UFC = Uniform Fire Code

5.15.8 Agencies and Agency Contacts

A number of federal and state agencies regulate hazardous materials, including the USEPA at the federal level and the California/EPA at the state level. However, local agencies are the primary enforcers of hazardous materials laws. For the SJS 1&2 site, the local agency is the FCDCH, Environmental Health Division, as shown in Table 5.15-6, Agency Contact List for LORS.

Table 5.15-6
Agency Contact List for LORS

	Agency	Contact	Address	Telephone
1	FCDCH, Environmental Health Division, CUPA	Gustavo Gomez or Hazardous Materials Specialist on Call	1221 Fulton Mall Fresno, California 93775	559-445-3271
2	Fresno County Fire Prevention Division, Coalinga Fire Department	Dan Hernandez Fire Chief	25600 W. Jayne Ave. Coalinga, CA 93210	559-935-0756

Source: Fresno County Fire Protection District, 2008; 2008, FCDCH, Environmental Health Division, 2008.

Notes:

FCDCH = Fresno County Department of Community Health
LORS = laws, ordinances, regulations, and standards
CUPA = Certified Unified Program Agency

5.15.9 Permits Required and Permitting Schedule

The SJS 1&2 site will develop an HMBP prior to construction activities. The Project will develop and implement an RMP prior to the operation of the facility. See Table 5.15-7, Applicable Permits, for a list of potential permit requirements.

Table 5.15-7
Applicable Permits

Responsible Agency	Permit/Approval	Schedule
Federal	No permits required	N/A
State	No permits required	N/A
FCDCH, Environmental Health Division, CUPA	Hazardous Materials Business Plan	30 days prior to storage of hazardous materials on site
FCDCH, Environmental Health Division, CUPA	Risk Management Plan	Prior to delivery of aqueous ammonia to the facility.

Source: FCDCH, Environmental Health Division, 2008.

Notes:
FCDCH = Fresno County Department of Community Health
N/A = not applicable

5.15.10 References

California Department of Toxic Substances Control. 2008. Information downloaded from: http://www.dtsc.ca.gov/. March 2008.

California Environmental Protection Agency (Cal/EPA), Central Valley Regional Water Quality Control Board (WQCB). 2008. Information downloaded from: http://www.waterboards.ca.gov/centralvalley. March 2008.

Fresno County Department of Community Health (FCDCH), Environmental Health Division. 2008. Information downloaded from: http://www.fresnohumanservices.org/CommunityHealth/EnvironmentalHealth/CUPA/

Fresno County Department of Public Works and Planning. 2008. Information downloaded from: http://www.co.fresno.ca.us. June.

Fresno County Fire Prevention Division. 2008. Information downloaded from: http://www.fresnocountyfire.net/

Lees, F.P. 1983. Loss Prevention in the Process Industries. Volumes I and II. Butterworths.

Lewis, Richard J., Sr. 1992. Sax's Dangerous Properties of Industrial Materials. Eighth Edition. Van Nostrand Reinhold. New York, New York.

National Institute of Occupational Safety and Health. 1997. NIOSH Pocket Guide to Chemical Hazards. DHHS Publication No. 97-140. U.S. Government Printing Office. Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1993. Guidance on the Application of Refined Dispersion Models to Hazardous/Toxic Air Pollutant Releases. EPA-454/R-93-002. April 30, 1993.

U.S. Environmental Protection Agency (USEPA). 1999. Risk Management Program Guidance for Off-site Consequence Analysis. EPA Document EPA550B99009. April, 1999.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Hazardous Materials Handling**

Project: San Joaquin Solar 1&2

Technical Staff: ____

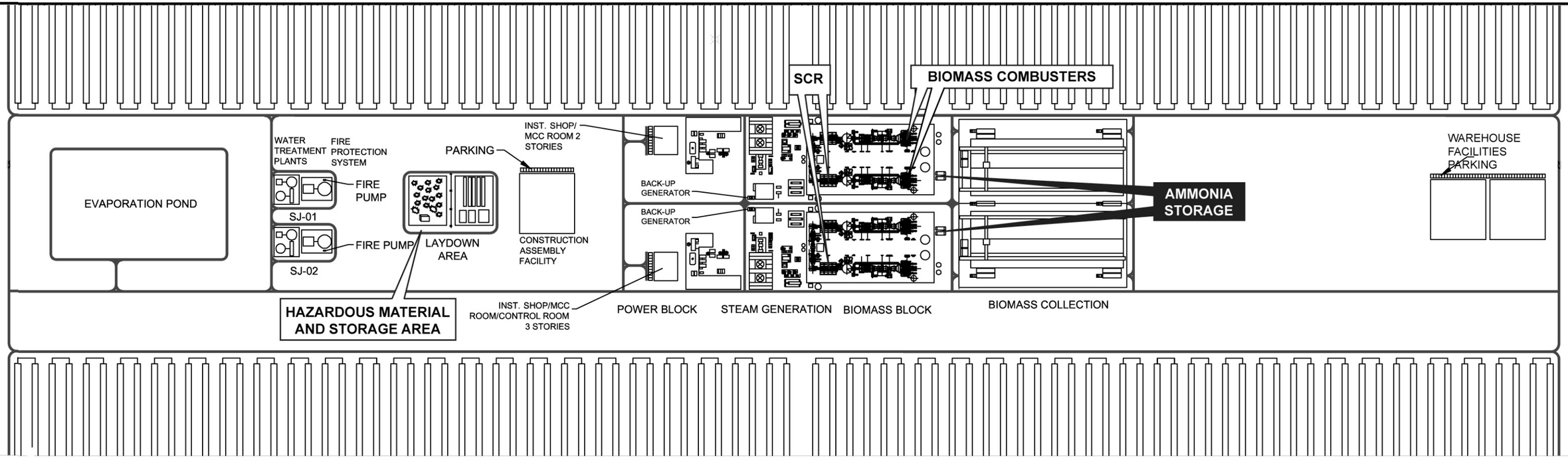
Project Manager: ____

Docket: ____

Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (e) (1)	A discussion of how facility closure will be accomplished in the event of premature or unexpected cessation of operations.	Section 5.15.2.4		
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sections 5.15.1, 5.15.2, 5.15.3 and 5.15.4		
Appendix B (g) (10) (A)	A list of all materials used or stored on-site which are hazardous or acutely hazardous, as defined in Title 22, California Code of Regulations, § 66261.20 *et seq*., and a discussion of the toxicity of each material.	Section 5.15.1 Table 5.15-1, 5.15-2		
Appendix B (g) (10) (B)	A map at a scale of 1:24,000 depicting the location of schools, hospitals, day-care facilities, emergency response facilities and long-term health care facilities, within the area potentially affected by any release of hazardous materials.	Figure 5.16-1		
Appendix B (g) (10) (C)	A discussion of the storage and handling system for each hazardous material used or stored at the site.	Sections 5.15.1, 5.15.2 Table 5.15-1 and 5.15-2		
Appendix B (g) (10) (D)	The protocol that will be used in modeling potential consequences of accidental releases that could result in off site impacts. Identify the model(s) to be used, a description of all input assumptions, including meteorological conditions. The results of the modeling analysis can be submitted after the AFC is complete.	Section 5.15.2.3		
Appendix B (g) (10) (E)	A discussion of whether a risk management plan (Health and Safety Code § 25531 *et seq*.) will be required, and if so, the requirements that will likely be incorporated into the plan.	Sections 5.15.2.2 and 5.15.2.3		
Appendix B (g) (10) (F)	A discussion of measures proposed to reduce the risk of any release of hazardous materials.	Sections 5.15.2 and 5.15.4		
Appendix B (g) (10) (G)	A discussion of the fire and explosion risks associated with the project.	Section 5.15.2.		
Appendix B (i) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly	Section 5.15.7 Table 5.15-6		

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
	reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and			
Appendix B (i) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Section 5.15.6 Tables 5.15-7 and 5.15-8		
Appendix B (i) (2)	The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.	Table 5.15-7		
Appendix B (i) (3)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Table 5.15-8		



DETAIL A

SCALE: 1" = 150'

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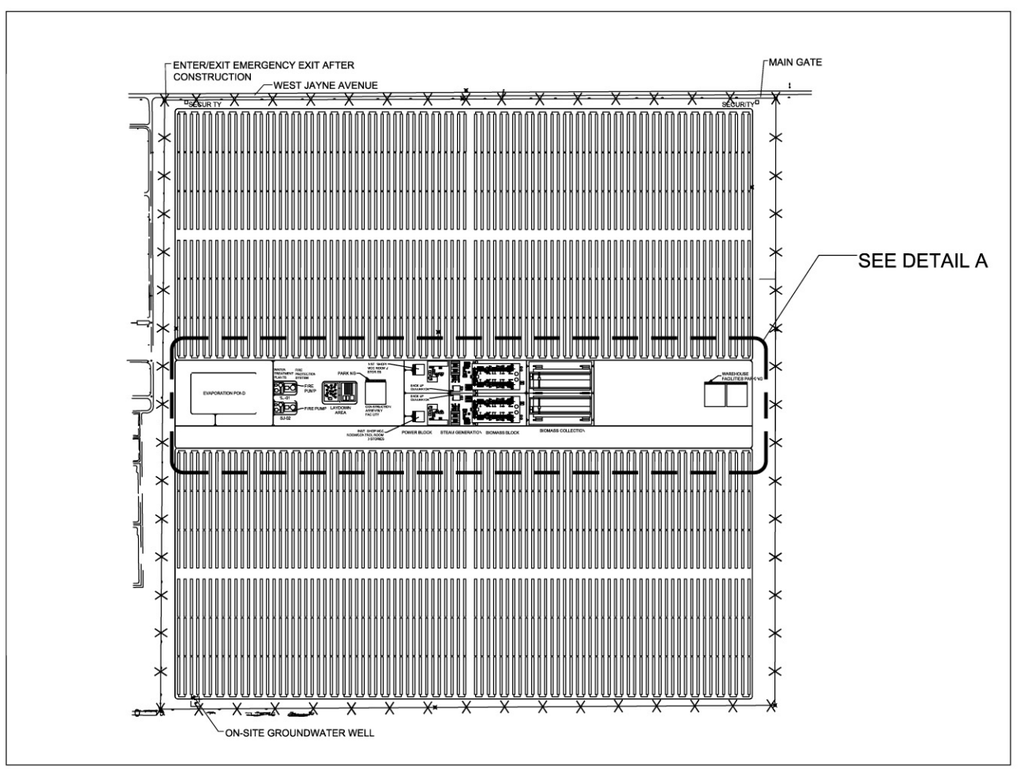

SITE PLAN

SCALE: 1" = 600'

−600 −300' 0' 600'

LEGEND

- FENCE LINE/PROPERTY BOUNDARY
- UTILITY ROAD
- ON-SITE GROUNDWATER WELL

SOURCES:
Ford Davis and Bacon (drawing 2008).

LOCATION OF HAZARDOUS MATERIALS
SAN JOAQUIN SOLAR 1 & 2

URS

SCALE: 1"=150'

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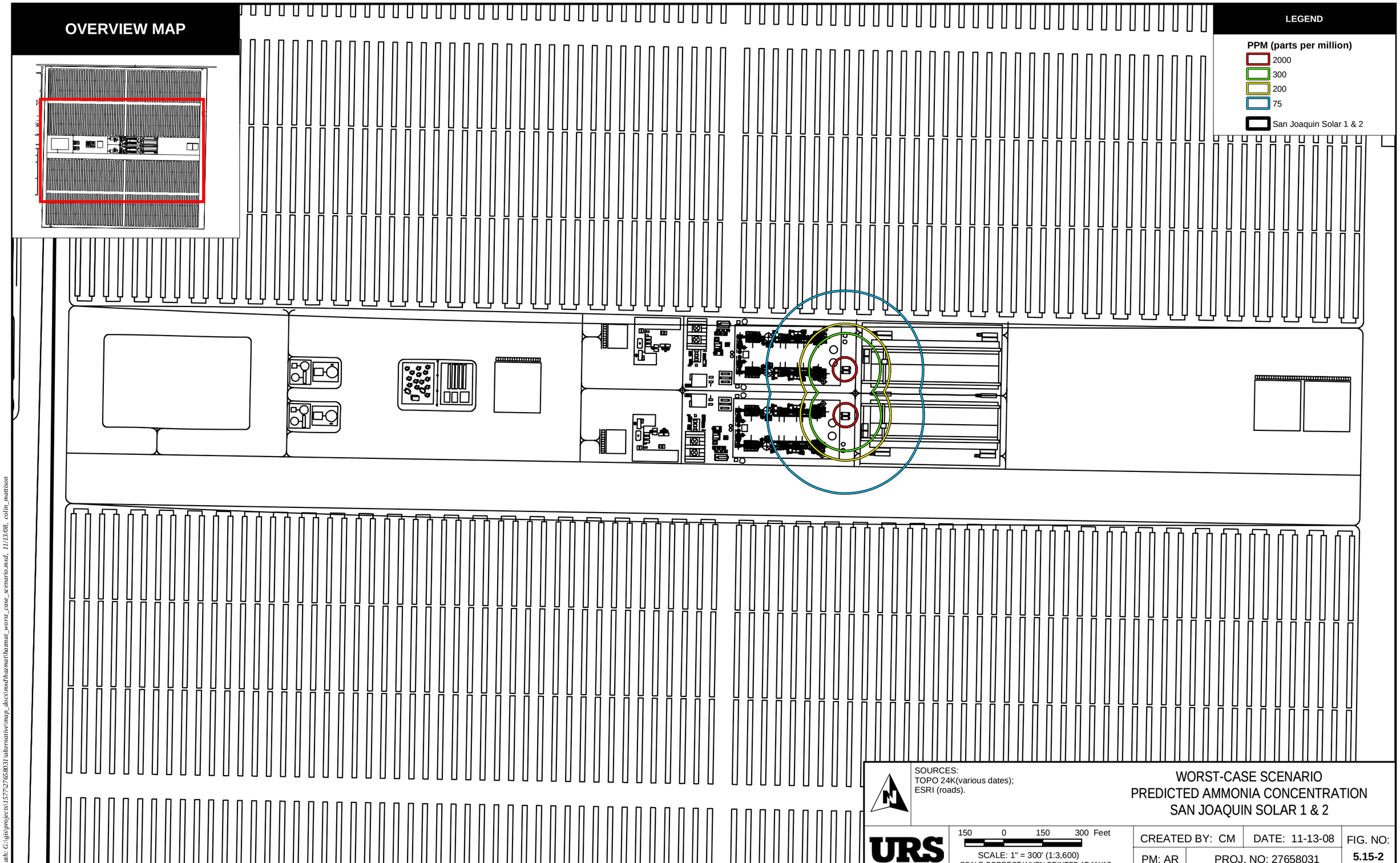

SOURCES:
TOPO 24K(various dates);
ESRI (roads).

WORST-CASE SCENARIO
PREDICTED AMMONIA CONCENTRATION
SAN JOAQUIN SOLAR 1 & 2

URS

150 0 150 300 Feet
SCALE: 1" = 300' (1:3,600)
SCALE CORRECT WHEN PRINTED AT 11X17

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PM: AR	PROJ. NO: 27658031	5.15-2

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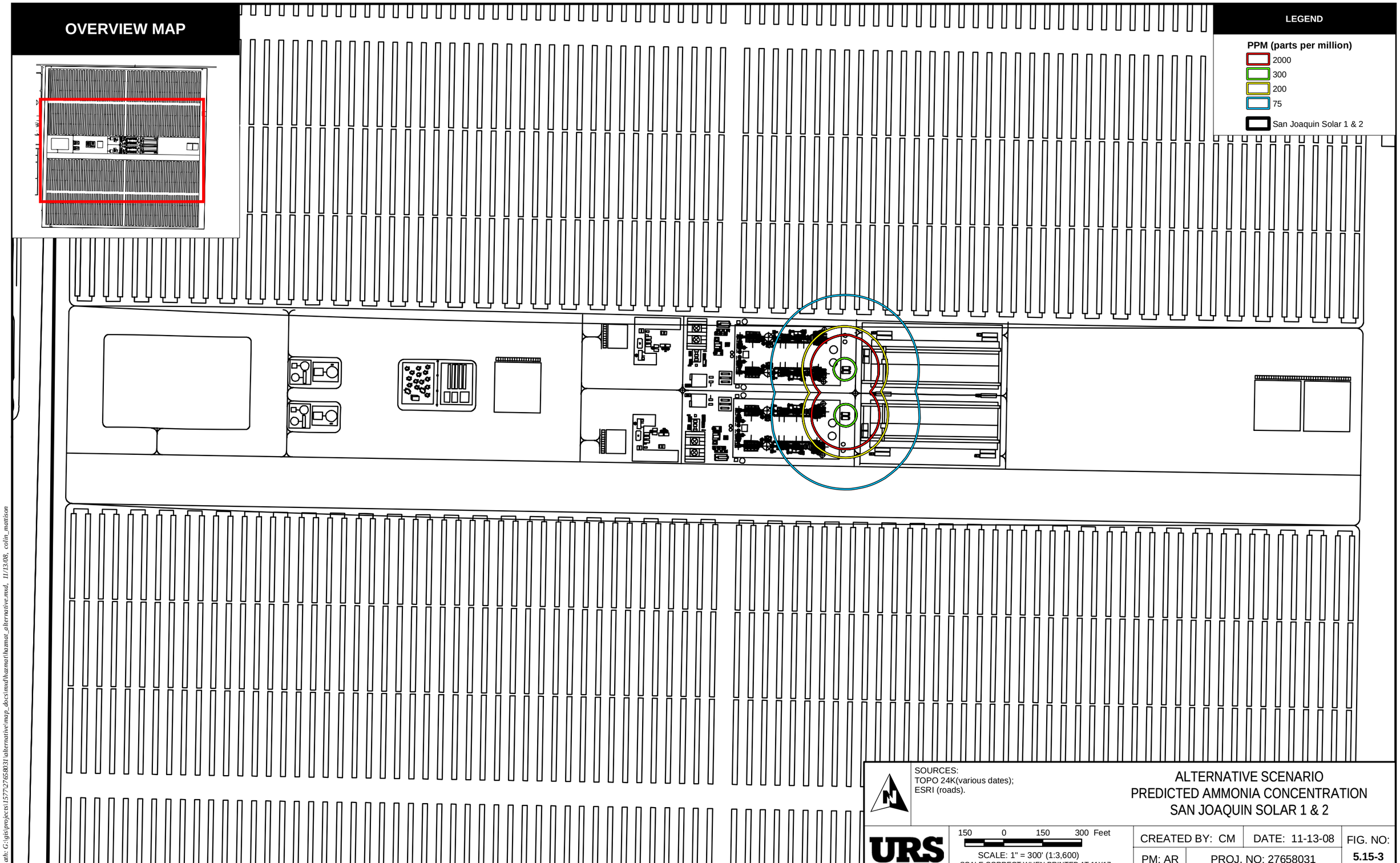

SOURCES:
TOPO 24K(various dates);
ESRI (roads).

ALTERNATIVE SCENARIO
PREDICTED AMMONIA CONCENTRATION
SAN JOAQUIN SOLAR 1 & 2

URS

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SCALE: 1" = 300' (1:3,600)
SCALE CORRECT WHEN PRINTED AT 11X17

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