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5.5 Hazardous Materials Handling

This section discusses the potential effects on human health and the environment from the storage and use of hazardous materials in conjunction with the Alamitos Energy Center (AEC). Section 5.5.1 describes the project setting, and Section 5.5.2 describes the existing environment that may be affected. Section 5.5.3 identifies potential impacts on the environment and on human health from site development. Section 5.5.4 addresses potential cumulative effects, Section 5.5.5 presents proposed mitigation measures, and Section 5.5.6 presents the laws, ordinances, regulations, and standards (LORS) applicable to hazardous materials. Section 5.5.7 describes the agencies involved and provides agency contacts. Section 5.5.8 describes permits required and the permit schedule. Section 5.5.9 provides the references used to develop this section. Hazardous waste management, including handling of potentially contaminated soil and groundwater, is addressed in Section 5.14, Waste Management.

5.5.1 Setting

AES Southland Development, LLC (AES-SLD) proposes to construct, own, and operate the AEC—a natural-gas-fired, air-cooled, combined-cycle, electrical generating facility in Long Beach, Los Angeles County, California. The proposed AEC will have a net generating capacity of 1,936 megawatts (MW) and gross generating capacity of 1,995 MW.[1] The AEC will replace and be constructed on the site of the existing Alamitos Generating Station.

The AEC will consist of four 3-on-1 combined-cycle gas turbine power blocks with twelve natural-gas-fired combustion turbine generators (CTG), twelve heat recovery steam generators (HRSG), four steam turbine generators, four air-cooled condensers, and related ancillary equipment. The AEC will use air-cooled condensers for cooling, completely eliminating the existing ocean water once-through-cooling system. The AEC will use potable water provided by the City of Long Beach Water Department (LBWD) for construction, operational process, and sanitary uses but at substantially lower volumes than the existing Alamitos Generating Station has historically used. This water will be supplied through existing onsite potable water lines.

The AEC will interconnect to the existing Southern California Edison (SCE) 230-kilovolt switchyard adjacent to the north side of the property. Natural gas will be supplied to the AEC via the existing offsite 30-inch-diameter pipeline owned and operated by Southern California Gas Company (SoCalGas) that currently serves the Alamitos Generating Station. Natural gas compressors, water treatment facilities, emergency services, and administration and maintenance buildings will be constructed within the existing Alamitos Generating Station site footprint. Stormwater will be discharged to two retention basins and then ultimately to the San Gabriel River via existing stormwater outfalls.

The AEC will include a new 1,000-foot process/sanitary wastewater pipeline to the first point of interconnection with the existing LBWD sewer system and will eliminate the current practice of treatment and discharge of process/sanitary wastewater to the San Gabriel River. The project may also require upgrading approximately 4,000 feet of the existing offsite LBWD sewer line downstream of the first point of interconnection, therefore, this possible offsite improvement to the LBWD system is also analyzed in this AFC. The total length of the new pipeline (1,000 feet) and the upgraded pipeline (4,000 feet) is approximately 5,000 feet.

To provide fast-starting and stopping, flexible generating resources, the AEC will be configured and deployed as a multi-stage generating (MSG) facility. The MSG configuration will allow the AEC to generate power across a wide and flexible operating range. The AEC can serve both peak and intermediate loads with the added capabilities of rapid startup, significant turndown capability (ability to turn down to a low load), and

[1] Referenced to site ambient average temperature conditions of 65.3 degrees Fahrenheit (°F) dry bulb and 62.7°F wet bulb temperature without evaporative cooler operation.

fast ramp rates (30 percent per minute when operating above minimum gas turbine turndown capacity). As California's intermittent renewable energy portfolio continues to grow, operating in either load following or partial shutdown mode will become necessary to maintain electrical grid reliability, thus placing an increased importance upon the rapid startup, high turndown, steep ramp rate, and superior heat rate of the MSG configuration employed at the AEC.

By using proven combined-cycle technology, the AEC can also run as a baseload facility, if needed, providing greater reliability to meet resource adequacy needs for the southern California electrical system. As an in-basin generating asset, the AEC will provide local generating capacity, voltage support, and reactive power that are essential for transmission system reliability. The AEC will be able to provide system stability by providing reactive power, voltage support, frequency stability, and rotating mass in the heart of the critical Western Los Angeles local reliability area. By being in the load center, the AEC also helps to avoid potential transmission line overloads and can provide reliable local energy supplies when electricity from more distant generating resources is unavailable.

The AEC's combustion turbines and associated equipment will include the use of best available control technology to limit emissions of criteria pollutants and hazardous air pollutants. By being able to deliver flexible operating characteristics across a wide range of generating capacity, at a relatively consistent and superior heat rate, the AEC will help lower the overall greenhouse gas emissions resulting from electrical generation in southern California and allow for smoother integration of intermittent renewable resources.

Existing Alamitos Generating Station Units 1–6 are currently in operation. All six operating units and retired Unit 7 will be demolished as part of the proposed project. Construction and demolition activities at the project site are anticipated to last 139 months, from first quarter 2016 until third quarter 2027. The project will commence with the demolition of retired Unit 7 and other ancillary structures to make room for the construction of AEC Blocks 1 and 2. The demolition of Unit 7 will commence in the first quarter of 2016. The construction of Block 1 is scheduled to commence in the third quarter of 2016 and construction of Block 2 is scheduled to commence in the fourth quarter of 2016. The demolition of existing Units 5 and 6 will make space for the construction of AEC Block 3. AEC Block 3 construction is scheduled to commence in the first quarter of 2020 and will be completed in the second quarter of 2022. The demolition of existing Units 3 and 4 will make space for the construction of AEC Block 4. AEC Block 4 construction is scheduled to commence in the second quarter of 2023 and will be completed in the fourth quarter of 2025. The demolition of remaining existing units is scheduled to commence in the third quarter of 2025.

Construction of the AEC will require the use of onsite laydown areas (approximately 8 acres dispersed throughout the existing site) and an approximately 10-acre laydown area located adjacent to the existing site. The adjacent 10-acre laydown area will be shared with another project being developed by the Applicant (Huntington Beach Energy Project [HBEP] 12-AFC-02). Due to the timing for commencement of construction for these two projects, the adjacent laydown area will already be in use for equipment storage before AEC construction begins.

5.5.2 Affected Environment

Land use in the vicinity of the AEC site (discussed in Section 5.6, Land Use) is a mix of commercial, residential, and recreational development. The project site is bounded to the north by the SCE switchyard and State Route 22 (East 7th Street); to the east by the San Gabriel River and, beyond that, the Los Angeles Department of Water and Power's Haynes Generating Station; to the south by the Plains West Coast Terminals petroleum storage facility and undeveloped property; and to the west by the Los Cerritos Channel, the former fuel oil tank farm for the Alamitos Generating Station (now owned by a third party), Alamitos Generating Station ocean water inlet canals, and residences.

The existing Alamitos Generating Station has six operating generating units (Units 1 through 6) that will be retired, decommissioned, and demolished as part of the project. Retired Unit 7 will also be demolished. The existing plant has various ancillary facilities that will be used to support the AEC, such as the

administration/control room/water treatment building, maintenance and warehouse buildings, existing SoCalGas natural gas pipeline, City of Long Beach Department of Water potable water connections, and the existing SCE switchyard. Other existing infrastructure at the Alamitos Generating Station, such as the fire water distribution, including two emergency electric-driven fire water pumps, and process water distribution and storage systems, will be reused to the greatest extent possible.

Primary access to the project site will be provided via an existing entrance off North Studebaker Road, just north of the intersection of Westminster Avenue and North Studebaker Road.

A total of 1,642 sensitive receptors have been identified within 6 miles of the site, including 650 daycare facilities; 808 hospitals, doctors' offices, and long-term/senior care facilities; 181 schools and colleges; 2 prisons; and 1 arena. These receptors are listed in Appendixes 5.9A and 5.9B. The nearest residence to the site is approximately 460 feet west, across Studebaker Road and Los Cerritos Channel in the University Park Estates. The residential Leisure World Retirement Community of Seal Beach is approximately 1 mile east-northeast of the site across the San Gabriel River and the Los Angeles Department of Water and Power's Haynes Generating Station. The nearest school to the project site is Rosie the Riveter Charter High, located on the Alamitos Generating Station property at 690 North Studebaker Road, Long Beach.

The nearest hospital is the Veterans Administration Long Beach Healthcare System at 5901 E 7th Street, Long Beach, approximately 1 mile northwest of the project site. Saint Mary Medical Center, 1050 Linden Avenue, Long Beach, is the closest Level 1 Trauma Center and is approximately 5 miles west of the AEC site. The two nearest long-term health care facilities/senior facilities are the Retirement Housing Foundation, approximately 1 mile north of the project site, at 911 North Studebaker Road, Long Beach, and the Sweetest Homes for Seniors, approximately 0.90 mile northeast of the project site, at 2812 Tigertail Drive, Los Alamitos.

5.5.3 Environmental Analysis

Construction/demolition and operation of the project will involve the use of hazardous materials and one regulated substance. The use of these materials and their potential to cause adverse environmental and human health effects are discussed in this section.

5.5.3.1 Significance Criteria

Appendix G of the California Environmental Quality Act (CEQA) is a screening tool, not a method for setting thresholds of significance. Appendix G is typically used in the Initial Study phase of the CEQA process, asking a series of questions. The purpose of these questions is to make a determination as to whether a project requires an Environmental Impact Report, a Mitigated Negative Declaration, or a Negative Declaration. As the Governor's Office of Planning and Research stated, "Appendix G of the Guidelines lists a variety of potentially significant effects, but does not provide a means of judging whether they are indeed significant in a given set of circumstances." The answers to the Appendix G questions are not determinative of whether an impact is significant or less than significant. Nevertheless, the questions presented in CEQA Appendix G are instructive.

With Respect to "Hazards and Hazardous Materials," CEQA Appendix G asks, in part, whether the project would:

- Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or
- Emit hazardous emissions or handle hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.[2]

[2] With Respect to "Hazards and Hazardous Materials," CEQA Appendix G also asks would the project:

5.5.3.2 AEC Hazardous Materials Use

The AEC will use hazardous materials during project construction, demolition, and operation activities. The project will comply with applicable laws and regulations for the storage of these materials to minimize the potential for a release of hazardous materials and will conduct emergency response planning to address public health concerns regarding hazardous materials storage and use. The following sections describe this use, followed by tables detailing the hazardous materials used, their characteristics, the quantities to be used, and use locations.

5.5.3.2.1 Construction and Demolition Phases

Relatively small quantities of hazardous materials will be onsite during AEC construction and demolition of the Alamitos Generating Station facilities and will be limited to gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, lubricants, paint, and paint thinner. There are no feasible alternatives to vehicle fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the service conditions and environment. Best management practices (BMP) described in Section 5.5.5.1 will be implemented by contractor personnel for these small quantities. Therefore, the potential for environmental effects will be less than significant.

No regulated substances, as defined in California's Health and Safety Code, Section 25531, will be used during Alamitos Generating Station demolition or AEC construction activities. Therefore, discussion of the storage or handling of regulated substances during construction is not necessary.

5.5.3.2.2 Operations Phase

Storage locations for the hazardous materials that will be used during project operations are listed in Table 5.5-1. Table 5.5-2 presents information about these materials, including trade names, chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities onsite, reportable quantities (RQ), California Accidental Release Program (CalARP) threshold planning quantities (TPQ), and status as Proposition 65 chemicals (chemicals known to be carcinogenic or cause reproductive problems in humans). Health hazards and flammability data are summarized for these materials in Table 5.5-3, which also contains information on incompatible chemicals (e.g., sodium hypochlorite and ammonia).

Hazardous substances used by the project will be contained within designated hazardous materials storage areas, and their use will be prescribed in terms of hazardous materials handling plans, facility Health and Safety Plans, and the Hazardous Materials Business Plan (HMBP). For the non-CalARP-regulated materials, the risk of public exposure and serious hazard is low and will not be significant.

d) 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, would it create a significant hazard to the public or the environment?"

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

TABLE 5.5-1
Use and Location of Hazardous Materials

Chemical	Estimated Delivery Schedule	Use	Quantity	Storage Location	State	Type of Storage
Aqueous ammonia (19% NH_3 by weight)	20 tanker trucks (7,000 gallons each) per month	Control NO_x emissions through selective catalytic reduction	48,000 gallons	Onsite storage tanks (two 24,000-gallon tanks)	Liquid	Continuously onsite
Aqueous ammonia (19 to 29.4%)	Two totes per month	Condensate/feedwater/ boiler water and steam pH control, i.e. cycle pH control	800 gallons	Water treatment building	Liquid	Continuously onsite
Anti-scalant (e.g., NALCO PermaTreat® PC-191T)	One to two totes per year	Inhibit mineral scale in reverse osmosis microfiltration membranes	400 gallons	Water treatment building	Liquid	Continuously onsite
Battery electrolyte	Complete change out every 10 years	UPS and emergency shutdown battery array	2,400 gallons	Battery rooms	Liquid	Continuously onsite
Citric acid	Six pallets for commissioning, then two pallets every 5 years	Cleaning of heat-recovery steam generator Reverse osmosis microfiltration membrane cleaning	625 pounds	Pallet-supported chemical storage bags in onsite warehouse Water treatment building	Solid powder	Initial startup and periodically onsite
Cleaning chemicals/detergents	One drum (50 gallons) per year	Periodic cleaning of combustion turbine	110 gallons	Chemical storage tote or drums in onsite warehouse	Liquid	Continuously onsite
Cleaning chemicals / detergents for membrane-based water treatment systems* (e.g., NALCO PermaClean® PC-77, NALCO PermaClean® PC-40, and NALCO PermaClean® PC-98)	One drum per year	Periodic cleaning of reverse osmosis (RO), microfiltration (MF), and electrodeionization (EDI) systems	55 gallons	Water treatment building	Liquid and/or powders	Continuously onsite (used intermittently)
Sanitization chemicals for membrane-based (MF/RO/EDI) water treatment systems (e.g., NALCO PermaClean® PC-11)	Two totes per year	Periodic cleaning of accumulated biofilms on the membranes of the RO, MF, and EDI systems	400 gallons	Water treatment building	Liquids	Continuously onsite (used intermittently)

TABLE 5.5-1
Use and Location of Hazardous Materials

Chemical	Estimated Delivery Schedule	Use	Quantity	Storage Location	State	Type of Storage
Diesel No. 2	Top off fuel tank once per month	Fuel for onsite equipment	400 gallons	Double-walled tank in appropriate location	Liquid	Continuously onsite
Hydraulic fluid	As needed in very small quantities	Portable equipment in shop	100 gallons	Shop	Liquid	Continuously onsite
Fire resistive hydraulic fluid (e.g., Akzo Chemicals Fyrquel®)	Six drums every 5 years	Steam turbine control valve actuators	300 gallons	Hydraulic oil reservoir beneath the steam turbine pedestal and drum storage in lubricant storage shed	Liquid	Continuously onsite
Laboratory reagents	Replenish monthly	Water/wastewater laboratory analysis	10 gallons	Chemical storage cabinets (stored in original chemical storage containers/bags) in lab areas located in steam cycle sample enclosure and water treatment building	Liquid and granular solid	Continuously onsite
Lubrication oil	55 gallons every 3 to 6 months (makeup for losses during filter changes)	Lubricate rotating equipment (e.g., combustion turbine and steam turbine bearings)	40,000 gallons	Lubricating oil reservoirs adjacent to the combustion turbines and steam turbine and drum storage in lubricant storage shed	Liquid	Continuously onsite
Mineral insulating oil	Never	Transformers	164,000 gallons	Contained within transformers and drum storage in lubricant storage shed	Liquid	Continuously onsite
Waste oil	Pick up every 90 days	Vehicle and small equipment oil changes	500 gallons	Waste oil storage tank in warehouse	Liquid	Continuously onsite but drained every 90 days
Amine solution (e.g., NALCO 5711)	One tote per month	Condensate/feedwater/ boiler water and steam pH control (i.e., cycle pH control)	400 gallons	Near steam turbine pedestal	Liquid	Continuously onsite
Sodium bisulfite ($NaHSO_3$) (e.g., NALCO PermaCare® PC-7408)	One tote per year	Reduce oxidizers in RO feed to protect the RO membranes	500 gallons	Water treatment building	Liquid	Continuously onsite

TABLE 5.5-1
Use and Location of Hazardous Materials

Chemical	Estimated Delivery Schedule	Use	Quantity	Storage Location	State	Type of Storage
Sulfuric acid (93%)	One tote per year	RO feedwater pH control	600 gallons	Water treatment building	Liquid	Continuously onsite
Sodium hydroxide (NaOH) solution (20% to 50%)	One tote per year	MF membrane cleaning	400 gallons	Water treatment building	Liquid	Continuously onsite
Sodium hypochlorite (12.5% trade)	One tote per year	Fire/service water storage tank biological control MF system membrane cleaning Evaporative fluid cooler biocide	600 gallons	Water treatment building and adjacent to the evaporative fluid cooler	Liquid	Continuously onsite
Hydrochloric acid	One tote every 2 years	MF system membrane cleaning	25 gallons	MF treatment area	Liquid	Continuously onsite (used intermittently)
Sodium nitrite	One tote per year	Closed loop cooling corrosion inhibitor	500 pounds	Water treatment building and under steam turbine pedestal	Solid	Continuously onsite (used intermittently)
Proprietary corrosion/scale inhibitor (e.g., NALCO TRAC107)	Two drums per year	Closed loop cooling corrosion/scale inhibitor	110 gallons	Water treatment building and under steam turbine pedestal	Liquid	Continuously onsite (used intermittently)
Proprietary non-oxidizing biocide (e.g., NALCO 7330)	One tote every few years	Evaporative fluid cooler (i.e., wet surface air cooler) non-oxidizing biocide	400 gallons	Adjacent to the evaporative fluid cooler	Liquid	Continuously onsite
Propylene glycol	One drum per year	Closed loop wetting agent/antifreeze	6,000 gallons	Cooling loop	Liquid	Continuously onsite
Trisodium phosphate (Na_3PO_4) or phosphate/sodium hydroxide blend (e.g., NALCO BT-3400 or NALCO BT-4000)	One tote every 6 months	Boiler water pH and corrosion control	400 gallons	Phosphate chemical feed area in water treatment building	Liquid	Continuously onsite

TABLE 5.5-1
Use and Location of Hazardous Materials

Chemical	Estimated Delivery Schedule	Use	Quantity	Storage Location	State	Type of Storage
Sulfur hexafluoride	Estimate one tank every 5 years	Circuit breakers	1,248 pounds	Switchyards	Gas	Continuously onsite
Acetylene	As needed in very small quantities	Welding gas	540 cubic feet	Maintenance/warehouse building	Gas	Continuously onsite
Oxygen	As needed in very small quantities	Welding gas	540 cubic feet	Maintenance/warehouse building	Gas	Continuously onsite
Propane	As needed in very small quantities	Torch gas	200 cubic feet	Maintenance/warehouse building	Gas	Continuously onsite
EPA Protocol gases	20 bottles per month	Calibration gases	5,000 cubic feet	CEMS enclosures	Gas	Continuously onsite
Cleaning chemicals	As needed in very small quantities	Cleaning	Varies (less than 25 gallons of liquids or 100 pounds of solids for each chemical)	Admin/control building, maintenance/ warehouse building	Liquid or solid	Continuously onsite
Paint	As needed in very small quantities	Touchup of painted surfaces	Varies (less than 25 gallons of liquids or 100 pounds of solids for each chemical)	Maintenance/warehouse building	Liquid	Continuously onsite

*Water treatment system is a combination of reverse osmosis and deionization equipment.

CEMS = continuous emissions monitoring system
NO_x = oxides of nitrogen

TABLE 5.5-2
Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Aqueous ammonia (19% NH_3 by weight)[h]	Aqueous ammonia	7664-41-7	48,000 gallons [g]	100 pounds	526 pounds	500 pounds	500 pounds	No
Aqueous ammonia (19% NH_3 by weight)[h]	Aqueous ammonia	7664-41-7	800 gallons	100 pounds	340 pounds	500 pounds	500 pounds	No
Anti-scalant (e.g., NALCO PermaTreat® PC-191T)	Antiscalant	Various	400 gallons	[e]	[e]	[e]	[e]	No
Battery electrolyte	Sulfuric acid	7664-93-9	2,400 gallons	1,000 pounds	2,632 pounds	1,000 pounds	1,000 pounds	Yes
Citric acid	Citric acid	77-92-9	625 pounds	[e]	[e]	[e]	[e]	No
Cleaning chemicals/detergents	Various	None	110 gallons	[e]	[e]	[e]	[e]	No
Cleaning chemicals/detergents for membrane-based water treatment systems (e.g., NALCO PermaClean® PC-77, NALCO PermaClean® PC-40, and NALCO PermaClean® PC-98)	Various	None	55 gallons	[e]	[e]	[e]	[e]	No
Sanitizing chemicals for membrane-based (MF/RO/EDI) water treatment systems (e.g., NALCO PermaClean® PC-11)	Dibromoacetonitrile 2,2-dibromo-3-nitrilopropionamide Polyethylene glycol	3252-43-5 10222-01-2 25322-68-3	400 gallons	[e]	[e]	[e]	[e]	No No No
Diesel No. 2	Diesel No. 2	68476-34-6	400 gallons	[e]	[e]	[e]	[e]	No
Hydraulic fluid	Phosphate ester	None	100 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Laboratory reagents	Various	Various	10 gallons	[e]	[e]	[e]	[e]	No
Lubrication oil	Oil	None	40,000 gallons	42 gallons[f]	42 gallons[f]			No
Mineral insulating oil	Oil	8012-95-1	164,000 gallons	42 gallons[f]	42 gallons[f]			No
Waste oil	Oil	None	500 gallons	[e]	[e]	[e]	[e]	No
Amine solution	Amine	2008-39-1	400 gallons	[e]	[e]	[e]	[e]	No

TABLE 5.5-2
Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Sodium bisulfite ($NaHSO_3$)	Sodium bisulfite	7631-90-5	500 gallons	5,000 pounds	5,000 pounds	[e]	[e]	No
Sulfuric acid (93%)	Sulfuric acid	7664-93-9	600 gallons	1,000 pounds	1,075 pounds	1,000 pounds	1,000 pounds	Yes
Sodium hydroxide (NaOH) (20 to 50%)	Sodium hydroxide	1310-73-2	400 gallons	1,000 pounds	2,000 pounds	[e]	[e]	No
Sodium hypochlorite (12.5%)	Sodium hypochlorite	7681-52-9	600 gallons	100 pounds	800 pounds	[e]	[e]	No
Hydrochloric acid	Hydrochloric acid	7647-01-0	25 gallons	5,000 pounds	5,000 pounds	[e]	15,000 pounds	No
Sodium nitrite	Sodium nitrite	7632-00-0	500 pounds	100 pounds	100 pounds	[e]	[e]	No
Proprietary corrosion/scale inhibitor (e.g., NALCO TRAC107)	Inorganic salt Sodium hydroxide	Proprietary 1310-73-2	110 gallons	[e] [e]	[e] [e]	[e] [e]	[e] [e]	No No
Proprietary non-oxidizing biocide (e.g., NALCO 7330)	5-chloro-2-methyl-4-isothiazolin-3-one (1.1%)	26172-55-4	400 gallons	[e]	[e]	[e]	[e]	No
	2-methyl-4-isothiazolin-3-one (0.3%)	2682-20-4						No
Propylene glycol	Propylene glycol	57-55-6	6,000 gallons	[e]	[e]	[e]	[e]	Yes
Trisodium phosphate (Na_3PO_4) or phosphate/sodium hydroxide blend (e.g., NALCO BT-3400 or NALCO BT-4000)	Trisodium phosphate	7601-54-9	400 gallons	[e]	[e]	[e]	[e]	No
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	1,248 pounds	[e]	[e]	[e]	[e]	No
Acetylene	Acetylene	47-86-2	540 cubic feet	[e]	[e]	[e]	[e]	No
Oxygen	Oxygen	7782-44-7	540 cubic feet	[e]	[e]	[e]	[e]	No
Propane	Propane	74-98-6	200 cubic feet	[e]	[e]	[e]	[e]	No
EPA Protocol gases	Various	Various	5,000 cubic feet	[e]	[e]	[e]	[e]	No

TABLE 5.5-2
Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Cleaning chemicals	Various	Various	Varies (less than 25 gallons of liquids or 100 pounds solids for each chemical)	[e]	[e]	[e]	[e]	No
Paint	Various	Various	Varies (less than 25 gallons of liquids or 100 pounds solids for each type)	[e]	[e]	[e]	[e]	No

[a]RQ for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund Amendments and Reauthorization Act (SARA) (Ref. 40 Code of Federal Regulations [CFR] Section 302, Table 302.4). Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[b]RQ for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 pounds, the RQ for that material will be (100 pounds)/(10%) = 1,000 pounds.

[c]Extremely Hazardous Substance (EHS) TPQ (Ref. 40 CFR Part 355, Appendix A). If quantities of extremely hazardous materials equal to or greater than the TPQ are handled or stored, they must be registered with the local Administering Agency.

[d]TQ is from Title 19 of the California Code of Regulations (CCR) Section 2770.5 (state) or Title 40 of the CFR Section 68.130 (federal)

[e]No reporting requirement. Chemical has no listed threshold under this requirement.

[f]State RQ for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

[g]The two ammonia tanks have a capacity of 24,000 gallons each, for a total capacity of 48,000 gallons; however, the tanks are only filled to 85 percent of their capacity, at 20,400 gallons each or 40,800 gallons total.

[h]Aqueous ammonia will be used for two separate operations (selective catalytic reduction [SCR] and water treatment) and will be stored in two separate locations and quantities, therefore it is addressed as two separate items.

TABLE 5.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
Aqueous ammonia	Colorless liquid with pungent odor	Corrosive; irritation to permanent damage from inhalation, ingestion, and skin contact.	Acids, halogens (e.g., chlorine), strong oxidizers, salts of silver and zinc.	Liquid is incombustible; vapor is combustible, but difficult to burn
Anti-scalant	Amber liquid	May cause slight irritation to the skin and moderate irritation to the eyes.	None.	Nonflammable
Battery electrolyte (sulfuric acid)	Oily, colorless to slightly yellow, clear to turbid liquid; odorless	Causes severe skin burns; causes severe eye burns; causes burns of the mouth, throat, and stomach.	Nitro compounds, carbides, dienes, alcohols (when heated): causes explosions. Oxidizing agents, such as chlorates and permanganates: causes fires and possible explosions. Allyl compounds and aldehydes: undergoes polymerization, possibly violent. Alkalis, amines, water, hydrated salts, carboxylic acid anhydrides, nitriles, olefinic organics, glycols, aqueous acids: causes strong exothermic reactions.	Nonflammable
Citric acid	Odorless, white granules	Causes irritation to the skin, gastrointestinal tract, and respiratory tract.	Metal nitrates (potentially explosive reaction), alkali carbonates and bicarbonates, potassium tartrate; will corrode copper, zinc, aluminum and their alloys.	Slightly flammable
Cleaning chemicals/ detergents	Liquid	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Cleaning chemicals/detergents for membrane-based water treatment systems (e.g., NALCO PermaClean® PC-77, NALCO PermaClean® PC-40, NALCO PermaClean® PC-98)	Liquid	Causes irritation to the skin and eyes with prolonged contact.	None.	Nonflammable

TABLE 5.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
Sanitizing chemicals for membrane-based (MF/RO/EDI) water treatment systems (e.g., NALCO PermaClean® PC-11)	Clear, colorless amber	Corrosive: Causes irreversible eye damage. May be fatal if inhaled or swallowed. Causes skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.	None.	Slightly flammable
Diesel No. 2	Oily, light liquid	May be carcinogenic.	Sodium hypochlorite.	Flammable
Hydraulic oil	Oily, dark liquid	Hazardous if ingested	Sodium hypochlorite; oxidizers.	Combustible
Laboratory reagents	Liquid and solid	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Lubrication oil	Oily, dark liquid	Hazardous if ingested.	Sodium hypochlorite; oxidizers.	Flammable
Mineral insulating oil	Oily, clear liquid	Minor health hazard.	Sodium hypochlorite; oxidizers.	Can be combustible, depending on manufacturer
Amine solution (e.g. NALCO 5711)	Clear, pale yellow liquid with phenolic-amine odor	Harmful if swallowed; causes irreversible eye damage.	Hazardous polymerization will not occur.	Nonflammable
Sodium bisulfite (e.g., NALCO PermaCare® PC-7408)	Yellow liquid	Corrosive: Irritation to eyes, skin, and lungs; may be harmful if digested.	Strong acids and strong oxidizing agents.	Nonflammable
Sulfuric acid	Oily, colorless to slightly yellow, clear to turbid liquid; odorless	Causes severe skin burns; causes severe eye burns; causes burns of the mouth, throat, and stomach.	Nitro compounds, carbides, dienes, and alcohols (when heated): cause explosions. Oxidizing agents, such as chlorates and permanganates: causes fires and possible explosions. Allyl compounds and aldehydes: undergoes polymerization, possibly violent. Alkalis, amines, water, hydrated salts, carboxylic acid anhydrides, nitriles, olefinic organics, glycols, and aqueous acids: cause strong exothermic reactions.	Nonflammable
Sodium hydroxide	Solid, white, and odorless	Causes eye and skin burns; hygroscopic; may cause severe respiratory tract irritation with possible burns; may cause severe digestive tract irritation with possible burns.	Incompatible with acids, water, flammable liquids, organic halogens, metals, aluminum, zinc, tin, leather, wool, and nitromethane.	Nonflammable

TABLE 5.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
Sodium hypochlorite	Colorless liquid with strong odor	Harmful by ingestion and inhalation, and through skin contact.	Incompatible with strong acids, amines, ammonia, ammonium salts, reducing agents, metals, aziridine, methanol, formic acid, phenylacetonitrile.	Nonflammable
Hydrochloric acid	Colorless to light-yellow liquid	Hazardous in case of skin contact, of eye contact and of ingestion; slight hazard in case of inhalation; skin contact may produce burns. Inhalation may produce severe irritation of respiratory tract; severe over-exposure can result in death.	Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, and water.	Nonflammable
Sodium nitrite	White to slightly yellowish. Solid (powdered solid), odorless	Hazardous in case of eye contact (irritant), of ingestion, of inhalation; hazardous in case of skin contact (irritant); slightly hazardous in case of skin contact (permeator); prolonged exposure may result in skin burns and ulcerations; overexposure by inhalation may cause respiratory irritation; severe overexposure can result in death; inflammation of the eye is characterized by redness, watering, and itching.	Highly reactive with combustible materials, organic materials; reactive with reducing agents, metals, acids; slightly reactive to reactive with moisture.	Nonflammable
Proprietary corrosion/scale inhibitor (e.g., NALCO TRAC107)	Clear liquid, ammonia smell	Irritating to eyes and skin.	Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors.	Nonflammable
Proprietary non-oxidizing biocide (e.g., NALCO 7330)	Light yellow or green liquid	Corrosive. Causes irreversible eye damage or skin burns. Harmful if inhaled, swallowed or absorbed through skin. Do not get in eyes, on skin or on clothing. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals.	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.	Nonflammable
Propylene glycol	Clear oily liquid	Hazardous in case in ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of inhalation.	Hygroscopic; keep container tightly closed. Incompatible with chloroformates, strong acids (nitric acid, hydrofluloric acid), caustics, aliphatic amines, isocyanates, strong oxidizers, acid anhydrides, silver nitrate, and reducing agents.	Flammable

TABLE 5.5-3
Toxicity, Reactivity, and Flammability of Hazardous Substances Stored Onsite

Hazardous Materials	Physical Description	Health Hazard	Reactive and Incompatibles	Flammability*
Trisodium phosphate / sodium hydroxide blend (e.g., NALCO BT-3400 or NALCO BT-4000)	White crystal	Severe irritant; causes pain and redness; prolonged or repeated contact may cause mild burn.	Strong acids.	Nonflammable
Sulfur hexafluoride	Colorless gas	Simple asphyxiant. This product does not contain oxygen and may cause asphyxia if released in a confined area. Maintain oxygen levels above 19.5%. Nonflammable. Decomposes to toxic fluoride compounds at temperatures above 400°F (204°C).	Reported to explode in contact with disilane. Oxygen and certain metals cause slow decomposition to toxic fluorides.	Nonflammable
Acetylene	Colorless gas	Asphyxiant gas.	Oxygen and other oxidizers including all halogens and halogen compounds; forms explosive acetylide compounds with copper, mercury, silver, brasses containing >66 percent copper and brazing materials containing silver or copper.	Flammable
Oxygen	Colorless, odorless, tasteless gas	Therapeutic overdoses can cause convulsions; liquid oxygen is an irritant to skin.	Hydrocarbons, organic materials.	Oxidizing agent; actively supports combustion
Propane	Propane gas (odorant added to provide odor)	Asphyxiant gas; causes frostbite to area of contact.	Strong oxidizing agents and high heat.	Flammable
EPA Protocol gases	Gas	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Paint	Various colored liquid	Refer to individual container labels.	Refer to individual container labels.	Refer to individual container labels

*In accordance with California Department of Transportation (Caltrans) regulations, under 49 CFR Section 173: “Flammable” liquids have a flash point less than or equal to 141°F; “Combustible” liquids have a flash point greater than 141°F.

Source: Data were obtained from Material Safety Data Sheets (MSDS) and Lewis, 1991.

Most of the hazardous substances that will be used by the project are required for oxides of nitrogen (NO_X) emissions control (i.e., 19 percent aqueous ammonia), treatment and laboratory analyses of process and closed-loop cooling water, facility maintenance, and lubrication of equipment, or will be contained within transformers and electrical switches. The only regulated substance that will be used for the project is 19 percent aqueous ammonia. The toxicity characteristics and the exposure level criteria for this regulated substance are included in Table 5.5-4 and discussed below.

TABLE 5.5-4
Toxic Effects and Exposure Levels of Regulated Substance

Name	Toxic Effects	Exposure Levels Pure NH_3
Aqueous ammonia (19 percent solution)	Contact with pure liquid or vapor causes eye, nose, and throat irritation, skin burns, and vesiculation. Ingestion or inhalation causes burning pain in mouth, throat, stomach, and thorax, constriction of thorax, and coughing followed by vomiting blood, breathing difficulties, convulsions, and shock. Other symptoms include dyspnea, bronchospasms, pulmonary edema, and pink frothy sputum. Contact or inhalation overexposure can cause burns of the skin and mucous membranes, headache, salivation, nausea, and vomiting. Other symptoms include labored breathing, bloody mucous discharge, bronchitis, laryngitis, hemoptysis, and pneumonitis. Damage to eyes may be permanent, including ulceration of conjunctiva and cornea and corneal and lenticular opacities.	Occupational Exposures: • PEL = 35 mg/m³ OSHA • TLV = 18 mg/m³ ACGIH • TWA = 25 mg/m³ NIOSH • STEL = 35 mg/m³ Hazardous Concentrations: • IDLH = 500 ppm • LD_{50} = 350 mg/kg – oral, rat ingestion of 3 to 4 ml may be fatal Sensitive Receptors: • ERPG-1 = 25 ppm • ERPG-2 = 150 ppm • ERPG-3 = 750 ppm

Notes:

ERPG = Emergency Response Planning Guideline
ERPG-1 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects
ERPG-2 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without developing irreversible or serious health effects
ERPG-3 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing life-threatening health effects
IDLH = Immediately dangerous to life and health
LD_{50} = Dose lethal to 50 percent of those tested
mg/kg = milligrams per kilogram
mg/m^3 = milligrams per cubic meter
OSHA = Occupational Safety and Health Administration
PEL = OSHA-permissible exposure limit for 8-hour workday
STEL = Short-term exposure limit, 15-minute exposure
TLV = ACGIH threshold limit value for 8-hour workday
TWA = NIOSH time-weighted average for 8-hour workday

Aqueous Ammonia

The AEC facility will store the aqueous ammonia solution in two 24,000-gallon, horizontal aboveground storage tanks (AST). Each tank will be surrounded by a covered secondary containment structure that can hold the full contents of the tank and accumulated precipitation from a maximum 24-hour rain event. The truck unloading area will include a concrete pad, sloped to drain spillage to the storage tank containment sump. The truck unloading station will include a storage tank fill line and vapor return line for pressure equalization between the storage tanks and truck.

Aqueous ammonia will be used in an SCR process to control NO_x emissions created from fuel combustion in the combustion gas turbines. The SCR system will include catalyst modules (located inside the HRSG), an ammonia storage system, and an ammonia injection system. The aqueous ammonia will be vaporized and injected into the turbine exhaust flow upstream of the catalyst modules. The rate of injection will be

controlled by a monitoring system that uses sensors to determine the correct quantity of ammonia to feed to the injection system.

The volume of aqueous ammonia required by the AEC and the number of truck deliveries required will depend on the actual operating hours of the plant. Based on the maximum operating profile for the AEC power blocks, a 7,000-gallon tanker truck will deliver aqueous ammonia to the AEC site approximately 20 times per month (approximately 240 deliveries per year). The aqueous ammonia storage tanks will be equipped with continuous tank level monitors, automated leak detection system, temperature and pressure monitors and alarms, and emergency block valves.

Because of its hazardous properties, ammonia is classified as a regulated substance, and an accidental release of the aqueous ammonia solution could present a human health hazard. Pure ammonia (NH_3) is a volatile substance that is soluble in water. Aqueous ammonia consists of a solution of ammonia and water. If the aqueous ammonia solution leaks or is released without proper controls, the ammonia in solution could escape or evaporate as a gas into the atmosphere.

Ammonia gas can be toxic to humans at sufficiently high concentrations. Potential toxic effects of ammonia and acceptable exposure levels are summarized in Table 5.5-4. The odor threshold of ammonia is about 5 parts per million (ppm), and minor irritation of the nose and throat will occur at 30 to 50 ppm. Ammonia concentrations greater than 140 ppm will cause detectable effects on lung function even for short-term exposures (0.5 to 2 hours). At higher concentrations of 700 to 1,700 ppm, ammonia gas will cause severe effects; death will occur at concentrations of 2,500 to 6,000 ppm (Smyth, 1956).

Storage and use of ammonia are subject to the requirements of the California Fire Code, Article 80, as well as CalARP. Article 80 of the California Fire Code contains specific requirements for control of liquid and gaseous releases of hazardous materials. Secondary containment in the form of spill containment vaults will be provided for the ammonia storage tanks and loading area. In addition, the facility will be required to prepare a Risk Management Plan (RMP) in accordance with CalARP, further specifying safe handling procedures for the ammonia, as well as emergency response procedures in the event of an accidental release. The RMP, which is discussed in Section 5.5.5.2.2, will be prepared for the site using updated modeling guidance prior to operation of the AEC.

Because sodium hypochlorite and aqueous ammonia are incompatible chemicals, the sodium hypochlorite will be stored within a bermed area for secondary containment (an area capable of capturing spills) and will be separated from ammonia to eliminate potential interactions/reactions if the chemicals are accidentally released.

With the implementation of these measures, impacts related to the storage and handling of aqueous ammonia will be less than significant.

5.5.3.3 Transportation of Hazardous Materials

Project operation will require regular transportation of hazardous materials to the project site (see also Section 5.12, Traffic and Transportation). Transportation of hazardous materials will comply with Caltrans, U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and California State Fire Marshal regulations. Aqueous ammonia, a regulated substance, will be delivered to the facility and transported in accordance with California Vehicle Code (CVC) Section 32100.5, which regulates the transportation of hazardous materials that pose an inhalation hazard. Compliance with applicable regulations will ensure that impacts from the transportation of hazardous materials will be less than significant.

The AEC will have truck traffic associated with the delivery of cleaning chemicals, gasoline and diesel fuel, lubricants, sulfuric acid, and other hazardous material associated with plant operation. It is expected that there will be approximately 32 truck deliveries per month to the AEC site (including aqueous ammonia). The Transportation Element of the City of Long Beach General Plan identifies truck routes through the city that

comply with CVC and local ordinances (City of Long Beach Planning, 1991). The truck route for aqueous ammonia and other regulated materials to the AEC site is I-405 (San Diego Freeway), south to Studebaker Road, then east to the project site off North Studebaker Road, just north of the intersection with Westminster Avenue.

5.5.3.4 Accidental Release Hazards

If a chemical release occurs without proper engineering controls in place, the public could be exposed to harmful vapors, and incompatible chemicals could mix, causing vapors that could have harmful effects. In addition, an uncontrolled release of liquid chemicals could run off and drain into the stormwater system and degrade water quality. However, the California Fire Code, Articles 79 and 80, includes specific requirements for the safe storage and handling of hazardous materials that will reduce the potential for a release of hazardous materials and mixing of incompatible materials. The design of the project will incorporate state-of-the-art chemical storage and handling facilities in compliance with the current California Fire Code and other federal, state, and local regulations. With the implementation of these measures, the impacts related to the accidental release of hazardous materials, including ammonia, will be less than significant.

5.5.3.4.1 Offsite Consequences Analysis

Because there is human activity in the vicinity of the AEC site, an Offsite Consequences Analysis (OCA) will be performed to support the AFC process. The analysis will assess the potential risk to humans at various distances from the AEC site if a spill or rupture of the aqueous ammonia storage tanks occurs or if a spill from the supply truck occurs while refilling the storage tanks. The OCA will assess the project in relation to the California Energy Commission's (CEC) significance threshold of 75 ppm and pursuant to the guidance given in *RMP Offsite Consequence Analysis Guidance* (EPA, 2004). The OCA modeling protocol is provided as Appendix 5.5A.

5.5.3.5 Fire and Explosion Hazards

Table 5.5-3 describes the flammability for the hazardous materials that will be onsite at the AEC. Article 80 of the California Fire Code requires all hazardous material storage areas to be equipped with a fire extinguishing system and ventilation for all enclosed hazardous material storage areas.

Aqueous ammonia, which constitutes the largest quantity of hazardous materials stored onsite, is incombustible in its liquid state. Under normal storage conditions, ammonia will not evaporate to the atmosphere because it is contained in sealed tanks that maintain the ammonia in a state that precludes evaporation. If a release occurs, ammonia could evaporate directly to the atmosphere. Ammonia vapor is combustible only within a narrow range of concentrations in air. The evaporation rate of aqueous ammonia is similar to water, which is sufficiently low that the lower explosive limit of 15 percent (or 15,000 ppm) will not be reached.

The AEC machinery lubrication oil is flammable. In accordance with Article 80 of the California Fire Code, the storage area for the lubrication oil will be equipped with a fire extinguishing system, and the lubrication oil will be handled in accordance with an HMBP approved by the CEC in consultation with the City of Long Beach Department of Health and Human Services, Environmental Health Bureau (Long Beach Environmental Health Bureau) (Kerr, 2013). 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 will be minimal.

Natural gas will be delivered to the site via an existing 30-inch SoCalGas natural gas pipeline onsite. The natural gas will flow from the metering station to a gas pressure control station and gas scrubber/filtering equipment. Prior to being supplied to the CTGs, the natural gas will be compressed, scrubbed, and filtered consistent with the turbine vendor recommendations. The natural gas used in the HRSG duct burner will not require gas compression, but will require filtering and scrubbing at the gas metering station. The natural gas for the building heating systems will flow through the metering station and gas pressure control station and

will not require compression or filtering. The natural gas fuel is flammable and could leak from the pipeline onsite.

Natural gas is composed mostly of methane, but also may contain ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and lighter than air. Methane is flammable when mixed in air at concentrations of 5 to 14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and explosion if an accidental release occurs. However, the risk of a fire or explosion will be reduced through compliance with codes, regulations, and industry design/construction standards.

The federal safety and operating requirements for natural gas pipelines are contained in Title 49 of the CFR, Parts 190 through 192. These requirements vary according to population density and land use. The pipeline classes are defined as follows:

- Class 1 includes pipelines in locations with 10 or fewer buildings intended for human occupancy.
- Class 2 includes pipelines in locations with more than 10, but fewer than 46 buildings intended for human occupancy.
- Class 3 includes pipelines in locations with more than 46 buildings intended for human occupancy, or where the pipeline is within 100 yards of any building or small well-defined outside area occupied by 20 or more people on at least 5 days per week for 10 weeks in any 12-month period.
- Class 4 includes pipelines in locations where buildings with four or more stories aboveground are prevalent.

The existing SoCalGas natural gas supply pipeline to the AEC site is designed to meet Class 3 service and meet the California Public Utilities Commission (CPUC) General Order 112-D and 58-A standards, in addition to the federal requirements for gas pipeline construction and safety.

The nearest fire station to the AEC is the City of Long Beach Fire Department Station No. 22, located at 6340 East Atherton Street, Long Beach. The station is approximately 2 miles away from the project site and will provide the first response to a fire, with an approximate 5-minute response time on average (DuRee and Zinnen, 2013). The Project Owner and the City of Long Beach Fire Department have discussed the project's fire protection needs and the City of Long Beach Fire Department's ability to respond. The facility will have an onsite fire suppression system, which is described in Section 2, Project Description. Two existing electric fire pumps, connected to two independent power feeds from the SCE distribution system, will be provided to pump water from the onsite fire/service water storage tank. Fire protection water from the potable connection and onsite fire/service water storage tank will be provided to a dedicated underground fire loop piping system.

If hazardous materials are involved in the incident, Fire Station No. 22 will be the first onsite, requesting additional resources from the 22 other stations in the district (DuRee and Zinnen, 2013) as needed. If additional response is required, the City of Long Beach Fire Department has mutual aid and automatic aid agreements with the Los Angeles County Fire Department and the Orange County Fire Authority. The most likely scenario for use of mutual aid to the project site will come from Orange County Fire Authority resources at Orange County Stations 48, 17, and 42 (DuRee and Zinnen, 2013). All City of Long Beach Fire Department firefighters and stations are certified and capable of managing a hazardous materials-related incident. City of Long Beach Fire Department Station No. 24 and Station No. 19 house specialized equipment and personnel for hazardous materials response, and these resources can be deployed city-wide when requested (DuRee and Zinnen, 2013).

5.5.3.6 Schools

The nearest school to the project site is Rosie the Riveter Charter High, located on the Alamitos Generating Station property at 690 North Studebaker Road, Long Beach. The Transportation Element of the City of Long

Beach General Plan identifies truck routes through the city that comply with CVC and local ordinances (City of Long Beach Planning, 1991). The truck route for aqueous ammonia and other regulated materials to the AEC site is I-405 (San Diego Freeway), south to Studebaker Road, then east to the project site off North Studebaker Road, just north of the intersection with Westminster Avenue. The proposed transportation route for delivery of regulated materials such as aqueous ammonia (and for all other hazardous materials used at the AEC) will pass near the school but not directly, and only when the trucks are on the AEC property.

5.5.4 Cumulative Effects

A cumulative effect refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code Section 21083; 14 CCR Sections 15064(h), 15065(c), 15130, and 15355).

Potential cumulative impacts from construction or operation of the AEC are not expected. Existing laws and regulations address the handling of hazardous materials and the transportation and use of aqueous ammonia, an acutely hazardous material, and will ensure that hazardous materials at the AEC site are safely managed. Projects that could result in a cumulative impact will also be required to comply with federal, state, and local LORS. The AEC is unlikely, therefore, to result in cumulative impacts from hazardous materials in combination with other closely related past, present, and reasonably foreseeable future projects.

5.5.4.1 Cumulative Spills of Ammonia

The hypothetical accidental releases of aqueous ammonia will be evaluated for the AEC as described in the OCA modeling protocol provided as Appendix 5.5A. Several open-top, floating-roof storage tanks that can store hazardous materials were identified in the vicinity of the AEC by the City of Long Beach Fire Department (DuRee and Zinnen, 2013). These tanks, located within 0.25 mile of the project site, are the former fuel oil tank farm for the Alamitos Generating Station and are now owned by a third party.

As noted in Section 5.5.3.4.1, the OCA modeling protocol will determine the distance that the 75-ppm measurement will extend from the ammonia tanks, in the event of an ammonia spill at the AEC. The OCA will determine the probability of ammonia vapor plumes combining in concentrations at or above 75 ppm. Existing laws and regulations will ensure that the AEC's incremental effect is not cumulatively considerable.

5.5.5 Mitigation Measures

The following sections present measures to mitigate potential public health and environmental effects of handling hazardous materials and regulated substances during project construction, demolition, and operation.

5.5.5.1 Construction and Demolition Phases

The hazardous materials that will be used during AEC construction/demolition present a relatively low public health risk, but could contaminate surface water or groundwater if a release occurred. Use of BMPs will reduce the potential for the release of construction/demolition-related fuels and other hazardous materials to stormwater and receiving waters as discussed in Section 5.15, Water Resources. BMPs prevent sediment and stormwater contamination from spills or leaks, control the amount of runoff from the site, and require proper disposal or recycling of hazardous materials.

Construction/demolition service personnel will follow general industry health, safety, and environmental BMPs for filling and servicing construction/demolition equipment and vehicles. The following BMPs are designed to reduce the potential for incidents involving the hazardous materials:

- Refueling and maintenance of vehicles and equipment will occur only in designated areas that are either bermed or covered with concrete, asphalt, or other impervious surfaces to control potential spills. Employees will be present during refueling activities.
- Vehicle and equipment service and maintenance will be conducted only by authorized personnel.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual fuel from the hoses.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- Refueling will be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- When refueling is completed, the service truck will leave the project site.
- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Should a spill contaminate soil, the soil will be put in containers and disposed of as appropriate. All containers used to store hazardous materials will be inspected at least once per week for signs of leaking or failure. All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

In accordance with local, state, and federal regulations, a spill may need to be reported to the appropriate regulatory agencies and cleanup of contaminated soil could be required. Small spills will be contained and cleaned up immediately by trained, onsite personnel. Larger spills will be reported via emergency phone numbers to obtain help from offsite containment and cleanup crews. All personnel working on the project during the construction and demolition phases will be trained in handling hazardous materials and the dangers associated with hazardous materials. An onsite health and safety person will be designated to implement health and safety guidelines and to contact emergency response personnel and the local hospital, if necessary.

If a large spill occurs from a service or refueling truck, contaminated soil will be placed into barrels or trucks by service personnel for offsite disposal at an appropriate facility in accordance with law. If a spill involves hazardous materials quantities equal to or greater than the specific RQ (42 gallons for petroleum products), federal, state, and local reporting requirements will be followed. In the event of a fire or injury, the local fire department will be called (City of Long Beach Fire Department Station No. 22).

5.5.5.2 Operation Phase

During AEC operations, hazardous materials and one regulated substance will be stored onsite as listed in Table 5.5-1. Table 5.5-2 presents information about these materials, including trade names, chemical names, CAS numbers, maximum quantities onsite, RQs, CalARP TPQs, and status as Proposition 65 chemicals (chemicals known to be carcinogenic or cause reproductive problems in humans). Health hazards and flammability data are summarized for these materials in Table 5.5-3, which also contains information on incompatible chemicals (e.g., sodium hypochlorite and ammonia). Table 5.5-4 describes the toxicity of the regulated substance and hazardous materials. The following sections list mitigation measures for minimizing the public health risks associated with hazardous material and regulated substance handling during AEC operations.

5.5.5.2.1 Hazardous Materials

Hazardous materials will be handled and stored in accordance with codes and regulations specified in Section 5.5.6. The California Fire Code lists the following specific requirements that reduce the risk of fire or the potential for a release of hazardous materials that could affect public health or the environment:

- Provide an automatic sprinkler system for indoor hazardous material storage areas.
- Provide an exhaust system for indoor hazardous material storage areas.
- Separate incompatible materials by isolating them from each other with a noncombustible partition.
- Control spills in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment is required to hold the entire contents of the tank plus the volume of water for the fire suppression system that could be used for fire protection for 20 minutes in the event of a catastrophic spill.

In addition, an HMBP is required by Title 19 of the CCR and the Health and Safety Code (Section 25504). As the project site has an existing HMBP, the plan will be updated twice—once upon operation of the AEC, and again when the Alamitos Generating Station has been decommissioned. The HMBP will be updated in accordance with these regulations and will include an inventory and location map of hazardous materials onsite and emergency response procedures for hazardous materials incidents. Specific topics addressed in the HMBP will include:

- Facility identification
- Emergency contacts
- Chemical inventory information (for every hazardous material)
- Site map
- Emergency notification data
- Procedures to control actual or threatened releases
- Emergency response procedures
- Training procedures
- Certification

The revised HMBP will be filed with the Long Beach Environmental Health Bureau, the designated Certified Unified Program Agency (CUPA); and the City of Long Beach Fire Department, the designated Participating Agency for the project site. The HMBP will be updated annually in accordance with regulations.

In accordance with emergency response procedures specified in the HMBP, designated AEC personnel will be trained as members of a plant hazardous materials response team, and team members will receive the first responder and hazardous materials technical training to be developed in the HMBP, including training in appropriate methods to mitigate and control accidental spills. In the event of a chemical emergency, AEC personnel will defer to the City of Long Beach Fire Department. City of Long Beach Fire Department Station No. 22 is approximately 2 miles away from the project site and will provide first response, with an approximate 5-minute response time on average (DuRee and Zinnen, 2013). City of Long Beach Fire Department firefighters and stations are certified and capable of managing a hazardous materials-related incident. City of Long Beach Fire Department Station No. 24 and Station No. 19 house specialized equipment and personnel for hazardous materials response, and these resources can be deployed city-wide when requested (DuRee and Zinnen, 2013). Additional resources and personnel will be dispatched to the site after initial assessment by the first responders, if warranted.

If hazardous materials are involved in the incident, Fire Station No. 22 will be the first onsite, requesting additional resources from the 22 other stations in the district (DuRee and Zinnen, 2013). If needed, the City of Long Beach Fire Department has mutual aid and automatic aid agreements for additional response from the Los Angeles County Fire Department and the Orange County Fire Authority. The most likely scenario for use of mutual aid to the project site will come from Orange County Fire Authority resources at Orange County Stations 48, 17, and 42 (DuRee and Zinnen, 2013).

5.5.5.2.2 Aqueous Ammonia

Ammonia is a regulated substance under the federal Clean Air Act (CAA) pursuant to Title 40 of the CFR, Section 68 (Subpart G) and the CalARP pursuant to Health and Safety Code Sections 25331 through 25543.3. The California program is similar to the federal program but is more stringent in some areas.

In accordance with CalARP regulations, an RMP will be prepared for the ammonia tanks. As the project site has an existing RMP, the plan will be updated twice—once upon operation of the AEC, and again when the Alamitos Generating Station has been decommissioned. The updated RMP will include a hazard assessment to evaluate the potential effects of an accidental release, a program for preventing an accidental release, and a program for responding to an accidental release. The specific components of the revised RMP include:

- Description of the facility
- Accident history of the facility
- History of equipment used at the facility
- Design and operation of the facility
- Site map(s) of the facility
- Piping and instrument diagrams of the facility
- Seismic analysis
- Hazard and operability study
- Prevention program
- Consequence analysis
- Offsite consequence analysis
- Emergency response
- Auditing and inspection
- Record keeping
- Training
- Certification

The revised RMP will be filed with the Long Beach Environmental Health Bureau, the designated CUPA; and the City of Long Beach Fire Department, the designated Participating Agency for the project site. The RMP will include a hazard assessment to evaluate the potential effects of accidental releases, a program for preventing accidental releases, and a program for responding to accidental releases to protect human health and the environment.

A Process Safety Management plan will not be required under the Occupational Safety and Health Act, because the regulations apply only to aqueous ammonia solutions above 44 percent (8 CCR Section 5189).

5.5.5.2.3 Petroleum Products

Federal and California regulations require a Spill Prevention Control and Countermeasure (SPCC) plan if petroleum products above certain quantities are stored onsite. Both federal and state laws apply only to petroleum products that might be discharged to navigable waters. If stored quantities are equal to or greater than 1,320 gallons total (including ASTs, oil-filled equipment, and drums), an SPCC plan must be prepared. Because the facility will store more than 1,320 gallons of petroleum products, an SPCC plan will be prepared. As the project site has an existing SPCC, the plan will be updated twice—once upon operation of the AEC, and again when the Alamitos Generating Station has been decommissioned.

5.5.5.2.4 Transportation/Delivery of Hazardous Materials and Regulated Substances

Hazardous materials and one regulated substance will be delivered periodically to the facility. As discussed in Section 5.12, Traffic and Transportation, transportation of hazardous materials will comply with Caltrans, EPA, DTSC, CHP, and California State Fire Marshal regulations. Under the CVC, the CHP has the authority to adopt regulations for transporting hazardous materials in California. Aqueous ammonia, a regulated substance, will be delivered to the AEC and transported in accordance with CVC Section 32100.5, which

regulates the transportation of hazardous materials that pose an inhalation hazard. In addition, ammonia will only be transported along approved transportation routes. It is expected that there will be approximately 32 truck deliveries per month of hazardous materials and 1 regulated substance to the operating facility. The Transportation Element of the City of Long Beach General Plan identifies truck routes through the city that comply with CVC and local ordinances (City of Long Beach Planning, 1991). The truck route for aqueous ammonia and other regulated materials to the AEC site is I-405 (San Diego Freeway), south to Studebaker Road, then east to the project site off North Studebaker Road, just north of the intersection with Westminster Avenue. Primary access is the existing entrance off North Studebaker Road.

5.5.5.2.5 Security Plan

In addition to standard industrial business security measures, the AEC will prepare a security plan that will include the following elements:

- Descriptions of the site fencing and security gate
- Evacuation procedures
- A protocol for contacting law enforcement in the event of conduct endangering the facility, its employees, its contractors, or the public
- A fire alarm monitoring system
- Measures to conduct site personnel background checks, including employee and routine onsite contractors, consistent with state and federal law regarding security and privacy
- A site access protocol for vendors
- A protocol for hazardous materials vendors to prepare and implement security plans in accordance with 49 CFR Section 172.800 and to ensure that all hazardous materials drivers are in compliance with personnel background security checks in accordance with 49 CFR Part 172, Subpart I

The plan will also include a demonstration that the perimeter security measures are adequate. The demonstration may include one or more of the following:

- Security guards
- Security alarm for critical structures
- Perimeter breach detectors and onsite motion detectors
- Video or still camera monitoring system

5.5.5.2.6 Facility Closure

When the AEC is closed, both nonhazardous and hazardous wastes must be handled properly. Premature or unexpected closure will be for a period greater than the time required for normal maintenance, including overhaul or replacement of the combustion turbines. Causes for premature or unexpected closure could be a disruption in the supply of natural gas, flooding of the site, or damage to the plant from earthquake, fire, storm, or other natural causes.

For a premature or unexpected closure of the AEC, where there is no release of hazardous materials, facility security will be deployed on a 24-hour basis, and the CEC will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. The plan will be developed to ensure conformance with LORS and the protection of public health and safety and the environment. The plan, depending on the expected duration of the shutdown, could include draining chemicals from storage tanks and other equipment and the safe shutdown of equipment. Hazardous materials and wastes will be disposed of according to applicable LORS.

If the temporary closure is in response to facility damage, or if there is a release or threatened release of hazardous waste or materials into the environment, procedures will be followed as set forth in a risk management plan. Procedures include methods to control releases, notification of authorities and the

public, emergency response, and training for generating facility personnel in responding to and controlling releases of hazardous materials and hazardous waste. Once the immediate problem of hazardous waste and materials release is contained and cleaned up, temporary closure will proceed as described for a closure where there is no release of hazardous materials or waste.

5.5.5.3 Monitoring

In accordance with federal, state, and local regulations, site personnel will regularly inspect hazardous materials handling facilities for compliance with regulations and will ensure that deficiencies are promptly repaired. In addition to the CEC's continuing regulatory oversight, the AEC could be subject to periodic inspections by the Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency), which will monitor for compliance with regulatory requirements for hazardous materials and regulated substances handling.

5.5.6 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials and regulated substances at the facility are governed by federal, state, and local laws. Laws and regulations address the use and storage of hazardous materials to protect the environment from contamination and to protect facility workers and the surrounding community from exposure to hazardous and regulated substances. Applicable LORS are summarized in Table 5.5-5 and described below.

TABLE 5.5-5
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
Section 302, EPCRA (Pub. L. 99–499, 42 USC Section 11022) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR Section 370)	Requires one-time notification if extremely hazardous substances are stored in excess of TPQs.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised HMBP will be prepared for submittal to the Long Beach Environmental Health Bureau (Section 5.5.5.2.1).
Section 304, EPCRA (Pub. L. 99–499, 42 USC Section 11002) Emergency Planning and Notification (40 CFR Section 355)	Requires notification when there is a release of hazardous material in excess of its RQ.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised HMBP will be prepared to describe notification and reporting procedures (Section 5.5.5.2.1).
Section 311, EPCRA (Pub. L. 99–499, 42 USC Section 11021) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR Section 370)	Requires that MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the CUPA, SERC, LEPC, and City of Long Beach Fire Department	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised HMBP will include a list of hazardous materials for submission to agencies (Section 5.5.5.2.1).
Section 313, EPCRA (Pub. L. 99–499, 42 USC Section 11023) Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR Section 372)	Requires annual reporting of releases of hazardous materials.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised HMBP will describe reporting procedures (Section 5.5.5.2.1).

TABLE 5.5-5
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Section 112, CAA Amendments (Pub. L. 101–549, 42 USC Section 7412) Chemical Accident Prevention Provisions (40 CFR Section 68)	Requires facilities that store a listed hazardous material at a quantity greater than the TQ to develop an RMP. 19% aqueous ammonia is not subject to Title 40 CFR 68.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised RMP will be prepared as part of the HMBP and submitted to Long Beach Environmental Health Bureau (Section 5.5.5.2.2). 19% aqueous ammonia is not subject to Title 40 CFR 68 (Section 5.5.6.1.4)
Section 311, CWA (Pub. L. 92–500, 33 USC Section 1251 et seq.) Oil Pollution Prevention (40 CFR Section 112)	Requires preparation of an SPCC plan if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised SPCC will be prepared (Section 5.5.5.2.3).
Pipeline Safety Laws (49 USC Section 60101 et seq.) Hazardous Materials Transportation Laws (49 USC Section 5101 et seq.) Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (49 CFR Section 192)	Specifies natural gas pipeline construction, safety, and transportation requirements.	U.S. Department of Transportation	The natural gas pipelines are constructed in accordance with 49 CFR requirements (Section 5.5.3.5)
State			
Health and Safety Code, Section 25500, et seq. (HMBP)	Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	Cal/OSHA	A revised HMBP will be prepared for submittal to the Long Beach Environmental Health Bureau (Section 5.5.5.2.1).
Health and Safety Code, Section 25531 through 25543.4 (CalARP)	Requires registration with local CUPA or lead agency and preparation of an RMP if regulated substances are handled or stored in excess of TPQs.	Long Beach Environmental Health Bureau	A revised RMP will be prepared and submitted to the Long Beach Environmental Health Bureau (Section 5.5.5.2.2).
Health and Safety Code, Section 25270 through 25270.13 (Aboveground Petroleum Storage Act)	Requires preparation of an SPCC plan if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	A revised SPCC plan will be prepared (Section 5.5.5.2.3).

TABLE 5.5-5
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Health and Safety Code, Section 25249.5 through 25249.13 (Safe Drinking Water and Toxics Enforcement Act) (Proposition 65)	Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from same toxins.	OEHHA	The site will be appropriately labeled for chemicals on the Proposition 65 list (Section 5.5.5.2.4).
CVC Section 32100.5.	Establishes the procedures for the state to determine transportation corridors for materials that may pose an inhalation hazard.	Caltrans, CHP	Transportation of aqueous ammonia will follow designated routes (Section 5.5.5.2.4).
CPUC General Order Nos. 112-E and 58-A	Specify standards for gas service and construction of gas gathering, transmission, and distribution piping systems.	CPUC	Construction of the natural gas pipeline complies with the standards specified in these General Orders (Section 5.5.5.2.5).
Local			
Uniform Fire Code Articles 79 and 80	Require secondary containment, monitoring and treatment for accidental releases of toxic gases.	City of Long Beach Fire Department	Section 5.5.5.3
City of Long Beach Municipal Code Chapter 18.48, Sections 18.48.240 and 18.18.580	Relate to storage, handling, transport, and generation of hazardous materials in the city	Long Beach Environmental Health Bureau (designated CUPA) and the City of Long Beach Fire Department (designated Participating Agency)	Section 5.5.6.3

Notes:

Cal/OSHA = California Division of Occupational Safety and Health
CWA = Clean Water Act
EPCRA = Emergency Planning and Community Right-to-Know Act of 1986
LEPC = local emergency planning committee
OEHHA = Office of Environmental Health Hazard Assessment
Pub. L. = Public Law
SERC = State Emergency Response Commission
USC = United States Code

5.5.6.1 Federal LORS

Hazardous materials are governed under OSHA regulations, CERCLA, the CAA, and the CWA.

5.5.6.1.1 OSHA Regulations 29 CFR Parts 1910 and 1926

These sections contain requirements for equipment used to store and handle hazardous materials for the purpose of protecting worker health and safety. This regulation also addresses requirements for equipment necessary to protect workers in emergencies. It is designed primarily to protect worker health, but also contains requirements that affect general facility safety. The California regulations contained in Title 8 (California equivalent of 29 CFR) are generally more stringent than those contained in Title 29. The administering agency for the above authority is OSHA and Cal/OSHA.

5.5.6.1.2 49 CFR Parts 172, 173, and 179

These regulations provide standards for labels, placards, and markings on hazardous materials shipments by truck (Part 172), standards for packaging hazardous materials (Part 173), and standards for transporting hazardous materials in tank cars (Part 179). The administering agencies for the above authority are the CHP and U.S. Department of Transportation.

5.5.6.1.3 CERCLA

SARA amends CERCLA and governs hazardous substances. The applicable part of SARA for the proposed project is Title III, otherwise known as the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which 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 include:

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

The administering agencies for the above authority are the EPA Region IX, the National Response Center, the Long Beach Environmental Health Bureau, and the City of Long Beach Fire Department. The Long Beach Environmental Health Bureau is the CUPA, and the City of Long Beach Fire Department is the Participating Agency. This Unified Program combines both Fire Department and Health Department programs related to hazardous materials management into one agency function for the City of Long Beach.

5.5.6.1.4 Clean Air Act

Regulations (40 CFR Part 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities storing 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 Section 68.130. Aqueous ammonia is a listed substance, and its TQ for solutions of 20 percent and greater is 20,000 pounds of solution. Because the AEC will use and store 19 percent aqueous ammonia, it is not subject to these CCA provisions.

5.5.6.1.5 Clean Water Act

The SPCC rule under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations (40 CFR Section 112) under the CWA require facilities to prepare a written SPCC plan if they store oil and its release would pose a threat to navigable waters. The SPCC rule is applicable if a facility has total petroleum storage (including ASTs, oil-filled equipment, and drums) greater than 1,320 gallons. The SPCC rule is jointly administered by the local CUPA, which is the Long Beach Environmental Health Bureau, and the Participating Agency, which is the City of Long Beach Fire Department.

Other related federal laws that address hazardous materials, but do not specifically address their handling, include the Resource Conservation and Recovery Act, which is discussed in Section 5.14, Waste Management, and the Occupational Safety and Health Act, which is discussed in Section 5.16, Worker Health and Safety.

5.5.6.1.6 Natural Gas Pipeline Construction and Safety

Title 40 of the CFR, Parts 190 through 192, specifies safety and construction requirements for natural gas pipelines. 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.

5.5.6.2 State LORS

California laws and regulations relevant to hazardous materials handling at the facility include Health and Safety Code Section 25500 (hazardous materials), Health and Safety Code 25531 (regulated substances), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

5.5.6.2.1 Title 8, CCR, Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq.

Section 339 of Title 8 of the CCR lists hazardous chemicals relating to the Hazardous Substance Information and Training Act; 8 CCR Section 3200 et seq. and 5139 et seq. address control of hazardous substances; and Section 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances.

5.5.6.2.2 Health and Safety Code Section 25500

California Health and Safety Code, Section 25500, et seq., and the related regulations in 19 CCR Section 2620, et seq., require local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local CUPA and to report releases to their CUPA and the State Office of Emergency Services. The TQs for hazardous materials are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

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

California Health and Safety Code, Section 25531, et seq., and the CalARP regulate the registration and handling of regulated substances. Regulated substances are chemicals designated as an extremely hazardous substance by the EPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above TPQs must register with their local CUPA and prepare an RMP, formerly known as a Risk Management and Prevention Program. The CalARP is found in Title 19, CCR, Chapter 4.5. The TPQ for ammonia is 500 pounds. Portions of the aqueous ammonia process that can be demonstrated to have a partial pressure of the regulated substance in the mixture (solution) under the handling or storage conditions (less than 10 millimeters of mercury) do not count toward the threshold.

5.5.6.2.4 Aboveground Petroleum Storage Act

The California Health and Safety Code Sections 25270 to 25270.13 ensure compliance with the CWA. The law applies to facilities that have a combined AST capacity greater than 1,320 gallons, or oil-filled equipment where there is a reasonable possibility that the tank(s) or equipment may discharge oil in “harmful quantities” into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare an SPCC plan.

5.5.6.2.5 Safe Drinking Water and Toxics Enforcement Act (Proposition 65)

This California law requires the state to identify chemicals that cause cancer and reproductive toxicity, contains requirements for informing the public of the presence of these chemicals, and prohibits discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated

periodically by California's OEHHA. Some of the chemicals to be used at the facility are on the cancer-causing and reproductive-toxicity lists of the Act.

5.5.6.2.6 Natural Gas Pipeline Construction and Safety

The CPUC enforces General Order No. 58-A, which specifies standards for natural gas service in the State of California, and General Order No. 112-E, which specifies rules governing the design, construction, testing, operation, and maintenance of natural gas gathering, transmission, and distribution piping systems. The proposed project will connect to an existing SoCalGas 30-inch natural gas pipeline onsite.

5.5.6.2.7 California Vehicle Code Section 32100.5

CVC Section 32100.5 regulates the transportation of hazardous materials that pose an inhalation hazard. Aqueous ammonia, a regulated substance, will be delivered to the facility and transported in accordance with this section by following the designated access routes, as described in Section 5.5.5.2.4.

5.5.6.3 Local LORS

The Long Beach Environmental Health Bureau has overall responsibility for CUPA programs (City of Long Beach Certified Unified Program Agency, 2013). It is responsible for administering HMBPs, Hazardous Materials Management Plans, and RMPs filed by businesses in the city. In addition, the Long Beach Environmental Health Bureau ensures that businesses and industry store and use hazardous materials safely and in conformance with regulatory codes, including Long Beach Municipal Code Chapter 18.48, Sections 18.48.240 and 18.18.580 (DuRee and Zinnen, 2013). These sections of the municipal code relate to storage, handling, transport, and generation of hazardous materials in the city. The Long Beach Environmental Health Bureau also administers hazardous waste generator and CalARP programs.

The City of Long Beach Fire Department is the Participating Agency responsible for other CUPA programs, including AST and underground storage tank permits and administers the business emergency plan program (DuRee and Zinnen, 2013; City of Long Beach Fire Department, 2013). The Long Beach Environmental Health Bureau and City of Long Beach Fire Department jointly administer SPCC plans. The Long Beach Environmental Health Bureau and City of Long Beach Fire Department perform inspections at established facilities to verify that hazardous materials are properly stored and handled and that the types and quantities of materials reported in a business's HMBP are accurate.

The Long Beach Environmental Health Bureau and the City of Long Beach Fire Department will be contacted in the event of a release of hazardous wastes or materials to the environment. The Project Owner will work with local authorities to register and handle all hazardous materials onsite.

5.5.6.4 Codes

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

- CVC, 13 CCR Section 1160, et seq.—Provides the CHP with authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery.
- The California Fire Code, Articles 79 and 80—Includes the hazardous materials sections of the Fire Code. Local fire agencies or departments enforce this code and can require that an HMBP and a Hazardous Materials Inventory Statement be prepared. The California Fire Code is based on the federal fire guidelines, which include the Uniform Fire Code.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949—Incorporates the Uniform Building Code, Uniform Fire Code, and Uniform Plumbing Code.
- The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII.
- City of Long Beach Municipal Code.

5.5.7 Agencies and Agency Contacts

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at the AEC. At the federal level, the EPA will be involved; at the state level, the California Environmental Protection Agency (CalEPA) will be involved. However, local agencies primarily enforce hazardous materials laws. For the AEC, the primary local agencies with jurisdiction will be the Long Beach Environmental Health Bureau as the designated CUPA and the City of Long Beach Fire Department as the designated Participating Agency. The persons to contact are listed in Table 5.5-6.

TABLE 5.5-6
Agency Contacts for Hazardous Materials Handling

Issue	Agency	Persons Contacted
CUPA for Hazardous Materials Inventory and Risk Management Plan, SPCC Plan	Long Beach Environmental Health Bureau	Nelson Kerr, Manager City of Long Beach Department of Health and Human Services, Environmental Health Bureau 2525 Grand Avenue Long Beach, CA 90815 (562) 570-4131 nelson.kerr@longbeach.gov
Participating Agency for Aboveground and Underground Storage Tanks, Emergency Business Plan, SPCC Plan	City of Long Beach Fire Department	Mike DuRee, Fire Chief and David Zinnen, Deputy Fire Marshal City of Long Beach Fire Department 3205 Lakewood Boulevard Long Beach, CA 90808 (562) 570-2579 michael.duree@longbeach.gov
Fire Department Permits and Hazardous Materials Response	City of Long Beach Fire Department	Mike DuRee, Fire Chief and David Zinnen, Deputy Fire Marshal City of Long Beach Fire Department 3205 Lakewood Boulevard Long Beach, CA 90808 (562) 570-2579 michael.duree@longbeach.gov

5.5.8 Permits and Permit Schedule

The Long Beach Environmental Health Bureau requires that project developers obtain the permits listed in Table 5.5-7 before storing hazardous materials onsite.

TABLE 5.5-7
Permits and Permit Schedule for Hazardous Materials Handling

Permit	Agency Contact	Schedule
Hazardous Materials Business Plan	Nelson Kerr, Manager City of Long Beach Department of Health and Human Services, Environmental Health Bureau 2525 Grand Avenue Long Beach, CA 90815 (562) 570-4131 nelson.kerr@longbeach.gov	Approximately 60 days before any regulated substance comes onsite
Risk Management Plan	Nelson Kerr, Manager City of Long Beach Department of Health and Human Services, Environmental Health Bureau 2525 Grand Avenue Long Beach, CA 90815 (562) 570-4131 nelson.kerr@longbeach.gov	Approximately 60 days before any regulated substance comes onsite (acceptable to integrate with HMBP)

Note: Discussion of permits is included in Section 5.5.4.2, Mitigation Measures, Operations

5.5.9 References

City of Long Beach Certified Unified Program Agency. 2013. City of Long Beach Department of Health and Human Services, Environmental Health Bureau, Long Beach Certified Unified Program Agency (CUPA) website. Available online at http://www.longbeach.gov/health/eh/hazmat/cupa.asp. Accessed June 2012.

City of Long Beach Fire Department. 2013. City of Long Beach Fire Department website. Available online at: http://www.longbeach.gov/fire/. Accessed June 2013

City of Long Beach Planning. 1991. Transportation Element of the City of Long Beach General Plan. December. Available online at: http://www.lbds.info/civica/filebank/blobdload.asp?BlobID=2542. Accessed June 2013

DuRee, Mike / City of Long Beach Fire Department, Fire Chief, and David Zinnen / City of Long Beach Fire Department, Deputy Fire Marshal. 2013. Personal communication with Beth Smoker/CH2M HILL. July.

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Lewis, Richard J., Sr. 1991. *Hazardous Chemical Desk Reference*. 2nd Edition.

Smyth, H. F., Jr. 1956. "Improved Communication: Hygienic Standards for Daily Inhalation." *American Industrial Hygiene Association Quarterly*, Volume 17 (Issue 2), pages 129-185.

U.S. Environmental Protection Agency (EPA). 2004. *RMP Offsite Consequence Analysis Guidance.* April. Available online at: http://www.epa.gov/oem/content/rmp/rmp_guidance.htm. Accessed June 2013.