

## 5.5 Hazardous Materials Handling

### 5.5.1 Introduction

The Applicant proposes to develop a solar energy project called the Ivanpah Solar Electric Generating System (Ivanpah SEGS). It will be located in southern California's Mojave Desert, near the Nevada border, to the west of Ivanpah Dry Lake. The project will be located in San Bernardino County, California, on federal land managed by the Bureau of Land Management (BLM). It will be constructed in three phases: two 100-megawatt (MW) phases (known as Ivanpah 1 and 2) and a 200-MW phase (Ivanpah 3). The phasing is planned so that Ivanpah 1 (the southernmost site) will be constructed first, followed by Ivanpah 2 (the middle site), then Ivanpah 3 (the 200-MW plant on the north), though the order of construction may change. Each 100-MW site requires about 850 acres (or 1.3 square miles); the 200-MW site is about 1,660 acres (or about 2.6 square miles). The total area required for all three phases, including the Administration /Operations and Maintenance building and substation, is approximately 3,400 acres. The Applicant has applied for a right-of-way grant for the land from BLM. Although this is a phased project, it is being analyzed as if all phases are operational.

The heliostat (or mirror) fields focus solar energy on the power tower receivers near the center of each of the heliostat arrays (the 100-MW plants have three arrays and the 200-MW plant has four arrays). In each plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheat steam from one solar reheater – located in the power block at the top of its own tower. The solar field and power generation equipment are started each morning after sunrise and insolation build-up, and shut down in the evening when insolation drops below the level required to keep the turbine online.

Ivanpah 1, 2 and 3 will be interconnected to the Southern California Edison (SCE) grid through upgrades to SCE's 115-kilovolt (kV) line passing through the site on a northeast-southwest right-of-way. These upgrades will include the construction by SCE of a new 220/115-kV breaker-and-a-half substation between the Ivanpah 1 and 2 project sites. This new substation and the 220-kV upgrades will be for the benefit of Ivanpah and other Interconnection Customers in the region. The existing 115-kV transmission line from the El Dorado substation will be replaced with a double-circuit 220-kV overhead line that will be interconnected to the new substation. Power from Ivanpah 1, 2 and 3 will be transmitted at 115 kV to the new substation. SCE plans to add three new 115-kV lines to increase capacity to the existing El Dorado-Baker-Cool Water-Dunn Siding-Mountain Pass 115-kV line heading southwest. The timing of this upgrade depends upon the development of wind projects ahead in the queue, and is not affected by the Ivanpah SEGS project.

Each phase of the project includes a small package natural gas-fired start-up boiler to provide heat for plant start-up and during temporary cloud cover. The project's natural gas system will be connected to the Kern River Gas Transmission Line, which passes less than half a mile to the north of the project site. Raw water will be drawn daily from one of two onsite wells, located east of Ivanpah 2. Each well will have sufficient capacity to supply water for all three phases. Groundwater will go through a treatment system for use as boiler make-up water and to wash the heliostats. To save water in the site's desert environment, each plant will use a dry-cooling condenser. Water consumption is, therefore, minimal

(estimated at no more than 100 acre-feet/year for all three phases). Each phase includes a small onsite wastewater plant located in the power block that treats wastewater from domestic waste streams such as showers and toilets. A larger sewage package treatment plant will also be located at the Administration Building/Operations and Maintenance area, located between Ivanpah 1 and 2. Sewage sludge will be removed from the site by a sanitary service provider. No wastewater will be generated by the system, except for a small stream that will be treated and used for landscape irrigation. If necessary, a small filter/purification system will be used to provide potable water at the Administration Building.

This subsection describes the applicable laws, ordinances, regulations, and standards (LORS) and the environmental setting. It provides an analysis of the project impacts that could occur as a result of project construction and operation. It also presents protection and mitigation measures that would avoid, minimize, or compensate for adverse impacts when required. At the end of the subsection is a list of agency contracts and permits that would be required.

### 5.5.2 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials, including regulated substances, at Ivanpah SEGS are governed by federal, state, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination; they are also intended to protect facility workers and the surrounding community from exposure to hazardous materials. The LORS applicable to Ivanpah SEGS are summarized in Table 5.5-1.

TABLE 5.5-1  
Laws, Ordinances, Regulations, and Standards Applicable to Ivanpah SEGS Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
<b>Federal</b>			
Section 302, EPCRA (Pub. L. 99-499, 42 USC 11022)	Requires one time notification if extremely hazardous substances are stored in excess of TPQs.	San Bernardino County Fire Department	Section 5.5.6.4.1
Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)			
Section 304, EPCRA (Pub. L. 99-499, 42 USC 11002)	Requires notification when there is a release of hazardous material in excess of its RQ.	San Bernardino County Fire Department	Section 5.5.6.4.1
Emergency Planning And Notification (40 CFR 355)			

TABLE 5.5-1  
Laws, Ordinances, Regulations, and Standards Applicable to Ivanpah SEGS Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Section 311, EPCRA (Pub. L. 99-499, 42 USC 11021)  Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and San Bernardino County Fire Department.	San Bernardino County Fire Department	Section 5.5.6.4.1
Section 313, EPCRA (Pub. L. 99-499, 42 USC 11023)  Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR 372)	Requires annual reporting of releases of hazardous materials.	San Bernardino County Fire Department	Section 5.5.6.4.1
Section 311, Clean Water Act (Pub. L. 92-500, 33 USC 1251 et seq.)  Oil Pollution Prevention (40 CFR 112)	Requires preparation of an SPCC plan if oil is stored in a single aboveground storage tank with a capacity greater than 660 gallons or 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.	San Bernardino County Fire Department	Section 5.5.6.4.3
Pipeline Safety Laws (49 USC 60101 et seq.)  Hazardous Materials Transportation Laws (49 USC 5101 et seq.)  Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (49 CFR 192)	Specifies natural gas pipeline construction, safety, and transportation requirements.	DOT and CHP	Section 5.5.4.4
<b>State</b>			
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.	San Bernardino County Fire Department	Section 5.5.6.4.1

TABLE 5.5-1  
 Laws, Ordinances, Regulations, and Standards Applicable to Ivanpah SEGS Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Health and Safety Code, Section 25270 through 25270.13 (Aboveground Petroleum Storage Act)	Requires preparation of an SPCC plan if oil is stored in a single aboveground storage tank with a capacity greater than 660 gallons or 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.	San Bernardino County Fire Department	Section 5.5.6.4.3
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.	Not applicable (CA OEHHA administers program, but does not check compliance)	Section 5.5.6.4.4
California Public Utilities Commission (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	Section 5.5.6.4.4

## Notes:

AFC	Application for Certification	HMBP	Hazardous Materials Business Plan
AST	Aboveground Storage Tank	LEPC	local emergency planning committee
CA OEHHA	California Office of Environmental Health Hazard Assessment	MSDS	Material Safety Data Sheet
CFR	Code of Federal Regulations	Pub. L.	Public Law
CHP	California Highway Patrol	RQ	Reportable Quantity
DOT	U.S. Department of Transportation	SERC	state emergency response commission
EPCRA	Emergency Planning and Community Right-to-Know Act	SPCC	Spill Prevention Control and Countermeasure Plan
		TPQ	Threshold Planning Quantity
		USC	United States Code

### 5.5.2.1 Federal LORS

Hazardous materials are governed under Titles 29 and 49 of the US Code, Titles 29, 40, and 49 of the CFR, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Clean Air Act (CAA), and the Clean Water Act (CWA).

#### 5.5.2.1.1 29 CFR 1910 et seq. and 1926 et seq.

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 the United States Department of Labor's Occupational Safety and Health Administration, and the California Division of Occupational Safety and Health.

#### 5.5.2.1.2 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 (Parts 173), and for transporting hazardous materials in tank cars (179). The CHP and DOT are the administering agencies for the above authority.

#### 5.5.2.1.3 CERCLA

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

- Section 302 – Requires that certain emergency planning activities be conducted when Extremely Hazardous Substances (EHSs) are present in excess of their TPQs. EHSs and their TPQs are found in Appendices A and B of 40 CFR Part 355.
- Section 304 – Requires immediate notification to the LEPC and the 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 U.S. Environmental Protection Agency (EPA) Region 9, the National Response Center, and the San Bernardino County Fire Department. The Fire Department is a Certified Unified Program Agency (CUPA).

#### 5.5.2.1.4 Clean Air Act

Regulations (40 CFR 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop a Risk Management Plan (RMP), including hazard assessments, prevention programs and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in 40 CFR 68.130. No regulated substances will be used at the Ivanpah SEGS project. Therefore, the preparation and submittal of an RMP will not be required.

#### 5.5.2.1.5 Clean Water Act

The SPCC program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations under the

CWA (40 CFR 112) require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters. The SPCC program is applicable if a facility has a single oil AST with a capacity greater than 660 gallons, total AST storage greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons. The SPCC program is administered by the local CUPA, which is the San Bernardino County Fire Department. Compliance with other elements of the CWA, such as stormwater management and National Pollutant Discharge Elimination System permitting, is described in Section 5.15, Water Resources.

#### **5.5.2.1.6 Natural Gas Pipeline Construction and Safety**

Title 40 of the Code of Federal Regulations, 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.

#### **5.5.2.1.7 Other**

Other related federal laws that address hazardous materials but do not specifically address their handling are the Resource Conservation and Recovery Act (RCRA), 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.

### **5.5.2.2 State LORS**

California laws and regulations relevant to hazardous materials handling at Ivanpah SEGS include Title 8 of the California Code of Regulations (CCR), Health and Safety Code Section 25500 (hazardous materials), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

#### **5.5.2.2.1 Title 8, California Code of Regulations, 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; 8 CCR Section 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances.

#### **5.5.2.2.2 Health and Safety Code Section 25500**

This law is found in the California Health and Safety Code, Section 25500, et seq., and in the regulations contained in 19 CCR Section 2620, et seq. The law requires local governments to regulate 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 administering agency (i.e., CUPA). They must also report releases to their CUPA and the Governor's 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.

#### **5.5.2.2.3 Health and Safety Code Section 25531**

This law regulates the registration and handling of regulated substances, per California Health and Safety Code, Section 25531, et seq. Regulated substances are any chemicals

designated under 40 CFR 68.130 as part of the CAA's Accidental Release Prevention Program or designated by the state of California under its California Accidental Release Prevention (CalARP) program. Facilities handling or storing regulated substances at or above TQs must register with their local CUPA and, if requested, must prepare an RMP. Ivanpah SEGS will handle and store one regulated substance, sulfuric acid, at the project site. However, the type of sulfuric acid to be used does not fall under the CalARP program.

#### 5.5.2.2.4 Aboveground Petroleum Storage Act

This law is found in the California Health and Safety Code Sections 25270 to 25270.13 and is intended to ensure compliance with the federal CWA. The law applies if a facility has an AST with a capacity greater than 660 gallons or a combined AST capacity greater than 1,320 gallons and if there is a reasonable possibility that the tank(s) may discharge oil in "harmful quantities" into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare an SPCC Plan. The law does not cover AST design, engineering, construction, or other technical requirements, which are usually determined by local fire departments. Although there are no navigable waterways or shore lands near the project site, the Ivanpah facility will store greater than 10,000 gallons of petroleum products onsite, and the facility will be required to prepare an SPCC plan.

#### 5.5.2.2.5 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 CA OEHHA. Some of the chemicals to be used at Ivanpah SEGS are on the cancer-causing chemicals list.

#### 5.5.2.2.6 California Fire Code, Article 80 and others

The code includes provisions for storage and handling of hazardous materials. There is considerable overlap between this code and Chapter 6.95 of the California Health & Safety Code. The fire code, however, contains independent provisions regarding fire protection and neutralization systems for emergency venting (Section 80.303, D [compressed gases]). Article 4 establishes hazardous materials storage thresholds above which a permit is required. Article 79 presents requirements for combustible and flammable liquids. The administering agency for the above authority is the San Bernardino County Fire Department.

#### 5.5.2.2.7 Natural Gas Pipeline Construction and Safety

The CPUC enforces General Order No. 58-A specifying standards for natural gas service in the State of California, and General Order No. 112-E specifying rules governing the design, construction, testing, operation, and maintenance of natural gas gathering, transmission, and distribution piping systems.

#### 5.5.2.3 Local LORS

The San Bernardino County Fire Department is the designated CUPA for the proposed project site and is responsible for administering HMBPs/Hazardous Material Management Programs (HMMPs), SPCC plans, and RMPs filed by businesses located in the county. The Fire Department is also responsible under the CUPA program for underground and aboveground storage tank compliance. In addition, the CUPA is the regulatory body for all hazardous waste generated in the county (see Section 5.14, Waste Management). The CUPA

is responsible for ensuring that businesses and industry store and use hazardous materials safely and in conformance with various regulatory codes. The CUPA performs 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 firm's HMBP are accurate.

San Bernardino County does not have additional LORS that apply to Hazardous Materials Handling, but administers the state programs as the CUPA.

Similarly, as described in Section 5.5.2.2.7, the pipeline construction is addressed by state and federal LORS. There are no local requirements.

#### 5.5.2.4 Other Codes

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

- California Vehicle Code, 13 CCR 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.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949 – Incorporates the Uniform Building Code, Uniform Fire Code, and the Uniform Plumbing Code.
- American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII.

### 5.5.3 Affected Environment

The proposed project site is located in the Mojave Desert near the Nevada–California border in unincorporated San Bernardino County (Figure 2.1-1). As part of this AFC, identification of sensitive receptor facilities (such as schools, day-care facilities, convalescent centers, or hospitals) within 6 miles of the project site was performed. The nearest sensitive receptors are the Sandy Valley Elementary and Middle School located approximately 17 miles north of the project site at the corner of Pearl and Hopi Road in Sandy Valley, Nevada, and the Good Springs Elementary School located approximately 18 miles northeast of the project site at 385 W. San Pedro in Goodsprings, Nevada. In California, the nearest sensitive receptor is Baker High School which is located approximately 40 miles southwest of the project at 72100 School House Lane in Baker, California. The nearest hospital, St. Rose Dominican Hospital, is located approximately 42 miles to the north at 102 East Lake Mead Parkway in Henderson, Nevada.

### 5.5.4 Environmental Analysis

Hazardous materials to be used at Ivanpah SEGS during construction and operation were evaluated for hazardous characteristics. That evaluation is discussed in this subsection. Some of these materials will be stored at the generating site continuously. Others will be brought onsite for the initial startup and maintenance. Some materials will be used only during startup. Hazardous materials will not be stored or used in the gas supply line or electric transmission line corridors during operation of the plant. Storage locations are described in

Table 5.5-2. Table 5.5-3 presents information about these materials, including trade names; chemical names; Chemical Abstract Service (CAS) numbers; maximum quantities onsite; RQs; TPQs; and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans). Health hazards and flammability data are summarized in Table 5.5-4. Table 5.5-4 also contains information on incompatible chemicals. Measures to mitigate the potential effects from the hazardous materials are presented in Section 5.5.5. Due to the size of these tables, Tables 5.5-2 through 5.5-4 have been moved to the end of this section.

#### 5.5.4.1 Construction Phase

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

The quantities of hazardous materials that will be onsite during construction are small, and similar to the quantities used during operation. Construction personnel will be trained to handle the materials properly. The most likely possible incidents will involve the potential for fuels, oil, and grease dripping from construction equipment. The small quantities of fuel, oil, and grease that might drip from construction equipment will have relatively low toxicity. Therefore, the expected environmental impact is minimal.

Small oil spills may also occur during onsite refueling. The potential environmental effects from fueling operations are expected to be limited to small areas of contaminated soil. If a fuel spill occurs on soil, the contaminated soil will be placed into barrels or trucks for offsite disposal as a hazardous waste. The worst-case scenario for a chemical release from fueling operations would be a vehicle accident involving a service or refueling truck.

During construction of the project and linear facilities, regulated substances, as defined in California's Health and Safety Code, Section 25531, will not be used. Therefore, no discussion of regulated substance storage or handling is included in this subsection. Handling procedures for other non-CalARP-regulated hazardous materials to be used onsite during construction are presented in Section 5.5.61.

#### 5.5.4.2 Operations Phase

The hazardous characteristics of materials being used at each power block are summarized in Table 5.5-4. Table 5.5-4 also contains information on incompatible chemicals (e.g., acids and caustics). Mixing incompatible chemicals can generate toxic gases. Measures to keep incompatible chemicals separated include separate storage and containment areas and/or berming (see Section 5.5.6).

Potential environmental and/or human health effects could be caused by accidental releases, accidental mixing of incompatible chemicals, fires, and injury to facility personnel from contact with a hazardous material.

During operation of the project, one regulated substance, as defined in California's Health and Safety Code, Section 25531, will be used. Sulfuric acid, an extremely hazardous

substance, is a very corrosive chemical that can cause severe harm to humans if ingested, inhaled, or contacted. However, sulfuric acid has a very low vapor pressure and will not readily volatilize upon release. Therefore, the potential for harm to humans offsite is minimal. Sulfuric acid is identified as a regulated substance under the CalARP program, but only if it is concentrated with greater than 100 pounds of sulfur trioxide, if it meets the definition of oleum, or if it is stored in a container with flammable hydrocarbons. The sulfuric acid that will be used at the Ivanpah SEGS facility does not contain more than 100 pounds of sulfur trioxide or meet the definition of oleum. In addition, it will not be stored in a container with flammable hydrocarbons. Therefore, sulfuric acid is not subject to the RMP requirements under CalARP.

#### 5.5.4.3 Fire and Explosion Risk

As shown in Table 5.5-4, many of the hazardous materials are non-flammable. The lubrication oil and diesel fuel are flammable and will be handled in accordance with an HMBP to be approved by San Bernardino County Fire Department. Hydraulic oil, which is classified as combustible, will also be handled in compliance with the HMBP. With proper storage and handling of flammable materials in accordance with the HMBP, the risk of fire and explosion at the generating facility will be minimal.

The natural gas that will provide Ivanpah SEGS with fuel for the steam turbine and boiler at each power block is flammable and could leak from the supply line that brings gas from the Kern River Gas Transmission Line. The risk of leakage is the normal type of risk encountered with transmitting natural gas via pipeline. Proper design, construction, and maintenance of the line will minimize leaks and the risk of fire or explosion. The line will be buried primarily in or adjacent to roadways.

The closest fire station is Fire Station No. 53 located at 65 Kingston Circle in Baker, California, approximately 40 miles to the southwest and has a 45 minute response time to the project site. The San Bernardino County Fire Department has a mutual aid agreement with the Clark County Fire Department. Station No. 24 in Clark County is located approximately 40 miles from the project site and has a 45 to 60 minute response time.

#### 5.5.5 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 (Pub. Resources Code § 21083; Cal. Code Regs., Title 14, §§ 15064(h), 15065(c), 15130, and 15355). Cumulative projects are described in Section 5.6.7 and include the Desert Xpress Rail Line, improvements to Interstate 15, Las Vegas Valley Water District Pipeline, Southern Nevada Supplemental Airport (Ivanpah Valley Airport), and Table Mountain Wind Generating Facility. Although environmental analyses for most of these projects have not been completed at the time of preparation of this Application for Certification, standard mitigation measures exist to reduce hazardous materials impacts to a less-than-significant level, and it is anticipated that hazardous materials impacts from the cumulative projects, if any, would be mitigated to a less than significant level.

The primary potential cumulative effect from the use and storage of hazardous materials will be a simultaneous release from two or more sites of a chemical that will migrate offsite.

Potentially, the two or more migrating releases could combine; thereby posing a greater threat to the offsite population than a single release by any single site. Due to the remote location of the site, and lack of any facilities (industrial, agricultural, or residential) in the vicinity of the site, a simultaneous release from two or more sites of a chemical that will migrate offsite is highly unlikely. The project is unlikely, therefore, to have impacts that would combine cumulatively with other closely related past, present, and reasonably foreseeable future projects.

### 5.5.6 Mitigation Measures

The following subsections present measures that the Applicant would implement during project construction and operation to mitigate risks in handling hazardous materials, particularly the risk of inadvertent spills or leaks that might pose a hazard to human health or the environment.

#### 5.5.6.1 Construction Phase

Paints, thinners, solvents, cleaners, sealants, and lubricants will be stored in a locked utility building. These materials will be handled per the manufacturers' directions and will be replenished as needed. The emergency fuel containers will be DOT-approved, 5-gallon safety containers, secured to the construction equipment. The emergency fuel will be used only when regular vehicle fueling is unavailable.

Fuel, oil, and hydraulic fluids will be transferred directly from a service truck to construction equipment tanks and will not otherwise be stored onsite. Fueling will be performed by designated, trained service personnel either before or at the end of the workday. Service personnel will follow standard operating procedures (SOPs) for filling and servicing construction equipment and vehicles. The SOPs, which are designed to reduce the potential for incidents involving the hazardous materials, include the following:

- Refueling and maintenance of vehicles and equipment will occur in designated areas that are equipped with spill control features (e.g., berms, paved surfaces, spill response kits, etc.).
- Vehicle and equipment service and maintenance will be conducted by authorized personnel only.
- 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 hose.
- Vehicle engines will be shut down during refueling.
- No smoking, open flame, 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 for offsite disposal as a hazardous waste.
- All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

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. Personnel working on the project during the construction phase will be trained in handling of and the dangers associated with hazardous materials. An onsite health and safety person will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary.

If a spill involves hazardous materials equal to or greater than the specific reportable quantity, all federal, state, and local reporting requirements will be followed. The California Water Code, Section 13272(f), establishes a reportable quantity of 42 gallons for spills of petroleum products in water bodies. In the event of a fire or injury, the local fire department will be called (San Bernardino County Fire Station No. 53 at 65 Kingston Circle in Baker, California).

#### 5.5.6.2 Operation Phase

All hazardous materials stored onsite during Ivanpah SEGS operation will be handled and stored in accordance with applicable codes and regulations. All containers used to store hazardous materials will be inspected regularly for signs of leaking or failure. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Containment areas may drain to a collection area, such as an oil/water separator or a waste collection tank. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

If a spill involves hazardous materials equal to or greater than the specific reportable quantity all federal, state, and local reporting requirements will be followed. A worker safety plan, in compliance with applicable regulations, will be prepared and implemented. It will include training for contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous materials systems, proper use of personal protective equipment, fire safety, and emergency communication and response procedures. All plant personnel will be trained in emergency procedures, including plant evacuation and fire prevention. In addition, designated personnel will be trained as members of a plant hazardous material response team; team members will receive the first responder and hazardous material technical training to be developed in the HMBP (Section 5.5.6.4). For emergency spills, San Bernardino County Fire Department has a formally trained Hazardous Materials Response Team to provide assistance during a spill cleanup. The County Fire Department will respond and will identify the type and source of the hazardous material, oversee evacuation of people, and confine the spilled material if possible. Cleanup of the material is the responsibility of the facility causing the spill. The San Bernardino County Fire Department Station No. 53 in

Baker is the primary response unit. The Hazardous Materials Response Team is located in the City of San Bernardino and would respond in 3 to 4 hours (Ashbaker, 2007). In addition, the San Bernardino County Fire Department has a mutual-aid agreement with the Clark County Fire Department, which has a Level II HazMat team consisting of eight on-call registered environmental health specialists (Brenner, 2007).

### 5.5.6.3 Transportation/Delivery of Hazardous Materials

Hazardous materials will be delivered periodically to Ivanpah SEGS. Transportation will comply with the applicable regulations for transporting hazardous materials, including the DOT, EPA, California Department of Toxic Substances Control, CHP, and California State Fire Marshal.

### 5.5.6.4 Hazardous Materials Plans

Hazardous materials handling and storage procedures, and measures for providing training in the handling of hazardous materials will be set forth in more detail in hazardous materials plans that will be developed by the Applicant prior to commencement of construction and operation.

#### 5.5.6.4.1 Hazardous Materials Business Plan

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

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

The HMBP will be filed with the San Bernardino County Fire Department.

#### 5.5.6.4.2 Risk Management Plan

Although the Ivanpah SEGS will store one regulated substance, sulfuric acid, the type that will be used at the Ivanpah SEGS facility does not contain more than 100 pounds of sulfur trioxide or meet the definition of oleum. In addition, it will not be stored in a container with flammable hydrocarbons. Therefore, sulfuric acid is not subject to the RMP requirements under CalARP, and an RMP will not be prepared for the project.

#### 5.5.6.4.3 Spill Prevention Control and Countermeasure Plan

Federal and California regulations require an SPCC Plan if petroleum products above certain quantities are stored in ASTs. 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 660 gallons for a single tank, or equal to or greater than 1,320 gallons total, an SPCC Plan must be prepared. The key elements of an SPCC Plan are:

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

Ivanpah SEGS will store up to 10,000 gallons of turbine lubrication oil and 3,000 gallons of diesel fuel onsite at each unit, for a total of 30,000 gallons of turbine lubrication oil and 9,000 gallons of diesel fuel. The nearest waterway is Roach Lake, which is approximately 7 miles northeast from the project site. Since the project will store more than 10,000 gallons of petroleum products, a SPCC Plan will be prepared for the project.

#### **5.5.6.4.4 Proposition 65**

The facility will use lubricating oil, turbine oils and diesel fuel. These materials are included in the State of California's Proposition 65 list of chemicals known to the state to cause cancer. The site will be appropriately labeled for all chemicals on the Proposition 65 list.

#### **5.5.6.5 Monitoring**

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

#### **5.5.7 Involved Agencies and Agency Contacts**

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at Ivanpah SEGS. At the federal level, the EPA will be involved; at the state level, the California Environmental Protection Agency will be involved. However, local agencies primarily enforce hazardous materials laws. For Ivanpah SEGS, the primary local agency with jurisdiction will be the San Bernardino County Fire Department. The persons to contact are listed in Table 5.5-5.

TABLE 5.5-5  
Agency Contacts for Ivanpah SEGS Hazardous Materials Handling

Issue	Agency	Contact
CUPA for Hazardous Materials Inventory and Emergency Business Plan	San Bernardino County Fire Department Hazardous Materials Division, CUPA Program 620 South "E" Street San Bernardino, CA 92415-0153 (909) 386-8401 chull@sbcfire.org	Carrie Hull, Hazardous Materials Division CUPA Program
Hazardous Materials Response	San Bernardino County Fire Department Hazardous Materials Division Emergency Response Program 620 "E" Street San Bernardino, CA 92415-1053 (909) 386-8430 jashbaker@sbcfire.org	Joe Ashbaker, Supervisor, Hazardous Materials Division Emergency Response Program

### 5.5.8 Permits Required and Permit Schedule

The San Bernardino County Fire Department requires the following permits listed in Table 5.5-6.

TABLE 5.5-6  
Permits Required and Permit Schedule for Ivanpah SEGS Hazardous Materials Handling

Permit	Agency Contact	Schedule
Unified Program Facility Permit	San Bernardino County Fire Department Hazardous Materials Division, CUPA Program 620 South "E" Street San Bernardino, CA 92415-0153 Carrie Hull (909) 386-8401 chull@sbcfire.org	Prior to storage of hazardous materials at the site.
Aboveground Storage Tank Permit	San Bernardino County Fire Department Hazardous Materials Division, CUPA Program 620 South "E" Street San Bernardino, CA 92415-0153 Carleen Wiley (909) 386-8401 cwiley@sbcfire.org	Prior to storage of hazardous materials in aboveground storage tanks.

## 5.5.9 References

Ashbaker, J. 2007. San Bernardino County Hazardous Materials Division. Personal communication with Lucas Bair/CH2M HILL. May 21.

Brenner, R. 2007. Clark County Fire Haz Mat Coordinator. Personal communication with Lucas Bair/CH2M HILL. May 24.

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

TABLE 5.5-2  
Use and Location of Hazardous Materials at Ivanpah SEGS

Chemical	Use	Storage Location	State	Type of Storage
Antiscalant (Permatreat PC-391)	Antiscalant for boiler and steam turbine	Hazardous materials storage shed	Liquid	Continuously onsite
Cleaning chemicals/detergents	Periodic cleaning of steam turbine	Maintenance shop	Liquid	Continuously onsite
Diesel No. 2	Fuel for fire pump engine/generators	Near fire pump	Liquid	Continuously onsite
Hydraulic oil	High-pressure turbine starting system, turbine control valve actuators	Contained within equipment	Liquid	Continuously onsite
Lubrication oil	Lubricate rotating equipment (e.g., steam turbine bearings)	Contained within equipment	Liquid	Continuously onsite
Mineral insulating oil	Transformers/switchyard	Contained within transformers	Liquid	Continuously onsite
Oxygen scavenger (Control OS5607)	Oxygen scavenger for boiler cleaning solution and steam-water cycle	Containers near condensate polisher area	Liquid	Continuously onsite
Phosphate Treatment (Optisphere HP3100)	Phosphate treatment for boiler internal treatment	Hazardous materials storage shed	Liquid	Continuously onsite
Sodium Hydroxide Solution	pH Control	Hazardous materials storage shed	Liquid	Continuously onsite
Steam Condensate Treatment (Steamate NA1321)	Condensate and feedwater pH control	Hazardous materials storage shed	Liquid	Continuously onsite
Sulfuric Acid	pH control	Hazardous materials storage shed	Liquid	Continuously onsite
Lead Acid Batteries (Sulfuric Acid and Lead) size of batteries approx 10cm x 5cm x 7cm	Electrical power	Heliostats	Gel	Continuously onsite
Sulfur hexafluoride	Switchyard/switchgear devices	Contained within equipment	Gas	Continuously onsite

TABLE 5.5-3  
Ivanpah SEGS Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ <sup>a</sup>	RQ of Material as Used Onsite <sup>b</sup>	EHS TPQ <sup>c</sup>	Regulated Substance TQ <sup>d</sup>	Prop 65
Antiscalant (Permatreat PC-391)	Not Available	None	70 gal	e	e	e	e	No
Cleaning chemicals/detergents	Various	None	100 gal	e	e	e	e	No
Diesel No. 2	Oil	None	9,000 gal	42 gal <sup>f</sup>	42 gal <sup>f</sup>	e	e	Yes
Hydraulic oil	Oil	None	500 gal	42 gal <sup>f</sup>	42 gal <sup>f</sup>	e	e	No
Lubrication oil	Oil	None	30,000 gal	42 gal <sup>f</sup>	42 gal <sup>f</sup>	e	e	Yes
Mineral insulating oil	Oil	8012-95-1	105,000 gal	42 gal <sup>f</sup>	42 gal <sup>f</sup>	e	e	Yes
Oxygen scavenger (Cortrol OS5607)	Carbonic Dyhdrazide	497-18-7	170 gal	e	e	e	e	No
Phosphate Treatment (Optisperse HP3100)	Sodium Hydroxide	1310-73-2	62 gal	1000 lb	1000 lb	e	e	No
Sodium Hydroxide Solution	Sodium hydroxide (30%)	1310-73-2	170 gal	1000 lb	3333 lb	e	e	No
Steam Condensate Treatment (Steamate NA1321)	Ammonium Hydroxide	1336-21-6	300 gal	1000 lb	1000 lb	500 lb	e	No
Sulfuric Acid	Sulfuric acid (20%)	7664-93-9	670 gal	1000 lb	5000 lb	1000 lb	e	No
Lead Acid Batteries (Sulfuric Acid and Lead) size of batteries approx 10cm x 5cm x 7cm	Sulfuric acid (10%-30%)	7664-93-9	272,000 batteries	1000 lb	10000 lb	1000 lb	e	No
	Lead (45-60%)	7439-92-1		10 lb	22 lb	e	e	Yes
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	200 lb	e	e	e	e	No

<sup>a</sup> Reportable quantity for a pure chemical, per CERCLA [Ref. 40 CFR 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.

<sup>b</sup> Reportable quantity for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of a reportable chemical, the reportable quantity of the mixture can be different than for a pure chemical. For example, if a material only contains 10% of a reportable chemical and the RQ is 100 lb., the reportable quantity for that material would be (100 lb.)/(10%) = 1,000 lb.

<sup>c</sup> Threshold Planning Quantity [Ref. 40 CFR Part 355, Appendix A]. If quantities of extremely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.

<sup>d</sup> TQ is Threshold Quantity from 19 CCR 2770.5 (state) or 40 CFR 68.130 (federal)

<sup>e</sup> No reporting requirement. Chemical has no listed threshold under this requirement.

<sup>f</sup> State reportable quantity for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

TABLE 5.5-4  
Toxicity of Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability*
Alum	Solid	Irritant to eyes. Irritant if ingested.	Strong bases.	Non-flammable
Antiscalant (Permatreat PC-391)	Liquid	Irritant to eyes and skin.	Strong acids.	Non-flammable
Cleaning chemicals/detergents	Liquid	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Diesel No. 2	Oily, light liquid	May be carcinogenic.	Sodium hypochlorite. Oxidizers.	Flammable
Hydraulic oil	Oily, dark liquid	Hazardous if ingested.	Sodium hypochlorite. Oxidizers.	Combustible
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
Oxygen scavenger (Cortrol OS5607)	Colorless liquid	Irritant to eyes and skin.	Strong oxidizers.	Non-flammable
Phosphate Treatment (Optisphere HP3100)	Colorless liquid	Corrosive to eyes. Moderate irritant to skin. Respiratory tract irritant.	Strong oxidizers. Acids.	Non-flammable
Sodium Hydroxide Solution	Clear odorless liquid	Corrosive to skin, eyes, and digestive tract. Respiratory tract irritant.	Strong acids. Metals.	Non-flammable
Steam Condensate Treatment (Steamate NA1321)	Colorless liquid	Corrosive to skin and eyes. Toxic if ingested. Respiratory tract irritant.	May react with acids.	Non-flammable
Sulfuric Acid	Oily, colorless liquid	Corrosive to skin, eyes, and digestive tract. Respiratory tract irritant.	Nitro compounds, carbides, dienes, alcohols, oxidizers, allyl compounds, aldehydes, bases, organic acids.	Non-flammable
Sulfur hexafluoride	Colorless gas with no odor.	Hazardous if inhaled.	Disilane.	Non-flammable

Data were obtained from MSDSs and Lewis (1991).

\* Per Department of Transportation regulations, under 49 CFR 173: "Flammable" liquids have a flash point less than or equal to 141°F; "Combustible" liquids have a flash point greater than 141° F.