5.18 Worker Safety 1
5.18.1 LORS Compliance 1
5.18.1.1 Federal LORS 4
Construction Regulations 4
Operation Regulations 4
5.18.1.2 State LORS 5
Construction 7
Operations 8
5.18.1.3 Local LORS 9
5.18.1.4 Other LORS 9
5.18.1.5 Involved Agencies and Required Permits 11
5.18.2 Affected Environment 12
5.18.3 Environmental Impacts 13
5.18.3.1 Construction and Operations Health and Safety 13
Hazard Analysis 13
Injury and Illness Prevention Plan (IIPP) 16
Personal Protective Equipment (PPE) Program 16
Safety Training Program 19
5.18.3.2 Construction Health and Safety 23
Construction Fire Protection and Prevention Program 23
Emergency Action Program and Plan 24
5.18.3.3 Operations Health and Safety 25
Operations Fire Protection and Prevention Program 25
Fire Protection System 26
Fuel Handling System 27
5.18.4 Cumulative Impacts 27
5.18.5 Mitigation Measures 27
5.18.6 References 28

5.18 Worker Safety

This section describes or outlines the systems and procedures that will be implemented to provide occupational safety and health protection for MSP workers in accordance with all applicable requirements, and includes descriptions of the health and safety programs that will be used during both Project construction and operation. The section also provides information on the Project's planned fire prevention and protection program.

5.18.1 LORS Compliance

In order to ensure a safe and healthy workplace, construction and operations of the Project will be performed in accordance with the applicable LORS. The applicable LORS are briefly discussed and summarized in Table 5.18-1.

Table 5.18-1 Workers Safety LORS Summary

LORS	Applicability	Where Discussed in AFC
Federal:		
Occupational Safety and Health Act of 1970: 29 U.S. Code (U.S.C.), sections 651 et seq.	Created Occupational Safety and Health Administration (OSHA) and provides federal regulations for worker safety and health in industrial facilities	Sections 5.18.1.1
Occupational Safety and Health Standards: Title 29, CFR, Part 1910 et seq.	Contains federal minimum occupational safety and health standards for industrial facilities.	Sections 5.18.1.1
Safety and Health Regulations for Construction: Title 29, CFR, Part 1926 et seq.	Contains federal minimum occupational safety and health standards for the construction industry.	Section 5.18.1.1
Approved State Plans for Enforcement of State Standards: 29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own safety and health requirements, in lieu of most of the federal requirements found in 29 CFR §1910.1 to 1910.1500.	Section 5.18.1.1

LORS	Applicability	Where Discussed in AFC
Department of Labor, Safety and Health Regulations for Construction Promulgated Under Section 333 of the contract Work Hours and Safety Standards Act, 30 USC 327 et seq.	Meet employee health and safety standards for construction activities. Requirements addressed by CCR Title 8, General Construction Safety Orders.	Sections 5.18.1.1
State:		
California Occupational Safety and Health Act, 1973	Establishes minimum safety and health standards for construction activities and industrial facilities in California.	Sections 5.18.1.2
Title 8, California Code of Regulations (CCR)	Establishes requirements for a safe and hazard-free work environment. Categories include General Industrial Safety Orders, General Construction Safety Orders, Electrical Safety Orders, and Pressure Vessel Safety Orders (see Table 5.18-2 for topics covered)	Sections 5.18.1.2
Title 24 California Code of Regulations (CCR) , Section 2, et seq.	Incorporates the 2008 International Building Code of the International Code Council	Sections 5.18.2

LORS	Applicability	Where Discussed in AFC
Health and Safety Code, Sections 25500 through 25541	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed acutely hazardous materials prepare and maintain a Risk Management Plan (RMP). Also address requirements for preparation of a Hazardous Material Business Plan (HMBP) and an Emergency Response Plan for a hazardous materials emergency.	Section 5.18.1.2 and Section 5.6.1.2 (Hazardous Materials Handling)
Local:		
Fire and Hazardous Materials: San Bernardino County Code, Title 2, Division 3, Chapter 1 et seq.	Includes California Fire Code and specific codes to regulate permits activities and administrative penalties. Adopts California Fire Code and adopts State requirements and guidelines as governing hazardous materials release response plans and inventories.	Sections 5.18.1.3, 5.18.3.2 and Section 5..6.1.3 (Hazardous Materials Handling)
Health and Safety: San Bernardino County Code Title 3, Division 1, et seq.	Includes specific codes to regulate permits, activities (e.g., solid waste management), and administrative penalties.	Section 5.18.1.3
Building and Construction: San Bernardino County Code, Title 6, Division 3, Chapter 1 et seq.	Adopts national standards such as Uniform Building Code and National Electrical Code	Section 5.18.1.3
Industry Codes and Standards:		
California Fire Code, Chapters 27, 34, and others	Addresses prevention, control and mitigation of dangerous conditions related to storage, dispensing, uses, and handling of various hazardous materials. Also identities information needed by emergency response personnel.	Section 5.18.3 and Section 5.6.1.4 (Hazardous Materials Handling)

LORS	Applicability	Where Discussed in AFC
National Fire Protection Association (NFPA)	Standards needed to establish reasonable level of safety and property protection from hazards created by fire and explosion (see Table 5.18-3 for list of standards)	Section 5.18.3 and Section 5.6.1.4 (Hazardous Materials Handling)
American National Standards Institute (ANSI) and American Society of Mechanical Engineers (ASME)	Provides specifications and other requirements for pressure vessels.	AFC Appendix J (Engineering Design Criteria)
ANSI, B31.2§	Provides specifications and requirements for fuel gas piping systems.	AFC Appendix J (Engineering Design Criteria)

5.18.1.1 Federal LORS

The Occupational Safety and Health Act of 1970 (Act) outlines federal regulations addressing worker health and safety that are administered by the Occupational Safety and Health Administration (OSHA). The Act provides regulations covering equipment and employee safety practices during construction and operation of industrial facilities.

<u>Construction Regulations</u>

Construction health and safety regulations are provided in 29 CFR § 1926. Part 1926 addresses several types of construction activities, such as general safety and health provisions (Subpart C); occupational health and environmental controls (Subpart D); personal protective and life saving equipment (Subpart E); fire protection and prevention (Subpart F); material handling, storage, use, and disposal (Subpart H); welding and cutting activities (Subpart J); electrical work (Subpart K); scaffolding (Subpart L) and fall protection (Subpart M); cranes, derricks, hoists, elevators, and conveyors (Subpart N); motor vehicles and mechanized equipment (Subpart O); excavations (Subpart P); concrete and masonry construction activities (Subpart Q); steel erection activities (Subpart R); underground construction, caissons, cofferdams, and compressed air; demolition (Subpart T); power transmission and distribution (Subpart V); rollover protection structures and overhead protection (Subpart W); stairways and ladders (Subpart X); and toxic and hazardous substances (Subpart Z). Federal safety and health regulations for construction also are provided in 40 U.S. Code (USC) 327 et seq.; these requirements are addressed in Title 8, California Code of Regulations (CCR), Chapter 4, Subchapter 4, General Construction Safety Orders.

<u>Operation Regulations</u>

Occupational health and safety standards for industrial facilities are provided in 29 Code of Federal Regulations (CFR) §1910 et seq. Part 1910 addresses several types of operational activities, such as walking and working surfaces (Subpart D); means of egress (Subpart E);

powered platforms, manlifts, and vehicle-mounted work platforms (Subpart F); occupational health and environmental controls (Subpart G); hazardous materials (Subpart H); personal protective equipment (Subpart I); medical and first aid (Subpart K); fire protection (Subpart L); compressed gas and compressed air equipment (Subpart M); material handling and storage (Subpart N); machinery and machine guarding (Subpart O); hand and portable powered tools and other hand-held equipment (Subpart P); welding, cutting, and brazing (Subpart Q); special industries – electric power generation, transmission, and distribution (§1910.269); and electrical (Subpart S).

Per the 1989 Occupational Status Agreement between the federal OSHA and the California Department of Occupational Safety and Health, the state enforces most federal regulations and standards, although the federal OSHA has retained concurrent enforcement jurisdiction for certain federal standards (e.g., those related to hazardous waste).

5.18.1.2 State LORS

The California Occupational Safety and Health Administration (Cal-OSHA) is responsible for enforcing most federal health and safety regulations and standards, as well as state regulations dealing with health and safety issues during industrial facility construction and operation. These regulations deal with a variety of issues such as equipment design, personnel training, operational procedures, and safety devices, and are found primarily in California Code of Regulations, Title 8. Table 5.18-2 identifies specific topical areas covered in applicable portions of CCR Title 8.

Table 5.18-2 Potentially Applicable Topics Addressed in Title 8 CCR

Standard	Description
Occupational Health and Safety Standards, Title 8, §§ 401-428	Definitions Administration Variances Appeals Officers Hearing Board
General Industrial Safety Orders Title 8, §§ 3200 - 6184	Employee/Employer Communications Injury and Illness Prevention Program Emergency Action Plan Fire Prevention Plan Hazardous materials Control of Hazardous Substances Hazard Communications Emergency Medical Procedures Personal Protective Equipment Airborne Contaminants Signs, Tags, and Barriers Noise Levels Ventilation Flammable/Combustible Materials Handling and Storage Fire Protection Systems Machine Guarding Crane and Hoist Operation Heavy Equipment and Machinery Operation Rigging Sanitary Facilities Traffic Safety Interface with Other Contractors Miscellaneous Hazards (including hot pipes, compressed air systems, relief valves, pipelines, loading docks)

Standard	Description
General Construction Safety Orders High Voltage Electrical Safety Orders Title 8, §§ 1500-1938	Construction Accident Prevention Plan Weekly Toolbox Meeting Traffic Accidents and Earth Moving Hoist equipment Reinforcing Concrete Fall Protection and Scaffolding Electrical Installation Evacuation Plan and Procedures Fire Safety Airborne Contaminants Emergency Medical Procedures Personal Protective Equipment Hand and power Tool Use Crane and Hoist Operations Illumination Housekeeping Excavations
Electrical Safety Orders Title 8, §§2299-2974	High Voltage Installation, Operation, and Maintenance Low and High Voltage Hazards
Unfired Pressure Vessel Safety Orders, Title 8, §§ 450-460 Boiler and Fired Pressure Vessel Safety Orders, Title 8, §§ 750-797	Design and Construction Air Tanks Pressure Vessels other than Air Tanks LP Gas Systems Aqueous Ammonia Safe Practices Design and Construction Installation, Inspection, Operation, Repairs

Construction

Construction safety orders are published at Title 8 of the California Code of Regulations, sections 1502, et seq., and are made public by Cal/OSHA. These requirements apply to the

construction phase of the project and will be addressed in the construction safety and health programs which will include the following:

- Construction Injury and Illness Prevention Plan (8 CCR § 1509);
- Construction Fire Protection and Prevention Plan (8 CCR § 1920);
- Personal Protective Equipment Program (8 CCR § 1514 - 1522); and
- Emergency Action Program and Plan (8 CCR § 3220).

Additional programs under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will include: electrical safety program; motor vehicle and heavy equipment safety program; forklift operation program; excavation/trenching program; fall protection program; scaffolding/ladder safety program; articulating boom platforms program; crane and material handling program; housekeeping and material handling and storage program; respiratory protection program; employee exposure monitoring program; hand and portable power tool safety program; hearing conservation program; back injury prevention program; hazard communication program; heat and cold stress monitoring and control program; pressure vessel and pipeline safety program; hazardous waste program; hot work safety program; permit-required confined space entry program; and demolition procedure (if applicable).

24 CCR, also known as the California Building Standards Code, is a compilation of three types of building standards from three different origins: building standards that have been adopted by state agencies without change from building standards contained in international codes; building standards that have been adopted and adapted from the national model code standards to meet California conditions; and building standards, authorized by the California legislature, that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns. Within 24 CCR, potentially, there are several applicable parts, such as Part 3 - California Electrical Code; Part 4 - California Mechanical Code; Part 5 - California Plumbing Code; Part 6 - California Energy Code; Part 9 - California Fire Code; and Part 10 - California Code for Building Conservation.

Operations

An operations and maintenance safety and health program will be prepared prior to operation, and will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203);
- Fire Protection and Prevention Program (8 CCR § 3221);
- Personal Protective Equipment Program (8 CCR §§ 3401 to 3411); and
- Emergency Action Plan (8 CCR § 3220).

In addition, the requirements under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 560) will apply to this project. Written (operations) safety programs for the Project will ensure compliance with those requirements. Table 5.18-2 identifies specific topical areas covered in applicable portions of CCR Title 8.

5.18.1.3 Local LORS

The San Bernardino County Code of Ordinances includes many county-specific ordinances on topics including fire regulations (Title 2, Division 3, Chapter 2), hazardous materials (Title 2, Division 3, Chapters 4-6), wells (Title 3, Division 3, Chapter 6, Article 3) and waste management (Title3, Division 3, Chapter 8). In addition, the County Code also adopts and integrates by inclusion into County law several State and national codes and standards having to do with fire protection and hazardous waste, specifically Uniform Fire Code (Title 2, Division 3, Chapter 1) and CUPA Permit Elements for Hazardous Materials (Title 2, Division 3, Chapter 7), as well as building regulations based on codes promulgated by national organizations, for example, Uniform Building Code and Appendix, Thereof, Uniform Building Code Standards and Uniform Administrative Code (Title 6, Division 3, Chapter 1), National Electrical Code (Title 6, Division 3, Chapter 2), Uniform Plumbing Code (Title 6, Division 3, Chapter 3), and Uniform Mechanical Code(Title 6, Division 3, Chapter 4). In cases of adoption of State or National codes, San Bernardino County may have made modifications or additional changes or standards to tailor the Code to the local climatic, geographical and topographical peculiarities of the region.

5.18.1.4 Other LORS

The National Fire Protection Association (NFPA), the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), the American Welding Society, Heat Exchanger Institute, the Instrument Society of America, and a few other private and industrial organizations have established internal standards regarding the design and operation of industrial facilities and equipment. Many of these standards have been incorporated into federal and state regulations and into building codes. The fire and explosion hazards-related standards of the NFPA identified in Table 5.18-3 are most relevant to worker safety.

Table 5.18-3 Fire Protection Association Fire and Explosion Hazards Standards

Standard	Description
NFPA 1	Fire Prevention Code
NFPA 10	Portable Fire Extinguishers
NFPA 12	Carbon Dioxide Fire Extinguishers
NFPA 13	Sprinkler Systems
NFPA 14	Installation of Standpipe and Hose Systems
NFPA 15	Water Spray Fixed Systems
NFPA 17	Dry Chemical Fire Extinguishing Systems
NFPA 20	Centrifugal Fire Pumps
NFPA 22	Water Tanks for Private Fire Protection
NFPA 24	Private Fire Service Mains and Appurtenances
NFPA 26	Valves Controlling Water-Supplied Fire Suppression Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 37	Combustion Engines and Gas Turbines
NFPA 50A	Gaseous Hydrogen at Consumer Sites
NFPA 54	Protection of Fuel Gas Systems
NFPA 68	Explosion Venting
NFPA 69	Explosion Preventing
NFPA 70	National Electric Code
NFPA 71	Installation, Maintenance, and Use of Central Station Signaling Systems
NFPA 72	National Fire Alarm Code
NFPA 78	Lighting Protection Systems
NFPA 80	Fire Doors and Windows
NFPA 90A	Air Conditioning and Ventilating Systems
NFPA 101	Design Requirements for Means of Exiting Facilities
NFPA 291	Testing and Marking Hydrants
NFPA 496	Purged and Pressurized Enclosures for Electrical Equipment
NFPA 497	Flammable and Combustible Liquids Classification
NFPA 850	Fire Protection Req’ts for Fossil Fuel Steam Electric Generating Facilities
NFPA 1961	Fire Hose
NFPA 1962	Care, Use, and Service of Fire Hose including Couplings and Nozzles

Standard	Description
NFPA 1963	Screw, Threads, and Gaskets for Fire Hose Connections
NFPA 2001	Clean Agent Fire Extinguishing Systems
NFPA 8501	Standard for Single Boiler Operation

5.18.1.5 Involved Agencies and Required Permits

Agency contacts regarding worker health and safety for the Project are shown in Table 5.18-4.

Table 5.18-4 Agencies and Agency Contacts

Agency Contact	Phone/E-mail	Permit/Issue
California Occupational and Safety Administration (Cal-OSHA) Duty Officer 464 West 4th Street, Room 339 San Bernardino, CA 92408	Ray Acree Area Manager, San Bernardino Consultation Office (909) 383-4567 Compliance Division (909) 383-4321	See Permits in Table 5.18-5
San Bernardino County Fire Department, Victorville Office 15456 W. Sage St. Suite 205 Victorville, CA. 92392	Fire Prevention (760) 843-4375	Uniform Fire Code, NFPA compliance, and CUPA agency.
San Bernardino County Building Inspector 301 East Mt. View Avenue Barstow, California 92311	Julian del Real (760) 256-4750	See Permits in Table 5.18-5

Applicable worker safety permits required for the Project are listed in Table 5.18-5 along with the activities covered for each permit as well as the application requirements to obtain the permit. Generally, the permit notification or application requirement is 24 hours prior to commencement of work. A specific permitting schedule is not provided because the permits may be required at several points in the construction of the plant or during operation.

Table 5.18-5 Permit and Approvals

Permit/Approval	Issuing Agency	Law/Application Requirements	Permit Schedule
Trenching, Excavation, and Erection or Demolition Permit	Cal-OSHA	Permits are required for the following operations: • Trenches and excavations of more than five feet below ground surface where personnel are required to enter. • Construction of buildings, structures, scaffolding, or false work that are more than three stories high. • Demolition of any building, structure, or the dismantling of scaffolding or false work that are more than three stories high.	Submit completed permit application to Fresno Office and receive a permit within 24 hours. Annual permits are submitted to any Cal-OSHA district or field office prior to commencing construction and receive a permit within 24 hours.
Erection of a Fixed Tower Crane Permit	Cal-OSHA	Permits are required for the following operations: • Erection, climbing, and dismantling of fixed tower cranes. Additionally, notifications to the Cal-OSHA must be made at least 24 hours prior to the initiation of the following activities: • Completion of erection and commencement of operation • Climbing of the tower crane • Dismantling of the tower crane	Submit completed permit application to Fresno Office and receive a permit within 24 hours. Annual permits are submitted to any Cal-OSHA district or field office prior to commencing construction and receive a permit within 24 hours.

5.18.2 Affected Environment

There are no relevant baseline conditions to describe as there are in other environmental topical areas such as biological resources, air quality, etc. because the Project facilities have not yet been constructed and there are no industrial activities currently on the Project site.

5.18.3 Environmental Impacts

Workers on the Project may be exposed to hazards during construction, operation, and maintenance activities. Impacts that could adversely affect Project personnel, including individuals employed directly by the Project as well as employees of contractors, vendors, or others working on-site, during both Project construction and operations are referred to as potential impacts to worker safety. Implementation of appropriate engineering and administrative controls and use of personal protective equipment can minimize impacts to workers. Since hazards, impacts, and control measures are similar for the construction and operations of the Project, many of the health and safety programs and plans will be developed prior to construction and revised as the Project transitions to operations. Section 5.18.3.1 (Construction and Operations Health and Safety), 5.18.3.2 (Construction Health and Safety) and 5.18.3.3 (Operations Health and Safety) discuss the health and safety programs and plans specified for both (or each) phase of the project.

5.18.3.1 Construction and Operations Health and Safety

Health and safety programs designed to mitigate hazards and comply with applicable LORS will be developed and implemented to protect worker health and safety during Project construction and operations. Qualified individuals will perform periodic audits to evaluate regulatory compliance and to determine whether proper work practices and programs are being used to mitigate hazardous conditions.

Hazard Analysis

A hazard analysis of the Project is summarized in Table 5.18-6. This table lists work activities and associated hazards and shows programs designed to reduce the occurrence of each exposure, work place, or occupational hazard. Because the types of work activities, associated hazards, and hazard control approaches shown are generic and apply to both construction and operations work activities, Table 5.18-6 applies to both Project construction and Project operation. In order to ensure that they are appropriate for Project activities at that time, the analyses of hazards and the specifics of control strategies will be updated as Project design, construction, and operation proceed.

Table 5.18-6 Project Hazard Analysis (Construction and Operations Phases)

Activity	Hazard	Control
Motor Vehicle and Heavy Equipment Use	Collisions between equipment, injury to operators and construction workers, and damage to construction and operation equipment.	Establish a Motor Vehicle and Heavy Equipment Safety Program.
Forklift Operation	Similar to motor vehicle and heavy equipment use.	Same as above and provide Forklift Operator Training Program
Working in Elevated Locations	Injury to employees from falls from elevated locations.	Establish a Fall Protection Program and Scaffolding Safety Program
Trenching and Excavation Operations	Injury to employee and property damage from unsafe trenches and excavations.	Establish a Trenching and Excavation Safety Program, and a Confined Space Permit Program
Use of Cranes or Derricks	Equipment and property damage from falling loads and injuries to construction workers.	Implementation of Crane Permits per Cal-OSHA requirements and establishing a Hoisting and Rigging Safety Program
Plant Systems, Maintenance, and General Construction Activities	Injury to Employee and property damage from various contact with hazardous energy sources (e.g., heat sources, electrical, tools, and mechanical equipment)	Establish procedures to control energy sources (e.g., Lockout/Tagout Program, Hot Work Permits, and Cold Work Permits)
Working with Flammable and Combustible Liquids	Danger of fire or explosions and damage to property and injury to personnel	Establish Flammable and Combustible Liquid Storage and a Chemical Handling Program. Implement Fire Prevention and Protection Program. Implement Proper Housekeeping Policy and Program

Activity	Hazard	Control
Cutting and Welding (Hot Work)	Injury to employee and property damage from fire. Employee exposure to toxic fumes during cutting and welding operations Eye injury due to exposure to ultraviolet and infrared radiation during cutting and welding.	Establish a Respiratory Protection Program, Hot Work Program, Industrial Hygiene Monitoring Program, and a Housekeeping Policy
Working on or with Electrical Equipment and Systems	Injury to employee and equipment from flashovers and contact with electricity	Implement an Electrical Safety Program, Personal Protective Equipment Program, Hazardous Energy Control, Lockout/Tagout Program, etc.
Construction Assembly, Repair, and/or Maintenance Activities	Injury to employee from hand and portable power tools	Implement Hand and Portable Power Tool Safety Program, Personal Protective Equipment Program, and Tool Inspection Program
Ingress and Egress Issues	Injury to employee and property damage from inadequate walking and work surfaces areas	Establishing a Housekeeping Policy and Program, Confined Space Entry Program
Hearing Loss	Injury to employee from overexposure or inadequate ear protection	Implement a Hearing Conservation Program and a Personal Protective Equipment Program
Lifting Heavy Objects	Injury to employee from improper carrying or lifting and of materials and equipment	Establish a Safe Lifting Program and Personal Protection Equipment Program for adequate material handling.
Driving Small Vehicle (Cars and Pickups)	Collisions between equipment, injury to operators and construction workers, and damage to construction and operation equipment	Establish a Safe Driving Program

Activity	Hazard	Control
Exposure to Hazardous Gases, Vapors, Dust, and Fumes	Injury to employee exposure or overexposure to hazardous gases, vapors, dusts, and fumes	Establish a Hazardous Substances Program, Respiratory Protection Program, Personal Protective Equipment Program, and Industrial Hygiene Exposure Monitoring Program/Records
High Pressure Steam/Air Systems Testing, troubleshooting, Repair, and Maintenance.	Injury to employee and property damage from sudden unexpected release of high pressure steam or air.	Install proper relief valves or vents, Establish Relief Valve Maintenance and Testing Program, Proof-testing pressure system components, Hazardous Energy Control, Lockout/Tagout Program, and Line Breaking Safety Program

Injury and Illness Prevention Plan (IIPP)

The Project construction IIPP will meet Cal-OSHA Injury and Illness Prevention Program requirements. The construction IIPP will be adapted as needed to develop the operations phase IIPP, which is required by Title 8 CCR Section 3203. The IIPP for both Project phases will include the following elements:

- Specify personnel responsibility for implementing this plan,
- Establish safety and health policy of the plan,
- Define work rules and safe work practices for construction activities,
- Determine system for ensuring that employees comply with safe work practices,
- Implement an employee safety communications program,
- Identify and evaluate individual work place-related hazards and develop necessary program(s),
- Establish methods and/or procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the severity of the hazards,
- Specify safety procedures (e.g., fall protection, hearing protection, lock-out/tag-out, and respiratory protection), and
- Determine and establish training and instruction requirements and programs.

Personal Protective Equipment (PPE) Program

The Project will develop and implement a PPE Program during both construction and operation phase that will apply to all contractor employees, subcontractor employees, and

direct Project employees. The elements of the PPE Program will be the same for both construction and operation phases. However, program specifics will be updated as needed as the Project transitions from construction into operations. Specific requirements of the Personal Protective Equipment Program include:

- Determine and provide personal protective devices for specific jobs.
- Provide proper head protection requirements.
- Establish eye and face protection requirements.
- Identify body protection equipment requirements.
- Implement hand protection requirements.
- Define proper foot protection.
- Provide proper sanitation facilities.
- Determine safety belts and life lines job requirements.
- Establish procedures to prevent and protect personnel from electric shock.
- Identify on-site and off-site medical services and first aid requirements.
- Specify respiratory protection requirements for jobs.

Required PPE will be approved for use and distinctly marked to facilitate identification. The type of PPE required for each job task will be described in the job safety analysis for that task. The use of PPE for site activities includes, but is not limited to the items specifically described in Table 5.18-7 and will comply with Cal-OSHA requirements (Title 8 CCR § 1514-1522). The work atmosphere will be sampled and tested per established protocols to evaluate the adequacy of the PPE assigned for specific tasks. A respiratory protection program complying with Title 8 CCR § 5144 will be developed that includes respirator training, fit testing, monitoring, selection, etc., if testing results indicate that such a program is needed.

Table 5.18-7 Basic Protective Equipment Guide

Body Area	Hazards	Recommended Action
Eyes/Face	Low-velocity flying particles High-velocity chips and sparks Corrosive liquid splash during transfer Entering an acid storage system Welding-injurious light rays	Safety glasses with side shields Impact goggles or safety glasses with full face shield Splash-proof goggles and face shield Acid hood Welding hood with appropriate eye filter lenses

Body Area	Hazards	Recommended Action
Head/Ears	General wear, overhead rigging, material handling, maintenance, and general construction operations Noise exposure	Hard hat Ear plugs or muff
Respiratory System	Low-hazard inert dusts Welding fumes Low concentration solvent vapors Acid mists High-concentration dusts or vapors Oxygen deficiencies or gases	Dust mask Appropriately ventilated area Cartridge-type, positive pressure, full-face respirator Air line respirator Self-contained breathing apparatus
Hands/Arms	Handling rough or sharp objects Handling hot objects Using solvents	Leather gloves Insulated gloves Impervious synthetic gloves
Feet/Legs	General wear for light handling Handling heavy objects Using brush hooks or scythes Working with corrosive liquids Underground work	Safety toe shoes Metatarsal safety shoes Shin guards Safety toe boots, full leather, no breather holes Safety toe synthetic boots
Trunk/Full Body	Hot or corrosive liquids Punctures, impact, or cuts Cleanup of broken acid containers.	Full body suit made of appropriate materials, synthetic apron Rubber apron for corrosive liquids Canvas or leather kickback apron or metal mesh apron Full body suit made of appropriate materials

Body Area	Hazards	Recommended Action
Fall Protection/Rescue	Working from elevated structure of platform w/o standard railings Vessel entry Suspended scaffolds	Safety harness, arrestor, and lanyard Harness and lifeline or wristlets and lifeline Lifeline, safety harness/lanyard Boom lift platform with cage

Safety Training Program

The Project will develop and implement a Construction Safety Training Program that will be updated as needed to be suitable for the specific work activities associated with Operations Safety Training Program as the Project transitions from construction into routine power generation facility operations. Table 5.18-8 lists the typical training courses along with the employees who are required to receive the training.

Table 5.18-8 Training Programs and Target Employees (Construction and Operation Phases)

Training Course	Target Employees
Injury and Illness Prevention Training	All employees.
Emergency Action Plan Training	All employees.
PPE Training	All employees.
Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment.
Forklift Operation Training	Employees working with forklifts.
Excavation and Trenching Safety Training	Employees involved with trenching or excavation operations.
Fall Protection Training	All employees.
Scaffolding and Ladder Safety Training	Employees required to erect or use scaffolding and employees using ladders.
Hoist and Rigging Program	Employees and supervisors responsible for conducting hoists and rigging operations.
Crane Safety Training	Employees supervising, crane operators, and employees involved in crane operations.

Training Course	Target Employees
Fire Protection and Prevention Training	All employees.
Confined Space Entry Program	All employees.
Blood Borne Pathogens Training	First Responders.
Hazard Communication Training	Employees working with or handling hazardous materials.
Electrical Safety Training	Employees performing work with electrical systems, equipment, or electrical extension cords. Additionally, employees working with lockout/tagout activities.
Hand and Portable Power Tool Safety Training	All employees.
Heat Stress and Cold Stress Safety Training	All employees.
Hearing Conservation Training	All employees.
Back Injury Prevention Training	All employees.
Safe Driving Training	All employees.
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized vessel, pipes, or equipment.
Respiratory Protection Training	All employees required to wear respiratory protection equipment.
Hot Work Training	All employees working with welding, heating, or other equipment that generates ignition sources.

Specific safety program requirements for both construction and operations are identified below.

Develop a Motor Vehicle and Heavy Equipment Safety Program:

- Establish a program for operation and maintenance of Project equipment and vehicles.
- Develop a job site inspection procedure.
- Establish PPE requirements for job site personnel.
- Determine and establish training and instruction requirements and programs.

- Develop a Forklift Operation Program:
- Define training and certification requirements for operators based on equipment use.
- Determine fueling and refueling procedures and equipment.
- Establish safe operating parameters for specific jobs and equipment.
- Determine and establish training and instruction requirements and programs.

Develop an Excavation and Trenching Program and permit requirements:

- Establish shoring, sloping, and benching requirements.
- Determine job-specific Cal-OSHA permit requirements (e.g., lockout/tagout, confined space, and hot work).
- Develop equipment inspection procedures.
- Establish air monitoring requirements and procedures.
- Develop access and egress requirements for job sites.
- Establish calling procedures for the Underground Services Alert (USA) program.
- Determine and establish training and instruction requirements and programs.

Develop a Fall Protection Program:

- Evaluate specific job site of fall hazards
- Provide requirements for protection device use.
- Determine and establish training and instruction requirements and programs.

Develop a Scaffolding and Ladder Safety Program:

- Establish construction and inspection requirements for scaffolding erection.
- Determine scaffolding applicability of use and proper use procedures.
- Determine and establish training and instruction requirements and programs.

Develop an Articulating Boom Platforms Program:

- Establish procedures for inspection of equipment.
- Determine proper load rating of equipment.
- Establish safe operating parameters of equipment.
- Determine and establish training and instruction requirements and programs.

Develop a Crane and Material Handling Program:

- Determine certified and licensed requirements for operators.
- Establish inspection requirements and procedures.
- Determine proper load rates of equipment.

- Establish safe operating parameters of equipment.
- Determine and establish training and instruction requirements and programs.

Develop an Employee Exposure Monitoring Program:

- Determine and evaluate exposure limitations and requirements for specific job sites (e.g., noise, chemicals, and dust).
- Establish monitoring requirements for specific exposures.
- Establish a medical surveillance program and record keeping requirements.
- Determine and establish training and instruction requirements and programs.

Develop an Electrical Safety Program:

- Establish electrical grounding procedures and requirements.
- Determine lockout/tag-out permitting procedures.
- Determine overhead and underground utilities design and installation requirements.
- Implement electrical equipment inspection procedures.
- Determine and establish training and instruction requirements and programs.

Develop a Hand and Portable Power Tool Safety Program:

- Evaluate power tools guards and tools proper operation.
- Establish requirements and procedures for inspecting power tools prior to use.
- Determine and establish training and instruction requirements and programs.

Develop a Housekeeping and Material Handling and Storage Program:

- Determine chemical and other equipment storage requirements.
- Examine walkways and work surfaces for proper clearance and elimination of obstructions.
- Examine equipment handling and storage requirements.
- Determine and establish training and instruction requirements and programs.

Develop a Hearing Conservation Program:

- Establish proper hearing protective devices and type to use.
- Determine and establish training and instruction requirements and programs.

Develop a Back Injury Prevention Program:

- Determine proper lifting and material handling procedures.
- Provide proper PPE.
- Determine and establish training and instruction requirements and programs.

Develop a Hazard Communication Program:

- Establish labeling requirements for chemicals.
- Determine proper storage and handling requirements.
- Make available Material Safety Data Sheets (MSDSs) for chemicals used on site.
- Establish a chemical inventories.
- Determine and establish training and instruction requirements and programs.

Develop a Respiratory Protection Program:

- Determine the appropriate tasks for use of job-specific respiratory equipment.
- Establish a designated storage area for equipment.
- Perform a fit testing for equipment.
- Establish medical record keeping requirements.
- Perform proper inspection and repair.
- Determine and establish training and instruction requirements and programs.

Develop a Heat and Cold Stress Monitoring and Control Program:

- Determine monitoring requirements.
- Develop a process to prevent and control exposures.
- Determine and establish training and instruction requirements and programs.

Develop a Pressure Vessel and Pipeline Safety Program:

- Implement a pressure line-breaking program.
- Establish equipment inspection and maintenance procedures.
- Determine blocking, bleeding, and blanking requirements.
- Determine and establish training and instruction requirements and programs.

5.18.3.2 Construction Health and Safety

<u>Construction Fire Protection and Prevention Program</u>

The Project will rely on both onsite fire protection systems and offsite fire protection services (San Bernardino County Fire Department) during both construction and operations. A Construction Fire Protection and Prevention Plan will be developed and followed throughout all phases of construction. During construction, the permanent facility fire suppression system will be placed in service as early as practicable. Prior to installation of the facility's permanent fire suppression system, fire extinguishers and other portable fire-fighting equipment will be available onsite. These fire extinguishers will be maintained for the full construction duration, in accordance with Cal-OSHA requirements.

Locations of portable fire extinguishers will include, but not necessarily be limited to, portable office spaces, hot work areas, flammable chemical storage areas, and mobile equipment (e.g., passenger vehicles and earthmoving equipment). Fire-fighting equipment

will be located to allow for unobstructed access to the equipment and will be conspicuously marked. Portable firefighting equipment will be routinely inspected per regulatory requirements and replaced immediately, if defective, or if in need of recharge.

Construction fire prevention regulations in Title 8 CCR § 1920 et seq. will be followed, as necessary, to prevent construction fires. Specific requirements for the Construction Fire Protection and Prevention Program include:

- Determine general program requirements.
- Develop good housekeeping practices and procedures (e.g., proper storage of equipment, cleanup of job sites, and neat and orderly work places).
- Establish employee alarm and/or communication system(s).
- Provide portable fire extinguishers at appropriate site locations.
- Locate fixed fire-fighting equipment in suitable areas.
- Specify fire control requirements and procedures.
- Establish proper flammable and combustible liquid storage facilities.
- Identify the location and use of flammable and combustible liquids.
- Provide proper dispensing facilities for flammable materials.
- Determine proper disposal requirements for flammable liquids.
- Identify proper servicing and refueling locations.
- Establish and determine training and instruction requirements and programs.

Special attention will be given to operations involving open flames, such as welding, cutting, and the use of flammable liquids and gases. Personnel involved in such operations will have appropriate training. A fire watch, utilizing the appropriate class of extinguishers or other equipment, will be maintained during hazardous or hot work operations. Site personnel will not be expected to fight fires past the incipient stage.

Fuel storage areas will be contained and protected in accordance with Cal-OSHA requirements. It is anticipated that the Project will have only diesel and gasoline liquid fuels stored on-site during construction. This liquid fuel storage will be used for fueling on-site equipment and vehicles. The capacity and location of the fuel storage containers will be reviewed and approved by the San Bernardino Fire Department Hazardous Materials Division (CUPA) prior to installation and use.

Emergency Action Program and Plan

The Project will establish a Construction Emergency Action Program and Plan that will include emergency evacuation procedures. Specific requirements of the plan include:

- Establish emergency procedures for the protection of personnel, equipment, the environment, and materials.
- Identify fire and emergency reporting procedures.
- Determine response actions for accidents involving personnel and/or property.

- Develop response and reporting requirements for bomb threats.
- Specify site assembly and emergency evacuation route procedures.
- Define natural disaster responses (e.g., earthquakes, high winds, and flooding).
- Establish reporting and notification procedures for emergencies (including on-site, off-site, local authorities, and/or state jurisdictions).
- Determine alarm and communication systems needed for specific operations.
- Develop a Spill Response, Prevention, and Countermeasure (SPCC) plan.
- Identify emergency personnel (response team) responsibilities and notification roster.
- Obtain emergency response equipment and strategically locate.
- Establish and determine training and instruction requirements and programs.

5.18.3.3 Operations Health and Safety

As noted earlier, many of the workplace health and safety programs for MSP operations will be similar to those developed for Project construction activities. Thus, many of the construction programs and plans will be revised so they are appropriate for routine operations activities, and the Project health and safety programs will transition from the construction phase into the operations phase as the overall Project makes the transition between phases. The discussions presented earlier for the Project construction phase concerning the Project's Hazard Analysis and IIIP apply to Project operations as well and are not repeated in this subsection.

<u>Operations Fire Protection and Prevention Program</u>

Fire protection at the Project site during Project operations will include measures relating to safeguarding human life, preventing personnel injury, preservation of property and minimizing downtime due to fire or explosion. Fire protection measures will include fire prevention methods to prevent the inception of fires. Of concern are adequate exits, fire-safe construction, reduction of ignition sources, control of fuel sources, and proper maintenance of fire water supply and sprinkler systems.

Because the San Bernardino County Fire Department (SBCoFD) will have fire protection responsibility for the Project site, the Project's fire suppression systems will be subject to review and approval by the SBCoFD. In addition, the fire suppression facilities will be designed by a California Registered Fire Protection Engineer and fire protection equipment will be installed and maintained in accordance with applicable NFPA standards and recommendations. Project facilities also will be designed and operated in conformance with Uniform Fire Code requirements for safe storage, dispensing, use, and handling of hazardous materials, as well as meeting state and local requirements for preparation of hazardous materials release plans and inventories (also see Section 5.7.2, Hazardous Materials Handling).

The SBCoFD also will perform the final inspection of the Project plant site when construction is complete and periodic fire and life safety inspections thereafter, including reviewing and approving programs for regular equipment inspections and servicing and for

the training of employees in fire protection procedures. In addition, the Project's insurance carrier will likely provide annual inspections by a fire protection specialist. The Project operations phase Fire Prevention Plan will contain the required elements as defined in Title 8 CCR § 3221 including:

- Scope, purpose, and applicability
- Potential fire hazards
- Proper handling and storage of potential fire hazards
- Potential ignition sources
- Control of potential ignition sources
- Persons responsible for equipment and systems maintenance
- Portable fire extinguishers
- Automatic sprinkler fire suppression system
- Water-spray fire system
- Local fire department
- Training
- Housekeeping procedures
- Recordkeeping requirements

Fire Protection System

Fire protection systems are provided to limit personnel injury, property loss, and Project downtime resulting from a fire. The systems include a fire protection water system and portable fire extinguishers.

The Project's fire protection water system will be supplied from a dedicated 360,000-gallon portion of the 1,930,000-gallon Service Water storage tanks located in each of the two power islands. One electric and one diesel-fueled backup firewater pump for each power island, each with a capacity of 3,000 gallons per minute, will deliver water to the fire protection water-piping network. A smaller electric motor-driven pump jockey pump will maintain pressure in the piping network. If the jockey pump is unable to maintain a set operating pressure in the piping network, the fire pump starts automatically.

The piping network will be configured in a loop so that a piping failure can be isolated with shutoff valves without interrupting the supply of water to a majority of the loop. The piping network will supply fire hydrants located at intervals throughout the power plant site, a sprinkler deluge system at each unit transformer, HTF expansion tank and circulating pump area and sprinkler systems at the STG and in the operations and administration buildings. Portable fire extinguishers of appropriate sizes and types will be located throughout the Alpha and Beta Plant sites.

Fire protection for the solar field will be provided by zoned isolation of the HTF lines in the event of a rupture that results in fire. The HTF will be allowed to extinguish itself naturally, since the remainder of the field is of nonflammable material (aluminum, steel, and glass).

Fuel Handling System

As discussed in Section 2.5, the auxiliary boilers would be fueled by natural gas supplied from an existing 16-inch diameter pipeline that runs to the project under Harper Lake Road. This pipeline was installed for the original six SEGS projects envisioned at Harper Lake. Excess capacity exists due to the sizing of the pipeline for those projects which used natural gas to fire full-capacity boilers. Natural gas delivered to the Project site would flow through a revenue quality flow meter, pressure regulation station, and filtering equipment and will provide gas to the auxiliary boilers. Safety pressure relief valves are provided downstream of the pressure regulation valves. The peak natural gas rate is 43 million British thermal units per hour (MMBtu/hr) for the two auxiliary boilers combined. A maximum of 94,170 MMBtu/year of fuel consumption would be expected for the boilers.
Emergency Action Plan

In addition to the other design and procedural elements of the Project health and safety program, the Project will have a site-specific operations phase Emergency Action Plan. This plan will have many similarities to the construction phase Emergency Action Plan. The operations Emergency Action Plan will address a variety of potential emergencies, including chemical releases, fires, bomb threats, pressure vessel ruptures and other catastrophic events. The plan will describe evacuation routes, alarm systems, points of contact, assembly areas, responsibilities, and other actions to be taken in the event of an emergency.

The plan will have a layout map, a fire extinguisher list, and describe arrangements with local emergency response agencies for responding to emergencies. The Emergency Action Plan will be used in conjunction with the Injury and Illness Prevention Plan. As required in Title 8 CCR § 3220, the written Emergency Action Plan will be comprised of the following components:

- Scope, purpose, and applicability
- Roles and responsibilities
- Emergency incident response training
- Emergency response protocol
- Evacuation protocol
- Post emergency response protocol, and
- Notification and incident reporting.

5.18.4 Cumulative Impacts

As other projects considered for potential cumulative effects will be responsible for complying individually with applicable worker safety requirements, no cumulative impacts on worker safety are expected as a result of the Project.

5.18.5 Mitigation Measures

Because the MSP will implement the various worker safety programs and procedures discussed above and, thus comply with the applicable regulatory requirements to maintain a safe workplace, the Project will not have significant impacts on worker safety. Thus, no mitigation measures are proposed.

5.18.6 References

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National Safety Council, 2000. Accident Prevention Manual 12th Edition. Volume 2, Chapter 6, Fire