

HEALTH AND SAFETY PLAN

PG&E Kern Power Plant

Redacted

Bakersfield, CA 93312

Prepared by:

Silverado Contractors, Inc. E H & S

222 N. Mountain Ave, Suite 109B

Upland California 91786

This Health and Safety Plan (Plan) has been written for the use of Silverado Contractor s, Inc. (Silverado) and its employees. The health and safety guidelines in this Plan were prepared specifically for the site located at Redacted, Bakersfield, CA 93312 and should not be used on any other site without prior research by trained health and safety specialists.

This Health and Safety Plan (HASP) has been written to comply with the requirements of OSHA's Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120). This document does NOT replace, Federal Health and Safety Regulations, as forth by 29 CFR 1910 and 1926. It was prepared based on the best available information regarding the physical, biological and chemical hazards known or suspected to be present at the former PG&E Kern Power Plant located at 2401 Coffee Road, Bakersfield, CA 93312. Personnel covered by this HASP who cannot or will not comply will be excluded from Site.

Due to the potential hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. SILVERADO CONTRACTORS, INC. does not guarantee the health or safety of any person entering this site. **The Plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.**

Written by:

Redacted

Date: 3/5/2014

Environmental Health and Safety Manager

HASP
PG&E Kern Power Plant, Bakersfield, California



**HEALTH AND SAFETY PLAN
REVIEW AND APPROVAL**

CLIENT: **PG&E**

SITE NAME: **Kern Power Plant**

PROJECT NUMBER: **Pending**

HASP START DATE: **3/5/2014**

HASP END DATE:

_____ [Redacted], E H & S	_____ Signature	_____ Date
_____ [Redacted] Project Manager	_____ Signature	_____ Date
_____ [Redacted] Superintendent	_____ Signature	_____ Date
_____ [Redacted], Vice President	_____ Signature	_____ Date



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Section 1 Introduction

Background:

This document describes the health and safety protocols developed for the following site:

Kern Power Plant

Redacted

Bakersfield, CA 93312

This plan was developed to protect Silverado Contractors, Inc. (Silverado) personnel and make others involved with the project (subcontractors directly contracted by Silverado, visitors, and the public) aware of known or suspected health and safety hazards.

This is a “Silverado Contractors, Inc.” document, so specific sections of this plan should be changed or revised when additional information is received or when conditions at the site change. Any changes or revisions to this plan will be made by a written amendment, which will become a permanent part of this plan and placed in Attachment A. Amendments must be approved by Silverado’s Safety Director prior to implementation.

Site Information:

The Kern Power Plant is located on Redacted, Bakersfield, CA.

The former Kern Power Plant began operations in 1948, generating electricity for 240,000 homes in Central and Northern California. In 1985, PG&E permanently closed the plant.

In 2000, PG&E began the process of selling the property, entering into Purchase/Sell agreements with two different buyers over the last ten years. Neither of those efforts resulted in the sale of the property.

In late 2011, PG&E began efforts to dismantle the Kern Power Plant, removing several cooling towers, a large chiller and three storage buildings.

In December 2011, PG&E announced a multi-year, multi-phase plan to remove the remaining structures—a concrete power block, fuel storage tanks, small storage buildings and the concrete foundations of the buildings removed earlier—and clean up the power plant property.

The site will continue to serve as an active electric substation, providing power to tens of thousands of PG&E customers in the southern portion of Bakersfield and Kern County.

Description of Site Activities:

1. Inspection and removal of hazardous materials
2. Demolition and salvage of above grade structures
3. Demolition of below grade structures
4. Onsite concrete crushing
5. Site cleanup and grading

Constituents of Concern:

Asbestos and lead based paint (LBP) have been identified as constituents of concern at the site. It should be noted that although documents provide state that asbestos containing materials (ACM) have been



abated, gaskets, insulating, transite or other suspect ACM may be encountered. LBP coated materials are in fact present at this facility and thus present a concern for exposure. All rules and regulations set forth by OSHA, NIOSH, AHERA and the CDPH shall be thoroughly adhered to. This must be done in order to prevent exposures to personnel and the public. This document further explains methods and procedures to be practiced during all demolition activities.

Site Safety Plan Acknowledgment and Acceptance:

SILVERADO CONTRACTORS, INC.'s Safety Director shall be responsible for informing all individuals assigned to work on the site, or visit the site beyond the clean/support zone, of the contents of this plan and ensuring that each person signs the Health and Safety Plan Acknowledgment Form in Attachment B. By signing the Health and Safety Plan Acknowledgment Form, individuals recognize the site health and safety hazards, known or suspected, and will adhere to the protocols required to minimize exposure to such hazards.



Section 2 Responsibilities

Project Manager:

- Ensure that activities do not impact the neighboring community.
- Ensure site compliance with federal/state/local regulations.
- Implement project standard operating procedures (SOP), scope of work (SOW) and the site health and safety plan (HASP) to minimize hazards to employees, subcontractors and the general public.
- Consult with the Subcontractors regarding the health and safety procedures and practices to be used on this project.
- Perform site hazard analysis and job safety analysis.
- Direct the implementation of this HASP.
- Has the authority to suspend work activities if actions occur that may affect safety and health conditions for personnel or the environment.
- Plan all work activities to prevent personal injury, health impairment and property damage.
- Select proper PPE to be worn while performing tasks.
- Act as the site Health & Safety Officer (SHSO)
- Taking all reasonable precautions to prevent injury to themselves, their fellow employees and subcontractors, and being alert to potentially harmful situations.
- Performing only those tasks that they have been trained to complete and can do safely.
- Practicing good housekeeping by keeping the work areas neat, clean and orderly.
- Immediately reporting all injuries, incidents and near-misses to the Project Manager.
- Properly using PPE specified in this HASP.
- Properly maintaining their designated PPE per manufacturers' recommendations.
- Comply with the HASP and all health and safety recommendations and precautions.

Health and Safety Personnel:

- Ensure implementation of the requirements of this HASP with respect to health and safety, air monitoring requirements and waste management requirements.
- Has the authority to suspend work activities if actions occur that may affect safety and health conditions for personnel or the environment.
- Shall act as the primary contact during any on-site emergency situation.
- Be onsite at the start of the project and conduct periodic inspections of on-site field activities during the duration
- Taking all reasonable precautions to prevent injury to themselves, their fellow employees and subcontractors, and being alert to potentially harmful situations.
- Performing only those tasks that they have been trained to complete and can do safely.
- Practicing good housekeeping by keeping the work areas neat, clean and orderly.
- Immediately reporting all injuries, incidents and near-misses to the Project Manager.
- Properly using PPE specified in this HASP.
- Properly maintaining their designated PPE per manufacturers' recommendations.
- Comply with the HASP and all health and safety recommendations and precautions.
- Notifying the Project Manager of any Site conditions of concern which are not addressed by the protective measures specified in this HASP, or which are addressed but the employee does not understand the protective requirements specified herein.
- Consult with and coordinate any modifications to the HASP with the Project Manager.
- Recommend corrective actions for identified deficiencies and oversee the implementation of any corrective actions.



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- Conduct accident investigations and prepare accident reports.
 - Investigate and analyze “near-miss” incidents.
 - Ensure employee and subcontractor compliance with the provisions of this HASP.
 - Ensure training of employees in the recognition, avoidance and control of chemical, biological and physical hazards present at the Site.
 - Maintain records for employees as required by this HASP (including but not limited to) medical, training and fit-test records.
 - Verify training requirements of all SILVERADO CONTRACTORS, INC. personnel and subcontractors.
 - Ensure site compliance with federal/state/local regulations and all aspects of this HASP including, but not limited to:
 - Control of site hazards
 - Management of wastes generated
 - Ensure standard operating procedures minimize hazards.
 - Providing guidance concerning the use of PPE.

Subcontractor:

Each Subcontractor on the site is responsible for:

- Having a supervisor on-site who understands the scope of the work (SOW) to be performed, potential health and safety issues associated with that SOW and the strategies for managing and controlling the health and safety issues.
- Planning all work activities to prevent personal injury, health impairment and property damage.
- Ensure subcontractor’s employees compliance with the provisions of this HASP.
- Ensuring that Subcontractor personnel are qualified to perform the SOW that they are assigned.
- Ensuring training of the Subcontractor’s employees in the recognition, avoidance and control of chemical, biological and physical hazards present at the Site.
- Maintaining records for Subcontractor employees as required by this HASP (including but not limited to) medical, training and fit-test records.
- Providing specified PPE, including training for correct use and maintenance of that equipment.
- Providing adequate weather protective gear for their personnel as required for their work activities.
- Maintaining a system of prompt detection and correction of unsafe practices and conditions for their SOW and employees.
- Ensuring that any of the Subcontractor’s subcontractors and suppliers comply with the conditions of this HASP upon entrance to the Site.
- Shut down site activities if unsafe conditions exist.
- Taking all reasonable precautions to prevent injury to themselves, their fellow employees and subcontractors, and being alert to potentially harmful situations.
- Performing only those tasks that they have been trained to complete and can do safely.
- Practicing good housekeeping by keeping the work areas neat, clean and orderly.
- Immediately reporting all injuries, incidents and near-misses to the Project Manager.
- Properly using PPE specified in this HASP.
- Properly maintaining their designated PPE per manufacturers’ recommendations.
- Comply with the HASP and all health and safety recommendations and precautions.

Field Superintendent:

The Field Superintendent on the site is responsible for:

- Able to supervise Field Workers.
- Able to interpret scope of work and exercise safe work practices.
- Able to supervise and manage projects in high hazard work sites.



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- Able to communicate fluently and efficiently with field workers, office staff, customers and regulatory agencies.
 - Able to interpret and practice industry standards and regulations.
 - Ensure PPE is properly used.
 - Adhere to OSHA Regulations.
 - Able to complete job forms (Waste Manifest, Air Sample Data Sheet, Time Cards, Daily Activity Report, Material Usage Sheet, etc.).
 - Taking all reasonable precautions to prevent injury to themselves, their fellow employees and subcontractors, and being alert to potentially harmful situations.
 - Performing only those tasks that they have been trained to complete and can do safely.
 - Practicing good housekeeping by keeping the work areas neat, clean and orderly.
 - Immediately reporting all injuries, incidents and near-misses to the Project Manager.
 - Properly using PPE specified in this HASP.
 - Properly maintaining their designated PPE per manufacturers' recommendations.
 - Comply with the HASP and all health and safety recommendations and precautions.

Labor Workers/Equipment Operators:

Each Labor Worker/Equipment Operator on the site is responsible for:

1. The proper use of all tools and equipment.
 2. Adhere to Superintendent directions and adhere to OSHA guidelines, standards and regulations.
 3. Able to communicate follow directions given by management.
 4. Able to work and practice industry standards and regulations on all job sites.
- Ensure PPE is safely and properly used.
 - Taking all reasonable precautions to prevent injury to themselves, their fellow employees and subcontractors, and being alert to potentially harmful situations.
 - Performing only those tasks that they have been trained to complete and can do safely.
 - Practicing good housekeeping by keeping the work areas neat, clean and orderly.
 - Immediately reporting all injuries, incidents and near-misses to the Project Manager.
 - Properly using PPE specified in this HASP.
 - Properly maintaining their designated PPE per manufacturers' recommendations.
 - Comply with the HASP and all health and safety recommendations and precautions.



Section 3.0

Inspection and Removal of Hazardous Materials Hazard Analysis

This section identifies the specific hazards associated with the **Inspection and Removal of Hazardous Materials** and presents an analysis of documented or potential chemical, physical or biological hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards through engineering or administrative controls. Hazards that cannot be eliminated must be mitigated by use of PPE.

In an effort to prevent injuries to employees, subcontractors and the general public the Project Manager will perform a job safety analysis (JSA) that will identify all onsite operations, jobs and related tasks that are hazardous. From this assessment engineering controls, administrative controls and personal protection equipment will be identified and used to eliminate or control the hazards that are present. Attachment D contains the JSA that will be used for this site.

Evaluation and identification of hazards at the site will occur:

- Initially, during the site setup
- Immediately after initial site entry
- Prior to changes in jobs, tasks, and/or processes
- As required by changing site conditions

Inspection and Removal of Hazardous Materials Description of Procedures:

Personnel directly involved with work in and around the boiler structure shall have previous experience and/or training in recognition of misfired explosive devices (e.g. det. Cord, delays, shape charges). If found personnel shall be required to, stop all work, evacuate area and notify on site supervision immediately (See Table 9.1 for Explosives Expert Contact).

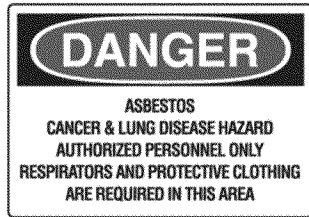
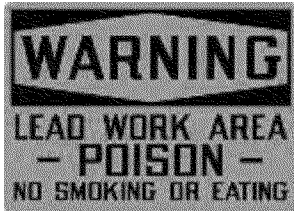
Prior to the start of work, any necessary modification to permits or Modifications to existing permits will be conducted, as warranted, prior to the start of work. On site Safety Officer shall monitor on and around work areas to assess if any atmospheric and /or environmental hazards exist prior to commencing any activities and written documentation shall be provided. A thorough review of the Pre-Task Safety Analysis Worksheet, Attachment F; shall be conducted and all identified risks for each activity shall be inserted into the daily JSA's. All on site safety supplies shall be in place prior to commencing any activities (e.g. eye wash stations, drinking water, first aid kits) and crews able to identify the locations. JSA shall be completed and updated as needed throughout the course of the work and as conditions change, all crew members shall be directly involved with its development on a daily basis.

Personnel involved in the removal of hazardous waste shall have proper certifications on site for the work being performed. All activities shall be in accordance with Local, State, Federal regulations, Silverado's IIPP and this HSP. Once hazardous materials needing removal are located, personnel shall be required but not limited to the following;

1. *Update and review JSA with crew as necessary.*
2. *Verify that all personnel has been properly trained and certified.*
3. *Communicate with personnel in the area of the work to be performed.*
4. *A work crew, of no less than two (2) personnel, will first set up a 3 stage decontamination system.*



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5. *Personnel shall don PPE proper for the work being performed (See Section 5 Table 5-0 for PPE specifics)*
 6. *Sufficient applicable warning signage shall be placed in conspicuous areas and must read:*



7. *Set up of Monitoring equipment as listed on section 6 of this HSP and in accordance with Silverado's IIPP.*
8. *Properly dispose or store hazardous waste as per Silverado's Spill Prevention Plan and section 10 (waste management) of this HSP.*
9. *After completion decontamination procedures found in section 12 of this HSP must be adhered to.*
10. *Sign post work authorization section of the JSA. This signifies that all areas have been secured, cleaned and made safe.*

Line-of-Sight Supervision shall be conducted during all demolition activities.

Potential Physical Hazards:

Table 3-0 contains a summary of the physical hazards that may be encounter while working on or around this site. *For specific hazards for each task performed on this site and its mitigation see the daily JSAs, Attachment D.*

Exposure to Chemicals:

A thorough discussion of toxicity is beyond the scope of any HASP. Individuals who handle chemicals should supplement the information in this HASP with specific details applicable to the site. Such information is available in Material Safety Data Sheets (MSDSs) in binder onsite. The complex relationship between a material and its biological effect in humans involves considerations of dose, duration and frequency of the exposure, route of exposure, and many other factors, including sex, allergic factors, age, previous sensitization, and lifestyle.

Hazards/Chemicals of Concern:

LBP
Unknown ACMs
Spills
Structure instability



Exposure Routes:

Chemicals enter the body through the following routes:

- Inhalation - absorption through the respiratory tract by inhalation.
- Ingestion - absorption through the digestive tract by eating or smoking with contaminated hands or in contaminated work areas. Depending on particle or droplet size, aerosols may also be ingested.
- Skin or eye contact - absorption through the skin or eyes. Skin contact is the most common cause of the widespread occupational disease dermatitis. The eyes are very porous and can easily absorb toxic vapors that cause permanent eye damage.
- Injection - percutaneous injection through the skin. This can occur through misuse of sharp items, especially hypodermic needles.

Acute toxicity is an adverse effect with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short-term exposures and are of short duration. Examples of acutely toxic chemicals are hydrogen cyanide and ammonia.

Chronic toxicity is an adverse effect with symptoms that develop slowly over a long period of time as a result of frequent exposure. The dose during each exposure period may frequently be small enough that no effects are noticed at the time of exposure. Chronic effects are the result of long-term exposure and are of long duration. Carcinogens as well as many metals and their derivatives exhibit chronic toxicity.

Carcinogenicity. A carcinogen is a chemical that causes malignant (cancerous) tumors.

Material Safety Data Sheets (MSDSs). MSDSs are the most basic source of chemical hazard information. The MSDS summarizes the chemical's properties, the health and physical hazards, including the type of toxicity information discussed in the sections above, and related safety information required by emergency responders.

Monitoring Airborne Concentrations of Contaminants. OSHA has established permissible exposure limits (PELs) for airborne concentrations of selected materials. The PEL is defined as a time-weighted average (TWA) concentration of a particular substance for a normal eight-hour workday and a 40-hour workweek, a concentration to which nearly all workers may be exposed, day after day, without adverse effect.

Corollaries to the eight-hour PEL are the short-term exposure limit (STEL) and the ceiling exposure limit. The STEL is the time-weighted average concentration of a compound to which a worker may be exposed over a period of fifteen minutes without expecting symptoms of irritation, chronic or irreversible tissue damage, or narcosis. The ceiling is the concentration of a substance that should not be exceeded during any part of the working exposure. When instantaneous monitoring is not feasible, the ceiling limit is measured over a period of ten to fifteen minutes.

OSHA PELs were designed to protect workers in industrial settings. Although it is unlikely that these limits will be exceeded during the abatement activities, SILVERADO CONTRACTORS, INC. will utilize personal air monitoring, engineering controls, and appropriate PPE to include, but not limited to, Tyvek suits, ½ Face respirators w/ HEPA filtration cartridges, gloves and boots to reduce the potential exposure risk.



Table 3-0 Inspection and Removal of Hazardous Materials Potential Hazards

Sub-Activity	Hazards
Travel to/from Jobsite	<ul style="list-style-type: none"> • Vehicle/Pedestrians • Road Conditions • Exhaustion
Unload/Reload equipment and supplies	<ul style="list-style-type: none"> • Weather • Hand pinch/cuts/crushed • Slips, Trips and Falls • Heat Stress/Cramps/Exhaustion • Back Injuries
Site Set Up	<ul style="list-style-type: none"> • Weather • Vehicles • Pedestrians • Hand pinch/cuts/crushed • Slips, Trips and Falls • Foot Injuries • Eye Injuries • Heat Stress/Cramps/Exhaustion • Back injuries
Abatement/Removal	<ul style="list-style-type: none"> • Back injuries • Slips, trips and falls • Noise • Biological – insects • Other personnel • Uneven ground • Flying dust and debris • Hand injuries • Foot injuries • Exposures • Back injuries • Eye injuries • Heat Stress/Cramps/Exhaustion • Structure instability
Decontamination and cleanup	<ul style="list-style-type: none"> • Slips, Trips and Falls • Hand pinch/cuts/crushed • Back injuries • Hand injuries • Eye injuries • Foot injuries • Heat Stress/Cramps/Exhaustion

*These activities may require air monitoring see Section 6 for the action



Section 3.1

Demolition and Salvage of Above Ground Structures Hazard Analysis

This section identifies the specific hazards associated with the **demolition and salvage of the above ground structures** and presents an analysis of documented or potential chemical, physical or biological hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards through engineering or administrative controls. Hazards that can not be eliminated must be mitigated by use of PPE.

In an effort to prevent injuries to employees, subcontractors and the general public the Project Manager will perform a job safety analysis (JSA) that will identify all onsite operations, jobs and related tasks that are hazardous. From this assessment engineering controls, administrative controls and personal protection equipment will be identified and used to eliminate or control the hazards that are present. Attachment D contains the JSA that will be used for this site.

Evaluation and identification of hazards at the site will occur:

- Initially, during the site setup
- Immediately after initial site entry
- Prior to changes in jobs, tasks, and/or processes
- As required by changing site conditions

Demolition and Salvage Description of Procedures:

Personnel directly involved with the demolition of the boiler structure shall have previous experience and/or training in recognition of misfired explosive devices (e.g. det. Cord, delays, shape charges). If found personnel shall be required to, stop all work, evacuate area and notify on site supervision immediately (See Table 9.1 for Explosives Expert Contact).

Prior to the start of work, any necessary modification to permits or Modifications to existing permits will be conducted, as warranted, prior to the start of work. On site Safety Officer shall monitor on and around work areas to assess if any atmospheric and /or environmental hazards exist prior to commencing any activities and written documentation shall be provided. All on site safety supplies shall be in place prior to commencing any activities (e.g. eye wash stations, drinking water, first aid kits) and crews able to identify the locations. This includes a water source to mitigate fugitive dust. JSA shall be completed and updated as needed throughout the course of the work and as conditions change, all crew members shall be directly involved with its development on a daily basis.

Controls such as storm water BMPs will be installed to minimize the threat of a release from within the work area to surrounding areas/soils. BMPs will be commensurate with the Storm Water Pollution Prevention Plan (SWPPP). Personnel shall adhere but not limited to the following prior and during said activities:

Demolition/Processing:

1. *Update and review JSA with crew as necessary.*
2. *Verify that all personnel has been properly trained and certified for work being performed.*
3. *Communicate with personnel in the area of the work to be performed.*



4. A work crew, of no less than two (2) personnel, will first set up a 3 stage decontamination system.
5. Personnel shall don PPE proper for the work being performed (**See Section 5 Table 5-1 for PPE specifics**)
6. Sufficient applicable warning signage shall be placed in conspicuous areas and must read:



7. Area and personnel air monitoring for all possible contaminants shall be performed during all activities until a Negative Exposure Assessment (NEA) has been accomplished and documented.
8. Wet methods will be employed during demolition of LBP containing materials (e.g. Pipes, beams) to control airborne contaminants.
9. Personnel not on equipment shall maintain 70 feet of clearance between themselves and the swing radius off all equipment.
10. Personnel shall remain visible to all equipment operators and maintain communication using radio contact at all times.
11. If torch cutting is necessary, personnel performing cutting shall first obtain a Hot Work Permit. Area must be prepared and fire watch in place as per Silverado's IIPP Fire Prevention Program. Supervisor must verify that all controls are in place (e.g. Fire extinguisher, water source,) and sign permit prior to commencing hot work activities.(See Attachment C.
12. Cylinders must remain secured 35 feet away from any ignition source. (see IIPP for complete Fire Prevention Program.
13. Hot Work Permit signed post all hot work activities. This signifies that area has been made secure and no fire hazards remain.



Load Out:

1. *During load-out activities truck drivers shall adhere to Silverado's Truck Management Plan found on Sections 17.0-18.0 of the Work Plan Document. It is everyone's responsibility that all requirements are met by truck drivers.*
2. *Spotter shall be in place during all load-out operations and maintain radio and visual contact with operators.*
3. *Drivers must not exceed a top speed of 10MPH.*
4. *Spotters shall confirm that all truck drivers have the appropriate PPE prior to exiting vehicle (e.g. safety glasses, high visibility vest, hard hat, boots) if not driver must be escorted off the property.*
5. *Truck drivers must exit vehicles prior to loading and shall have 30-50 feet distance between him/she and loading operations.*
6. *Equipment must perform a $\frac{3}{4}$ swing and must not swing over cab of vehicle being loaded.*
7. *Drivers shall not wonder into other locations and must remain visible to spotter at all times.*
8. *Drivers must remain downwind of all said activities.*
9. *Spotter shall stop all operations when driver is to verify load weight.*
10. *Spotter shall escort driver to scale area and directed to exit route.*

Clean Up:

1. *After completion decontamination procedures found in section 12 of this HSP must be adhered to if applicable.*
2. *Sign post work authorization section of the JSA. This signifies that all areas have been secured, cleaned and made safe.*

Additional Instruction:

All personnel directly involved with torch cutting LBP materials will be required to wear level D PPE as well as PAPRs with HEPA filtration as described in section 5.1. All other personnel involved with demolition activities will be required to wear level D PPE and at minimum a half-face respirator with HEPA filtration in accordance with Silverado's Respiratory Protection Program.

Due to the unknown content and disposition of the gaskets in the flanges, all exposed gaskets will be evaluated by a Licensed Asbestos Abatement Contractor. The Certified Asbestos Consultant (CAC) will be present to identify the gaskets as either presumed asbestos containing materials (PACM) or as ACM. If the CAC identifies the gaskets as ACM, the abatement contractor will collect the gaskets and will manage them according to the industry standard practices and regulations. Level D PPE will be worn during the cleanup of LBP chips that have been liberated during shearing of the LBP pipe. The waste generated from the operations will be placed in 6 mil polyethylene bags and placed in properly labeled



drums. The work area will be cleaned down and vacuumed with a vacuum equipped with a HEPA filtration system. *Line-of-Sight Supervision shall be conducted during all demolition activities.*

Potential Physical Hazards:

Table 3-1 contains a summary of the physical hazards that may be encountered while working on or around this site. *For specific hazards for each task performed on this site and its mitigation see the daily JSAs, Attachment D.*

Exposure to Chemicals:

A thorough discussion of toxicity is beyond the scope of any HASP. Individuals who handle chemicals should supplement the information in this HASP with specific details applicable to the site. Such information is available in Material Safety Data Sheets (MSDSs) in binder onsite. The complex relationship between a material and its biological effect in humans involves considerations of dose, duration and frequency of the exposure, route of exposure, and many other factors, including sex, allergic factors, age, previous sensitization, and lifestyle.

Hazards/Chemicals of Concern:

LBP
Unknown ACMs
Misfired explosive devices
Hex Chrome
Spills
Structure instability
Heavy Equipment (line of sight)

Exposure Routes:

Chemicals enter the body through the following routes:

- Inhalation - absorption through the respiratory tract by inhalation.
- Ingestion - absorption through the digestive tract by eating or smoking with contaminated hands or in contaminated work areas. Depending on particle or droplet size, aerosols may also be ingested.
- Skin or eye contact - absorption through the skin or eyes. Skin contact is the most common cause of the widespread occupational disease dermatitis. The eyes are very porous and can easily absorb toxic vapors that cause permanent eye damage.
- Injection - percutaneous injection through the skin. This can occur through misuse of sharp items, especially hypodermic needles.

Acute toxicity is an adverse effect with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short-term exposures and are of short duration. Examples of acutely toxic chemicals are hydrogen cyanide and ammonia.

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Carcinogenicity. A carcinogen is a chemical that causes malignant (cancerous) tumors.



Material Safety Data Sheets (MSDSs). MSDSs are the most basic source of chemical hazard information. The MSDS summarizes the chemical's properties, the health and physical hazards, including the type of toxicity information discussed in the sections above, and related safety information required by emergency responders.

Monitoring Airborne Concentrations of Contaminants. OSHA has established permissible exposure limits (PELs) for airborne concentrations of selected materials. The PEL is defined as a time-weighted average (TWA) concentration of a particular substance for a normal eight-hour workday and a 40-hour workweek, a concentration to which nearly all workers may be exposed, day after day, without adverse effect.

Corollaries to the eight-hour PEL are the short-term exposure limit (STEL) and the ceiling exposure limit. The STEL is the time-weighted average concentration of a compound to which a worker may be exposed over a period of fifteen minutes without expecting symptoms of irritation, chronic or irreversible tissue damage, or narcosis. The ceiling is the concentration of a substance that should not be exceeded during any part of the working exposure. When instantaneous monitoring is not feasible, the ceiling limit is measured over a period of ten to fifteen minutes.

OSHA PELs were designed to protect workers in industrial settings. Although it is unlikely that these limits will be exceeded during the abatement activities, Silverado will utilize personal air monitoring, engineering controls, and appropriate PPE to include, but not limited to, Tyvek suits, ½ Face respirators w/ HEPA filtration cartridges, gloves and boots to reduce the potential exposure risk.



Table 3-1 Demolition and Salvage of Above Grade Structures Potential Hazards

Sub-Activity	Hazards
Travel to/from Jobsite	<ul style="list-style-type: none"> • Vehicle/Pedestrians • Road Conditions • Exhaustion
Unload/Reload equipment and supplies	<ul style="list-style-type: none"> • Weather • Hand pinch/cuts/crushed • Slips, Trips and Falls • Heat Stress/Cramps/Exhaustion • Back Injuries
Site Set Up	<ul style="list-style-type: none"> • Weather • Vehicles • Pedestrians • Hand pinch/cuts/crushed • Slips, Trips and Falls • Foot Injuries • Eye Injuries • Biological – insects • Heat Stress/Cramps/Exhaustion
Set Up	<ul style="list-style-type: none"> • Back injuries • Hand pinch/cuts/crushed • Heat Stress/Cramps/Exhaustion
Dust Control	<ul style="list-style-type: none"> • Slips Trips and Falls • Equipment Swing Radius • Falling objects • Unstable structures • Flying dust and debris • Uneven ground • Other equipment in work area • Personnel in work area
Torching	<ul style="list-style-type: none"> • Hot Work • Hot surfaces • Pressurized cylinders • Flammability • LBP • ACM • Chromium CrVI • Heat stress • Falling objects • Unstable structures
Shearing	<ul style="list-style-type: none"> • Dust inhalation – Pb exposure • Slips, trips and falls • Noise • Other personnel • Flying debris • Equipment Failure • Heavy Equipment • Heat Stress/Cramps/Exhaustion



	<ul style="list-style-type: none"> • Structure instability
Truck Load-Out	<ul style="list-style-type: none"> • Equipment Swing Radius • Falling objects • Other personnel • Traffic • Flying Dust and Debris
Decontamination and cleanup	<ul style="list-style-type: none"> • Slips, Trips and Falls • Hand pinch/cuts/crushed • Back injuries • Hand injuries • Eye injuries • Foot injuries • Heat Stress/Cramps/Exhaustion

*These activities may require air monitoring see Section 6 for the action level that would require respirator use.



Section 3.2

Demolition of Underground Structures Hazard Analysis

This section identifies the specific hazards associated with the **demolition of underground structures** and presents an analysis of documented or potential chemical, physical or biological hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards through engineering or administrative controls. Hazards that cannot be eliminated must be mitigated by use of PPE.

In an effort to prevent injuries to employees, subcontractors and the general public the Project Manager will perform a job safety analysis (JSA) that will identify all onsite operations, jobs and related tasks that are hazardous. From this assessment engineering controls, administrative controls and personal protection equipment will be identified and used to eliminate or control the hazards that are present. Attachment D contains the JSA that will be used for this site. All crew members are required to participate in the development of the daily JSA.

Evaluation and identification of hazards at the site will occur:

- Initially, during the site setup
- Immediately after initial site entry
- Prior to changes in jobs, tasks, and/or processes
- As required by changing site conditions

Demolition of Underground Structures Description of Procedures:

Prior to the start of work, any necessary modification to permits or Modifications to existing permits will be conducted, as warranted, prior to the start of work. On site Safety Officer shall monitor on and around work areas to assess if any atmospheric and /or environmental hazards exist prior to commencing any activities and written documentation shall be provided. All on site safety supplies shall be in place prior to commencing any activities (e.g. eye wash stations, drinking water, first aid kits) and crews must be able to identify the locations. JSA shall be completed and updated as needed throughout the course of the work and as conditions change, all crew members shall be directly involved with its development on a daily basis.

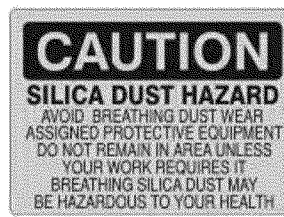
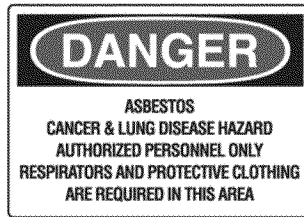
Personnel shall adhere but not limited to the following prior and during said activities:

Demolition/Processing:

1. *Update and review JSA with crew as necessary.*
2. *Verify that all personnel has been properly trained and certified for work being performed.*
3. *Communicate with personnel in the area of the work to be performed.*
4. *Personnel shall don PPE proper for the work being performed (See Section 5 Table 5-2 for PPE specifics). Due to the risk of VOC's Personnel working on said activities shall don Organic vapor cartridges only.*



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5. *Since transite may be found during said activities a work crew, of no less than two (2) personnel, will first set up a 3 stage decontamination system for precautionary reasons.*
 6. *Sufficient applicable warning signage shall be placed in conspicuous areas and must read:*



7. *Area and personnel air monitoring for all possible contaminants shall be performed during all activities until a Negative Exposure Assessment (NEA) has been accomplished and documented.*
8. *Wet methods will be employed during demolition of **Silica** containing materials (e.g. concrete foundations, man holes) to control airborne contaminants.*
9. *Personnel not on equipment shall maintain 70 feet of clearance between themselves and the swing radius off all equipment.*
10. *Personnel shall remain visible to all equipment operators and maintain communication using radio contact at all times.*
11. *Proper shoring technics must be exercised whenever an excavation of over 5 feet is necessary.*
12. *A properly labeled control access zone shall be in place whenever a possible fall into an excavation exists. These areas shall be made known to onsite supervision and health and safety personnel.*
13. *Personnel must not enter excavations without prior approval and permitting of onsite health and safety personnel.*
14. *Personnel shall not enter a confined space under any circumstance. If a confined space exists personnel must notify supervision immediately.*
15. *All excavations generated by said activities shall be properly barricaded and at no time left opened and unsecured. (See IIPP for complete excavation safety program)*



Concrete Stock Piling:

1. *Wet methods must be used during stock piling operations.*
2. *Equipment must not exceed a top speed of 10MPH.*
3. *Spotters shall be utilized during stock piling activities.*
4. *Spotters must maintain visual radio contact with operators at all time.*
5. *Equipment patch of travel must remain clear of personnel and clear of hazards.*

Clean Up:

1. *After completion decontamination procedures found in section 12 of this HSP must be adhered to if applicable.*
2. *All environmental controls shall be placed back into their previous location and the end of each day (e.g. BMPs)*
3. *Sign post work authorization section of the JSA. This signifies that all areas have been secured, cleaned and made safe.*

Line-of-Sight Supervision shall be conducted during all demolition activities.

Potential Physical Hazards:

Table 3-2 contains a summary of the physical hazards that may be encountered while working on or around this site. For specific hazards for each task performed on this site see the JSAs, Attachment D.

Exposure to Chemicals:

A thorough discussion of toxicity is beyond the scope of any HASP. Individuals who handle chemicals should supplement the information in this HASP with specific details applicable to their site. Such information is available in Material Safety Data Sheets (MSDSs) in binder onsite. The complex relationship between a material and its biological effect in humans involves considerations of dose, duration and frequency of the exposure, route of exposure, and many other factors, including sex, allergic factors, age, previous sensitization, and lifestyle.

Hazards/Chemicals of Concern:

Crystalline Silica
Excavations
Heavy equipment
ACM/PACM (transite)



Exposure Routes:

Chemicals enter the body through the following routes:

- Inhalation - absorption through the respiratory tract by inhalation.
- Ingestion - absorption through the digestive tract by eating or smoking with contaminated hands or in contaminated work areas. Depending on particle or droplet size, aerosols may also be ingested.
- Skin or eye contact - absorption through the skin or eyes. Skin contact is the most common cause of the widespread occupational disease dermatitis. The eyes are very porous and can easily absorb toxic vapors that cause permanent eye damage.
- Injection - percutaneous injection through the skin. This can occur through misuse of sharp items, especially hypodermic needles.

Acute toxicity is an adverse effect with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short-term exposures and are of short duration. Examples of acutely toxic chemicals are hydrogen cyanide and ammonia.

Chronic toxicity is an adverse effect with symptoms that develop slowly over a long period of time as a result of frequent exposure. The dose during each exposure period may frequently be small enough that no effects are noticed at the time of exposure. Chronic effects are the result of long-term exposure and are of long duration. Carcinogens as well as many metals and their derivatives exhibit chronic toxicity.

Carcinogenicity. A carcinogen is a chemical that causes malignant (cancerous) tumors.

Material Safety Data Sheets (MSDSs). MSDSs are the most basic source of chemical hazard information. The MSDS summarizes the chemical's properties, the health and physical hazards, including the type of toxicity information discussed in the sections above, and related safety information required by emergency responders.

Monitoring Airborne Concentrations of Contaminants. OSHA has established permissible exposure limits (PELs) for airborne concentrations of selected materials. The PEL is defined as a time-weighted average (TWA) concentration of a particular substance for a normal eight-hour workday and a 40-hour workweek, a concentration to which nearly all workers may be exposed, day after day, without adverse effect.

Corollaries to the eight-hour PEL are the short-term exposure limit (STEL) and the ceiling exposure limit. The STEL is the time-weighted average concentration of a compound to which a worker may be exposed over a period of fifteen minutes without expecting symptoms of irritation, chronic or irreversible tissue damage, or narcosis. The ceiling is the concentration of a substance that should not be exceeded during any part of the working exposure. When instantaneous monitoring is not feasible, the ceiling limit is measured over a period of ten to fifteen minutes.

OSHA PELs were designed to protect workers in industrial settings. Although it is unlikely that these limits will be exceeded during the abatement activities, SILVERADO CONTRACTORS, INC. will utilize personal air monitoring, engineering controls, and appropriate PPE to include, but not limited to, Tyvek suits, ½ Face respirators w/ HEPA filtration cartridges, gloves and boots to reduce the potential exposure risk.



Table 3-2 Demolition of Underground Structures Potential Site Hazards

Sub-Activity	Hazards
Travel to/from Jobsite	<ul style="list-style-type: none"> • Vehicle/Pedestrians • Road Conditions
Excavate to expose foundations/Structures	<ul style="list-style-type: none"> • Weather • Hand pinch/cuts/crushed • Slips, Trips and Falls • Heat Stress/Cramps/Exhaustion • Cave-ins • VOCs • Silica • ACM
Demolition of concrete foundations using breaker	<ul style="list-style-type: none"> • Weather • Other personnel • Noise • ACM • Heavy equipment • Hand pinch/cuts/crushed • Slips, Trips and Falls • Flying debris • Biological – insects & snakes • Heat Stress/Cramps/Exhaustion
Clean Up	<ul style="list-style-type: none"> • Back injuries • Slips, trips and falls • Noise • Spiders • Elevated Locations • Flying debris • Hand injuries • Foot injuries • Back injuries (ensure proper lifting practices are use; lift with legs. Limit load to less than 50 lbs without assistance. • Eye injuries • Heavy Equipment • Heat Stress/Cramps/Exhaustion



Section 3.3 On-site Concrete Crushing Hazard Analysis

This section identifies the specific hazards associated with **on-site concrete crushing** and presents an analysis of documented or potential chemical, physical or biological hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards through engineering or administrative controls. Hazards that cannot be eliminated must be mitigated by use of PPE.

In an effort to prevent injuries to employees, subcontractors and the general public the Project Manager will perform a job safety analysis (JSA) that will identify all onsite operations, jobs and related tasks that are hazardous. From this assessment engineering controls, administrative controls and personal protection equipment will be identified and used to eliminate or control the hazards that are present. Attachment D contains the JSA that will be used for this site.

Evaluation and identification of hazards at the site will occur:

- Initially, during the site setup
- Immediately after initial site entry
- Prior to changes in jobs, tasks, and/or processes
- As required by changing site conditions

Concrete Crushing Description of Procedures:

Prior to the start of work, any necessary modification to permits or Modifications to existing permits will be conducted, as warranted, prior to the start of work. E H & S shall monitor on and around work areas to assess if any atmospheric and/or environmental hazards exist prior to commencing any activities. All safety equipment and supplies shall be in place prior to commencing any activities (e.g. eye wash stations, drinking water, first aid kits) and crews must be able to identify the locations. JSA shall be completed and updated as needed throughout the course of the work and as conditions change, all crew members shall be directly involved with its development on a daily basis.

Prior to mobilizing crushing plan supervisions must assess site and ensure that:

1. *Ground is firm and stable*
2. *Safe/ suitable access/egress (trucks, mobile plant)*
3. *Room for equipment, mobile loading plant and materials*
4. *No work within 3m of overhead power lines (including the discharge conveyor when extended).*
5. *Clear of underground assets – (Dig-Alert)*
6. *Able to be positioned safely (allows for visual contact between operators and discharge area, not positioned on or adjacent to previously disturbed or back-filled land, excavations, trenches, pits etc. and on level ground)*



-
7. *Workers are not exposed to site hazards (such as dust containing silica, close proximity to moving plant/vehicles etc.).*
 8. *Sufficient warning signs and exclusion zones*
 9. *Dust suppression system in place (example: misting, water)*

All crushing related activities, including but not limited to:

1. *preparing the material for crushing,*
2. *loading the material into the crusher,*
3. *stockpiling the crushed material,*

All crushing activities shall be conducted by qualified trained personnel only and certifications shall be available upon request. Controls such as storm water BMPs will be installed to minimize the threat of a release from within the work area to surrounding areas/soils. BMPs will be commensurate with the Storm Water Pollution Prevention Plan (SWPPP). All areas in and around crusher shall remain well kept and clear of tripping hazards.

Wet methods shall be implemented during all crushing operations to prevent dust migration. Area and personnel air monitoring for silica shall be performed during all activities until a Negative Exposure Assessment (NEA) has been achieved and documented. Level D PPE and at minimum a half-face respirator shall be worn by all personnel working on and around crushing operation. Crusher guarding integrity must be checked at regular intervals, particularly after cleaning or maintenance work. During operation crusher must be fed by heavy equipment only to prevent personnel from coming in contact with crusher. Warning signs must be posted in area and must read:



The OSHA standard for The Control of Hazardous Energy (Lockout/Tagout), Title 29 Code of Federal Regulations (CFR) Part 1910.147, addresses the practices and procedures necessary to disable machinery or equipment, thereby preventing the release of hazardous energy and must be exercised anytime crusher needs maintenance or repair (e.g. clearing blockages). All maintenance must be performed by qualified trained personnel only. ***Line-of-Sight Supervision shall be conducted during all demolition activities.***

Potential Physical Hazards:



Table 3-3 contains a summary of the physical hazards that may be encountered while working on or around this site. For specific hazards for each task performed on this site see the JSAs, Attachment D.

Exposure to Chemicals:

A thorough discussion of toxicity is beyond the scope of any HASP. Individuals who handle chemicals should supplement the information in this HASP with specific details applicable to their site. Such information is available in Material Safety Data Sheets (MSDSs) in binder onsite. The complex relationship between a material and its biological effect in humans involves considerations of dose, duration and frequency of the exposure, route of exposure, and many other factors, including sex, allergic factors, age, previous sensitization, and lifestyle.

Hazards/Chemicals of Concern:

Crystalline Silica
Heavy Equipment Swing Radius
Crushing Plant

Exposure Routes:

Chemicals enter the body through the following routes:

- Inhalation - absorption through the respiratory tract by inhalation.
- Ingestion - absorption through the digestive tract by eating or smoking with contaminated hands or in contaminated work areas. Depending on particle or droplet size, aerosols may also be ingested.
- Skin or eye contact - absorption through the skin or eyes. Skin contact is the most common cause of the widespread occupational disease dermatitis. The eyes are very porous and can easily absorb toxic vapors that cause permanent eye damage.
- Injection - percutaneous injection through the skin. This can occur through misuse of sharp items, especially hypodermic needles.

Acute toxicity is an adverse effect with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short-term exposures and are of short duration. Examples of acutely toxic chemicals are hydrogen cyanide and ammonia.

Chronic toxicity is an adverse effect with symptoms that develop slowly over a long period of time as a result of frequent exposure. The dose during each exposure period may frequently be small enough that no effects are noticed at the time of exposure. Chronic effects are the result of long-term exposure and are of long duration. Carcinogens as well as many metals and their derivatives exhibit chronic toxicity.

Carcinogenicity. A carcinogen is a chemical that causes malignant (cancerous) tumors.

Material Safety Data Sheets (MSDSs). MSDSs are the most basic source of chemical hazard information. The MSDS summarizes the chemical's properties, the health and physical hazards, including the type of toxicity information discussed in the sections above, and related safety information required by emergency responders.



Monitoring Airborne Concentrations of Contaminants. OSHA has established permissible exposure limits (PELs) for airborne concentrations of selected materials. The PEL is defined as a time-weighted average (TWA) concentration of a particular substance for a normal eight -hour workday and a 40-hour workweek, a concentration to which nearly all workers may be exposed, day after day, without adverse effect.

Corollaries to the eight -hour PEL are the short -term exposure limit (STEL) and the ceiling exposure limit. The STEL is the time-weighted average concentration of a compound to which a worker may be exposed over a period of fifteen minutes without expecting symptoms of irritation, chronic or irreversible tissue damage, or narcosis. The ceiling is the concentration of a substance that should not be exceeded during any part of the working exposure. When instantaneous monitoring is not feasible, the ceiling limit is measured over a period of ten to fifteen minutes.

OSHA PELs were designed to protect workers in industrial settings. Although it is unlikely that these limits will be exceeded during the abatement activities, Silverado will utilize personal air monitoring, engineering controls, and appropriate PPE to include, but not limited to, Tyvek suits, ½ Face respirators w/ HEPA filtration cartridges, gloves and boots to reduce the potential exposure risk.



Table 3-3 Concrete Crushing Potential Site Hazards

Sub-Activity	Hazards
Travel to/from Jobsite	<ul style="list-style-type: none"> • Vehicle/Pedestrians • Road Conditions
Unload/Reload equipment and supplies	<ul style="list-style-type: none"> • Weather • Hand pinch/cuts/crushed • Slips, Trips and Falls • Heat Stress/Cramps/Exhaustion • Back Injuries
Site Set Up	<ul style="list-style-type: none"> • Weather • Vehicles • Heavy lifting • Hand pinch/cuts/crushed • Slips, Trips and Falls • Foot Injuries • Heavy equipment • Electrical hazards • Eye Injuries • Biological – insects • Heat Stress/Cramps/Exhaustion
Crushing	<ul style="list-style-type: none"> • Crusher • Crystalline Silica • Flying debris • Slips, trips and falls • Noise • Blockages • Electrical hazards • Flying debris • Hand injuries • Caught in between • Underground Utilities • Back injuries due to repetitive motion • Eye injuries • Heavy Equipment • Heat Stress/Cramps/Exhaustion
Equipment dismantling	<ul style="list-style-type: none"> • Slips, Trips and Falls • Hand pinch/cuts/crushed • Back injuries • Heavy equipment • Hand injuries • Eye injuries • Foot injuries • Trucking • Personnel in area • Heat Stress/Cramps/Exhaustion



Section 3.4 Site Clean-up and Grading Hazard Analysis

This section identifies the specific hazards associated with the **Site Cleaning & Grading** and presents an analysis of documented or potential chemical, physical or biological hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards through engineering or administrative controls. Hazards that cannot be eliminated must be mitigated by use of PPE.

In an effort to prevent injuries to employees, subcontractors and the general public the Project Manager will perform a job safety analysis (JSA) that will identify all onsite operations, jobs and related tasks that are hazardous. From this assessment engineering controls, administrative controls and personal protection equipment will be identified and used to eliminate or control the hazards that are present. Attachment D contains the JSA that will be used for this site.

Evaluation and identification of hazards at the site will occur:

- Initially, during the site setup
- Immediately after initial site entry
- Prior to changes in jobs, tasks, and/or processes
- As required by changing site conditions

Site Cleaning and Grading Description of Procedures:

Prior to the start of work, any necessary permits or modifications to existing permits will be conducted, as warranted, prior to the start of work.. EH & S shall verify and approve JSA prior to every task. JSA shall be updated as conditions and tasks change. Controls such as storm water BMPs shall be maintained during all activities to minimize the threat of a release from within the work area to surrounding areas/soils. BMPs will be commensurate with the Storm Water Pollution Prevention Plan (SWPPP). Soil sampling shall be performed as clean-up activities begin to assure proper cleanup of all hazardous wastes. At which point personnel will initiate Gross Product Removals, Initiate Cleaning Activities and manage all waste being generated during said activities. Waste generated during said activities shall be stored in sealed, labeled containers pending proper off-site disposal. Upon completion of all work, Personnel will decontaminate self and area as necessary.

Potential Physical Hazards:

Table 3-4 contains a summary of the physical hazards that may be encounter while working on or around this site. For specific hazards for each task performed on this site see the JSAs, Attachment D.

Exposure to Chemicals:

A thorough discussion of toxicity is beyond the scope of any HASP. Individuals who handle chemicals should supplement the information in this HASP with specific details applicable to their site. Such information is available in Material Safety Data Sheets (MSDSs) in binder onsite. The complex relationship between a material and its biological effect in humans involves considerations of dose, duration and frequency of the exposure, route of exposure, and many other factors, including sex, allergic factors, age, previous sensitization, and lifestyle.



Hazards/Chemicals of Concern:

Lead Waste
Proximity to Switch Yard
VOC's
Heavy Equipment

Exposure Routes:

Chemicals enter the body through the following routes:

- Inhalation - absorption through the respiratory tract by inhalation.
- Ingestion - absorption through the digestive tract by eating or smoking with contaminated hands or in contaminated work areas. Depending on particle or droplet size, aerosols may also be ingested.
- Skin or eye contact - absorption through the skin or eyes. Skin contact is the most common cause of the widespread occupational disease dermatitis. The eyes are very porous and can easily absorb toxic vapors that cause permanent eye damage.
- Injection - percutaneous injection through the skin. This can occur through misuse of sharp items, especially hypodermic needles.

Acute toxicity is an adverse effect with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short-term exposures and are of short duration. Examples of acutely toxic chemicals are hydrogen cyanide and ammonia.

Chronic toxicity is an adverse effect with symptoms that develop slowly over a long period of time as a result of frequent exposure. The dose during each exposure period may frequently be small enough that no effects are noticed at the time of exposure. Chronic effects are the result of long-term exposure and are of long duration. Carcinogens as well as many metals and their derivatives exhibit chronic toxicity.

Carcinogenicity. A carcinogen is a chemical that causes malignant (cancerous) tumors.

Material Safety Data Sheets (MSDSs). MSDSs are the most basic source of chemical hazard information. The MSDS summarizes the chemical's properties, the health and physical hazards, including the type of toxicity information discussed in the sections above, and related safety information required by emergency responders.

Monitoring Airborne Concentrations of Contaminants. OSHA has established permissible exposure limits (PELs) for airborne concentrations of selected materials. The PEL is defined as a time-weighted average (TWA) concentration of a particular substance for a normal eight-hour workday and a 40-hour workweek, a concentration to which nearly all workers may be exposed, day after day, without adverse effect.

Corollaries to the eight-hour PEL are the short-term exposure limit (STEL) and the ceiling exposure limit. The STEL is the time-weighted average concentration of a compound to which a worker may be exposed over a period of fifteen minutes without expecting symptoms of irritation, chronic or irreversible tissue damage, or narcosis. The ceiling is the concentration of a substance that should not be exceeded during any part of the working exposure. When instantaneous monitoring is not feasible, the ceiling limit is measured over a period of ten to fifteen minutes.



OSHA PELs were designed to protect workers in industrial settings. Although it is unlikely that these limits will be exceeded during the abatement activities, Silverado will utilize personal air monitoring, engineering controls, and appropriate PPE to include, but not limited to, Tyvek suits, ½ Face respirators w/ HEPA filtration cartridges, gloves and boots to reduce the potential exposure risk.



Table 3-4 Site Cleanup and Grading Potential Site Hazards

Sub-Activity	Hazards
Travel to/from Jobsite	<ul style="list-style-type: none"> • Vehicle/Pedestrians • Road Conditions
Reload equipment and supplies	<ul style="list-style-type: none"> • Weather • Hand pinch/cuts/crushed • Slips, Trips and Falls • Heat Stress/Cramps/Exhaustion • Back Injuries
Cleanup Activities	<ul style="list-style-type: none"> • Flying debris • Back injuries • Slips, trips and falls • Noise • LBP • Hand injuries • VOC's • Proximity of switch yard • Electrical hazards • Biological • Back injuries due to repetitive motion. • Eye injuries • Heavy Equipment • Heat Stress/Cramps/Exhaustion
Grading	<ul style="list-style-type: none"> • Weather • Vehicles • Other personnel • Heavy lifting • Equipment failure • Hand pinch/cuts/crushed • Slips, Trips and Falls • Foot Injuries • Eye Injuries • Biological – insects • Heat Stress/Cramps/Exhaustion
Demobilization	<ul style="list-style-type: none"> • Weather • Vehicles • Pedestrians • Heavy lifting • Hand pinch/cuts/crushed • Slips, Trips and Falls • Foot Injuries • Eye Injuries • Biological – insects & snakes • Heat Stress/Cramps/Exhaustion



Section 4 Training Requirements

All SILVERADO CONTRACTORS, INC. personnel assigned to work on this site beyond the support zone have successfully completed 40 hours of Training for Hazardous Waste Site Work, in accordance with Occupational Safety Health Act (OSHA) 29 CFR 1910.120(e)(3), and are current with their 8-hour Refresher Training, in accordance with OSHA 29 CFR 1910.120(e)(8).

For subcontractors, documentation of OSHA training has been submitted to the E H & S prior to personnel being permitted to work on-site. Attachment E contains a list of authorized SILVERADO CONTRACTORS, INC. personnel for this site along with certification dates for training. Any additional authorized personnel must be verified by the E H & S prior to working.

Training requirements for this site:

- **40 HR Hazwoper**
- **Respirator Training/Fit Test (Medical Surveillance)**
- **First Aid and CPR**
- **Lead Worker(Lead Awareness as a minimum)**
- **Hazard Communication/GHS**
- **Silica Awareness**
- **AHERA Asbestos worker (Asbestos Awareness as a minimum)**
- **Chromium Awareness**

Any exceptions to the training requirements will be explicitly specified either in this Health and Safety Plan (HASP) or through a HASP amendment and be approved by the E H & S. See Attachment A.

Personnel will be prohibited from participating in field activities until appropriately trained.

Medical Monitoring Requirements:

All personnel assigned to work on this site beyond the support zone must be enrolled in a medical surveillance program meeting the requirements of OSHA 29 CFR 1910.120(f). Personnel must have successfully passed an occupational physical during the past 12 months and be medically cleared to work on hazardous waste sites, and be capable of wearing appropriate personal protective equipment (PPE), including any respiratory protection.

Any exceptions to the medical monitoring requirements will be explicitly specified either in this HASP or through a HASP amendment see Attachment A.

Site Health and Safety Meetings:

A pre-work meeting addressing site-specific site health and safety issues shall be held prior to mobilization to the site and to the commencement of any work activities. Mandatory attendance is required for all personnel assigned to the site. At the conclusion of the meeting, personnel are to sign the daily JSA, see Attachment D, indicating their attendance and understanding of the health and safety protocols. As additional personnel are assigned to the site, it is the responsibility of the EH & S to ensure that new personnel are briefed on health and safety protocols and that they also have reviewed and signed the JSA.



Additional site health and safety tailgate meetings will be held on a daily basis. These meetings shall be conducted to inform all personnel of changing site conditions, to understand any near misses and “lessons learned,” to present pertinent site safety topics, and to address any worker health and safety concerns

Additional site health and safety meeting may be called for all participants on an “as needed” basis. Rationale for these additional meetings include but are not limited to the following: any significant change in site conditions, weather changes, observation of questionable activities at the site or recognition of potentially dangerous or hazardous conditions observed which may impact activities at the site or adjacent areas.

The following subjects or tasks must be addressed at all tailgate meetings:

- Are all employees capable of performing their job related duties?
- Required PPE for the site.
- Ask and check all employees for the required PPE – visual inspection must occur.
 - See section 5 of this HASP
- Discuss the specific routine tasks to be performed that day and the hazards associated with them.
- Discuss any non-routine tasks and the hazards associated with them and the proper safe operating procedures.
- Additional site hazards.
- Location of the first aid kit, MSDS, fire extinguisher, spill kits and eye wash containers.
- Review JSAs



Section 5

Personal Protective Equipment

The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical and biological hazards that may be encountered while on-site when engineering and other controls are not feasible or cannot provide adequate protection.

No single combination of PPE is capable of protecting against all hazards. Therefore, PPE should be used in conjunction with, not in place of, other protective methods, such as engineering controls, administrative controls and safe work practices.

The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress, impaired vision, reduced mobility, and distorted communication. In general, the higher the level of PPE protection, the greater the risks associated with use of PPE. For any given situation, PPE should be selected to provide an adequate level of protection. Over-protection as well as under-protection can be hazardous and should be avoided.

Selection of Personal Protective Equipment:

Selection of appropriate PPE is key to protecting the safety and health of site personnel. This will be done by qualified and knowledgeable professionals to insure that selected PPE protects workers from site-specific hazards posed by their task and work zone.

Level D

Level D protection is the standard work uniform that employees wear to protect themselves while performing routine tasks and the atmosphere contains no known hazard and are under the permissible exposure limits (PEL). Level D PPE consists of the following:

- Hard Hat
- Safety Glasses
- Gloves – leather – Kevlar , chemical resistant
- Tyvek suits
- Safety Boots
- Traffic Safety Vest
- Hearing Protection – as needed
- Face Shield – as needed
- Fall Protection – Asbestos Abatement

Level C

Level C protection includes level D equipment, but is used when a hazardous atmosphere is present and:

- The types of air contaminants have been identified, concentrations measured, and an IDLH condition does not exist.
- Oxygen levels are greater than 19.5% and less than 23.5%.
- Level C PPE consists of:
 - Half-face APR
 - Full-face APR
 - Type of Cartridges to be Used: HEPA
 - Level D PPE



Inspection and Removal of Hazardous Materials Required PPE:

Table 5-0: Required PPE for each task performed.

Task Performed	Required PPE	Additional PPE
Travel to/from Jobsite	<ul style="list-style-type: none"> • Seat belts • Defensive Driving 	
Unload/Reload equipment and equipment and supplies	<ul style="list-style-type: none"> • Steel toed work boots with ankle support • Leather or craftsman gloves • Eye protection – safety glasses • Reflective Vest • Hard Hat 	
Site Set Up: (1) Set -up 3 stage Decon shower <ul style="list-style-type: none"> • Stage 1 - Tool Room to be connect to work area containment/critical. • Stage 2 – Shower to be connected to tool room. • Shower head with valve attachments hot water and cold hosed connect to 5 gallon water heater. • Stage 3 – Clean room to be attached to shower. 	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather or craftsman gloves • High visibility vest 	
Abetment/Removal	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather/Kevlar gloves • Tyvek w/ booties or equivalent • High Visibility Vest Level C <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges 	<ul style="list-style-type: none"> • Hearing protection when applicable • Face Shield – flying debris • Fall Protection system with anchorage, harness and lanyard while on Arial lift.
Cleanup	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat 	



	<ul style="list-style-type: none">• Safety glasses• High visibility vest• Leather/Kevlar gloves• Tyvek• Ear Protection when using Vacuum <p>Level C</p> <ul style="list-style-type: none">• Half Face or Full North Respirator• HEPA Filter Cartridges	
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Demolition and Salvage of Above Grade Structures Required PPE:

Table 5-1: Required PPE for each task performed.

Task Performed	Required PPE	Additional PPE
Travel to/from Jobsite	<ul style="list-style-type: none"> • Seat belts • Defensive Driving 	
Unload/Reload equipment and equipment and supplies	<ul style="list-style-type: none"> • Steel toed work boots with ankle support • Leather or craftsman gloves • Eye protection – safety glasses • Reflective Vest • Hard Hat 	
Site Set Up: (1) Set -up 3 stage Decon shower <ul style="list-style-type: none"> • Stage 1 - Tool Room to be connect to work area containment/critical. • Stage 2 – Shower to be connected to tool room. • Shower head with valve attachments hot water and cold hosed connect to 5 gallon water heater. • Stage 3 – Clean room to be attached to shower. 	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather or craftsman gloves • High visibility vest 	
Demolition	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather/Kevlar gloves • Tyvek w/ booties or equivalent • High Visibility Vest Level C <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges • PAPR personnel performing torching activities only. 	<ul style="list-style-type: none"> • Hearing protection when applicable • Face Shield – flying debris • Fall Protection system with anchorage, harness and lanyard while on Arial lift.
Cleanup	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support 	



	<ul style="list-style-type: none">• Hard hat• Safety glasses• High visibility vest• Leather/Kevlar gloves• Tyvek• Ear Protection when using Vacuum <p>Level C</p> <ul style="list-style-type: none">• Half Face or Full North Respirator• HEPA Filter Cartridges	
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Demolition of Underground Structures Required PPE:

Table 5-2: Required PPE for each task performed.

Task Performed	Required PPE	Additional PPE
Travel to/from Jobsite	<ul style="list-style-type: none"> • Seat belts • Defensive Driving 	
Demolition	<p>Level D</p> <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Nitrile Gloves • Tyvek <p>Level C</p> <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges 	<ul style="list-style-type: none"> • Hearing protection when applicable • Face Shield – flying debris • Fall Protection system with anchorage, harness and lanyard while performing activities from an elevated area over 6’ in height.
Clean-Up	<p>Level D</p> <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • High visibility vest • Leather/Kevlar gloves • Tyvek <p>Level C</p> <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges 	



Concrete Crushing Required PPE:

Table 5-3: Required PPE for each task performed.

Task Performed	Required PPE	Additional PPE
Travel to/from Jobsite	<ul style="list-style-type: none"> • Seat belts • Defensive Driving 	
Unload/Reload equipment and equipment and supplies	<ul style="list-style-type: none"> • Steel toed work boots with ankle support • Leather or craftsman gloves • Eye protection – safety glasses • Reflective Vest • Hard Hat 	
Site Set Up:	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather or craftsman gloves • High visibility vest 	Fall Protection system with anchorage, harness and lanyard while performing activities from an elevated area over 6’ in height.
Crushing	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Nitrile Gloves • Tyvek • High visibility vest Level C <ul style="list-style-type: none"> • Half Face or Full North Respirator 	<ul style="list-style-type: none"> • Hearing protection • Face Shield – flying debris • Fall Protection system with anchorage, harness and lanyard while performing activities from an elevated area over 6’ in height.
Clean-Up	Level D <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • High visibility vest • Leather/Kevlar gloves • Tyvek Level C <ul style="list-style-type: none"> • Half Face Respirator 	



Site Cleanup, Grading and demobilization Required PPE:

Table 5-4: Required PPE for each task performed.

Task Performed	Required PPE	Additional PPE
Travel to/from Jobsite	<ul style="list-style-type: none"> • Seat belts • Defensive Driving 	
Reload equipment and supplies	<ul style="list-style-type: none"> • Steel toed work boots with ankle support • Leather or craftsman gloves • Eye protection – safety glasses • Reflective Vest • Hard Hat 	
Site Clean Up	<p>Level D</p> <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Leather/Kevlar gloves • Tyvek w/ booties if applicable • High Visibility Vest <p>Level C</p> <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges if applicable 	<ul style="list-style-type: none"> • Hearing protection when applicable
Waste management: Place generated waste in bins/drums/ Clean-up any spills.	<p>Level D</p> <ul style="list-style-type: none"> • Steel toed work boots with ankle support • Hard hat • Safety glasses • Face shield • High visibility vest • Leather/Kevlar gloves • Tyvek <p>Level C</p> <ul style="list-style-type: none"> • Half Face or Full North Respirator • HEPA Filter Cartridges if applicable 	
Grading	<ul style="list-style-type: none"> • Steel toed work boots with ankle support • Leather or craftsman gloves • Eye protection – safety glasses • Reflective Vest • Hard Hat 	



Respirator Program:

Silverado Contractors, Inc. has developed for the protection of its employees a Respiratory Protection Program. This program is intended to protect employees from atmospheres that may be hazardous to their health. Before any employee is authorized to wear a respirator they must be medically cleared and fit tested. All employees and subcontractors will follow the requirements of SILVERADO CONTRACTORS, INC.'s Respiratory Protection Program when respirator use is required.

Inspection and Maintenance:

Prior to using a respirator, the employee shall inspect the unit for signs of wear and contamination. Specifically, the following items should be inspected:

Face piece - check for:

- excessive dirt (clean dirt from face piece)
- cracks, tears, or holes (obtain new face piece)
- excessive wear and tear on all respirator seals and/or components.
- distortion (allow face piece to "sit-free" from any constraints and see if distortion disappears; if not, obtain new face piece)
- cracked, scratched, or loose fitting lenses (contact respirator manufacturer to see if replacement is possible; otherwise, obtain new face piece)

Head straps - check for:

- breaks or tears (replace head straps)
- loss of elasticity (replace head straps)
- broken or malfunctioning buckles or attachments (obtain new buckles)

Inhalation valve, exhalation valve - check for:

- detergent residue, dust particles, or dirt on valve or valve seat (clean residue with soap and water)
- cracks, tears, or distortion in the valve material or valve seat (obtain replacement valves from manufacturer)
- missing or defective valve cover (obtain valve cover from manufacturer)

Filter element(s) - check for:

- proper filter for the hazard
- approval designation
- missing or worn gaskets (contact manufacturer for replacement)
- worn threads - both filter threads and face piece threads (replace filter or face piece, whichever is applicable)

Using a Respirator:

Prior to entering a contaminate zone SILVERADO CONTRACTORS, INC.'s personnel must don the respirator and perform a positive and negative fit test. In order to achieve a good face to face piece seal and eliminate interference with valve function, SILVERADO CONTRACTORS, INC. employees will be clean shaven when wearing a respirator, e.g. no beards, long mustaches, or stubble will be permitted.

Respirators will not be worn by anyone with a condition that interferes with the face to face piece seal or valve function. If an employee wears corrective glasses or goggles, they will be



worn in a manner that does not interfere with the seal of the face piece to the face. No clothing, facelets, or coverings will be permitted between the face and the facepiece. Coverall hoods and head coverings will be put on over the respirator.

The employee shall leave the respirator use area:

- To wash their faces and respirator face piece as necessary to prevent eye or skin irritation associated with the respirator use.
- If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece;
- To replace the respirator or the filter, cartridge, or canister elements.

Respirator Cleaning:

Respirators issued and utilized by a single employee shall be cleaned and disinfected as frequently as necessary to be maintained in a sanitary condition. SILVERADO CONTRACTORS, INC. personnel shall follow the manufactures instructions for cleaning and disinfecting or use the following procedures:

- Remove cartridges and filters along with any gasket and seals not affixed to their seats.
- Loosen strap adjustments completely.
- Remove the exhalation valve cover.
- Remove the exhalation valve and inhalation valves.
- Wash the face piece and other components in a warm (43 deg. C [110 deg.F] maximum) solution of detergent/sanitizer and water. Use a scrub brush to remove any gross contamination.
- If the detergent used does not contain a disinfectant/sanitizer, respirator components will be immersed for two minutes in one of the following:
 - Sodium Hypochlorite solution (50 ppm chlorine) made by adding approximately one milliliter of laundry bleach to one liter of warm water; or
 - A commercially available disinfectant recommended by the respirator manufacture.
 - Rinse all parts thoroughly in warm, clean, preferably running water. Drain.
 - Allow parts to air dry.
 - Use a damp, lint-free cloth to remove any soap or other foreign materials from the face piece, valves, and seating surfaces.
 - Reassemble the respirator.
 - Test the respirator to ensure all components work properly.

Respirator Storage:

After cleaning and drying the APR, it will be placed in a clean ziplock bag and stored in a location that will protect them from damage, extreme heat/cold, sunlight, excessive moisture and damaging chemicals. The respirators will be stored in a manner to prevent distortion of the face piece and exhalation valve.

Cartridge Change Out:

Respirator cartridges will be disposed of at the conclusion of each work day (8 hrs shift). New cartridges will be utilized prior to the start of the work day. SILVERADO CONTRACTORS, INC.'s HEPA Cartridge Change out schedule is in accordance with OSHA Regulations For



HEPA cartridges, certain conditions may dictate that the cartridges are changed out more frequently as listed below:

- If the organic chemical's boiling point is <70°F and the concentration is greater than 200 parts per million (ppm), contact the Corporate EHS Director to discuss cartridge change out and options for respiratory protection.
- If physical work rate exceeds a moderate level, replace cartridges every 4 hours of work.
- If relative humidity exceeds 85%, replace cartridges every 4 hours of work.

Fall Protection (If Required):

Per OSHA Regulations, each employee engaged in activities with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. At no time will SILVERADO CONTRACTORS, INC. personnel be exposed to a fall of 6 feet or more without fall protection equipment. *Although work in elevated locations is not anticipated 100% tie off is required if the situation presents its self. (See IIPP for complete fall protection plan.)*

SILVERADO CONTRACTORS, INC. will utilize a Body Harness – Vest Style with lanyards and appropriate anchorage during the asbestos abatement of mastic associated with roof penetration and flashing mastic. The harness specifications are below:

- Two sizes fits most, S-M & M-XL
- Tongue buckle legs straps
- Hip Dees for positioning
- Adjustable chest strap
- Sliding back dee for lanyard attachment
- Webbing: T19 - 1-3/4" nylon webbing, minimum tensile strength 10,000 lbs
- Hardware: Dee ring: forged steel, proof load 3600 lbs, minimum tensile strength 5000lbs
- Tongue buckle: Forged steel, proof load 3600 lbs, minimum tensile strength 5000 lbs
- Grommets: #2 Brass spur washer and grommet
- Friction buckles: Forged steel, proof load 3600 lbs, minimum tensile strength 5000 lbs
- Mating buckles: Stamped steel, proof load 3600 lbs, minimum tensile strength 5000 lbs
- Back & Shoulder pads: Cool-max foam/denier
- Thread: 415 black bonded nylon

Ladder(s) and Safety Harness:

The Field crew(s) shall be trained on Safety Harness usage. The field Superintendent and crew(s) shall follow manufacturers' instructions for wearing harnesses. At no time will any SILVERADO CONTRACTORS, INC. employee be exposed to a fall at 6 feet or more without fall protection. For most full-body harnesses, every time you use one, do the following:



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- Insure that ladder(s) is on a firm and level surface. Do not station on soft or uneven terrain. Failure to take caution could cause tipping. Ladder limits specified by the manufacturer shall not be exceeded.
 - Modifications or alterations of the ladder(s) shall be made only with prior written permission of the manufacturer.
 - Do Not Alter or disable interlocks or other safety devices.
 - Inspect the work area thoroughly for all obstacles, debris, drop offs, holes, slopes and depressions.
 - Inspect the harness and ladder thoroughly before each use. Test all functions before raising the platform.
 - Field Crew(s) shall maintain a firm footing on roof at all times. Safety Harnesses/lanyards must be work at all times.
 - Hard hat, safety glasses and safety shoes should be worn.
 - Carefully look over the harness.
 - Hold the harness by the back D-ring and shake it so all straps fall in place.
 - Slip the straps over your shoulders so the D-ring is in the middle of your back.
 - Connect the chest and/or waist straps. These straps should fit snugly.
 - Reach between your legs and connect one long strap to the buckle or closure on your thigh. Repeat with the second strap.
 - After you connect both straps, pull them tight. The hamess should be snug but let you move freely.
 - Connect the harness to the right fall-protection system.
 - Make sure your anchor point is approved for the way you will use it. If you are not sure, check with the competent person for the job.
 - Never use gear that has already been in a fall, unless it has been recertified by the manufacturer.

Anchorage:

Anchors will be installed by a competent person with experience in designing fall protection systems, or another qualified person with appropriate education and experience. At a minimum, 3-4 anchors will be installed no greater than 4 feet apart, adjacent to each area requiring Attention. Two (2) lanyards will be utilized at all times. The lanyard length should be 6 feet plus or minus 2 inches as measured from the fixed anchorage to the attachment on the body harness. Eye bolts and snap hooks utilized shall be made of appropriate grade steel.

Rescue:

Workers who fall in a harness may not be able to rescue themselves. A rescue plan for each possible fall situation shall be set up. Make sure ladder trucks will be able to reach hanging workers. Or plan ahead for other ways to rescue them. Be sure medical and rescue teams will get there fast, if needed. This is because hanging in a harness for more than a halfhour can be fatal. And a worker who falls may have other injuries.

- Call 911

Inspections:

- Inspect your equipment before each use. Documentation in Worker's Daily Log (See Attached).



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- Follow all manufacturer instructions about inspecting, caring for, and storing the equipment.
 - After inspecting your equipment as the manufacturer says, inspect it for:
 - Missing or unreadable markings or warnings
 - Missing parts
 - Damage to metal parts – any changes, cracks, sharp edges, distortion, corrosion, chemical damage, too much heating, or too much wear
 - Defects in or damage to any straps and ropes – any changes, fraying, unsplicing, unlaying, kinking, knotting, roping, broken or pulled stitches, abrasion, excessive oiling, or sections that are too old, too worn, or too dirty



Section 6 Air Monitoring

Air monitoring will be conducted on this site to ensure that SILVERADO CONTRACTORS, INC. personnel and subcontractors are protected from potential air contaminants. The action levels found in table 6-1 indicate when level C PPE is required and when work must be stopped.

Air monitoring shall be conducted during the following site operations or as specified by the project safety director:

- While walking around the site identifying existing and potential hazards.
- Monitoring shall be conducted during cleanup of any Haz Material by methods of personal pumps and high volume pump.
- At the site boundary
- In the breathing zone for 30 minutes during excursion.
- On going as an area monitor in the exclusion zone downwind of site operations.

The results of all air monitoring data will be maintained by EH & S. All air monitoring equipment calibration data is to be recorded by personnel performing the calibration. Upon request, this data will be made available for review to all interested persons.

Table 6-1: PEL 's

Contaminants	Permissible Exposures	Controls
Asbestos	0.1 f/cc	Neg. pressure system/Respiratory protection/Dust suppression
Lead	0.05 mg/m ³	HEPA P100 Filters/Dust Control/PAPR Depending on trigger task
Hexavalent Chromium	0.1 mg(CrO ₂)/m ³ 0.1 mg(CrO ₃)/m ³ 0.005 mg(CrO ₆)/m ³ 0.1 mg(CrO ₆)/m ³ Ceiling	PAPR w/HEPA filtration
Silica	Crystalline-0.05 mg/m ³ Quartz-0.1 mg/m ³	Half face w/P100 Filters

Air Sampling

Silverado Contractors, Inc. policy is that all air samples will be read by independent NIOSH or PAT certified laboratories. It is our preference that air sample collection will be performed by personnel employed by independent laboratories. In cases where it is not feasible to have an independent lab collect the samples, they will be taken by a certified supervisor who has



participated in training and is proficient in sample collection as specified by OSHA and state regulations. Independent laboratory shall be an accredited lab or, i.e., Silverado Contractors, Inc. or field registered analysts.

It is important that employees understand air-sampling procedures to ensure the consultant/lab is taking the proper amount of samples and employees understand sample results.

At a minimum the following will be required for air monitoring:

Airborne Lead/Asbestos/CRVI/Silica samples are taken before, during and after abatement/Demolition activities to determine how much contaminant is in the air that people breathe. The sampler consists of (1) a pump, (2) plastic or rubber tubing, and (3) a filter cassette. The pump pulls air through the filter. Contaminants collect on the filter surface. This is then examined by the laboratory to determine concentrations of contaminants in the sample air.

Battery-powered pumps are used to pull low volumes of air (0.5 to 4.0 liters per minute). Electric pumps pull higher air volumes (4 to 16 liters per minute). All pumps are calibrated before and after use.

A plastic cassette is attached to the pump with flexible tubing. It holds a filter with very small openings. The front cover of the cassette is removed for asbestos sampling (called “open face” sampling). Air is drawn through the filter, and particles in the air are collected on the filter surface.

The type of filter used depends on the technique and/or contaminant that will be analyzed

Calibration

Before and after sampling it is necessary to calibrate the equipment. This has three steps:

- (1) Assemble the calibration train. This consists of the filter cassette connected between the pump and a primary standard such as a soap bubble burette.
- (2) Turn on the pump, record the time it takes for the soap bubble to travel a predetermined volume, and calculate the flow rate.
- (3) If necessary, adjust the pump to control the flow rate. Most pumps can be adjusted with a small tool such as a screwdriver.

It is important to establish the flow rate before and after each sample, with the sample filter in place. The flow rate and time are both recorded at the beginning and end of the sampling. Knowing the sample time and the flow rate allows the calculation of the total amount (volume) of air that passed through the filter. The lab analyst needs that information to calculate the airborne fiber concentration in fibers per cubic centimeter.

Area Air Sampling

The two basic types of air sampling are area and personal monitoring. The process for taking area air samples includes these steps:

- (1) Place the pump at breathing zone height at a stationary location.



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- (2) Remove the top cover of the plastic filter holder, and point the holder downward to prevent material from falling onto the filter.
 - (3) Turn on the pump, and record the start time and sample description.
 - (4) The pump should be checked periodically (time interval depends on the degree of contamination) to make sure it is functioning properly. Also, the filter should be visibly inspected for overloading.
 - (5) At the end of the sampling period, turn the pump off, replace the cover of the filter holder and secure it with tape. Record the stop time and any other comments about sampling conditions.

Passive and Aggressive Sampling

Area air samples can be collected using passive or aggressive sampling techniques. *Passive sampling* implies monitoring an area as it is, without creating any additional disturbance in the air. This method is typically used during the removal phase of the abatement project. An obvious criticism of this technique is that fibers that have settled out of the air are not detected.

Aggressive sampling addresses this concern by creating an artificial disturbance. This can be done with electric fans, brooms, blowers, etc.

Personal Air Sampling

Personal samples are collected from within the breathing zone (as close to the mouth as possible) of the worker. They are collected in the same manner as area samples except that (1) the pump is hung from a belt around the worker's waist, and (2) the filter cassette is attached to the worker's lapel or collar with tape or clips. The open cassette faces downward and samples the same air that the person would be breathing. This is the only true and accepted method of monitoring an employee's exposure, except in unusual situations such as a very confined area.

Analysis of Air Samples

The main techniques used for analyzing air samples are Phase Contrast Microscopy (PCM). Silverado Contractors, Inc. will use only independent laboratories.

Air Sampling Methodology

Area air sampling is conducted before abatement activities to estimate the existing airborne fiber concentrations inside and outside the building. This is termed "*pre-abatement*". It is particularly useful when an abatement project is conducted in one part of the building while other parts remain occupied. Airborne fiber levels in occupied areas should never exceed the pre-abatement level (before the project began).

Because airborne fiber levels before abatement are usually low, a large volume of air should be sampled. The volume needed to obtain a 0.01 f/cc detection limit should range between 500 and 2,500 liters, depending on the filter size and counting method used. (The detection limit is the minimum amount needed to give a statistically reliable result). One fiber per cubic centimeter



(f/cc) is equivalent to 1,000,000 fibers in a cubic meter (approximately 1 cubic yard). Samples can be collected at a flow rate of 2-15 liters per minute.

Prevalent samples should be collected throughout the building as well as in the areas where abatement will take place. As a rule of thumb, one sample should be taken for every 50,000 cubic feet (5,000 square feet with 10 foot ceilings) of building space (minimum of 3 samples). At least two samples should be collected from outside the building. The same sampling and analytical techniques should be used for sampling outside the work area before, during and after the abatement.

Personal Air Sampling

As mentioned earlier, personal air sampling is used to measure employees' exposure (outside any respirator) to airborne fibers. It is required by the OSHA and various state Asbestos Standards. By law, employees have the right to know the asbestos concentrations to which they are exposed and what measures are being taken to protect them. Silverado Contractors, Inc. will notify all affected employees in writing, either individually or by posting at a centrally located place that is accessible to affected employees, of the monitoring results as soon as possible following receipt of such results.

The results of personal sampling serve several other purposes. They can be used to select proper respiratory protection. They can also be used to identify those removal or control techniques which result in the lowest employee exposure. This, in turn, reduces the risk to the worker of asbestos/Lead-related diseases.

Personal samples shall be taken daily in the breathing zones of employees working on or in proximity of Lead/Asbestos/CRVI/Silica containing materials until a NEA has been achieved. Both TWA (described below) and STEL samples (a worker's peak exposure over any 30 minute period) are collected. Additional personal samples should be taken if there are changes in the type of material being removed or the work location (i.e., another building).

Permissible Exposure Limits (PEL) for asbestos

- (1) OSHA/CAL-OSHA 8-hour time-weighted average: 0.1 f/cc.
- (2) OSHA STEL 30-minute exposure limit: 1.0 f/cc.
- (3) OSHA/CAL-OSHA 30-minute excursion limit: 1.0 f/cc.

Permissible Exposure Limits (PEL) for Lead

- (1) OSHA/CAL-OSHA 8-hour time-weighted average: 50 ug/m³.
- (2) OSHA/CAL-OSHA Action Level: 30 ug/m³

Permissible Exposure Limits (PEL) for Hexavalent Chromium

- (1) OSHA/CAL-OSHA 8-hour time-weighted average: .005 mg/m³.
- (2) OSHA/CAL-OSHA Action Level: .0025 mg/m³

Permissible Exposure Limits (PEL) for Silica

- (1) OSHA/CAL-OSHA 8-hour time-weighted average: .05 mg/m³.



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- (2) OSHA/CAL-OSHA Action Level: $.025 \text{ mg/m}^3$

Area Air Sampling

In addition to personal samples, area air samples will be collected inside the work area and downwind from the work area to determine the concentrations of Lead asbestos and any other contaminants determined to exist in the work area. The data from these samples can be used to monitor work conditions from one day to the next. A radical increase in area concentrations would signal that work practices needed to be adjusted.

Interpretation of Results

The following are some important points to remember about air sampling on an asbestos abatement job:

- (1) There is a time lag between sampling and receipt of results if on-site analysis is not done. If levels are not known, make a conservative choice of respirators and use exposure-reduction techniques. This makes the sampling results less critical.
- (2) TWA and ceiling samples shall be collected. Just one or two -hour samples by themselves really relate to neither standard.

The results shown on a data sheet are called "exposure" levels, regardless of respiratory protection. However, if employees are properly protected, their actual exposures underneath the respirators will be much lower.



Section 7

Weather Hazards

Introduction

Heat illness in all its forms has always been a recognized work hazard in California, and across the nation. All heat related illnesses are preventable. Cal/OSHA requires employers in California to train workers regarding the hazards of working in heat and in heat related illness. The standard also requires Silverado Contractors, Inc. to have a written plan that informs employees, supervisors, and managers of the regulatory requirements Silverado Contractors, Inc. must adhere to related to heat related illness prevention.

The primary goal of the SILVERADO CONTRACTORS, INC. Heat Illness Prevention plan is employee safety. The training and operational elements found in this plan will provide employees, managers and supervisors with the tools necessary to anticipate environmental conditions that contribute to heat related illness, to recognize when work assignments place employees at risk and what job instructions need to be communicated to employees regarding the prevention of heat related illness.

This plan is consistent with the requirements of Silverado Contractors, Inc.'s Injury and Illness Prevention Plan (IIPP), and nothing in this program supersedes or nullifies the requirements found in our IIPP. *(See IIPP Emergency Response Program)*



Definitions

"Acclimatization" means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

"Active Cooling Equipment" – Clothing or powered devices (passive or active) that work to provide body core cooling when worn by an employee.

"Heat Illness" means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

"Environmental risk factors for heat illness" means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

"Full-body Protective Clothing" – means clothing or a protective suit that can provide a protective barrier to prevent dermal contact with a full range of materials from ordinary non-hazardous soiling agents to aggressive hazardous material/chemical substances. This suit provides body protection including head (hood) and feet (integrated booties).

"Personal risk factors for heat illness" means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

"Preventative recovery period" means a period of time to recover from the heat in order to prevent heat illness.

"Shade" means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.



Program Scope

The SILVERADO CONTRACTORS, INC. Heat Illness Prevention Plan (HIPP) is intended to control occurrence of heat related illness. The Plan applies to all outdoor areas of the campus where employees can be assigned work, and where environmental conditions cannot be mitigated by engineering controls.

Additionally, the Plan also applies to indoor areas where employees may be assigned work, where the indoor temperature meets or exceeds 100° F. The Plan is also applicable to Silverado emergency response personnel, or other employees who are required to wear and perform work in full - body personal protective suits, regardless of exterior or interior ambient temperatures.

Program Responsibilities

Safety Management, will:

- Distribute the HIPP to personnel.
- Provide initial training in the requirements of the plan to Supervisors and employees who are covered by the requirements of this program.
- Maintain employee training records for courses conducted by Silverado Contractor's Safety Personnel.

Managers and supervisors will:

- Ensure that employee work assignments both indoors and outdoors are evaluated and the components of this plan are implemented when the established temperature/relative humidity thresholds are met or exceeded.
- Ensure that initial and periodic training is provided to employees under their supervision and are consistent with the requirements of this document.
- Ensure that active or passive cooling equipment is available to employees who may require its use.
- Maintain employee training records for courses conducted solely by Facilities Management personnel.

Employees will:

- Comply with the requirements of this plan.
- Understand the responsibilities of both Silverado Contractors, Inc. and employees in maintaining compliance with this plan.
- Take steps to mitigate any personal risk factors that may exist prior to working in a regulated hot environment.
- Immediately report unsafe conditions to their supervisor.
- Observe their fellow employees for signs of heat related illness, and take quick action to ensure that rapid assistance is provided if applicable.



Training

California Code of Regulations, Title 8, Chapter 4, section 3395 requires employers to provide training in the provisions of the written Heat Illness Prevention Plan to managers and supervisors, and employees. The minimum requirements for training content include:

- The environmental and personal risk factors for heat illness;
- SILVERADO CONTRACTORS, INC.'s procedures for complying with the requirements of CCR, T8, section 3395;
- The importance of frequent consumption of small quantities of water, up to four
 - (4) cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;
- The importance of acclimatization.
- The different types of heat illness and the common signs and symptoms of heat illness.
- The importance to employees of **immediately** reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- SILVERADO CONTRACTORS, INC.'s procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary (refer to Emergency Action Plan);
- SILVERADO CONTRACTORS, INC.'s procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider (refer to Emergency Action Plan);
- SILVERADO CONTRACTORS, INC.'s procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders (refer to Emergency Action Plan).
- Further, supervisors are required to receive the same training content as outlined above and in addition:
- The procedures the supervisor is to follow to implement the applicable provisions in this section.
- The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.



Program Compliance Strategy

- Drinking water containers (of five to 10 gallons each) will be brought to the site, so that at least two quarts per employee are available at the start of the shift. All workers whether working individually or in smaller crews, will have access to drinking water.
- Paper cone rims or bags of disposable cups and the necessary cup dispensers will be made available to workers and will be kept clean until used.
- As part of the Effective Replenishment Procedures, the water level of all containers will be checked periodically (e.g. every hour, every 30 min), and more frequently when the temperature rises. Water containers will be refilled with cool water, when the water level within a container drops below 50 percent. Additional water containers (e.g. five gallon bottles) will be carried, to replace water as needed.
- Ice will be carried in separate containers, so that when necessary, it will be added to the drinking water to keep it cool.
- Water containers will be placed as close as possible to the workers (given the working conditions and layout of the worksite), to encourage the frequent drinking of water. If field terrain prevents the water from being placed as close as possible to the workers, bottled water or personal water containers will be made available, so that workers can have drinking water readily accessible.
- Water containers will be relocated to follow along with the crew, so drinking water will remain readily accessible.
- Water containers will be kept in sanitary condition.
- Daily, workers will be reminded of the location of the water coolers and of the importance of drinking water frequently. When the temperature exceeds or is expected to exceed 90 degrees Fahrenheit, brief ‘tailgate’ meetings will be held each morning to review with employees the importance of drinking water, the number and schedule of water and rest breaks and the signs and symptoms of heat illness.
- Audible devices (such as whistles or air horns) will be used to remind employees to drink water.
- When the temperature equals or exceeds 95 degrees Fahrenheit or during a heat wave, the number of water breaks will be increased, and workers will be reminded throughout the work shift to drink water.
- During employee training and tailgate meetings, the importance of frequent drinking of water will be stressed.



Access to Shade

- Shade structures will be opened and placed as close as practical to the workers, when the temperature equals or exceeds 85 degrees Fahrenheit. When the temperature is below 85 degrees Fahrenheit, access to shade will be provided promptly, when requested by an employee. Note: The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned and the air conditioner is on.
- Enough shade structures will be available at the site, to accommodate at least 25 percent of the employees on the shift at any one time.
- Daily, workers will be informed of the location of the shade structures and will be encouraged to take a five minute cool-down rest in the shade.
- Shade structures will be relocated to follow along with the crew and they will be placed as close as practical to the employees, so that access to shade is provided at all times.
- In situations where trees or other vegetation are used to provide shade (such as in orchards), the thickness and shape of the shaded area will be evaluated, before assuming that sufficient shadow is being cast to protect employees.
- In situations where it is not safe or feasible to provide access to shade (e.g., during high winds), a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide shade upon request.
- In situations where it is not safe or feasible to provide shade, a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide alternative cooling measures but with equivalent protection as shade.

Outdoor Work Assignments

Managers and supervisors shall ensure that they are aware of the most current and accurate meteorological information (ambient temperature and relative humidity) in areas of the campus where they will be assigning employees to work. The manager and/or supervisor shall implement the proper controls when local weather conditions have achieved, or are expected to achieve the following threshold:

- *more than 48 hours with day time temperatures at or above 90° F and relative humidity at or above 80%.*

Note: Managers and supervisors may consult the following web page for accurate information regarding weather within the Site's vicinity:

www.weather.com

In these conditions, the manager and/or supervisor shall implement the following worker protection controls.

- Prior to the start of the work shift, when weather conditions require the application of the HIPP, managers and/or supervisors shall meet with their employees, and review the work procedures to be used during the high heat period.



- Managers and/or supervisors shall ensure that exposed employees have access to cool potable drinking water. Water must be provided to employees at the beginning of the work shift in sufficient quantities to ensure that employees can consume one quart of potable water per hour.
- Employees may be provided with smaller quantities of water if provisions are made to supply one quart of water per hour per employee.
- Managers and/or supervisors shall encourage frequent drinking of water by employees.
- Managers and/or supervisors shall ensure that employees assigned work outdoors and exposed to high environmental temperatures shall have quick and effective access to a rest area where shade is available, or to an area where ventilation or cooling is provided for a period of not less than 5 minutes.
- Employees shall have access to shade or cooling at all times during the work shift.

Procedures for Acclimatization (include but are not limited to):

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. In more common terms, the body needs time to adapt when temperatures rise suddenly, and an employee risks heat illness by not taking it easy when a heat wave strikes or when starting a new job that exposes the employee to heat to which the employee's body hasn't yet adjusted. Inadequate acclimatization can be significantly more perilous in conditions of high heat and physical stress. Employers are responsible for the working conditions of their employees, and they must act effectively when conditions result in sudden exposure to heat their employees are not used to.

- The weather will be monitored daily. The supervisor will be on the lookout for sudden heat wave(s), or increases in temperatures to which employees haven't been exposed to for several weeks or longer.
- During a heat wave or heat spike, the work day will be cut short (example 12 p.m.), will be rescheduled (example conducted at night or during cooler hours) or if at all possible cease for the day.
- For new employees, the intensity of the work will be lessened during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening). Steps taken to lessen the intensity of the workload for new employees will be documented.
- The supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptoms.
- New employees will be assigned a "buddy" or experienced coworker to watch each other closely for discomfort or symptoms of heat illness.
- During a heat wave, all employees will be observed closely (or maintain frequent



communication via phone or radio), to be on the look-out for possible symptoms of heat illness.

- Employees and supervisors will be trained on the importance of acclimatization, how it is developed and how these company procedures address it.

High Heat Procedures (include but are not limited to):

High Heat Procedures are additional preventive measures that this company will use when the temperature equals or exceeds 95 degrees Fahrenheit.

- Effective communication by voice, observation, or electronic means will be maintained, so that employees at the worksite can contact a supervisor when necessary. If the supervisor is unable to be near the workers (to observe them or communicate with them), then an electronic device, such as a cell phone or text messaging device, may be used for this purpose if reception in the area is reliable.
- Frequent communication will be maintained with employees working by themselves or in smaller groups (keep tabs on them via phone or two-way radio), to be on the lookout for possible symptoms of heat illness.
- Employees will be observed for alertness and signs and symptoms of heat illness. When the supervisor is not available, an alternate responsible person may be assigned, to look for signs and symptoms of heat illness. Such a designated observer will be trained and know what steps to take if heat illness occurs.
- Employees will be reminded throughout the work shift to drink plenty of water.
- New employees will be closely supervised, or assign a “buddy” or more experienced coworker for the first 14 days of the employment (unless the employee indicates at the time of hire that he or she has been doing similar outdoor work for at least 10 of the past 30 days for four or more hours per day).



TABLE 1 – HEAT INDEX CHART

NOAA's National Weather Service

Heat Index
Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	118	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	130					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

IMPORTANT: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15 F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

The Heat Index Chart shaded zone above 105°F shows a level that may cause increasingly severe heat disorders with continued exposure and/or physical activity



TABLE 2 – STAY TIME ESTIMATION

	Work Clothes			Cotton Coveralls			Double Cottons			Cotton Plus Plastics		
WBGT F	Metabolism											
	Low	Mod	High	Low	Mod	High	Low	Mod	High	Low	Mod	High
104	60-90	15-45	10-20	45-90	15-40	5-10	30-60	10-25		20-45	5-20	
100	90-120	20-45	15-30	60-90	15-45	10-25	45-90	15-30	5-10	30-60	10-25	
97	2h-4h	30-60	15-40	90-120	25-45	15-30	60-90	15-45	10-20	45-90	15-30	5-10
93	3h-8h	45-90	20-45	2h-4h	30-60	15-45	90-120	20-45	15-30	60-90	15-45	10-20
90	NL	90-120	30-60	3h-8h	60-100	25-50	2h-4h	30-60	15-40	90-120	20-45	15-30
86	NL	2h-4h	60-120	NL	1h-2h	30-90	3h-8h	45-90	20-45	2h-4h	30-60	15-40
82	NL	NL	2h-4h	NL	1h-4h	1h-3h	NL	90-120	30-60	3h-8h	45-90	20-45

METABOLISM

LOW	MODERATE	HIGH
<input type="checkbox"/> Sitting/Monitoring <input type="checkbox"/> Inspection <input type="checkbox"/> Slow Walk <input type="checkbox"/> Equipment Operation (e.g. cranes, relays) <input type="checkbox"/> Sitting or Standing to control machine <input type="checkbox"/> Standing with work light at machine or bench using mostly arms <input type="checkbox"/> Performing light hand or arm work <input type="checkbox"/> Writing, typewriting	<input type="checkbox"/> Sorting Materials <input type="checkbox"/> Descending Stairs or Ladders <input type="checkbox"/> Walking <input type="checkbox"/> Installing Insulation <input type="checkbox"/> Manual Valve Alignment (easy) <input type="checkbox"/> Walking about with moderate lifting and pushing <input type="checkbox"/> Walking on level at 4 mph while carrying 5 lbs. weight load <input type="checkbox"/> Scrubbing in a standing position <input type="checkbox"/> Cleaning a floor	<input type="checkbox"/> Using Respiratory Protection (Air-Purifying Respirator) <input type="checkbox"/> Manual Valve Alignment <input type="checkbox"/> Materials Handling <input type="checkbox"/> Sweeping/Mopping <input type="checkbox"/> Manual Hoisting <input type="checkbox"/> Climbing Stairs or Ladders <input type="checkbox"/> Pick and shovel work <input type="checkbox"/> Carpenter sawing by hand <input type="checkbox"/> Shoveling dry sand or wet sand <input type="checkbox"/> Heavy assembly work on a non-continuous basis <input type="checkbox"/> Intermittent heavy lifting with pushing or pulling
NL = No Limit		



Stay Time Estimation

Heat stress depends, in part, on the amount of heat the worker's body produces while a job is being performed. The amount of heat produced during hard, steady work is much higher than that produced during intermittent or light work

Rather than be exposed to heat for extended periods of time during the course of a job, workers should, wherever possible, be permitted to distribute the workload evenly over the day and incorporate work-rest cycles. Work-rest cycles give the body an opportunity to get rid of excess heat, slow down the production of internal body heat, and provide greater blood flow to the skin. Table 2 provides stay times in minutes [or hours (h)] for different WBGT's in F by combinations of clothing ensemble and metabolism.

Trigger Response

HEAT INDEX	RISK LEVEL	PROTECTIVE MEASURES
Less than 91 F	Lower(Caution)	Basic heat safety planning
91F to 103F	Moderate	Implement precautions and heighten Awareness
103F to 115F	High	Additional precautions to protect workers
Greater than 115F	Very high to extreme	Triggers even more aggressive protective measures



Plan Element	Heat Index Risk Level			
	Lower (Caution)	Moderate	High	Very High/Extreme
Supplies (ensuring adequate water, provisions for rest areas, and other supplies)	✓	✓	✓	✓
Emergency planning and response (preparing supervisors and crews for emergencies)	✓	✓	✓	✓
Worker acclimatization (gradually increasing workloads; allowing more frequent breaks as workers adapt to the heat)	✓	✓	✓	✓
Modified work schedules (establishing systems to enable adjustments to work schedules)		✓	✓	✓
Training (preparing workers to recognize heat-related illness and preventive measures)	✓	✓	✓	✓
Physiological, visual, and verbal monitoring (using direct observation and physiological monitoring to check for signs of heat-related illness)		✓	✓	✓

Checklists shall be used to assist in planning ahead and in daily planning.

Work Assignments in Indoor Environments

Where employees are assigned work in an indoor environment where ambient temperatures will exceed 100° F, managers and supervisors will ensure that :

- Prior to the start of the work shift, when interior environmental conditions require the application of the HIPP, managers and/or supervisors shall meet with their employees, and review the work procedures to be used during the high heat period.
- Managers and/or supervisors shall ensure that exposed employees have access to cool potable drinking water. Water must be provided to employees at the beginning of the work shift in sufficient quantities to ensure that employees can consume one quart of potable water per hour.
- Employees may be provided with smaller quantities of water if provisions are made to supply one quart of water per hour per employee.



-
- Managers and/or supervisors shall encourage frequent drinking of water by employees.
 - Managers and/or supervisors shall ensure that employees assigned work outdoors and exposed to high environmental temperatures shall have quick and effective access to a rest area where shade is available, or to an area where ventilation or cooling is provided for a period of not less than 5 minutes. Employees shall have access to shade or cooling at all times during the work shift.

Work in Full – Body Protective Clothing (FBPC)

FBPC is used on this campus for non-routine emergency response to hazardous materials releases and for routine maintenance/construction – related tasks.

When an employee wishes to wear a full – body protective suit (Tyvek, breathable Kleenguard, etc.) to **solely** prevent soiling street clothing from a routine work assignment, and no exposure to hazardous materials is anticipated, and the temperature is not expected to meet or exceed the HIPP action thresholds, the manager and/or supervisor shall comply with the following:

1. Employees shall be advised to pre-hydrate before donning suit and beginning work.
2. Employees shall be advised to continue drinking sufficient water to maintain a hydration rate of one 500ml bottle of water per hour.

When emergency conditions are present and the responders are required to protect themselves from any chemical, physical or biological hazard, the following work practices shall be implemented (by properly and currently trained personnel):

- Supervisors shall ensure that active cooling equipment is available for employee use, and that employees have been trained in the use of the equipment prior to work assignment.
- Supervisors shall limit work assignments for employees to allow sufficient rest time for fluid replacement and restoration of nominal vital signs.
- Every effort shall be made to schedule work in the coolest part of the day, usually early morning, to mitigate the need for active cooling equipment.

Definitions and Symptoms of Heat Related Illness/ Emergency Services Contact Procedures

Emergency Services Contact Procedures

When an employee has been impacted with a heat related illness, or any emergent medical condition, SILVERADO CONTRACTORS, INC. has the following process in place:

1. When an employee appears to be suffering from a heat related illness, contact 9-1-1 immediately. Advise Dispatch that an employee is suffering from a heat related emergency. Do not hang up; Silverado Contractors, Inc. Police Dispatched will require further information from the calling party.
2. If the affected employee is able to walk, get them out of the sun, begin active cooling, and



advise Emergency Dispatch of the patient's location on the site. Be as precise as possible. If the dispatcher requests that the employee be moved to a location that is easier for emergency services (Police and Fire/EMS responders) to access, advise the dispatcher if you think that can be done without further injury.

3. If the patient cannot be re-located, provide emergency Dispatch with the precise location. If other employees are available, direct them to the nearest campus street to assist in directing emergency services to the patient.

The SILVERADO CONTRACTORS, INC. HIPP uses definitions and treatment modalities promulgated the American Red Cross curriculum First Aid/CPR/AED for the Workplace -2013. The following information is collected from that source.

Types of Heat Related Illness –

- Heat Cramps – are painful muscle spasms that usually occur in the legs (hamstrings) and abdomen. Heat cramps are treatable, and are the least severe form of heat related illness.
- Heat Exhaustion (heat syncope) – is an early indicator that the body's cooling system is becoming overwhelmed. Signals of heat exhaustion include:
 - a. Cool, moist, pale, ashen or flushed skin.
 - b. Headache, nausea, dizziness.
 - c. Weakness, exhaustion
 - d. Heavy sweating (a capstone sign)
- Heat Stroke – is a profound medical emergency. Heat stroke occurs when the body's systems are overwhelmed by heat and stop functioning. Heat stroke is a life threatening condition and requires professional emergency medical intervention.

Signs of heat stroke include:

1. Red, hot, dry skin.
2. Changes in the level of consciousness (LOC)
3. Vomiting

First Aid Care for Victims of Health Related Illness

For employees suffering from heat cramps or heat exhaustion:

- Move the employee out of the sun, to a cool shaded place.
- Loosen tight or restrictive clothing, and remove any personal protective equipment over garments.
- Remove perspiration soaked clothing.
- Apply cool, wet towels to the skin
- Fan the employee gently
- If the person is conscious, provide small sips of cool water, (not a sports drink)



For employees suffering from heat stroke:

- **This is a profound medical emergency, and cannot be successfully treated in the field. Immediate and decisive action is required.**
- Call 9-1-1 and advise Site Safety of the situation. Ensure that accurate directions are provided to responders so medical assistance is not delayed.
- Move the employee to a place out of the sun, or provide shade for them.
- Loosen tight clothing, and begin active cooling methods (active fanning, pouring cool water over the body core, placing ice packs in the arm pits, behind the neck, and in the groin.
- Place the employee on their back (supine position) and gently roll them onto their side, with their airway (mouth) pointed down toward the ground in the recovery (Haines) position. Maintain an open airway!
- Continue to cool the person by using ice or cold packs on the employee's wrists, ankles, groin, neck, and armpits.
- Remain with the employee until medical assistance arrives, and provide assistance to responders as required.

Hydration Techniques

For most employees who are well acclimated to exterior conditions in the work environment, proper hydration is a simple matter of drinking sufficient potable water prior to exposure to heat, and at least one quart per hour of cool potable water during the work involving exposure to high heat. **Drink before you get thirsty.** If you are working in high heat conditions, and become thirsty, you cannot replace the fluid loss you have sustained orally.

To re-state what Cal/OSHA recommends, an employee must consume up to four (4) cups per hour of cool, potable water during work in high heat conditions. For reference, a 500 ml bottle of commercially available water is equal to approximately two (2) cups of water. Thus, consuming two (2) 500ml bottles of water per hour would be equal to 4 cups.

Preventing heat related illness in employees is preferable to responding to a victim of heat illness. It is very important to “pre-hydrate” prior to beginning work in a high heat environment. If possible, employees should consume at least one bottle of water, or 2 cups, before beginning work in a high heat environment.

The Cal/OSHA standard requires employers to provide potable, “cool” water for employees. For reference, Silverado public drinking fountains that are not electrically refrigerated provide water at between 75 ° F and 76 ° F. If supervisors choose to supply drinking water out of insulated water coolers, the contents needs to be kept at that relative temperature. Additionally, if a water cooler is provided, it must be sanitary, and have a valve for dispensing the water into individual cups, one for each employee, or disposable cups. The use of a communal dipper is not permitted.

The use of **salt pills**, or **electrolyte replacement “sports” drinks** is not recommended for normal hydration and fluid replacement. Water is the preferred fluid, taken in the amounts discussed. Do not over-hydrate, or try to consume more than the recommended amount and rate. Water intoxication can occur, where so much water is ingested that electrolyte balance is disturbed,



which can lead to heart arrhythmias and other circulation problems.

In summary, anticipate high heat conditions, ensure that heat illness risk factors are eliminated or controlled, pre-hydrate before beginning work in high heat and humidity, and consume at least four (4) cups of water per hour during work in high heat.

Know the signs and symptoms of heat related illness. Keep an eye on co-workers, and respond quickly when you see signs of heat related illness in others.



Section 8 Site Control

Site Access:

Access to the work site will be controlled in the following manner if and when necessary:

- Chemical caution flagging.
- orange safety fence
- barricades
- Cones
- Caution flagging
- Warning Signs
- Spotters

Work Zones:

The primary purpose for site control is to establish the hazardous area perimeter, reduce migration of contaminants into clean areas, prevent unauthorized access into an area where high hazard work is being performed and minimize risk. At the end of each workday, the site should be secured and/or guarded to prevent unauthorized entry. Site work zones will include:

Clean Zone/Support Zone. This uncontaminated zone will be the area outside the exclusion and decontamination (decon) zone and within the geographic perimeters of the site. This area is used for staging of materials, parking of vehicles, office and laboratory facilities, sanitation facilities, and receipt of deliveries. Personnel entering this zone may include delivery personnel, visitors, security guards, etc., who will not necessarily be permitted in the exclusion zone.

All personnel arriving in the support zone will report to supervision and sign the Visitor Sign-in Log in Appendix C of this HASP.

Barricading of all hazard areas such as open holes, unstable overhead hazards, chemical hazards and any other hazards that may be present.

General Site Control Safety Procedures:

The Buddy System will be used at all times by all field personnel in the exclusion zone, especially if personnel are required to wear Level C or higher PPE. No one is to perform fieldwork alone unless approved by SILVERADO CONTRACTORS, INC.'s E H & S. Maintain visual, voice, and/or radio communication at all times.

Eating, drinking or smoking are not permitted. Hands and face must be thoroughly washed upon leaving decon area. Beards and/or other facial hair that interferes with respirator fit will preclude admission to the exclusion zone. All equipment must be decontaminated or properly discarded upon exit from the exclusion zone.



Section 9 Emergency Response

Information contained in this section provides a clear understanding of organizational roles and responsibilities during plant emergencies to ensure a prompt and proper response. An **EMERGENCY** is an unexpected situation or sudden event, which involves physical, medical and/or chemical hazards. Examples would be hazardous chemical releases, oil spills, fires, bomb threats, explosions and natural disasters. Any emergency shall be acted upon according to the guidelines established by this section. Refer to the specified guidelines for responses to fires, bomb threats, earthquakes, spills and releases, medical emergencies and floods contained in the **RED** and **ORANGE** Tabs.

INITIATING EMERGENCY RESPONSE

In general, the nature and magnitude of any incident will govern the level of response necessary. The following steps should be taken for any emergency.

1 PERSON DISCOVERING THE INCIDENT

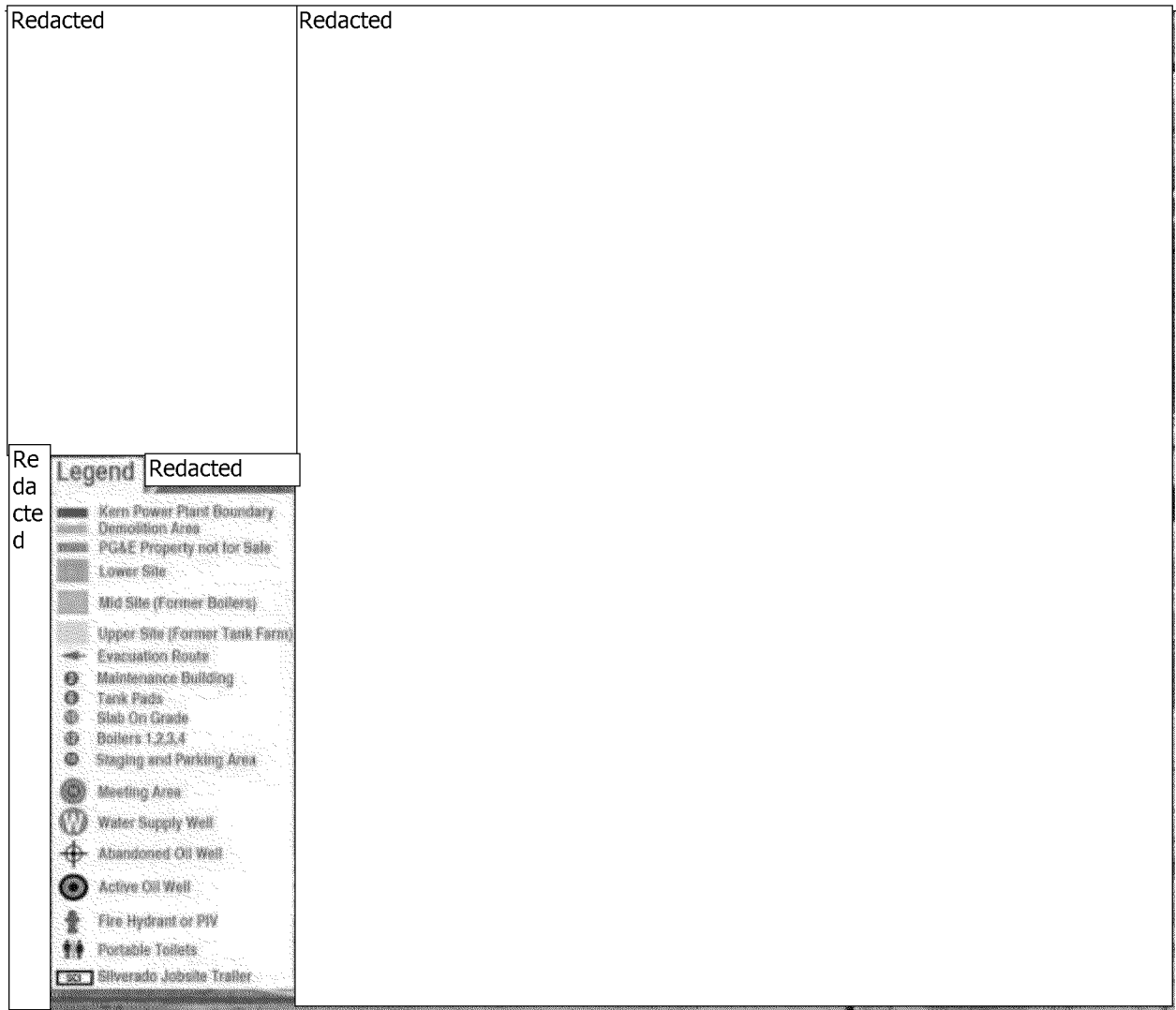
- NOTIFY the E H & S Coordinator from a safe location by dialing (951) 436-6808 (24 hrs.)
- STAY ON THE LINE and provide information until released by the E H & S
- DOCUMENT incident actions and maintain a timeline of events.

EMERGENCY COORDINATOR

1. COLLECT INFORMATION from the caller related to the emergency to assess the response needed. Use the **EMERGENCY INFORMATION FORM** ⇒ ER-3 as a tool. Consider:
 - ❑ Type of emergency
 - ❑ Exact location
 - ❑ Resources needed
2. If necessary, announce PLANT EVACUATION. **3 Short Horn Blasts**

Personnel shall evacuate to staging area outside main gate shown on map





3. NOTIFICATIONS:

- CALL 9-1-1 to request off-site emergency assistance.
- Dispatch an employee to the Main Gate to direct off-site emergency response personnel to the emergency location.

➤ ACTIONS

1. REPORT to the emergency location.
2. ASSESS safety/medical/rescue needs.
3. ENSURE response support is promptly and efficiently directed to the location of the emergency.
4. COORDINATE safety/medical/rescue activities with the off-site emergency responders.



-
5. **COMMUNICATE** continuously throughout the incident with municipal responders and plant personnel to ensure resources are available and actions are effective.
 6. **DOCUMENT** the incident.

➤ **RESPONSE OBJECTIVES**

- ❑ Minimize chance for personnel injury and/or chemical exposure.
- ❑ Any spills should be contained from a safe distance.
- ❑ Protect nearby persons, property and the environment.
- ❑ Coordinate **DEFENSIVE RESPONSE ACTIONS** . The E H & S Coordinator must ensure that non-essential personnel are evacuated from the hazardous area(s) and that only qualified employees assist in handling the emergency. Examples of defensive actions include:
 - Barricading hazardous areas; and
 - Initiating partial or complete plant evacuations.

**Notice for Silverado Contractors, Inc. Personnel Not
Directly Supporting the Emergency**

During an emergency, all SILVERADO CONTRACTORS, INC. personnel that do not have a designated emergency response function shall remain where they are or proceed to the designated assembly area (in the event of an emergency evacuation) until a verbal “all clear” is given. Do not go to the emergency scene unless specifically asked to do so by responding personnel.



EMERGENCY INFORMATION FORM

Time call received: _____

Name of caller: _____

Nature of emergency: Medical, Fire, Chemical Spill, Other: _____

Emergency location: _____

Resources Needed at the Scene: Fire Department, Paramedics, Confined Space Rescue Equipment

Notification

Notified municipal responders 911.



Emergency equipment available on-site:

- Cellular Telephone
- Spill Kits
- First Aid Kits
- Eye Wash Station and/or 2 1L Eye Wash Bottles
- Fire extinguisher
- MSDS
- 3 Stage Decontamination Shower

Pre-Emergency Planning:

Part of the Pre-Emergency Planning process is the development of Job Safety Analysis (JSA) for the activities to be performed on-site. If the JSAs are followed, preventable emergencies should be eliminated.

Personnel Roles, Lines of Authority and Communication:

The field Superintendent shall be the on-site person in charge of coordinating all responses to the emergency. The SHSO will assess emergency and report all incidents to the E H & S as soon as possible.

Emergency Alerting and Response:

The first actions should involve assessing the severity of the emergency. Then direct all personnel on-site to evacuate to the evacuation meeting area if this is warranted. If a severe or life threatening injury has occurred 911 should be called, if not a call should then be made to the SILVERADO CONTRACTORS, INC. office notifying the personnel listed on Table 9-1.

Site Security and Control:

The exclusion/work area will be expanded if the severity of the emergency warrants. All bystanders will be required to move a safe distance from the work area.

Evacuation Route:

Personnel will take the most direct route possible to the evacuation meeting area as warranted by the type and location of the emergency.

Evacuation Meeting Area:

If an evacuation is required a head count will be taken to ensure all personnel have evacuated the area. The evacuation meeting area may change due to change in site conditions. The evacuation area will be discussed during the tailgate safety meeting.

Emergency Response Review:

The review of the incident and response will follow the procedure outlined in Table 9-2.



Table 9-1 Emergency Contacts/Telephone Numbers

Emergency Contacts/Telephone Numbers

CONTACT	NAME	TELEPHONE NO.
E H & S	Redacted	Redacted
Project Manager		
Project Superintendent		
Local Emergency Number	US Healthworks	(805) 983-2234
Vice President	Redacted	Redacted
Explosives Expert		

PROJECT PERSONNEL TELEPHONE NUMBERS

CONTACT	NAME	TELEPHONE NO.
E H & S	Redacted	Redacted
Project Manager		
Vice President		
Client Contact		

SUBCONTRACTOR TELEPHONE NUMBER

CONTACT	NAME	TELEPHONE NO.
N/A	N/A	N/A

Injury/Illness:

The following steps should be followed if an injury or illness case occurs:

- Check the scene of the injury or illness
- If safe to do so check the condition of the victim(s)
- Call 911 if the victim(s) is unconscious or your training dictates you to.
- Care for victim(s). Always use latex or nitrile gloves, safety glasses and CPR barrier when providing first aid.
- If the injury is non-life threatening.
 - Direct employee to appropriate medical facility, if necessary.
 - US Healthworks, 1800 Westwind Drive # 301, Bakersfield, CA 9331 (661) 327-9617
 1. Exit main gate turn right onto Coffee Rd.
 2. Turn left on Truxtun Ave.
 3. Turn left onto Westwind Dr.
 4. Destination will be on the right. (see map below)

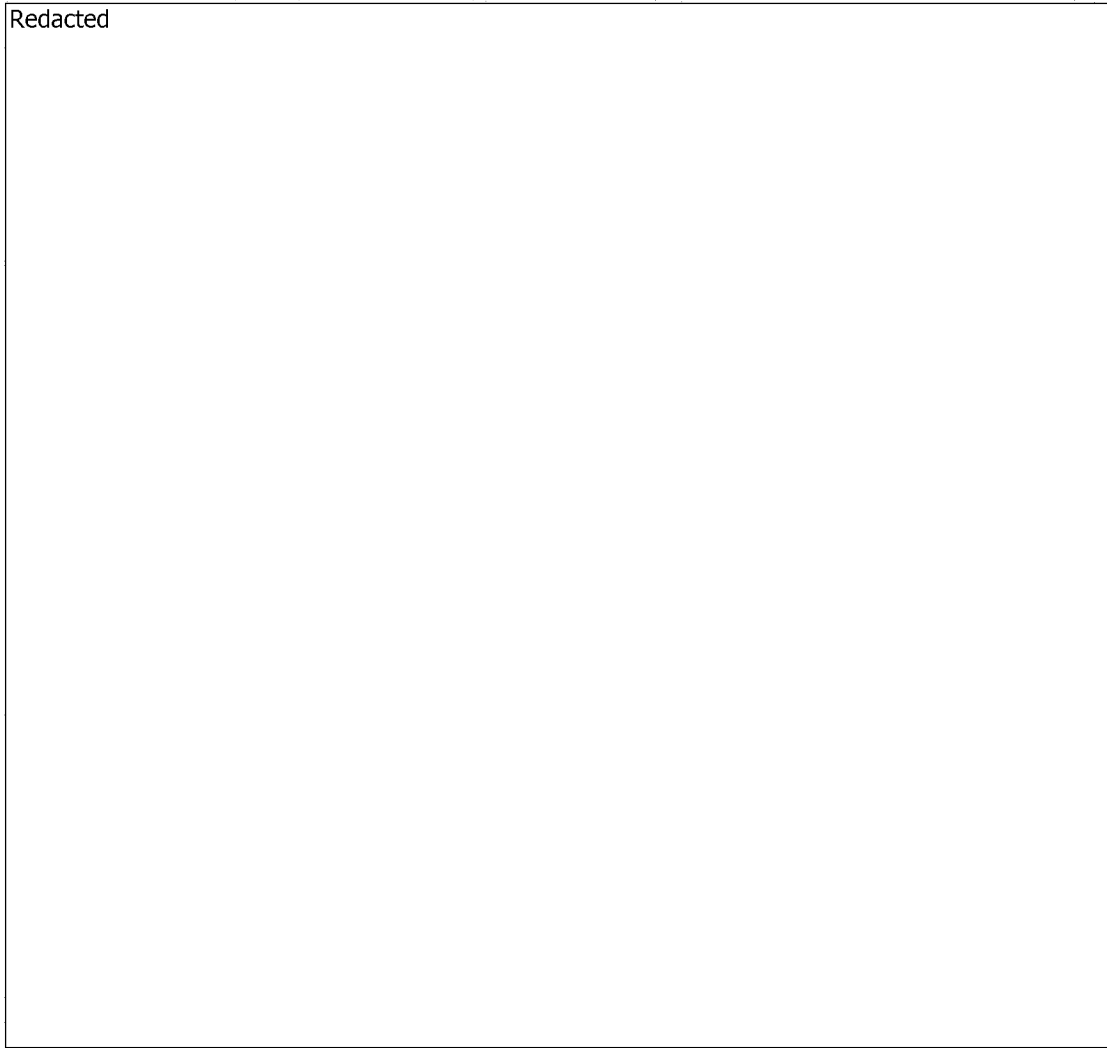


Google

Directions to 1800 Westwind Dr #301, Bakersfield, CA 93301

Redacted

Redacted



- Remove all contaminated clothing or PPE before leaving the area



Ensure that appropriate chemical decontamination treatment for exposed or injured personnel is obtained. If the victim must be transported to the hospital, do not transport the victim yourself, but accompany the victim to the hospital. Notify the Project Manager and E H & S.

Any person transporting an injured/exposed person to a hospital for treatment should take directions to the hospital with them (Figure 9-1), and information on the chemicals involved. Any vehicle used to transport contaminated personnel will be cleaned or decontaminated as necessary.

Environmental or Property Damage Incident Response:

Take appropriate measures to protect the public and the environment including isolating and securing the site, preventing run-off to surface waters, and ending and/or controlling the emergency to the extent possible. Notify the Project Manager and E H & S.

In the event of an air release of toxic materials, the local authorities should be informed in order to assess the need for evacuation. In the event of a spill, sanitary districts and drinking water systems may need to be alerted.

Spill Response /Containment:

Under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, the Occupational Safety and Health Administration (OSHA) requires responders to evaluate a situation and determine hazards prior to response efforts.

If the identity or nature of a spill cannot be determined, responders must assume the worst. When spills present dangers such as explosion or inhalation hazards, correctly identifying spilled materials helps establish proper isolation or work zones to protect both responders and the public. Air monitoring equipment is sometimes used to help establish these zones.

Even if a spill is more of a nuisance than a safety hazard, establishing zones helps maintain site security and keep untrained persons safely out of spilled materials so that responders can respond more efficiently.

With responders properly protected and the area around the spill secured, the actual work of spill response can begin. Creating a physical barrier around spilled liquid helps limit the overall area affected and requiring cleaning and restoration.

For smaller spills, absorbent socks are one quick answer for containment. Larger spills may require bigger and longer booms. Skilled responders are able to gauge their needs and choose the correct materials.

Spill response kits—containers of absorbents, PPE, tools and other equipment and supplies—are a convenient way to help ensure that adequate response materials are available. These kits can be positioned in the equipment enclosure, and stocked with items most likely to be needed.

With the spill surrounded, the next step in response is to find and eliminate the source of the spill. Faulty valves, ruptured pipelines and holes in flexible hoses are other common sources of leaks and spills. Response can be accelerated by clearly marking shut-off valves, keeping them unobstructed, and training responders on their locations.

After the spill has been contained and the source stopped, actual cleanup can begin. Unless something inside the spill area needs to be removed or protected from further damage, it's best to start from the outside of the spill and work toward the center.

Absorbent mats, pillows and socks can be used to soak up spilled liquids. Be sure to verify the chemical compatibility of the absorbents being used. Some absorbents contain cellulose, which should not be used



with spills of corrosive materials.

Complete spill cleanup also involves collecting all spent materials used to combat the spill. Absorbents assume the characteristics of the liquids that they absorb and should be handled accordingly. This also applies to disposable PPE, tools and other items that are not going to be reused.

The site conditions and remedial systems have been evaluated and the potential for a major spill is negligible because no hazardous materials are stored on-site.

Emergency Decontamination:

Emergency decon is the process of immediately removing contaminants from victims and/or response personnel, foregoing the usual set-up of the planned decontamination corridor. This procedure is used to remove as much of the product as possible from the victims to enable emergency treatment to protect their lives. It's usually performed by the SHSO on the scene and uses the "flush/strip/ flush" protocol.

Fire or Explosion:

In the event of a fire or explosion, the local fire department must be summoned immediately. Upon their arrival, the project manager and/or E H & S will advise the fire commander of the location and nature of the fire and identification of all hazardous materials on-site.

If it is safe to do so and personnel have been properly trained, site personnel may use fire-fighting equipment available on-site, or remove or isolate flammable or other hazardous materials, which may contribute to the fire (i.e., incipient stage fire-fighting only). Notify the Project Manager and E H & S.

Near Miss:

If anyone on-site witnesses a near-miss they must immediately notify the Project Manager and E H & S. Stop all operations until the near miss has been reported and the corrective measures are in place to prevent another near miss or possible injury.



Section 10 Waste Management

Any waste that is generated while on-site will be disposed of properly following federal, state and local regulations. Before any waste can leave the site it must first be characterized as non-hazardous, special or hazardous waste. Waste characterization will be completed using generator knowledge, MSDS and laboratory analysis.

Container Management:

Containers used to collect or accumulate waste must be managed in the following manner

- **Container Labeling and Marking:** Any container used to collect or accumulate waste must be labeled and marked with the following information:
 - **Container Contents** – Containers used to accumulate waste must be clearly marked with the contents of the drum.
 - **Collection Date(s)** – Containers must have a date listed on the container label. The date is the earliest date that waste is placed in the container.
 - **Owner Information** – Containers must have the Name, address and phone number of the company and responsible individual clearly marked.
 - **Hazardous Waste** – If the waste is considered to be hazardous the words *hazardous waste* must be on the label.

- **Closed Containers**
Containers must be kept closed except when adding or removing wastes.
- **Clean Containers**
Containers should be kept clean with no visible contamination on the outside of the container and markings or labels on the container must be readable and not defaced.
- **Secondary Containment**
Areas where hazardous waste is accumulated must have secondary containment sufficient to collect incidental spills that might occur when adding waste to containers.
- **Full Containers**
Containers should not be overfilled. “Full containers” should have at least a 10% head space to allow for expansion.
- **Container Storage**
Filled containers of hazardous waste must be stored in a secure area under the control of the operator.

Generator Status:

If the waste is determined to be hazardous then a generator status for that specific site must be determined.

Removal of Waste:

All waste and debris should not be stored for extended periods of time according local, state and federal regulations.

Waste will be manifested and transported to an approved waste facility.



Section 11

HazCom

See Silverado's IIPP for complete Hazcom program.

An MSDS is a form containing information regarding the properties of a particular substance. It is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data, toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures. The exact format of an MSDS can vary from source to source.

MSDS shall be maintained at the site and made readily accessible to all affected employees in accordance with Silverado's Hazard Communication program. Copies of equipment operating manuals shall be kept with each piece of equipment at each site and made available to all employees who operate the equipment.



Section 12 Decontamination

Lead/Asbestos Decontamination:

In general, everything that enters the exclusion zone must either be decontaminated or properly discarded upon exit from the exclusion zone. All personnel, including any state or local officials, must enter and exit the exclusion zone through the decon area. Prior to demobilization, contaminated equipment will be decontaminated and inspected by the field Superintendent before it is moved into the clean zone. Any material that is generated by decontamination procedures will be stored in a designated area in the exclusion zone pending disposal approvals and disposition.

The type of decontamination solution to be used is dependent on the type of chemical hazards. Decontamination solutions will be changed as required and collected and stored on-site until disposal approvals are secured and the arrangements for their final disposition are finalized.

Personnel Decontamination:

Personnel may become contaminated in a number of ways including, but not limited to:

- Contacting vapors, gases, mists, or particulates in the air
- Being splashed by materials while sampling open containers
- Walking through puddles of liquids or on contaminated soil
- Using contaminated instruments or equipment

Even with safeguards, personnel contamination may occur. Harmful materials can be transferred into the clean area, exposing unprotected personnel. In removing contaminated clothing, personnel may contact contaminants on clothing or inhale them. To prevent such occurrences, decontamination procedures must be developed and established before anyone enters the site and must continue throughout site operations.

Personnel decontamination procedures will be based on the contaminants of concern and the level of protection being worn by site personnel.

Ingress and egress of any authorized personnel shall be conducted through the three stage decontamination rooms on-site.

Disposal of Contaminated Materials:

All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be properly packaged and stored on-site until disposal arrangements are finalized. Clothing not completely decontaminated on-site should be secured in plastic bags before being removed from the site.

Emergency Decontamination:

Personnel with medical problems or injuries may also require decontamination. There is the possibility that the decontamination may aggravate or cause more serious health effects. If prompt lifesaving, first aid, and medical treatment are required, decontamination procedures will be omitted. In either case, a member of the site management team will accompany contaminated personnel to the medical facility to advise on matters involving decontamination.



Sanitizing of Personal Protective Equipment:

Respirators, reusable protective clothing, and other personal articles not only must be decontaminated before being reused, but also sanitized. The insides of masks and clothing become soiled due to exhalation, body oils, and perspiration. Manufacturer's instructions should be used to sanitize the respirator masks. If practical, reusable protective clothing should be machine-washed after a thorough decontamination; otherwise, it must be cleaned by hand.



ATTACHMENT A

List of Approved Amendments/Changes

Date	Name	Signature	Changes/Comments	Section Added



ATTACHMENT B

Health and Safety Plan (HASP) Acknowledgement/Agreement Form

(All SILVERADO CONTRACTORS, INC., Subcontractor & Client Personnel Must Sign)

Client Site Name: _____ KPP _____ Project Site No. _____

SILVERADO CONTRACTORS, INC. Project No. _____ Task No. _____

I acknowledge I have reviewed a copy of the Health and Safety Plan for this project, understand it, and agree to comply with all of its provisions. I also understand I could be prohibited by the Site Health and Safety Coordinator or other SILVERADO CONTRACTORS, INC. personnel from working on this project for not complying with any aspect of this Health and Safety Plan:

PRINT NAME	SIGNATURE	COMPANY	DATE



ATTACHMENT "C"

SILVERADO CONTRACTORS HOT WORK PERMIT

Plant Name: _____ **KPP** _____ **Work Order #** _____

Location of Hot Work: _____ **Elevation:** _____

Permit Issued (Date/Time) _____ **Permit Expires (Date/Time)** _____

Description of Work: _____

Preparation of Area / Precaution Observed

Note: If a "No" is checked in this section, the Competent Person completing this permit must explain to the Craftsperson how the hazard is going to be controlled and if or why these condition do or do not warrant the need for a Fire Watch.

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| Yes | No | N/A | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Have combustibles and trash within a minimum 35-foot radius horizontally and vertically, if any, been either removed from work area or covered/shielded with fire-retardant material? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Has potential for transmission of heat to adjacent rooms been controlled, if necessary? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are warning signs & barricades in place, as necessary? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are shielding or partitions in place to protect passer-by and lower levels, if necessary? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is fire protection equipment (including portable extinguisher) inspected, available and operational? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is emergency communication (fire alarm, telephone, or radio) readily available? |

Type of Hot Work:

- | | | | |
|--|---|------------------------------------|--|
| <input type="checkbox"/> Stick Weld | <input type="checkbox"/> Oxy / Fuel Cutting | <input type="checkbox"/> Grinding | <input type="checkbox"/> Soldering |
| <input type="checkbox"/> Tig Weld | <input type="checkbox"/> Mig Weld | <input type="checkbox"/> Stud Weld | <input type="checkbox"/> Heat Treating |
| <input type="checkbox"/> Other (describe): _____ | | | |

Yes **No** Fire Watch required?
 Fire Watch Authorized by Supervisor _____ Date: _____

Yes	No	N/A		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hold out / Clearance required?	LOTO # _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a combustible air test required? Atmospheric combustible concentration _____ %	Instrument Serial # _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is continuous atmospheric monitoring required?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is continuous ventilation required?	

Special Instructions:

Restrictions:

- This permit is valid only so long as work conditions existing at the time of issuance do not change. Any change in work area conditions which adversely affects safety voids the permit.
- No hot work is allowed in combustible atmospheres. If testing indicates presence of combustibles, the source of the combustibles must be isolated and the area ventilated and re-tested prior to beginning hot work.
- Other (describe) _____

Craftsperson & Competent Person Approval:

_____ <u>Printed Name</u>	_____ <u>Signature</u>	_____ <u>Date</u>
_____ <u>Printed Name</u>	_____ <u>Signature</u>	_____ <u>Date</u>
_____ <u>Printed Name</u>	_____ <u>Signature</u>	_____ <u>Date</u>

PERMIT REVALIDATION

Competent Person	Date/Time	SAT/UNSAT		Comments
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	

POST HOT WORK INSPECTION

Fire Watch Signature	Date/Time	SAT/UNSAT		Comments
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	

Final Review and Closure by Competent Person:

Comments:

Title

Printed Name

Signature

Date



ATTACHMENT "D" FRONT PAGE

JOB SAFETY ANALYSIS

Work Activity:		Location: KPP	Area:	Date:	Time:								
New/Short Term Employee Count:		Total Crew Member Count:	Job Supervisor/Safety Manager: Mike Turpin/Cesar Salas										
Task	Indicate Hazards: <i>What are the Hazards? Are chemical hazards present?</i>	Safety Work Procedures/Plan: <i>How do I work safely?</i>	PPE Requirements:										
	1.	1.	Safety Glasses										
	2.	2.	Steel Toe Boots										
	3.	3.	Hard Hat										
	4.	4.	High Viz. Vest										
	5.	5.	Hand Protection										
	1.	1.	Hearing Protection										
	2.	2.	Respiratory protection										
	3.	3.											
	4.	4.											
	5.	5.											
	1.	1.											
	2.	2.											
	3.	3.											
	4.	4.											
	5.	5.											
	1.	1.											
	2.	2.											
	3.	3.											
	4.	4.											
	5.	5.											
Confirm Understanding (Crew Members Signatures)		Supervisory / Foreman Review:											
1.	1.	<input type="checkbox"/> Confirm employees have been properly trained and are qualified to perform tasks.											
2.	2.	<input type="checkbox"/> Confirm potential chemical exposures and MSDS availability											
3.	3.	<input type="checkbox"/> Confirm specific work and compliance permits have been secured and authorized.											
4.	4.	<input type="checkbox"/> Confirm employees have safe/inspected tools, PPE & other equipment required.											
5.	5.	<input type="checkbox"/> Confirm New/Short-Term employees are clear on who is their mentor.											
JSA Reviewed during mid-shift break for new hazards? <input type="checkbox"/> YES <input type="checkbox"/> NO		Pre Work Safety Authorization: X											
Initials: <table border="1" style="display: inline-table; border-collapse: collapse; width: 100px; height: 15px;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table>										Post Work Safety Authorization: X			

SILVERADO CONTRACTORS ATTACHMENT “D” BACKPAGE

Example Hazards to Consider	Examples of Safe Work Procedures	Personal Protective Equipment (PPE) – Check all that apply
Hot Work, Sparks, Flame	Welding Curtains/Screens/Permit	EYE & FACE PROTECTION
Tripping Hazards (Obstacles)	Safer Routes, Housekeeping, Barricades	Safety Glasses with Side Shields (ANSI Z-87.1)
Slippery Hazards (Traction)	Routes, Remove Hazard, Enhance Grip	Face Shield (ANSI -87.1)
Elevated Locations up to 6"	Guardrails, Safe Ladders, Barricades	Chemical/Dust/Fine Particulate Goggles (ANSI Z-87.1)
Elevated Locations over 6"	Harness, Lanyard, Anchor Point (5,000lbs)	Impact Goggles (ANSI -87.1)
Moving/Lifting Objects Up to 50lbs	Proper Body Mechanics, Close, Lift w/ Legs	Welding Hood (Note: Proper Shade Selection #10-#12)
Moving/Lifting Objects over 50lbs	Proper Body Mechanics, Two-Person lift	Brazing/Cutting (Burning) Goggles (Shade #3-#5)
Falling Objects	PPE, Barricade, Path of Travel Around	EAR PROTECTION
Sharp Edges/Puncture Points	PPE, Highlight, Protect Remove Object	Hearing Protection (e.g. Muffs, Plugs, Combination)
Pinch Points (Caught Between)	Adjust Hand & Body Position, Use Tools	HEAD & BODY PROTECTION
Release of Energy (Electrical)	Lockout/Tagout Procedures	Hard Hat (ANSI 89.1, Type 1, Class E & G)
Release of Energy (Liquid, Fluid)	Lockout/Tagout & Line Breaking Procedure	Fire Resistant Clothing (i.e. Nomex)
Release of Energy (Pressurized)	Lockout/Tagout & Line Breaking Procedure	Chemical Protective Suit (e.g. Tyvek-Dry to Damp)
Flammables (Things that burn)	Remove Ignition Sources, Relocate, Cover	HAND PROTECTION
Being in the line of fire	Scan Area, Adjust Position & Path of Travel	Hand Protection - Leather (Cuts, General Purpose, Dry)
Hot Surfaces (Burns)	Identify, Guard/Shield, PPE	Hand Protection - Nitrile (Light Chemical Exposure)
Chemical Contact	PPE Eye/Face/Body/Hands/Respirator	Hand Protection - PVC/Viton (Heavy Chemical Exposure)
Electrical Shock/Electrocution	No exposed wires, Guard/Shield, PPE, GFCI Use	RESPIRATORY PROTECTION
Flying/Blowing Particles	PPE for Eyes, Face & Respirator	Filtering Face Piece - (i.e. Paper Mask - P95 or P100)
Grinding Dust/Particles	PPE for Eyes, Face & Respirator	Air Purifying Respirator (APR) - 1/2 Mask
Hoisting/Rigging Materials Objects	Training, Exclusion Zones, Inspect Devices	Air Purifying Respirator (APR) - Full Mask
Noise Exposure	Hearing PPE, Address Source, Distance	Organic Vapor Cartridges (Used w/ APR Respirator)
Vibration/Impact	Gloves, Breaks, Alternative Tools	Acid Gas Cartridges (Used w/ APR Respirator)
Lack of Task Knowledge	Get Training Prior to Accepting Task	P-100 (Dusts, Fumes, Mists) (Used w/ APR Respirator)
Over Tooling/Wrong Tool	Downsize Tool– Safer Tool Usage	Combination Cartridges (Used w/ APR Respirator)
Falls	Guardrails, Covers/Plates, Exclusion Zone	Self-Contained Breathing Apparatus (SCBA)
Confined Space Hazards	Follow Confined Space Procedure	Air Line Respirator (i.e. Fresh Air)
Mental: (Fatigue, Frustration, Rushing)	Rest, Recognize & Stop “At-Risk” Behavior	FALL PROTECTION
Mental: (Complacency-Too Familiar?)	Actively Seek Out Hazards, Observations	Fall Protection Harness
Tooling – Grounding, Guarding, Etc.	Inspect, Have Repaired or Do Not Use	Lanyard (Shock Absorbing Lanyard) with Beam Wrap
Visibility/Lighting	Add Lighting, Mirrors, Use Spotters	"Y" Lanyard (100% Tie Off)
Trenching & Excavation	Permit, Safety Graphic, Competent Person	FOOT PROTECTION
Environmental Spill/Leak	Protect, Contain, & Response Procedure	Safety (Steel Toe) Boots with Defined Heel (ANSI Z-41)
Environmental (Heat, Wind, Cold)	Hydration, Clothing, Rest Periods	Chemical Boots
Heavy Equipment Operation	Authorized, Training, Operating Procedures	Metatarsal Guards over Safety Boots

SILVERADO CONTRACTORS, INC.
PRE-TASK HAZARD ANALYSIS WORKSHEET

Pre-Task# 001Job# 650Location of Task/Job Units 1,2,3,4 Boiler Demolition Date 12/16/2013

MAJOR WORK STEPS OF TASK	POTENTIAL HAZARDS	CONTROLS / SAFETY PLAN	EQUIPMENT/ TOOLS REQUIRED
Setup of work boundries	Trips and falls due to uneven surfaces	Walk area prior to work commencing to locate any areas of concern	Standard PPE (Workboots, glasses, hardhat, safety vest, long pants sleeved shirt, and gloves)
Check utility safe offs	Electrocution, flooding, inhalation of gas fumes	Walk all utility tie in points with Site Manager and physically verify disconnection	Standard PPE (Workboots, glasses, hard hat, safety vest, long pants sleeved shirt, and gloves), voltage tester
Train workers and team	Accident due to lack of information being shared	The implementation of this work sheet	Standard PPE (Workboots, glasses, hardhat, safety vest, long pants sleeved shirt, and gloves)
Secure Site	Unauthorized personnel being onsite and getting injured	Walk site fence perimeter and ensure fencing is intact. Post a guard during trucking days when the gate is open to prevent unauthorized entrance	Standard PPE (Workboots, glasses, hardhat, safety vest, long pants sleeved shirt, and gloves)
Verification of ACM	Worker exposure to asbestos	Constant inspection by trained workers to ascertain the presence of asbestos	Upgraded PPE (Workboots, glasses, hardhat, safety vest, long pants sleeved shirt, North ½ face respirator and P100 filter, coveralls and gloves)
Dismantle potential energy devices (Snubbers, springs, etc)	If devices are compressed, removal could release stored energy and injure workers	Train workers of what the devices may look like and then instruct if found that only the excavator shear is allowed to handle the device. The Shear cannot be damaged by these devices.	Linkbelt 700 excavator equipped with MT 100 shear. Standard PPE (Workboots, glasses, hardhat, safety vest, long pants sleeved shirt, and gloves)
Dismantle boiler with 700 linkbelt and 850 hitachi excavators equipped with shear and grapple	Falling material, hitting nearby workers or the machines themselves, explosion of a remnant blasting charge (unexploded ordinance) that would injure workers	Full time supervision and communication with operators to ensure that work proceeds in the safest manner, and to ensure that the ground crew stays outside of the impact area. Inspect excavators and tools twice daily to ensure proper working order. Pre work training on unexploded ordinance, and daily review of training to keep workers	Standard PPE (Workboots, hardhat, glasses, safety vest, long pants sleeved shirt, and gloves), cab guards on excavators, high volume 1.5" water hoses for dust control, 700 linkbelt and 850 hitachi excavators equipped with shear and grapple

SILVERADO CONTRACTORS, INC.
PRE-TASK HAZARD ANALYSIS WORKSHEET

Pre-Task#	001	Job#	650	Location of Task/Job	Units 1,2,3,4 Boiler Demolition Date 12/16/2013
				attention and focus acute. If ordinance is discovered it will be placed in a 5 gallon pail of clean water and turned over to responsible party (this party is to be determined).	
Torchcut boiler parts that are unshearable		Falling material, hitting workers, slag/sparks injuring workers, lead ingestion or respiration due to fumes		Use excavators to create a safe work area to torch steel. Full time supervision and communication with torch cutters to ensure that work proceeds in the safest manner, wearing issued PPE for torch cutting activities, blood lead monitoring for all workers, showering after work, handwashing before eating lunch, and at break, twice daily coverall changes	Standard PPE (Workboots, hardhat, glasses, safety vest, long pants sleeved shirt, and gloves), welding hoods with integrated hepa filters and face shields, coveralls, and fire retardant clothing
Stage material for loadout		Piles are built to high and become unsafe		Supervisor to ensure operators make stable load out piles	850 hitachi excavator equipped with grapple
Task Specific Required Inspection				Work Area Questions	
Daily Lift Inspection		Inspected By/Name		Is there adjacent work and/or co-occupancy in work area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Harness Inspection		Inspected By/Name		Other workers adjacent above or below work area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fire protection Inspection		Inspected By/Name		Did you notify them of your presence?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cords – Properly Inspected		Inspected By/Name		Did you coordinate with adjacent work?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Heavy Equipment Inspected		Inspected By/Name		Can you proceed with work safely?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other-		Inspected By/Name		Is there any M.E.P. nearby?	<input type="checkbox"/> Yes <input type="checkbox"/> No
				Barricades Set Up <input type="checkbox"/> Yes <input type="checkbox"/> No	Removed at end of task <input type="checkbox"/> Yes <input type="checkbox"/> No

SILVERADO CONTRACTORS, INC.
PRE-TASK HAZARD ANALYSIS WORKSHEET

Pre-Task# 001 Job# 650 Location of Task/Job _____ Units 1,2,3,4 Boiler Demolition Date 12/16/2013

Pre-Task Review has been completed and each employee is taking the responsibility to ensure that all required training for their work activity is current, and that they are competent and qualified on all required tools/equipment – Print Name and Sign below!

- | | |
|----------|-----------|
| 1. _____ | 9. _____ |
| 2. _____ | 10. _____ |
| 3. _____ | 11. _____ |
| 4. _____ | 12. _____ |
| 5. _____ | 13. _____ |
| 6. _____ | 14. _____ |
| 7. _____ | 15. _____ |
| 8. _____ | 16. _____ |

Instructions: Complete this form per task, per day. **1.** location and date. **2.** List **major work steps** of this task. **3.** Using the back side of this form as a guide, walk-through the work area and list **potential hazards** involved with each work step. **4.** List controls or **safe plan** to mitigate those hazards. **5.** List **required Equipment/tools** needed to perform the job safely. **6.** Have each worker review the work area; assist with completing this form and print and initial. **NOTE:** Multi Craft jobs require each discipline to complete separate form for their task. Review with all workers in work area. Each worker prints name and initials on all worksheets. **7.** Submit this form to your Supervisor at completion of day. **NOTE: Work shall stop if conditions change, job scope changes, or a deficiency in the plan is noted. If any injuries or incidents occur, respond as appropriate, then contact Supervisor immediately.**

SILVERADO CONTRACTORS, INC.
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Task notes/Employee remarks

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