

**Site Safety and Health Plan
Blair's Lane Bridge Replacement
at Hangtown Creek
Placerville, California**

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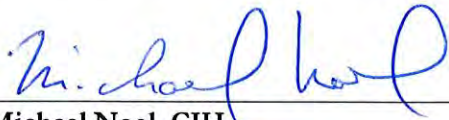
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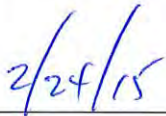
Site Safety and Health Plan Blair's Lane Bridge Replacement at Hangtown Creek Placerville, California

Millennium Project No. 20037.2000

REVIEWED AND APPROVED BY:



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¹ Supplemental Submittal - Records to be inserted into Appendix G only if HAZWOPER provisions are triggered by impacted soils and/or groundwater.

1.0 INTRODUCTION

The intent of this document is to be a GUIDANCE DOCUMENT ONLY. It is not intended to prescribe means and methods for accomplishing any project tasks. The General Contractor shall submit their own Site Specific Health and Safety Plan (HASP) governing all the contractor and subcontractor activities for the duration of this project. The General Contractor shall assume all responsibility for their actions as well as the actions of all their subcontractors.

1.1 GENERAL PROJECT BACKGROUND

This Project Site Safety and Health Plan (HASP) addresses potential safety and health hazards associated with work activities during demolition and replacement of a bridge spanning Hangtown Creek, located in Placerville, CA.

The Site Description was taken from Taber Consultants' Foundation Report to QEI dated May 30, 2007 as incorporated in Taber Initial Site Assessment and Preliminary Site Investigation Work Plan (ISA), dated December 16, 2014. The Project description was taken from the Addendum to the Adopted Mitigated Negative Declaration for Blairs Lane Bridge (25C-0012) at Hangtown Creek Replacement Project SCH# 2006122001 dated July 2014 as incorporated in the ISA as indicated above.

The project site is located on Blairs Lane and Broadway in Placerville approximately 450 feet south of Highway 50 (See Figure 1). The GPS coordinates of the site are latitude 38.731449° N and longitude -120.783225° W.

Hangtown Creek follows a generally straight course through the project area, and flows to the west (Figure 1). The existing Blairs Lane Bridge is a single-span concrete deck on steel girder structure approximately 30 feet long and 20 feet wide. It is supported on reinforced concrete wall abutments slightly skewed to match the channel. A concrete sill / weir structure is located in the channel just below the downstream (west) side of the bridge. Natural channel banks are moderately steep and heavily vegetated in the immediate vicinity of the existing bridge. Walls and hardened bank areas exist both up and downstream of the site. Channel bottom is about 10 feet below deck on the upstream side of the sill and $11 \pm$ feet below deck on the downstream side.

The proposed project consists of replacing the existing 31-foot long single span, steel stringer bridge with a concrete deck supported on concrete abutments with a 41-foot long single span cast in place pre-stressed concrete bridge.

The proposed project provides a tangent horizontal alignment in approximately the same location as the existing roadway. Most of the road widening associated with the proposed project will be located on the east side of Blairs Lane. Road widening will require right of way (ROW) acquisition on both sides of the road to provide two standard 12-foot wide travel lanes, five-foot wide sidewalks on the west and an approximately 125 feet long sidewalk segment portion to the east.

Retaining walls will be used where feasible to avoid existing utilities, oak trees, and other improvements south of Bridge 25C0012. Retaining wall types include Caltrans standard cantilever wall and modular block landscaping walls.

North of Bridge 25C0012, Blairs Lane will be raised approximately two feet from the existing grade in order to accommodate hydraulic design constraints. The road profile at the intersection of Blairs Lane and Broadway will not be changed. This allows Broadway to maintain its existing grade. The two gas station driveways north of the bridge will be raised and reconstructed to match the proposed Blairs Lane road profile.

The project will relocate an existing 6 inch sewer line in Blairs Lane from Baco Drive which connects to a 12-inch sewer line on the north side of the creek. The existing 6-inch sewer line is attached to the bridge. Existing north-south aligned underground utilities present along Blairs Lane include 10-inch water lines (one line along west side of the bridge and one line along the eastside of the bridge)., the 6-inch existing inch sewer line to be relocated, Comcast television, and a 36-inch storm drain that outlets at both north and south creek banks. Existing east-west aligned underground utilities present adjacent to Hangtown Creek include a 4-inch sewer and 2-inch water service adjacent to the south bank and a 12-inch sewer line adjacent to the north bank.

Depth to existing dry utilities below grade can be assumed to be roughly 3 feet. The existing north-south aligned 6-inch sewer depth ranges from approximately 3 to 8 feet (to invert of pipe).The approximate depth of the existing north-south aligned waterline is 4 feet (to invert of pipe). The approximate depth of the existing 12-inch sewer line adjacent to the north bank of the creek is 7 feet.

The Project will relocate the existing 6 inch sewer line in Blairs Lane from Baco Drive north to a point just south of the new bridge structure. The relocated 6 inch sewer line will transition to an 8 inch sewer main and will be placed in a trench beneath the bed of Hangtown Creek.

Installation of the relocated sewer main will require excavation of a trench perpendicular to Hangtown Creek. Maximum depth of excavation below the bed of the Hangtown Creek for the creek crossing would be approximately 3 feet. Maximum depth of excavation in the adjacent creek banks and uplands areas would be approximately 13 feet below existing grade.

The Project will relocate the existing 12 inch sewer line that parallels Hangtown Creek approximately 130 feet north, placing it beneath Broadway and extending it west approximate 550 feet to reconnect with the existing sewer line on Lucky Street. Depth of excavation required along Broadway would range from approximately 15 feet near the intersection of Blairs Lane to about 6 feet near Lucky Street. The relocated pipe will be 15 inch diameter. The existing sewer line segment paralleling Hangtown Creek and the sewer line segment along the north edge of Broadway will be abandoned (filled with slurry). Relocation of the sewer line in Broadway will require installation of two short (each less than 100 feet in length) 6 inch sewer laterals to connect service lines to existing businesses.

The existing waterline beneath Blairs Lane will be relocated, and a pressure reducing station will be installed on the west side of Blairs Lane, north of Baco Drive. The relocated waterline will be attached to the east side of the new bridge. The Project requires relocation of overhead electrical utility and telephone lines across Hangtown Creek. PG&E or their subcontractor will perform activities associated with the relocation of electrical utilities associated with the project. Ground disturbance associated with relocation of electrical utility and telephone lines is comprised of the installation of one new wooden utility pole near the southeast corner the new bridge and installation of a replacement wooden utility pole and a small utility box within a utility easement between the Caltrans maintenance yard and the south bank of Hangtown Creek. Tree trimming and tree removal will be necessary to provide line clearance for the existing and relocated electrical utility and telephone lines over Hangtown Creek. Tree trimming and tree removal will be conducted by the City, PG&E, or their contractors.

1.2 PREVIOUS SITE USAGE AND ENVIRONMENTAL INVESTIGATION SUMMARY

The site was and remains a single lane automobile bridge across Hangtown creek. Site Investigation was undertaken by Taber Consultants to characterize potential site hazards. The hazards identified during multiple site investigations/assessments are detailed in the following sections.

1.2.1 Project Site Chemical Contaminants of Concern

Taber Consultants conducted soil borings at the site. Refer to Taber report for boring location map. The following chemical contaminants were identified from soil samples collected from the soil borings from 6 ft to 15 ft below ground surface (BGS).

- a. TPH-Gas (TPHg) – Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- b. TPH-Diesel (TPHd) – Detected at same locations as TPHg above. Non-hazardous levels
- c. Benzene – Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels
- d. Toluene – Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels
- e. Ethylbenzene - Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels
- f. M,p Xylenes - Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels
- g. Naphthylene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- h. Perchloroethylene (PCE) - Detected at one location (SB-7 @ 6' BGS) – Non-hazardous levels
- i. N-Butylbenzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- j. Sec-Butylbenzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- k. Tert-Butylbenzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- l. Isopropyl Benzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- m. N-propyl Benzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- n. P-Isopropyl Benzene - Detected at two locations (SB-5 @ 6' BGS, SB-7 @ 10.5 BGS) – Non-hazardous levels
- o. 1,3,5 Trimethylbenzene - Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels
- p. 1,2,4 Trimethylbenzene - Detected at one location (SB-5 @ 6' BGS) – Non-hazardous levels

The results of the soil boring chemical testing were compared with the Regional Water Quality Control Board Table K-3 – Direct Exposure Soil Screening Levels (Construction/Trench Worker Exposure Scenario).

1.2.2 Naturally Occurring Asbestos (NOA)

Taber Consultants reviewed the geologic logs for the above soil borings during their site investigation. No ultramafic rock, NOA-containing carbonate rock or serpentine rock was reported during those investigations. Laboratory analysis of representative soil/rock samples of the project site indicated no evidence of NOA by CARB method 435.

1.2.3 Asbestos Containing Materials

A site asbestos survey was conducted by National Analytical Laboratories (NAL) to determine if there were asbestos-containing materials associated with the actual bridge structure. NAL identified the following materials associated with the bridge structure to contain greater than 1% asbestos and therefore are considered as hazardous materials. Refer to NAL report dated December 16, 2014 for more information.

- a. Thermal System Insulation (TSI) – Pipe insulation located beneath the bridge – East side pipe (approx.. 30 LF). This material is highly Friable (RACM) and must be removed by a C-22 California licensed asbestos contractor prior to any disturbance of the bridge structure.

- b. Compression Shims – Category II non-friable ACM located on I Beams and Foot Support (approx. 10 SF). This material must be removed by a C-22 California licensed asbestos contractor prior to any disturbance of the bridge structure.
- c. The project specifications also indicate that portions of existing sanitary sewer and water line piping may be constructed with asbestos cement pipe (ACP) that may contain asbestos at concentrations greater than 1 percent. The asbestos cement pipe (ACP) will be considered an asbestos containing material (ACM). Removal and/or disturbance of ACP will be subject to existing OSHA regulations governing the non-destructive removal of asbestos cement pipe (exterior to buildings).

1.2.4 Lead Paint and Lead Contamination

Taber Consultants conducted lead paint sampling of the bridge structure and lead in soil contamination beneath the bridge structure. The following levels were noted:

- a. Bridge structure (railings & posts) – White Paint ranged from 10 – 86 mg/kg lead.
- b. Bridge structure (lateral support beams) – Orange Paint ranged from 6,200 – 23,000 mg/kg lead
- c. Soil beneath Bridge structure – 110 mg/kg with Soluble (leachable) lead at 17 mg/L.

1.2.5 Sewer Replacement – Escherichia coli in Surface water, groundwater and escape during sewer bypass

All persons working on this site should be aware that during the sewer abandonment and replacement activities that are part of the project, workers may encounter bacteria commonly found in sewer and surface water that have the potential to be pathogenic, i.e., *Escherichia coli* (*E. coli*) or other fecal coliform bacteria.

According to the Centers for Disease Control and Prevention:

Although most strains of *E. coli* are harmless, others can make you sick. Some kinds of *E. coli* can cause diarrhea, while others cause urinary tract infections, respiratory illness and pneumonia, and other illnesses.

1.2.6 Treated Wood Waste

It was determined by Taber Consultants that the railing on the bridge was constructed of timber for the lateral railing and vertical posts. The timbers appear to be treated wood. Such wood treatments may contain chromated copper arsenate, , copper quaternary, copper azole, arsenic, creosote and others.

1.3 HEALTH AND SAFETY PLAN PROVISIONS

Since the project specifications indicate the potential to encounter chemical-impacted soil, asbestos materials, lead materials and lead-contaminated soil beneath the bridge, sewage-related bacteria, treated wood chemicals or groundwater and ACP within specific areas of the project site, this Health and Safety Plan (HASP) includes provisions to conduct specific work activities at selected work areas as a HAZWOPER-defined activity or as “Asbestos-Related Work”. The HAZWOPER provisions of this HASP will only be implemented where exposed conditions indicate that more stringent health and safety measures need to be implemented.

The Asbestos-related Work Provisions will only be implemented during removal of asbestos-containing materials identified on the bridge structure and where exposed conditions indicate that asbestos cement pipe is damaged or deteriorated such that the pipe would be reclassified from a Category II non-friable ACM to a friable ACM. If determined to be friable, friable ACP would require handling and disposal as a Regulated Asbestos Containing Material (RACM) and as California Regulated Hazardous Waste – Friable Asbestos. All Asbestos-Related Work activities will be conducted in conformance with 8 CCR 1529 and asbestos related sections in 29 CFR 1910, 29 CFR 1926 and 40 CFR 61.

It is anticipated that the standard, non-HAZWOPER provisions of this HASP will be implemented during most, if not all, of the excavation and underground construction activities to be performed as part of the bridge demolition and replacement as well as the sewer realignment portions of the project.

For purposes of this HASP, non-HAZWOPER health and safety provisions will include standard operating procedures used in trenching and underground utility construction and special provisions under California Code of Regulation (CCR) Title 8 Section 1529(r)(1) for non-destructive removal of asbestos cement pipe located exterior to buildings. Removal of intact ACP will be removed by a licensed asbestos abatement contractor.

Tasks addressed in this HASP include, but are not limited to:

- Initial work location reconnaissance, including utility clearance
- Demolition and removal of at grade or near surface structures
- Trench excavation, pipe installation, site restoration and use of conventional earth moving equipment for sewer realignment and bridge demolition/replacement.
- Confined space work activities associated with re-lining the existing sanitary sewer line
- Working with and around sewage-contaminated materials
- Health and safety monitoring (both visual and instrumental)
- Handling and storage of non-hazardous construction debris
- Non-destructive removal and disposal of asbestos cement pipe (as Category II Non Friable ACM)
- Handling and storage of excavated soils
- Handling and storage of groundwater generated from dewatering (if required)
- Site restoration and
- Disposal of non-hazardous construction debris

Operational changes to this HASP that could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of the Construction Resident Engineer (RE).

In the event of a conflict between this HASP, federal, state, or local regulation and the Contractor's Safety Program, the more stringent will apply.

1.4 KEY CONSTRUCTION MANAGEMENT DOCUMENTS

In addition to this HASP, the following health and safety and construction management documents will be SUBMITTED BY CONTRACTOR and implemented as part of the underground construction activities:

- General Safety Rules and Safe Work Practices (Appendix B)
- Contractor Safety Program (Injury and Illness Prevention Plan [IIPP] (Appendix C)
- Contractor Excavation Safety Plan (Appendix C)
- Contractor Confined Space Entry Program (Appendix D)
- Contractor HAZWOPER Health And Safety Training/Medical Surveillance Documentation and HAZWOPER Provisions (Appendix G)
- Construction Storm Water Pollution Prevention Plan (SWPPP)
- Soil Management Plan (SMP),
- Groundwater Management Plan (GMP)
- Dust Control Management Plan (DCMP) – El Dorado County’s Fugitive Dust Control Plan,
- Debris Management Plan (DMP),
- Asbestos Cement Pipe Management Plan (ACPMP) and

Where not referenced as a HASP appendix, the documents referenced above are stand-alone documents submitted by the Contractor, except for the DCMP and DMP which are incorporated into the SWPPP as appendices. Where not included in this HASP, these documents are incorporated into this HASP by reference.

This HASP also identifies administrative and field procedures to be observed to mitigate chemical and physical hazards. The HASP and SWPPP will be implemented to support the Soil Management Plan (SMP), including operation of the Soil Management Area (SMA) if petroleum impacted soil is encountered. Specific requirements for the storage, treatment and discharge of groundwater should be detailed in the GMP.

The Contractor Safety Program (IIPP) also identifies standard procedures and tasks to be followed by Contractor personnel while performing routine (non-HAZWOPER) construction activities. The activities and standard operating procedures covered by Contractor’s Safety Program (IIPP) are incorporated into this HASP by reference. Contractor’s standard procedures will be implemented by Contractor’s Site Foreman. The general safety rules and safe work practices presented in Appendix B to this HASP are intended to augment and not replace standard operating procedures identified in Contractor’s IIPP.

In addition, the Caltrans Standard Special Provisions (SSP’s) are attached as additional requirements relevant to this project. Throughout this HASP, various requirements shall reference these SSP’s. The SSP’s must be completed by Contractor and are located in Appendix E.

Where appropriate, Contractor’s Excavation Safety Plan has been referenced in the HASP. The Excavation Safety Plan addresses procedures to be followed by Contractor personnel for underground construction in conformance with California Construction Safety Orders regarding trenching. The Excavation Safety Plan will be implemented by the Contractor Site Foreman or by Contractor’s designated excavation competent person. The Excavation Safety Plan is part of Contractor’s Safety Program (IIPP).

The Asbestos Cement Pipe (ACP) Management Plan identifies the specific procedures to be utilized in the cutting, removal, handling of asbestos cement pipe (ACP). Training certificates shall be included in the ACP Management Plan (ACPMP) that is a separate submittal to be prepared by Contractor's asbestos abatement subcontractor. The removal of ACP will be performed in conformance this ACP. To support the ACPMP, this HASP addresses procedures to be implemented in the event that suspect friable ACM associated with damaged or deteriorated ACP is encountered.

The SWPPP details procedures and best management practices (BMPs) to be implemented for reducing impact to storm water runoff. The project engineers should determine if this project is subject to the requirements under California's General Permit for *Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit [CGP]) and State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ. If required, the SWPPP will be implemented by Contractor's project foreman and superintendent. Likewise, the project engineer should determine if a Qualified SWPPP Practitioner (QSP) is required. The SWPPP would also include provisions and procedures for amending the SWPPP if a SWPPP amendment is determined to be necessary.

Excavated soil and groundwater generated from underground construction will be managed in conformance with the CONTRACTOR SUBMITTED Soil Management Plan (SMP) and Groundwater Management Plan (GMP), respectively. Based on the geotechnical report, groundwater could be encountered in excavations and trenches that extend deeper than 2-4 feet below finish grade. BMPs addressing management of non-contaminated groundwater are included in the SWPPP and the GMP. Implementation of these plans may be modified based on additional testing results as determined by the Construction Resident Engineer (RE).

Where identified by the initial hazard assessment, construction activities within areas identified as impacted with petroleum hydrocarbons or other non-visible pollutants may require the use of respirators and other personal protection equipment (PPE) in the event that the HAZWOPER provisions of this HASP are implemented. Contractor's Respiratory Protection Plan and other HAZWOPER-related documentation shall be included in Contractor's Safety Program.

Asbestos-related work activities associated with removal of friable ACM will require the use of respirators and other personal protection equipment (PPE). This work will also be performed by a licensed asbestos abatement contractor. This work will be subject to a separate work plan Contractor submittal to be prepared under the ACP Management Plan.

1.5 POLICY STATEMENT

This HASP is a project specific document, and is intended to augment and not replace existing health and safety programs, IIPPs, hazard communication programs, respiratory protection programs, hearing conservation programs, Excavation Safety programs, training programs, standard operating procedures, and other safety related programs, methods or procedures currently in use by Contractor (prime general contractor) and Contractor subcontractors for their own employees. These include both voluntary and regulatory required programs.

However, in the event of a conflict between this HASP, Contractor's Safety Program or the individual subcontractor's Safety Program, the more stringent will apply.

This HASP is intended to cover site work and work activities in areas where there is a low potential for exposure to soil and groundwater impacted from unknown hazardous material releases. Consequently, this HASP assumes the following:

- The General Contractor (Contractor) and subcontractors (where utilized) personnel have not completed training to perform hazardous waste operations or emergency response actions as described in Title 8 of the California Code of Regulations, Chapter 4, Subchapter 7 and Title 29 of the Code of Federal Regulations, Part 1910.
- Contractor (Contractor) personnel have only completed training to perform non-destructive removal of asbestos cement pipe located exterior to buildings in conformance with 8 CCR 1529(r)(1). This work will be performed as Asbestos-related work in conformance with 8 CCR 1529 and 29 CFR 1910. The removal of ACP will be performed by a licensed asbestos abatement contractor under contract to Contractor.
- The Contractor and subcontractor have developed and implemented “awareness level” training in their Safety Programs to enable their respective site personnel to identify an environmental condition that could result in an unsafe work condition, and to immediately cease work if an unsafe work condition occurs.
- The Contractor and subcontractor have implemented reporting procedures requiring that the Contractor Site Foreman or Contractor Site Safety Officer (SSO) be immediately notified of an unsafe work condition so that a proper hazard assessment can be made prior to restarting work in the area where the environmental condition is encountered.

In the event that an unknown environmental condition is encountered during the construction activities or site work performed under this HASP, the Contractor shall immediately cease all work in the area where the environmental condition has been exposed. No work shall be performed in the area until a hazard assessment has been completed, and a determination has been made that there is no hazard or until additional measures, procedures, and/or engineering controls to effectively mitigate the identified site hazard have been developed and implemented.

The hazard assessment will be performed upon direction from the Resident Engineer. Hazard assessment associated with determining if damaged or deteriorated ACP shall be reclassified from a Category II Non Friable ACM to friable ACM shall be performed in conformance with the ACPMP by a State of California Certified Asbestos Consultant (CAC).

Where additional measures, procedures, engineering controls or specially licensed contractors are determined to be necessary, this HASP will be amended and the HASP amendment approved in conformance with procedures identified in this HASP. The amended HASP shall be approved and the additional measures, procedures and/or engineering controls shall be in-place before work is allowed to resume.

Contractor requires that visitors to the work location under this contract also abide by these procedures (see Section 10.4).

1.6 HEALTH AND SAFETY REFERENCES

This HASP complies with requirements specified in applicable U.S. Department of Labor Occupational Safety and Health Administration (OSHA), California Occupational Safety and Health Administration (CAL/OSHA), and U.S. Environmental Protection Agency (EPA) regulations. This HASP follows the guidelines established by the regulatory agencies in the following documents.

- *Standard Operating Safety Guides*, U.S. EPA, November 1984
- *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH 85-115, 1985
- Title 8 of the California Code of Regulations, Chapter 4, Subchapter 4, (commencing with Section 1500) Construction Safety Orders (CAL/OSHA)
- Title 8 of the California Code of Regulations, Chapter 4, Subchapter 4, (commencing with Section 1529 (r)) Asbestos (CAL/OSHA)
- Title 8 of the California Code of Regulations, Chapter 4, Subchapter 7, (commencing with Section 3200) General Industry Safety Orders (CAL/OSHA), with special attention to Section 5192, Hazardous Waste Operations and Emergency Response
- Title 29 of the Code of Federal Regulations, Part 1910 (29 CFR 1910), Occupational Safety and Health Standards (OSHA), with special attention to Section 1910.120, Hazardous Waste Operations and Emergency Response
- Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR 1926), Safety and Health Regulations for Construction (OSHA), Subpart Z, Section 1101 Asbestos
- Title 8 California Code of Regulations (CCR) Section 1529 Asbestos Construction Industry
- Title 8 California Code of Regulations (CCR) Section 1532.1 Lead Construction Industry
- Title 8 California Code of Regulations (CCR) Section 5156 – 5158 Confined Space Regulations
- National Oil and Hazardous Substances Contingency Plan

Other applicable laws, ordinances, rules and regulations, or portions thereof, listed in the project specifications that specifically address health and safety.

1.7 OTHER APPLICABLE REFERENCES

Regulations addressing the characterization, management, transportation, and disposal of hazardous materials and/or hazardous wastes, and other applicable laws, ordinances, rules and regulations, or portions thereof, listed in the project specifications are incorporated into this HASP by reference.

The Caltrans Standard Special Provisions (SSP's) are attached as additional requirements relevant to this project.

1.8 ORGANIZATION

The HASP is organized into twelve (12) sections. Section 1 gives an introduction and identifies specific health and safety objectives. Section 2 gives a brief description of the project, and summarizes historical uses of the site. Sections 3 through 12 address specific health and safety plan requirements.

Backup information is provided in the appendices as indicated below.

Appendix A includes various health and safety reporting forms.

Contractor Safe work practices are included in Appendix B.

Appendix C includes copies of the prime contractor's Injury and Illness Prevention Plan (IIPP), Respiratory Protection Plan and Excavation Safety Plan. Copies of OSHA training certificates are also included in Appendix C, as applicable.

The prime contractor's Confined Space Program are included in Appendix D.

The Caltrans Standard Special Provisions (SSP's) are included in Appendix E.

Appendix F includes a copy of the geotechnical report.

Appendix G will be used to contain supplemental submittals for implementation of the HAZWOPER and Asbestos-related Work Provisions.

Appendix H will contain the Contractor Submitted Asbestos Management Plan (AMP)

Appendix I will contain the Contractor Submitted Lead Compliance Plan

Appendix J will be used for addendums to the HASP.

2.0 HEALTH AND SAFETY RESPONSIBILITIES

Underground utility removal/installation will involve Contractor, consultant, and subcontractor personnel. The following health and safety authorities and responsibilities are established for above and underground work activities covered under this HASP. Specific personnel designated to assume the responsibilities identified in this section are shown in Table 7.

This HASP assumes that Contractor and subcontractor personnel involved in non-HAZWOPER defined work activities have not completed training to perform hazardous waste operations or emergency response actions as described in Title 8 of the California Code of Regulations, Chapter 4, Subchapter 7 and Title 29 of the Code of Federal Regulations, Part 1910.

This HASP assumes that removal of ACP will be performed under a Contractor Submitted ACP Asbestos Management Plan to be included as Appendix H to this HASP. Personnel conducting removal of ACP shall have completed training to perform non-destructive removal of asbestos cement pipe used outside of building as described in Title 8 of the California Code of Regulations Section 1529(r)(1) or are licensed as an asbestos abatement contractor.

In the event that an unknown environmental condition is encountered during the construction activities or site work performed under this HASP, Contractor shall immediately cease all work in the area where the environmental condition has been exposed. No work shall be performed in the area until a hazard assessment has been completed, and a determination has been made that there is no hazard or until additional measures, procedures, and/or engineering controls to effectively mitigate the identified site hazard have been developed and implemented.

The hazard assessment will be performed as directed by the resident engineer. Hazard assessment associated with impacted bridge structure, soil and/or groundwater shall be performed by a Certified Industrial Hygienist (CIH) or other California registered professional. Hazard assessment associated with determining if damaged or deteriorated ACP shall be reclassified from a Category II Non Friable ACM to friable ACM shall be performed by a State of California Certified Asbestos Consultant (CAC).

2.1 Contractor CORPORATE HEALTH AND SAFETY OFFICER or other Contractor-designated individual.

The Contractor Corporate Health and Safety Officer or other Contractor-designated individual is a Contractor employee designated with developing, maintaining, and implementing Contractor's Safety Program. Specific duties include:

- General health and safety program administration,
- Conducting periodic safety reviews of the project site and project documentation,
- Documenting compliance with the Contractor's Safety Program (IIPP) and other safety regulations,
- Approving in writing each addendum to Contractor's Safety Program (IIPP),
- Coordinating with other Contractor personnel to ensure that Contractor personnel have received the proper training (both initial and annual refresher) and medical clearance (where necessary) to perform their tasks under Contractor's Safety Program,
- Ensuring that Contractor and Subcontractor personnel are familiar with project SSP's,
- Maintaining health and safety records including training records, medical clearances, respiratory fit tests, and other required documentation for compliance with Contractor's Safety Program and other safety regulations,

- Verifying with Contractor Site Superintendents and/or Site Foremen that there is a qualified first-aid provider at construction sites where Contractor personnel are working,
- Discussing potential health and safety hazards with the Contractor's Superintendent and Site Foremen, including level of personal protection required, and
- Conducting periodic field health and safety quality assurance audits to verify implementation of Contractor's Safety Program.
- Reviewing hazard assessments performed in the event that an unknown environmental condition is encountered during construction activities or site work performed under this HASP

When onsite, the Contractor Corporate Health and Safety Manager has the authority to halt any Contractor work activity and/or subcontractor work activity, and to remove any Contractor personnel or subcontractor employee from the work area for failure to comply with established health and safety procedures or for operating in an unsafe manner.

2.2 Contractor PROJECT MANAGER or other Contractor-designated individual

The Project Manager or other Contractor-designated individual is a Contractor employee, and is responsible for overall management of the project. This individual also has administrative responsibility for implementing the HASP. With regard to health and safety, this includes the following responsibilities:

- Reading and becoming familiar with this HASP,
- Ensuring that the Site Superintendent and Site Foreman have read and are familiar with this HASP
- Working with the Site Superintendent and Site Foreman to implement all elements of this HASP, and
- Consulting with the Health and Safety Project Consultant regarding changes to the HASP in response to operational changes or improved site knowledge.
- Discussing potential health and safety hazards with the Health and Safety Project Consultant, and
- Ensuring that changes as directed by the H&S Project Consultant and in approved HASP addenda are being implemented.
- Ensuring that hazard assessments are performed in the event that an unknown environmental condition is encountered during construction activities or site work performed under this HASP.

The Contractor Project Manager has the authority to halt any Contractor work activity and/or subcontractor work activity, and to remove any Contractor personnel or subcontractor employee from the work area for failure to comply with established health and safety procedures or for operating in an unsafe manner.

2.3 Contractor SITE SUPERINTENDENT or other Contractor-designated individual

The Site Superintendent or other Contractor-designated individual is a Contractor employee, and is responsible for managing all contractor and subcontractor field activities conducted during the project. This individual also has administrative responsibility for implementing the non-HAZWOPER and HAZWOPER provisions of this HASP. With regard to health and safety, this includes communicating site requirements to all personnel, observing that subcontractors working at the project site enforce all provisions of their respective Safety Programs and this HASP, working with the Site Foreman to implement all elements of this HASP, and consulting with the Health and Safety Project Consultant regarding changes to the HASP in response to operational changes or improved site knowledge. Other responsibilities include:

- Reading and becoming familiar with this HASP,
- Performing site inspections to find hazards and observe employees at work,

- Ensuring that proper personal protective equipment (hard hat, eye protection, hearing protection, safety shoes) is available, used properly, and cleaned/stored appropriately when not in use. Specific personal protective equipment will be defined in this HASP or by the Contractor's Safety Program (IIPP),
- Stopping work, as required, to maintain personal and environmental health and safety,
- Discussing potential health and safety hazards with the Health and Safety Project Consultant, and
- Implementing changes as directed by the H&S Project Consultant and in approved HASP addenda.

The Contractor Site Superintendent or other Contractor-designated individual has the authority to halt any Contractor work activity and/or subcontractor work activity, and to remove any Contractor personnel or subcontractor employee from the work area for failure to comply with established health and safety procedures or for operating in an unsafe manner.

2.4 Contractor SITE FOREMAN or other Contractor-designated individual

The Site Foreman or other Contractor-designated individual is a Contractor employee. The Site Foreman or other Contractor-designated individual is responsible for field implementation of non-HAZWOPER and HAZWOPER provisions of this HASP, and is responsible for implementing the specific requirements in Contractor's Safety Program (IIPP) in the field on a day to day basis. With regard to health and safety, this includes communicating site requirements to all Contractor personnel assigned to this project, observing that all Contractor field personnel and subcontractors follow all provisions of this HASP and their respective Safety Programs (IIPPs), working with the Site Superintendent to implement all elements of this HASP and the Contractor Safety Program, and consulting with the Health and Safety Project Consultant regarding changes to the HASP in response to operational changes or improved site knowledge. Other responsibilities include:

- Reading and becoming familiar with this HASP,
- Implementing Contractor's Safety Program, this HASP, and other safety regulations,
- Implementing Contractor's Excavation Safety Plan as the designated "competent" person,
- Ensuring that the ACPMP is being implemented,
- Stopping work, as required, to maintain personal and environmental health and safety,
- Ensuring that all site personnel and visitors have received the proper training and medical clearance prior to entering the site,
- Discussing potential health and safety hazards with the designated Health and Safety Project Consultant,
- Implementing changes as directed by the H&S Project Consultant and in approved HASP addenda,
- Ensuring that proper personal protective equipment defined in this HASP or by Contractor's Safety Program (IIPP) is available, used properly, and cleaned/stored appropriately when not in use, and
- Designating appropriate personal protective equipment where not defined in this HASP or by Contractor's Safety Program (IIPP).

The Contractor Site Foreman or other Contractor-designated individual shall have completed an OSHA Competent Person Training (OSHA 8 – 10 hour) in conformance with Specification Section 01342 Part 1.03(B). A copy the OSHA Certificate should be included in Appendix C.

This Contractor-designated individual has the authority to halt any Contractor work activity and/or subcontractor work activity, and to remove any Contractor personnel or subcontractor employee from the work area for failure to comply with established health and safety procedures or for operating in an unsafe manner.

2.5 Contractor SITE SAFETY OFFICER or other Contractor-designated Individual

The Site Safety Officer (SSO) or other Contractor-designated individual manages the safety aspects of on-site activities at the Site covered by this HASP. For this project, the duties of the SSO will be assumed by the Contractor Site Foreman. The responsibilities of the SSO include:

- Maintaining a copy of this HASP and any subsequent revisions at the work site,
- Coordinating with the Site Superintendent to ensure that proper personal protective equipment is available, used properly, and cleaned/stored appropriately when not in use,
- Maintaining documentation of health and safety related activities such as safety briefings, etc. as required in this HASP,
- Implementing Contractor's respiratory protection program,
- Enforcing the contractor's (Contractor) Safety Program, this HASP, and other safety regulations, including that proper personal protective equipment is available and being used correctly,
- Performing site inspections to identify potential hazards, and to observe employee work practices,
- Performing field screening, monitoring, and record keeping,
- Stopping work when necessary to prevent injury or illness and ensure personal and environmental health and safety,
- Investigating all injuries, illnesses, and accidents, no matter how minor,
- Determining evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation,
- Developing and implementing corrective action plans to eliminate or mitigate hazards,
- Presenting field safety meetings and maintaining attendance logs and records,
- Ensuring that all Contractor personnel assigned to this project have received appropriate training in the hazards associated with the job (as detailed in this HASP), and
- Ensuring that hazard assessments are performed in the event that an unknown environmental condition is encountered during construction activities or site work performed under this HASP.

2.6 SUBCONTRACTORS

Subcontractors engaged by Contractor to perform work on this project are responsible for ensuring that the subcontractor's onsite personnel have read and are familiar with this HASP. Subcontractors, through their respective Site Foreman, are responsible for assigning specific work tasks to their employees, and for ensuring that their personnel are properly trained and participate in health and safety programs which fulfill the requirements specified in this HASP (e.g., hearing conservation, respiratory protection, etc.). Each subcontractor's management will provide qualified employees and allocate sufficient time, materials and equipment to safely complete assigned tasks. In particular, each contractor is responsible for equipping its personnel assigned to this Project with all required personal protective equipment.

For purposes of this HASP, each contractor is considered to be an expert in all aspects of the work operations for which they are tasked to provide, and each contractor is responsible for compliance with those regulatory requirements which pertain to the services provided. Each contractor is expected to perform its operations in accordance with its own unique safety policies and procedures, to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of safety documentation for the subcontractor's work activities will be provided to the project engineer for review prior to the start of on-site activities.

In the event that contractor procedures/requirements conflict with requirements specified in this HASP, the more stringent guidance will be adopted.

Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed during the weekly field safety briefing (see Section 10.2.2) prior to beginning work operations.

2.7 ONSITE PERSONNEL AND VISITORS

All Contractor, subcontractor, site Owner, Agency and consultant personnel performing project-related duties at the Site are required to read and acknowledge their understanding of this HASP. All personnel will abide by the requirements of this HASP and cooperate with site authorities to ensure a safe and healthful work site. Site personnel are required to report immediately any of the following to the SSO:

- Accidents and injuries, no matter how minor,
- Unexpected or uncontrolled releases of any hazardous substances, and any symptoms of exposure to a hazardous substance,
- Any unsafe or malfunctioning equipment, and
- Any changes in site conditions which may affect the health or safety of project personnel.

All visitors (including third-party observers) to contractor controlled areas of the work site (see Section 9.0) must also read and acknowledge their understanding of this HASP, and must conform to all HASP requirements. The Contractor (Contractor) will have the right to suspend work activities as necessary to protect visitor safety or health if entry to controlled work areas (see Section 9.0) is required by individuals who do not meet HASP requirements.

Visitors must also demonstrate, where required to enter HAZWOPER-controlled areas, conformance with the HAZWOPER training requirements, including medical monitoring, respirator fit testing, etc., and obtain prior approval from the Site Foreman prior to being allowed into an Exclusion Zone. Where a visitor cannot provide such documentation and entrance into the Exclusion Zone is determined to be essential for completion of the work, the Contractor Site Superintendent or the Contractor Site Foreman can allow limited visitor entrance provided the visitor has obtained prior approval from the SSO or the Health and Safety Project Consultant; the Contractor Site Superintendent or the Site Foreman has suspended work activities within the Exclusion Zone so that there are no physical hazards; and the SSO has performed sampling as necessary to protect visitor safety and health from exposure to chemical hazards.

3.0 SCOPE OF WORK

3.1 DESCRIPTION OF WORK

The work to be performed under this contract consists generally of the following work activities:

- Disconnecting and removing/relocating utilities,
- Conducting excavation and bypass of existing sewer lines,
- Performing all other work associated with installation of new sewer and utilities,
- Removing existing asbestos and lead to facilitate safe demolition of bridge structure,
- Demolition of existing bridge structure,
- Installation of new bridge structure including excavation and handling of groundwater required to construct the new bridge,
- Reconstruction of Blairs Lane.

All work is located within the project site limits as shown on the Vicinity Map, located in Taber Consultants report is provided in Figure 1. The project work limits are also shown on drawings provided by Taber Consultants and is provided in Figure 2.

3.2 HAZWOPER and NON-HAZWOPER WORK ACTIVITIES

Underground utility improvements to be constructed within the project limits are expected to encounter non-hazardous materials along the full utility alignment (with the exception of potential asbestos cement pipe (ACP). Based on soil sample results provided by Taber Consultants, potentially impacted soils containing petroleum hydrocarbon compounds (gasoline, diesel, MTBE) and PCE will likely be encountered in very minor amounts during excavation for the utility realignment, sewer bypass, new sewer construction and excavation for the bridge abutments.

A hazard assessment should be coordinated with potholing to be performed in this area and at other alignments and work areas. In addition, where ACP is to be removed to enable installation of new sewer line, ACP is assumed to be intact and will be removed using non-destructive methods. The hazard assessment should be performed by a California Certified Asbestos Consultant (CAC).

If contaminated materials (soil or groundwater) are encountered at potentially hazardous levels as evidenced by a significant increase in hydrocarbon-like odors or visible staining of the soil, or if asbestos cement pipe is found to be damaged or deteriorated, such that the material has become potentially friable, Contractor will immediately cease all operations in the vicinity where the contaminated materials or potentially friable asbestos were encountered in conformance with Health and Safety Policy described in Section 1.5. The Site Safety Officer (SSO) will notify the Contractor Project Manager. A Hazard assessment will be conducted by a Certified Industrial Hygienist (CIH) or by a California Registered Professional (PE, RG).

This HASP includes a HAZWOPER provision that will be implemented in the event that impacted soil and/or groundwater are encountered along the planned alignment. If HAZWOPER requirements will need to be implemented, the necessary documentation including health and safety training, medical surveillance documentation, respirator fit test records will be included in Appendix H as a supplemental submittal.

3.3 SCOPE OF WORK

The scope of work subject to this health and safety plan includes the following:

- Non-HAZWOPER Activity Health and Safety Monitoring: Visual field monitoring will be performed during excavation and trenching activities within the Non-HAZWOPER Activity project limits. Field monitoring within Non-HAZWOPER Activity project limits may be augmented with air monitoring using selected instruments based on the results of visual field monitoring.
- HAZWOPER Activity Health and Safety Monitoring: Visual field monitoring and mandatory air monitoring using selected instruments will be performed during excavation and trenching activities within a HAZWOPER-defined work area. HAZWOPER-defined work areas are identified in Section 3.2 above. Additional areas may be identified as HAZWOPER-defined work area based on the results of field monitoring.
- Excavated Soil/Material Management: Excavated materials are subject to the General Construction Permit and therefore the project will be implemented as a Risk Level 2 Storm Water Pollution Prevention Plan (SWPPP). Contaminated or impacted soil generated from trenching operations will be stored on-site in accordance with the Contractor SMP until disposition has been coordinated with the project engineer. Non-impacted soils deemed acceptable for re-use will be directly loaded and transported to the SMA where the material will be stockpiled. Consequently, temporary storage of demolition debris (asphalt concrete) and earthen materials removed from excavations and trenches within project limits will be limited to small volumes and short time durations. The stockpiles will be managed in conformance with Best Management Practices (BMPs) identified in the Construction Storm Water Pollution Prevention Plan (SWPPP). The specific BMPs to be implemented include EC-1 “Scheduling”, SE-6 “Gravel Bag Berm”, SE-7 “Street Sweeping and Vacuuming”, SE-10 “Storm Drain Inlet Protection”, WM-1 “Material Delivery and Storage”, WM-2 “Material Use”, and NS-3 “Paving and Grinding Operations”. Detailed BMP descriptions should be included in the SWPPP.
- Trench Dewatering/Groundwater Management Plan: Excavations and trenches are anticipated to extend below the existing free groundwater level. Where groundwater is encountered during the operations, the groundwater will be handled in conformance with Trench Dewatering/Groundwater Management Plan. The Trench Dewatering/Groundwater Management Plan is a separate stand-alone document. SWPPP BMP NS-2 “Dewatering Operations” will also be implemented.
- Excavation and Trenching: Excavation, trenching and other underground construction will be performed in conformance with Contractor’s Excavation Safety Plan, and will be implemented by the Contractor Site Foreman, as the designated “competent” person. The excavated soil generated from trenching operations will be handled as described under the excavated soil/material management section presented above.
- Sewer Line Rehabilitation: Relining of the existing sanitary sewer will be performed in conformance with Contractor’s Confined Space Entry Plan. This work will be implemented by the Contractor Site Foreman, as the designated “competent” person. This will include necessary air monitoring and completion of necessary confined space entry permits.
- Asbestos Cement Pipe Removal and Abandonment: Installation of the new sewer lines will require removal of some portions of potential suspect asbestos cement pipe (ACP). The ACP will be removed in conformance with the Asbestos Management Plan located in Appendix H.

- Pavement Saw Cutting, Grinding, Paving and Slurry Seal Application: Such activities will be implemented as a Risk Level 2 SWPPP. Saw cutting, grinding, paving and slurry seal operations will be performed in conformance with Contractor's IIPP. Saw cutting, paving and slurry seal application operations will be subject to selected BMPs identified in the SWPPP, including BMP NS-3 "Paving and Grinding Operations" and SE-7 "Street Sweeping and Vacuuming".

The following field work will be performed to support the scope items identified above:

- Utility Clearance: The Contractor will mark the areas to be excavated, and will contact an underground service to identify underground utilities within the project work areas. The Contractor will pothole utilities that cross the trench alignments to confirm their location and depth prior to excavation. Utility relocation will be performed in conformance with project plans and specifications.
- Pavement Demolition, Removal and Disposal: Trench limits within pavement areas will be marked by the general contractor. Asphalt concrete pavement will be saw cut. All asphalt saw cutting will be performed in conformance with the construction (SWPPP). Residual slurry will be vacuumed. A rubber-tire backhoe or excavator will be used to breakup and remove existing pavement and other near surface structures to be demolished and removed.

The broken concrete and asphalt will be removed in a manner to minimize disturbance of underlying soil materials. The concrete and asphalt is considered to be non-hazardous, and will be managed and disposed as described in Section 5.2.6.

- Utility Construction in Non HAZWOPER-defined and HAZWOPER-defined Excavation Areas: The Contractor will perform trenching to install underground utilities using conventional excavation equipment (e.g., rubber-tire backhoe). Trenches are anticipated to extend to depths ranging from 4 feet bgs up to 12 feet bgs. Excavated earthen materials will be managed as described in Section 5.2.6. Trench dewatering will be performed in conformance with the Trench Dewatering/Groundwater Management Plan.
- Air Monitoring - HAZWOPER-defined Excavation Area: The Contractor will perform continuous air monitoring during excavation activities within HAZWOPER-defined work areas where there is a potential to encounter impacted soil and/or groundwater at concentrations that would necessitate implementing the HAZWOPER provisions of this HASP (e.g., Exclusion Zone, PPE). Field screening will be performed on a continuous basis. Air monitoring will be performed at the perimeter of the excavation and in the workers breathing zone (bz). Air monitoring will also be performed at the perimeter of temporary soil stockpiles. Air monitoring will be performed as described in Section 6.1 and Tables 3 and 4. All field readings will be recorded on a field log sheet.
- Air Monitoring - Trenches: Air monitoring as part of Contractor's Excavation Safety Program and Confined Space Program will be performed for hazardous environment (oxygen deficient, oxygen enriched) and other conditions that are immediately dangerous to life and health (IDLH) using a direct reading monitoring device. Trench air monitoring will be performed as described in Section 6.2 and Tables 3 and 4. Trench air monitoring will be performed by the Contractor Site Foreman, as the designated competent person, in conformance with Contractor's Safety Program.

- Air Monitoring – Confined Space: Air monitoring as part of Contractor’s Confined Space Entry Program will be performed for hazardous environment (oxygen deficient, oxygen enriched) and other conditions that are immediately dangerous to life and health (IDLH) using a direct reading monitoring device. Confined space air monitoring will be performed as described in Section 6.2 and Tables 3 and 4. Confined space air monitoring will be performed by the Contractor Site Foreman, as the designated competent person, in conformance with Contractor’s Safety Program.
- Non-Hazardous Construction Waste Management: Construction-related debris, including asphalt, concrete and aggregate base, that is not incorporated into the backfill material on the project, will be removed and transported to an approved landfill or recycling facility. Where necessary, a temporary (daily) non-hazardous waste accumulation area will be setup. Since this project will be performed similar to a Risk Level 2 SWPPP, trenching and associated waste management activities will be limited to what can be completed on a daily basis. This area will be determined by Contractor and by the Owner’s representative, and will be managed in conformance with the Construction SWPPP. Once construction-related debris is removed from the work area, the work area will be swept and managed as described in Section 5.2.6 and in conformance with the Construction SWPPP.
- Excavated Soil Management: Assuming earthen materials generated from construction activities performed within the project limits are not hazardous, they will be removed and transported to an approved landfill or offsite location where the soil will be reused. Based on initial profiling to be performed as part of the potholing program, the excavated soils will be placed directly into trucks for offsite disposal. Where necessary, a temporary (daily) non-hazardous waste accumulation area will be setup.

Since this project will be performed similar to a Risk Level 2 SWPPP, trenching and associated waste management activities will be limited to what can be completed on a daily basis. This area will be determined by Contractor and by the Owner’s representative, and will be managed in conformance with the Construction SWPPP. Once the excavated soil is removed from the work area, the work area will be swept and managed as described in Section 5.2.6 and in conformance with the Construction SWPPP.

Soil stockpiles associated with a HAZWOPER defined work activity will be managed in conformance with the procedures described in Section 5.2.6. and with the Construction SWPPP. Where characterization of the excavated soil is performed to determine appropriate disposal for HAZWOPER-defined areas, the characterization will be performed by the project engineer.

- Groundwater Management: Groundwater generated from dewatering operations from within trenches within the project limits will be managed as described in the Contractor submitted Trench Dewatering/Groundwater Management Plan. BMPs in the Construction SWPPP will also be implemented. It is anticipated that the groundwater will be impacted only by visible pollutants (e.g. silt) although there could be some level of hydrocarbons and chlorinated ethenes encountered. Where characterization of the groundwater is performed to determine appropriate disposal, the characterization will be performed by Resident Engineer or other registered professional.
- Asbestos Cement Pipe Removal and Abandonment: Installation of the new sewer line will require removal of potential asbestos cement pipe (ACP) from within the existing sewer line alignment. The ACP will be removed in conformance with the Asbestos Management Plan which may be found in Appendix H.

As discussed previously, this HASP includes a HAZWOPER provision that will be implemented in the event that impacted soil and/or groundwater are encountered along the planned alignment. If HAZWOPER requirements will need to be implemented, the necessary documentation including health and safety training, medical surveillance documentation, respirator fit test records should be included Appendix G as a supplemental submittal.

This HASP also includes an Asbestos-related Work Provision that will be implemented in the unlikely event that friable asbestos is encountered along the planned alignment. If the asbestos cement pipe is found to be damaged or deteriorated such that the material is considered friable, the necessary documentation including: work plan, licensing, emergency notification, health and safety training, medical surveillance, respirator fit test records and other required documentation for asbestos-related work will be included in the Asbestos Management Plan (AMP).

4.0 HEALTH AND SAFETY PROGRAMS

4.1 NON-HAZWOPER ACTIVITY HEALTH AND SAFETY

4.1.1 Non-HAZWOPER Training Requirements

Contractor and subcontractor personnel performing on-site work activities located within the Project limits, and any visitor requiring entry to work areas managed by Contractor, will be required to meet necessary training requirements and understand standard operating procedures identified in Contractor's Safety Program and to follow the non-HAZWOPER provisions of this HASP.

Site specific training will be performed as appropriate in conformance with Contractor's IIPP. Site specific training will be supplemented with weekly site safety briefings for the duration of the work task. The training will be conducted by the Contractor Site Foreman before daily work activities begin. Training will be documented on the *Field Safety Briefing Form*, found in Appendix A.

4.1.2 Respiratory Protection Program

Where a specific work task under Contractor's (or a subcontractor's) safety program requires their personnel to wear a respirator, respirator use will conform to a written respiratory protection program. The respiratory protection program shall comply with the requirements of Title 8 CCR §5144(c). Contractor's respiratory protection program is included in Contractor's IIPP.

4.2 HAZWOPER ACTIVITY HEALTH AND SAFETY

Contractor and subcontractor personnel performing on-site work activities inside a HAZWOPER-defined work area (i.e., any Exclusion Zone, see Section 9.3), and any visitor requiring entry to such controlled areas of the work site, will meet the specific HAZWOPER requirements identified in Sections 4.2.1 through 4.2.4 of this HASP. Previous investigations have not identified areas within the proposed project limits that would be defined as a HAZWOPER Activity. The health and safety elements presented in this section will be implemented if impacted soil and/or groundwater are encountered that require re-defining a Non-HAZWOPER work area as a HAZWOPER-define work area.

4.2.1 Medical Screening and Health Surveillance

Each person shall have completed a physical exam in accordance with the requirements of Title 8 CCR §5192 (f). Exam requirements will be specified by the examining physician. The results of medical examinations are to be evaluated by a physician specializing in occupational medicine. The examining physician must document his evaluation/recommendations in appropriate written documentation.

Any person desiring access to controlled work areas (Exclusion Zones) must provide written verification of medical status before entry will be permitted. Personnel who have not received a medical examination within 12 months (365 days) of their previous medical exam will:

- Be required to immediately obtain an appropriate medical exam and provide written verification of medical status prior to starting work on the project
- Be denied access to controlled work areas until an appropriate medical exam has been performed and written verification of medical status has been provided.

Medical monitoring documentation will be included in Appendix G.

4.2.2 HAZWOPER Health and Safety Training

Personnel involved with sampling or excavation activities within a HAZWOPER-defined work area covered by this HASP will have completed health and safety training courses meeting the requirements established in Title 8 CCR §5192 (e)(2) and (e)(3) (40-hour initial training). The course content will include, but is not limited to:

- Hazard communication,
- Flammable atmospheres and ignition controls,
- Toxic chemical recognition,
- Exposure guidelines,
- Protective clothing,
- Respiratory protection,
- Hearing conservation,
- Heat stress,
- Decontamination,
- Prevention of slip, trip, and fall hazards, and
- Safe lifting techniques and safe work practices.

Each person will have completed this training, or a refresher training course meeting the requirements set forth in Title 8 CCR §5192 (e)(8), within a 1-year period preceding participation in HAZWOPER-defined activities conducted at this site.

In addition, the Site Foreman or the SSO, and any designated Task Leaders performing work within a HAZWOPER-defined work area, will also have completed an additional required 8 hours of training, covering supervisor responsibilities and obligations in accordance with 8 CCR §5192 (e)(4).

Copies of all training certifications will be included in Appendix G upon the completion of a hazard assessment that determines that the HAZWOPER provisions under this HASP need to be implemented.

4.2.3 Site-Specific HAZWOPER Training

All field personnel will be trained concerning the potential hazards at the site, and exposure prevention or control measures. Field personnel will be:

- Instructed on the HAZWOPER provisions of this HASP,
- Made aware of task-specific physical hazards and other hazards which may be encountered during site work (see Section 5.0),
- Informed about the potential routes of exposure, protective clothing, precautionary measures, and symptoms of chemical exposure and heat stress,
- Made aware of fire prevention measures, fire extinguishment methods, and evacuation procedures.

Site specific HAZWOPER training will be performed prior to the start of any work task to be performed within a HAZWOPER-defined work area, and will be supplemented with daily site safety briefings for the duration of the work task. The site specific HAZWOPER training will be conducted by the Contractor Site Foreman or the SSO before daily work activities begin. Training will be documented on the *Field Safety Briefing Form*, found in Appendix A.

4.2.4 Asbestos Cement Pipe Training and Negative Exposure Assessment

If subcontractor personnel involved in the removal of ACP is not a licensed asbestos abatement contractor, all field personnel that will perform removal of asbestos cement pipe will have completed training under an approved asbestos cement pipe training program meeting the requirements identified in 8CCR Section 1529 (f)(1).

Where necessary, ACP pipe training will be performed prior to the start of any work task that could result in disturbance of ACP. Training will be documented. Copies of training certificates should be included in the ACP Management Plan as a submittal after the remediation contractor has been selected.

For ACP trained workers, a negative exposure assessment (NEA) shall also be performed to confirm that employee exposures to asbestos do not exceed 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average or more than 1.0 fibers per cubic centimeter of air (f/cc) for a 30 minute “worst case” Excursion Limit. An NEA will not be required if a licensed asbestos abatement contractor will perform the ACP removal.

4.2.5 Respiratory Protection Program

Contractor and subcontractors working within a HAZWOPER-defined work area shall have a written respiratory protection program. The respiratory protection program shall comply with the requirements of Title 8 CCR §5144(c). A copy of Contractor’s respiratory protection program is included in Appendix C.

4.3 CONFINED SPACE ENTRY PROGRAM

Contractor and subcontractors shall have a written confined space entry program. Contractor’s confined space entry program is included in Appendix D. This program shall be in compliance with Title 8 CCR §5156-5158.

All personnel entering any trenching areas which might be considered as confined spaces shall adhere to the following:

- a. Workers shall have been trained in confined space regulations and requirements and be knowledgeable about their company Confined Space Program.
- b. The Contractor shall have functioning and currently calibrated Confined Space monitoring equipment on-site.
- c. The Contractor shall have a person qualified to operate the equipment who will monitor all confined space conditions before every entry and at least every 30 minutes during any activity in the confined space (continuous monitoring is preferred).
- d. The Contractor shall have a stand-by person who continuously monitors the condition of workers in the confined space through the use of visual hand signals, verbal communications and radios.
- e. The Contractor shall adhere to all requirements of Title 8 CCR §5156-5158 for establishing, monitoring, logging conditions, etc. of each confined space for the duration of the project.
- f. The stand-by person or Confined space supervisor shall be continuously evaluating the condition of the confined space and be vigilant for changing conditions that may require changes in the use of the space, monitoring frequency, communications or work practices while in the confined space.

5.0 HAZARD ASSESSMENT

5.1 POTENTIAL HAZARDS

Excavation, trenching and other grading activities within the project limits present a wide range of chemical and physical hazards to which personnel may be exposed. These are due both to the hazards presented by the work locations themselves (e.g., presence of contamination), and those which may be encountered during the completion of the required scope of work. The potential hazards include, but are not limited to:

- Possible exposure to various petroleum-based compounds (e.g., diesel, gasoline), fuel hydrocarbon VOCs (BTEX compounds), PCE and other possible chemicals of concern in soil and groundwater.
- Potential conditions that are immediately dangerous to life and health (IDLH) due to an oxygen deficient atmosphere and/or presence of common asphyxiants within trenches or confined spaces,
- Exposure to hydraulic fluid used in construction equipment,
- Exposure to fumes involved in joining HDPE and PVC pipe,
- Exposure to fumes and physical hazards associated with paving and slurry seal application,
- Exposure to asbestos during removal and handling of ACP, Friable Asbestos Materials or
- Lead Contamination during soil removal beneath the bridge or bridge deconstruction,
- Exposure to sewage-related bacteria during sewer realignment activities,
- Slipping or falling hazards due to open excavations,
- Hazardous noise produced during coring and trenching activities,
- Heat/cold stress, depending heavily on time of year, personal protective equipment in use, and specific work tasks/activities undertaken,
- Hazards involving underground electrical, gas or other utilities, or overhead electrical lines,
- Snapping cables, slings, and ropes during construction operations,
- Cleaning and decontamination of equipment,
- Physical hazards related to lifting and other activities performed during construction activities, and
- Physical hazards related to construction vehicles and traffic.

Physical hazards not listed here but known to any subcontractor or known to be associated with any subcontractor-provided services must be presented in the subcontractor's Safety Program (see Section 2.7), identified by the subcontractor to the Contractor Site Foreman and SSO, and addressed prior to the subcontractor beginning work. Relevant information pertaining to such hazards will be presented to personnel during daily field safety briefings (see Section 10.2.2).

5.2 TASK HAZARD ANALYSIS

5.2.1 Reconnaissance Activities

Reconnaissance activities include initial site walks, staking or other marking activities, geophysical clearance operations, and setup of site security and control measures. During these activities, the work site will be walked, and work locations will be identified. Excavation boundaries will be marked with stakes or white paint in conformance with USA guidelines by the Contractor.

Hazards which may be encountered include heat stress and sunburn and being struck by a moving vehicle. There is the potential for unprepared walking surfaces as well as open trenches associated with ongoing construction activities. Level D personal protective equipment (PPE) will be worn at all times during site reconnaissance activities. Requirements for Level D PPE are described in Section 7.2.1. Also, the following requirements should be observed:

- Watch carefully where you walk. Do not step in shadows until you are sure of your footing. Shadows may hide pits, holes, or other unstable footing.
- Carefully choose your footholds when crossing rocky, uneven, or loose ground surfaces.
- Due to the potential for residential traffic and equipment with poor visibility, always wear a high visibility vest. Be aware of traffic flow directions and patterns.

5.2.2 Excavation and Trenching Operations

Operations involving excavating and trenching equipment present potential hazards from falling debris, mechanical failure of hydraulic lines, and being hit by moving equipment (i.e. backhoe bucket or excavator turret). Level D PPE will be used outside the HAZWOPER-defined excavation limits unless air monitoring determines that the PPE level needs to be upgraded to Level C.

Level C PPE equipment will be worn at all times during excavation and/or trenching activities within a HAZWOPER-defined work area (Exclusion Zone) until air monitoring indicates that the PPE Level can be downgraded.

In addition, potential explosive and IDLH environments could exist in excavations and trenches within the work area. Entry into trenches and excavations will conform to Contractor's Excavation Safety Program. The specific trench entry procedures to be followed are included Contractor's Excavation Safety Plan.

Trenching/Excavation activities will cease if concentrations exceed 10% of the Lower Explosive Limit (LEL), and personnel will withdraw to a position upwind of the affected area. (See Table 4 for action guidelines)

Soil gas from excavated trench surfaces can be a potential explosive hazard. All excavation equipment will be equipped with spark arrestors and will be operated in a manner to reduce the potential for sparks. Additional procedures including supplemental equipment are described in the Fire Control Plan. Continuous air monitoring will be performed during all trenching operations conducted in HAZWOPER-defined work areas and in areas where elevated TPH and/or VOC concentrations are detected.

Appendix B provides safety procedures which should be followed by all personnel. Equipment should be properly inspected on a regular basis in accordance with industry-established procedures to minimize the risk of mechanical failure. In addition to physical hazards associated with excavation equipment, there is the potential for excessive noise to be produced around the equipment. Section 5.8 provides details concerning the hazards associated with high noise levels.

Underground work may be performed at night. Hazards associated with night work include poor visibility due to lack of illumination. Section 5.11 provides details concerning the hazards associated with night work.

Existing soils within HAZWOPER-defined excavation limits have the potential to be contaminated with hazardous materials. Excavated soil within the HAZWOPER-defined excavation limits shall be handled using proper personal protective equipment (PPE). Level C PPE will be worn at all times when handling impacted soils from within the HAZWOPER-defined excavation limits. If air monitoring determines that a non-

HAZWOPER-defined excavation area will be reclassified as a HAZWOPER-defined work area, Level C PPE will be worn at all times within the Exclusion Zone.

5.2.3 Asbestos Cement Pipe Removal and Abandonment Operations

Removal and abandonment of asbestos cement pipe (ACP) could result in exposure to asbestos. All personnel that will be involved in removal of ACP shall have completed training as described in Section 4.2.4 or in the ACPMP. In addition, if a California registered asbestos contractor is not used for ACP removal, an NEA will be performed at the start of the project to document exposure limitations where work will be performed pursuant to 8CCR 1529 (r)(1).

5.2.4 Excavated Soil Loading and Hauling Operations

Operations involving loading and transporting excavated soil generated from within the project limits present potential hazards from falling debris, mechanical failure of hydraulic lines, and exposure to dust and vapors. Truck drivers will remain inside their vehicle with windows fully closed.

Truck drivers will remain in their vehicle at all times while being loaded. All windows are to be kept in their full up and closed position.

5.2.5 Utility Installation and Sewer Rehabilitation

Utility construction and sewer realignment that will be performed outside the HAZWOPER-defined excavation limits can be performed in Level D personal protective equipment identified in this HASP or specific PPE identified in Contractor's IIPP, whichever is more stringent.

Utility installation work that is conducted within the HAZWOPER-defined excavation limits will be performed using Level C PPE.

Petroleum hydrocarbons and Chlorinated ethenes were identified during previous investigations. Fill and native soils however, can have a higher potential to be contaminated with soil gas containing petroleum hydrocarbons, fuel hydrocarbon VOCs and other flammable VOCs. These compounds are potentially explosive.

In addition, an oxygen deficient or oxygen enriched environment could exist within the trench.

No personnel shall enter a trench unless air monitoring is first performed to verify that there is no oxygen deficient or oxygen enriched environment.

Air monitoring will be performed in conformance with Contractor's Excavation Safety Program during all construction activities that require personnel working in a trench. Entry into trenches and excavations will conform to the requirements in Contractor's Safety Program.

Entry into confined spaces will be performed in conformance with Contractor's Confined Space Entry Program and Contractor's IIPP and Excavation Safety Plan. The following areas are classified as confined spaces within the Project Limits.

- Manholes which may contain raw sewage and methane gas. The manhole structures may possibly contain other fluid and gas fumes.
- Manholes where unexpected volumes of water may collect due to accidentally diverted storm waters or broken water mains. Escape may be difficult due to inwardly converging walls.
- Trenches which may contain raw sewage and possibly other fluids and/or fumes that are impossible to predict
- Trenches which are subject to cave-in due to loose, wet or improperly compacted soil, earthquake or superimposed loads adjacent to existing trench excavations.

Contractor's Confined Space Entry Program is included in Appendix C. Contractor's IIPP and Excavation Safety Plan are included in Appendix C

5.2.6 Construction-Generated Waste Management Operations

Non-hazardous excavated materials will be handled and stored as follows:

Asphalt and/or Concrete Pavement – Asphalt and/or concrete pavement may be incorporated back into the project as backfill material or will be handled and disposed as construction-generated debris to a Class II/III landfill or will be transported to a recycling facility.

Aggregate Base - Aggregate base underlying the asphalt concrete pavement will be handled and disposed as construction-generated debris to a Class II/III landfill or will be transported to a recycling facility.

Non-hazardous excavated materials will be managed in conformance with Best Management Practices (BMPs) identified in the construction SWPPP. The specific BMPs to be implemented for management of non-hazardous excavated materials include EC-1, SE-6, SE-7, SE-10 and NS-2. Specific BMP descriptions are included in the SWPPP.

Other construction-related wastes will be handled and stored as follows:

Waste PPE - Waste PPE and other equipment will be placed into appropriate containers. Sampling of this material may need to be performed for waste characterization.

Other Solid Wastes - Other solid wastes, including maintenance of portable toilets, hand washing stations, waste packaging materials, etc., will be managed using BMPs in the Construction SWPPP.

Solid wastes and other non-hazardous construction-related wastes will be coordinated for recycling in accordance with approved Construction Waste Management Program or offsite disposal by Contractor.

All activities involving non-hazardous materials can be accomplished in Level D PPE.

5.2.7 Excavated Soil and Groundwater Management Operations

Excavated Soil Management - Soil materials removed from excavations or trenches within the project limits will be handled in conformance with the requirements identified in the construction SWPPP and approved soil disposal plan. Under the disposal plan, it is anticipated that all impacted trench spoils will be directly

loaded and transported off-site for disposal to an approved landfill. Trench spoils deemed to be clean will be directly loaded and transported to the Soil Management Area for temporary stockpiling.

Level D personal protective equipment can be worn while performing waste management activities for all soils excavated outside of designated HAZWOPER-defined excavation limits. Modified Level D PPE will be worn while performing waste management activities for soils generated from the within a HAZWOPER-defined excavation limits, unless air monitoring indicates that Level C PPE needs to be worn.

Earthen materials excavated from trenches within a HAZWOPER-defined excavation area will be handled and stored as follows:

- Following removal of pavement and aggregate base, or the foundation materials, the exposed earthen surfaces will be wetted with a water truck. The water truck will be equipped with a hose and spray nozzle so that the truck can be staged outside of the work area. The excavated materials will be wetted during excavation and during placement in the truck to minimize fugitive dust emissions and retard odor migration. Exposed surfaces will also be wetted, where determined to be necessary, to prevent fugitive dust emissions and odor migration.
- Previous investigations performed by the environmental and geotechnical consultants have determined that the excavated earthen materials generated from utility construction performed in non-HAZWOPER defined work areas can be placed directly into a “bob-tail” truck for offsite transport to an approved Class II/III landfill). A fog spray nozzle will be used to minimize fugitive dust emissions.
- Excavated earthen materials generated from utility construction that may be performed in a HAZWOPER-defined work area will be placed directly into a “bob-tail” truck for transport to a designated Soil Management Area (SMA). Drop height from the excavator/backhoe bucket into the transport truck will be kept to the smallest height to enable transfer. A fog spray nozzle will be used to minimize fugitive dust emissions. The location of the SMA, if determined to be necessary, will be determined by Contractor and the project engineer. At the SMA, the excavated earthen materials will be placed in a stockpile.
- Stockpiles maintained at the SMA will be underlain by plastic sheeting (minimum 40-mil thickness). Stockpiles will be maintained outside of drainage areas, and will be covered by plastic sheeting (minimum 10-mil thickness) when material is not being added to the stockpile. Such plastic covering shall be anchored or otherwise secured to prevent from lifting off of the stockpile. The sheeting used to underline the stockpile will be formed over a sandbag berm to form an impermeable perimeter berm around the entire stockpile area. The impermeable perimeter berm will prevent lateral migration of soil and contain storm water runoff from the stockpile during rainfall events. Additional stockpile BMPs to be used are included in the Construction SWPPP.
- Air monitoring at the SMA will be performed in conformance with the Air Monitoring Plan presented in this HASP (Section 6.1 and 6.2, Tables 3 and 4).

BMPs in the Construction SWPPP will be implemented for all temporary stockpiles.

Groundwater Management - Excavations and trenches may extend below the free groundwater level. Where groundwater is encountered, the groundwater will be collected, stored, characterized and disposed in conformance with the Contractor submitted Trench Dewatering/Groundwater Characterization Management Plan, or as directed by the resident engineer. BMPs in the Construction SWPPP will also be implemented.

5.2.8 Excavated Earthen Material Waste Characterization and Disposal

Unless reclassified as a HAZWOPER-defined excavation area, earthen materials and other non-hazardous construction waste that have been profiled and accepted for offsite disposal will be excavated and directly loaded for transport to the approved landfill. This will be performed in conformance with a soil disposal plan that has been reviewed and approved by the resident engineer. The excavated soils to be generated from within a HAZWOPER-defined excavation limits will be managed in conformance with a Soil Management Plan that will be prepared as a supplemental submittal in the event that impacted soil and/or groundwater are encountered during construction.

Impacted earthen materials excavated from the Project area will be transported to a designated off site permitted landfill. These soils will be characterized for proper disposal by the Contractor under the direction of the project engineer. Methods to be used in characterizing the excavated soils will be identified in an approved Soil Management Plan. Following the completion of waste characterization, copies of the waste characterization data will be provided by Contractor to the project engineer. Contractor will submit the reports to permitted disposal facilities as directed by the project engineer for acceptance.

Depending on the results of the characterization, the excavated soils will be disposed as follows:

- If the materials are determined not to exhibit a characteristic of a hazardous waste and are determined to be acceptable for disposal to a Class II/III landfill, the earthen materials will be transported to a project engineer-approved permitted Class II/III facility. The specific Class II/III landfill facility will be approved by the project engineer prior to starting offsite disposal.
- If the excavated earthen materials are determined to exhibit a characteristic of a hazardous waste, the materials will be managed as a hazardous waste, and will be transported to a permitted Class I facility by a properly licensed hazardous waste transporter as directed by project engineer. Project engineer will determine the specific Class I facility to be used prior to the start of off-haul.

Contractor will be responsible for coordinating and handling disposal of all non-hazardous excavated material. This shall include obtaining necessary acceptance at a project engineer approved permitted Class II/III waste disposal facility and, preparing necessary profiles and all required transportation documentation (i.e., non-hazardous manifest). Contractor will be responsible for documenting that trucks used to transport excavated soil are properly licensed as a hazardous waste transporter. Project engineer will be responsible for directing and reviewing necessary hazardous waste transportation documents (hazardous waste manifest). The project engineer will sign all hazardous waste manifests.

Contractor will also be responsible for ensuring that the trucks are properly loaded, tarped, and not overloaded. The project engineer shall approve all disposal locations prior to Contractor performing offsite disposal of stockpiled soils maintained at the SMA.

Documentation of all wastes disposed offsite generated by the contractor will be obtained and maintained by Contractor. This includes all weight tags or truck load counts, copies of manifests, and other record documentation.

5.2.9 Groundwater Characterization and Disposal

Storage and characterization of the groundwater will be performed in conformance with the Trench Dewatering/Groundwater Management Plan. In areas where the groundwater could be impacted, characterization of the groundwater will be performed by the project engineer's environmental consultant. Once approval for discharge has been received, the groundwater will be discharged in conformance with the approved discharge permit. Where groundwater will require treatment prior to discharge, treatment and discharge will be performed by an approved subcontractor/vendor.

Groundwater that is determined not to meet or cannot be treated adequately to meet the requirements for discharge to the sanitary sewer will be transported to a permitted facility for offsite treatment and disposal. The project engineer shall approve offsite groundwater disposal locations prior to Contractor performing offsite disposal of groundwater.

5.3 ENVIRONMENTAL AND WORK RELATED CONTAMINANTS OF CONCERN

During site operations in HAZWOPER-defined work areas, releases of dust containing petroleum-based products may occur. Table 2 provides a summary of the hazards associated with these materials, while Sections 5.3.1 - 5.3.6 provide a more detailed discussion of each contaminant.

5.3.1 Gasoline

Gasoline is a complex mixture of hydrocarbons and additives, used primarily as a motor fuel. Gasoline possesses a moderate to high vapor pressure. The lower explosive limit for gasoline is 1.1% concentration in air, and fire/explosion risk can be significant in enclosed spaces where airborne concentrations may accumulate.

Chronic exposures or exposures to a high concentration of gasoline vapor may cause unconsciousness, coma, and possible death from respiratory failure. Exposure to low concentrations of gasoline vapor may produce flushing of the face, slurred speech, and mental confusion. Gasoline is also irritating to the skin, and may cause drying and dermatitis as a result of prolonged contact. Various components and gasoline additives can themselves present significant additional hazards. The aromatic compounds benzene, toluene, ethylbenzene and xylene (BTEX) are of greatest concern in relation to site investigation activities, and are addressed separately below. However some additives used for octane control (e.g., methyl tert-butyl ether - MTBE), oxygenation (e.g., alcohols and MTBE) and water scavenging (e.g., ethylene glycol methyl ether - EGME) can also be present significant hazards as a result of prolonged inhalation or skin exposure. In the past, tetra-ethyl and tetra-methyl lead, both of which have been identified as carcinogens and moderate skin contact hazards, were added to gasoline for anti-knock control.

The American Council of Government Industrial Hygienists (ACGIH) 8 hour average Threshold Limit Value (TLV) for gasoline is 300 ppm. The short term exposure limit (15 minute average) is 500 ppm. There is no OSHA Permissible Exposure Limit (PEL) for gasoline. Control of inhalation exposure to gasoline (and its various constituents and additives) can be accomplished through the use of air purifying respirators equipped with organic vapor filter cartridges. The use of skin protection (chemically-protective gloves, etc.) is required when handling gasoline-contaminated materials.

5.3.2 Diesel Fuel

Like gasoline, diesel fuel is a complex mixture of hydrocarbons. It is manufactured through refining of middle distillate crude oil components, and thus is somewhat less volatile than gasoline (which comes from

light stocks). Exposure to diesel fuels can produce intoxication and other CNS depression effects in cases of acute exposure, and can lead to defatting of skin and contact dermatitis in the case of contact exposure. Like gasoline, diesel fuel contains some small quantities of volatile hydrocarbon additives, including BTEX members. There is no established PEL from OSHA; however, ACGIH has established a 100 mg/m³ TLV for diesel fuel.

However action levels should be developed that reflect the potential presence of BTEX (particularly benzene) when diesel fuels are present. Control of inhalation exposure to diesel fuel (and its various constituents) can be accomplished through the use of air-purifying respirators equipped with combination HEPA and organic vapor filter cartridges. The use of skin protection (chemically-protective gloves, etc.) is required when handling diesel-contaminated materials.

5.3.3 BTEX and CHLORINATED ETHENES

The aromatic compounds benzene, toluene, ethylbenzene and xylene are generally found together as significant components of petroleum fuels. In addition, it is common to find multiple forms of benzene such as sec-butyl, n-butyl or tert-butyl as well as forms of n-propyl and tri-methyl. Due to their high vapor pressure, and the range and severity of their health effects they are considered to present the greatest hazard during site operations.

Benzene: is a known human carcinogen. Prolonged skin contact with benzene or excessive inhalation of its vapor may cause headache, weakness, loss of appetite, and lassitude. Continued exposure can cause collapse, bronchitis, and pneumonia. The most important health hazards are cancer (leukemia), bone marrow effects, and injuries to the blood-forming tissue from chronic low-level exposure. The OSHA PEL is 1 ppm for an 8 hour average and 5 ppm for a 30 minute average (STEL). The OSHA action level is 0.5 ppm. The ACGIH TLV is 0.5 ppm (8-hour) and 2.5 ppm (15 minute STEL).

Toluene: Exposure to vapors of toluene may cause irritation of the eyes, nose, upper respiratory tract, and skin. Exposure to 200 ppm for 8 hours causes mild fatigue, weakness, confusion, tearing, and a sensation of prickling, tingling, or creeping on the skin that has no objective cause. Exposure to higher concentrations may cause headache, nausea, dizziness, dilated pupils, and euphoria, and, in severe cases, may cause unconsciousness and death. The liquid is irritating to the eyes and the skin. Contact with the eyes may cause transient corneal damage, conjunctival irritation, and burns if not promptly removed. Repeated and/or prolonged contact with the skin may cause drying and cracking. Toluene may be absorbed through the skin in toxic amounts. Ingestion causes irritation of the gastrointestinal tract and may cause effects resembling those from inhalation of the vapor. Chronic overexposure to toluene may cause irreversible liver and kidney injury. The OSHA PEL is 200 ppm (TWA); exposures may exceed 300 ppm, but not more than 500 ppm (peak), for a single time period up to 10 minutes for any 8-hour shift. The ACGIH TLV is 20 ppm.

Ethylbenzene: Its vapor is severely irritating to the eyes and to the mucous membranes of the respiratory system. Sustained inhalation of excessive levels can cause depression of the central nervous system (CNS) characterized by dizziness, headache, narcosis, and coma. Skin contact with liquid ethylbenzene causes irritation; dermatitis and defatting can also develop. The acute oral toxicity of ethylbenzene is low, however, ingestion poses a serious aspiration hazard. Aspirating even a small amount into the lungs can result in extensive edema (lungs filled with fluid) and hemorrhaging of the lung tissue. No systemic effects are suspected at the levels that produce pronounced, unignorable, disagreeable skin and eye irritation. The established Permissible Exposure Level (PEL) is set well below this intolerable level. The OSHA PEL and the ACGIH TLV are both 100 ppm.

Xylene: Liquid xylene is a skin irritant and causes itching, dryness, and defatting; prolonged contact may cause blistering. Inhaling xylene can depress the Central Nervous System (CNS), and ingestion can result in gastrointestinal disturbance; and possibly hematemesis (vomiting blood). Effects on the eyes, kidneys, liver, lungs, and the CNS are also reported. Both the OSHA PEL and the ACGIH TLV are 100 ppm. The ACGIH 15 minute exposure limit is 150 ppm.

Chlorinated Ethenes: Soil and groundwater contaminated with chlorinated solvents such as tetrachloroethylene (PCE) and its daughter products trichloroethylene (TCE), 1,2-dichloroethene, and vinyl chloride may be found on this project site. Based on toxicology, metabolism, animal studies, and human studies, occupational exposure to chlorinated aliphatic solvents (methanes, ethanes, and ethenes) has been associated with numerous adverse health effects, including central nervous system, reproductive, liver, and kidney toxicity, and carcinogenicity.

Long-term exposure may also damage the central nervous system, liver, and kidneys; it can also cause respiratory failure, memory loss, confusion, and dry and cracked skin. If you are pregnant, long-term exposure to perchloroethylene may damage a developing fetus.

Short-term exposure to high levels of perchloroethylene can cause buildup of fluid in the lungs, eye and respiratory irritation, severe shortness of breath, sweating, nausea, vomiting, headache, dizziness, sleepiness, confusion, difficulty speaking and walking, and lightheadedness. Short-term exposure to low levels of perchloroethylene can cause dizziness, inebriation, sleepiness, and irritated eyes, nose, mouth, throat, and respiratory tract.

The American Council of Government Industrial Hygienists (ACGIH) 8 hour average Threshold Limit Value (TLV) for Trichloroethylene (TCE) is 10 ppm. For Perchloroethylene (PCE) it is 25 ppm. The short term exposure limit (STEL), 15 minute average for TCE is 25 ppm while the STEL for PCE is 100 ppm. The OSHA Permissible Exposure Limit (PEL) for TCE and PCE both is 100 ppm for an 8-hour exposure. Control of inhalation exposure to TCE and PCE can be accomplished through the use of air purifying respirators equipped with organic vapor filter cartridges. The use of skin protection (chemically-protective gloves, etc.) is required when handling TCE-PCE-contaminated materials.

5.3.4 Hydraulic Fluid

Hydraulic fluids are liquids designed to transfer pressure from one point to another in a system based on Pascal's Law, *i.e.*, pressure on a confined liquid is transmitted equally in all directions. The hydraulic fluids used in hydraulic construction equipment are usually based on paraffinic and cycloparaffinic petroleum hydrocarbons, with antioxidant and viscosity improvement additives. Phosphate esters are sometimes added to improve resistance to ignition. The toxicity of hydraulic fluids is strongly influenced by the additives. Because of their low vapor pressure, hydraulic fluids do not present an inhalation hazard unless sprayed into the air to produce a mist. Both OSHA and ACGIH have established a 5 mg/m³ workplace exposure limits for hydraulic fluid mist exposure. Hydraulic fluids may cause skin irritation on prolonged contact. Copies of Material Safety Data Sheets (MSDS) for hydraulic fluids and other petroleum hydrocarbons used in construction equipment operated by Contractor are included in Contractor's IIPP. Good personal hygiene should be practiced when working with soils contaminated with hydraulic fluids.

5.3.5 Raw Sewage

Realignment of sewer lines will contain raw, untreated sewage. Raw sewage can contain both chemical and biological hazards. Chemicals can include acids and bases and discarded spent solvent. Biological hazards include waste and associated bacteria and virus. The primary route of exposure is through inhalation and dermal pathways. However, ingestion can also occur due to splash.

5.3.6 Asbestos

Selected portions of the existing sewer line to be removed or grouted are suspected to contain asbestos. The asbestos is contained in asbestos cement pipe (ACP). ACP is generally considered to be non-friable provided it has not been damaged or become friable due to weathering. Asbestos is a naturally occurring mineral and is a known carcinogen. Six minerals are defined as "asbestos" including: chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite. The primary route of exposure is through inhalation of asbestos fibers, although ingestion can also occur. Both OSHA and ACGIH have established a 0.1 f/CC workplace exposure limits for asbestos. Exposure to asbestos from ACP can be minimized by using non-destructive removal methods, wet methods and prompt removal.

There is also asbestos on the bridge structure as identified in this document. Both friable TSI and non-friable compression shims may release asbestos fibers if disturbed or their matrix disrupted. Asbestos on the bridge structure shall be removed prior to any other activities around the bridge structure.

5.3.7 Lead

Lead has been identified both on the bridge structure and in the soils beneath the bridge structure. Lead contamination may be released if disturbed. Exposure has been known to cause neurological diseases, damage to kidneys, lungs and other organs.

The lead on the bridge should be removed or stabilized prior to any other activities on the bridge structure. Soils containing lead beneath the bridge should be removed and placed in a separate lined and bermed area and covered with plastic until it can be waste profiled (Federal TCLP required) and disposed properly. Following over-excavation of the soils under the bridge, additional soil samples should be collected to ensure that no residual lead contamination remains.

5.3.8 Hot Asphalt

New asphalt pavement will be placed on portions of the project. Hot asphalt will emit fumes. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. There are currently no specific OSHA standards for asphalt fumes.

5.3.9 Construction-related Chemicals

Realignment of the existing sewer line and other construction activities may require the use of various manufactured adhesives, glues, and other potential hazardous materials. Where necessary the Contractor SSO will review applicable Safety Data Sheets and work practices included in Contractor's IIPP and Hazard Communication Program.

5.4 HEAVY MACHINERY/TRENCHING ACTIVITIES

The use of heavy machinery (backhoes, loaders, cranes, boring machines, etc.) in areas where unprotected personnel are operating warrants special attention on the part of all personnel. Operators should ensure that equipment is working properly and is being run in a safe manner, and should be aware of the location of unprotected personnel at all times while operating this machinery to avoid serious accidents. Other personnel must be aware of heavy equipment operations, and exercise proper caution to avoid placing themselves in an unsafe situation.

5.5 HEAT STRESS

Heat stress is a major hazard, especially for workers wearing protective clothing. The same protective materials that shield the body from chemical exposure also limit the dissipation of body heat and moisture. Personal protective clothing can therefore create a hazardous condition. Depending on the ambient conditions and the work being performed, heat stress can occur very rapidly, within as little as 15 minutes. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties.

5.5.1 Heat Exhaustion

Symptoms: Usually begins with muscular weakness, dizziness, nausea, and a staggering gait. Vomiting is frequent. The bowels may move involuntarily. The victim is very pale, with clammy skin, and he or she may perspire profusely. The pulse is weak and fast, breathing is shallow. He or she may faint unless they lie down.

First Aid: Immediately remove the victim to the Contamination Reduction Zone, in a shady or cool area with good air circulation (avoid drafts or sudden chilling). Remove all protective outer wear. Call a physician. Treat the victim for shock. (Make the victim lie down, raise his or her feet 6-12 inches and keep him or her warm but loosen all clothing.) If the victim is conscious, it may be helpful to give him or her sips of water. Transport victim to a medical facility as soon as possible.

5.5.2 Heat Stroke

Symptoms: This is the most serious of heat casualties due to the fact that the body excessively overheats, body temperature often rises to between 105°-110°F. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea, oppression, can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. The attack will usually occur suddenly.

First Aid: Immediately evacuate the victim to a cool and shady area. Remove all protective outer wear and all personal clothing. Lay the victim on his or her back with the head and shoulders slightly elevated. Apply cold wet towels, ice bags, etc. to the head, armpits, and thighs. Sponge off the bare skin with cool water or rubbing alcohol, if available, or even place the victim in a tub of cool water. The main objective is to cool without chilling the victim. Give no stimulants or hot drinks. Since heat stroke is a severe medical condition requiring professional medical attention emergency medical help should be summoned immediately to provide on-site treatment of the victim and proper transport to a medical facility.

5.5.3 Prevention of Heat Stress

One of the major causes of heat casualties is the depletion of body fluids. On the site there must be plenty of fluids available. Personnel should replace water and electrolytes lost through sweating. Electrolytes can be replaced by commercial mixes such as Gatorade.

5.5.4 Prevention of Sunburn

When working in the sun, regardless of temperature, exposed skin is vulnerable to sunburn. Protect exposed skin with an appropriate sun-screen. A sun-screen with a sun protection factor (SPF) of 15 or greater is recommended for a full day in the sun.

5.6 COLD STRESS

Cold stress (hypothermia) is a condition that occurs when body temperature falls to level where normal muscular and brain functions are impaired. There are three stages of hypothermia:

- Impending hypothermia
- Mild hypothermia
- Severe hypothermia

Cold stress is a potential physical hazard during periods of cold weather or where workers are exposed to wet conditions. Wet conditions can occur at the base of trenches due to groundwater inflow. Severe hypothermia is not anticipated to occur due to the time of year when construction work on this project will occur. Cold stress can be prevented by use of proper protective materials and minimizing exposure to wet conditions. Site personnel will be instructed in the identification of a cold stress victim, the first-aid treatment procedures for the victim and the prevention of cold stress casualties.

5.6.1 Impending Hypothermia

Symptoms: Impending hypothermia occurs when the body's core temperature drops to 95°F (35°C). The skin may become pale, numb and waxy. Muscles become tense. Fatigue and weakness begin to show.

First Aid: The treatment for impending hypothermia includes removal from the cold, wet environment, providing external heat (i.e., blankets) and providing a hot drink (no alcohol, tea or coffee). Additional medical aid is not usually necessary.

5.6.2 Mild Hypothermia

Symptoms: Mild hypothermia occurs when the body's core temperature drops to 93.2°F (34°C). Uncontrolled shivering begins. The individual is still alert, but movement becomes less coordinated and some pain and discomfort exists.

First Aid: The treatment for mild hypothermia includes removal from the cold environment, keeping the head and neck covered to prevent further heat loss and providing warm, sweetened drink (no alcohol, tea or coffee) and high-energy food. Transport victim to medical facility for further evaluation if pain and discomfort persist.

5.6.3 Severe Hypothermia

Symptoms: Severe hypothermia occurs when the body core temperature drops below 87.8°F (31°C). It is the most serious form of cold stress. The skin becomes cold and may be bluish in color. The individual is weak, and uncoordinated. Speech is slurred, and the victim appears exhausted, denies problem and may resist help. Gradually there is a loss of consciousness with little or no breathing occurring. In severe cases where prolonged cold stress exposure has occurred, the individual may be rigid and appear dead.

First Aid: The treatment for severe hypothermia includes immediate external warming. Keep the victim awake and apply mild heat to stop loss of heat, not to re-warm. Severe hypothermia requires professional medical attention. Emergency medical help should be summoned immediately to provide on-site treatment of the victim and proper transport to a medical facility.

5.6.4 Prevention of Cold Stress

The objective in prevention of cold stress is to protect all parts of the body with emphasis on hands, feet and head from cold injury. The early warning signs of cold stress are:

- Pain in the fingers and toes
- Severe shivering
- Excessive fatigue or drowsiness

Employees shall be monitored visually and questioned as to their condition. If signs of prolonged shivering exist, the employee(s) shall be removed from the work operation and allowed to warm themselves.

Adequate insulating clothing (coveralls) shall be provided if work is performed in air temperatures below 40°F. If exposed areas of the body cannot be protected sufficiently to prevent sensation of excessive cold or frostbite, or if available clothing does not give adequate protection to prevent hypothermia, work schedules shall be modified or suspended until adequate clothing is made available or until weather conditions improve.

Workers shall be instructed in safety and health procedures which include:

- Proper re-warming procedures,
- Proper clothing practices,
- Proper eating and drinking habits, and
- Recognition of hypothermia and frostbite symptoms.

Workers will also be instructed regarding safe work practices in cold weather.

5.7 SLIPS, TRIPS, FALLS, AND PROTRUDING OBJECTS

Hazards from protruding objects, careless movements, or placement of materials on paths or foot traffic areas present a problem with regard to slips, trips, falls, and puncture wounds. Personnel will use a reasonable amount of effort to ensure the prevention of such injuries.

5.8 HAZARDOUS NOISE ENVIRONMENTS

Working around large equipment often creates excessive noise. The effects of noise can include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities.

The Health and Safety Project Consultant can monitor employee exposure to hazardous noise levels from time to time as part of the hearing conservation program (see Section 6.3). However, for all work on this project, hearing protection will be worn at all times when normal conversation becomes difficult at distances of 3 feet or less (due to background noise) or when the conditions in Section 6.3 are met.

5.9 UNDERGROUND UTILITIES

Various forms of underground utility lines or pipes may be encountered during site activities. Prior to the start of intrusive operations, the Contractor will obtain authorization from all concerned public utility department offices.

Where necessary, a private utility locating service will be used to identify potential buried objects and/or utility crossing. Should intrusive operations cause equipment to come into contact with utility lines, the SSO and the Health and Safety Project Consultant will be notified immediately. Work will be suspended until the appropriate actions for the particular situations can be taken.

Utility crossings can also be a source for significant water inflows from perched groundwater in surface water that has infiltrated into coarse and/or permeable pipe bedding and trench backfill materials.

5.10 VEHICLES

The project will involve the use of heavy machinery (backhoes, cranes, etc.) in areas where unprotected personnel will be working. This warrants special attention on the part of all personnel. Operators should ensure that equipment is working properly and is being run in a safe manner, and should be aware of the location of unprotected personnel at all times while operating this machinery to avoid serious accidents. Other personnel must be aware of heavy equipment operations, and exercise proper caution to avoid placing themselves in an unsafe situation.

In addition, construction work will be performed within the limits of an existing roadway carrying residential and commercial traffic. Construction personnel must be aware of traffic patterns, and exercise proper caution to avoid placing themselves in an unsafe situation. Traffic will be managed by Contractor personnel in conformance with the applicable portions of the IIPP.

5.11 NIGHT WORK/ILLUMINATION

Night work increases the hazards from slip, trips and falls addressed in Section 5.7. Personnel will use a reasonable amount of effort to ensure the prevention of such injuries. In addition, areas that are insufficiently illuminated will be augmented with mobile field lighting as necessary.

During night work, all field personnel are to wear safety vests with reflective elements, and will stay within the designated work boundaries. Personnel leaving the designated work boundaries are to inform the Site Supervisor prior to leaving. Night work will be performed in conformance with Contractor's safety program.

5.12 CONFINED SPACES

The following areas are identified as confined spaces within the Project Limits.

- Manholes which may contain raw sewage and methane gas. The manhole structures may possibly contain other fluid and gas fumes.
- Manholes where unexpected volumes of water may collect due to accidentally diverted storm waters or broken water mains. Escape may be difficult due to inwardly converging walls.
- Trenches which may contain raw sewage and possibly other fluids and/or fumes that are impossible to predict
- Trenches which are subject to cave-in due to loose, wet or improperly compacted soil, earthquake or superimposed loads adjacent to existing trench excavations.

Entry into confined spaces will be performed in conformance with Contractor's Confined Space Entry Program, IIPP and Excavation Safety Plan. The Contractor's Confined Space Entry Program is included in Appendix D. Contractor's IIPP and Excavation Safety Plan are included in Appendix C.

5.13 PAVEMENT DEMOLITION AND PAVING

Pavement construction to be performed will include pavement demolition consisting of conventional removal. Pavement demolition can result in abrasion and puncture injury from flying debris and/or particles. Necessary PPE (eye protection) and/or attire (e.g. long pants, long sleeve shirt) shall conform to the contractor's IIPP.

Placement of hot asphalt, slurry seal can result in contact burns and exposure to asphalt fumes. Necessary PPE (dermal protection) and respiratory protection shall conform to the contractor's IIPP.

6.0 MONITORING PLAN

This section of the HASP presents monitoring requirements and analytical methods which will be used to assess employee exposure to chemical and physical hazards. Monitoring will consist primarily of on-site determination of various parameters (airborne contaminant concentrations, heat stress effects, etc.) using both visual observation and selected instrument measurements. The onsite monitoring may be supplemented by more sophisticated monitoring techniques (i.e., exposure assessment) where determined necessary by the Health and Safety Project Consultant.

The Site Foreman or the SSO is responsible for designating individuals within the work crew who will perform monitoring activities and complete the documentation of results. The SSO is also responsible for the collection, review and maintenance of the completed documentation.

6.1 NON-HAZWOPER DEFINE WORK AREA MONITORING

To assess the effectiveness of standard work practices in Non-HAZWOPER-defined work areas, visual monitoring will be performed to ensure that fugitive dust released during construction activities is minimized. Visual monitoring will be performed at the boundaries of Non-HAZWOPER-defined work areas. In the event that excessive fugitive dust is being released at the work area perimeter, the Site Foreman or the SSO will implement appropriate mitigation measures, such as:

Excavation and/or Trenching

- Reduce the advance rate of the excavation or trenching action to reduce fugitive dust
- Reduce the drop height from the excavator bucket to the transport truck bed to reduce fugitive dust
- Where visible dust is occurring, increase dust suppression measures to reduce fugitive dust
- Mechanically ventilate the immediate area where excavation and/or trenching is being performed

Excavated Material Handling

- Cover temporary stockpiles with plastic to prevent wind-born migration
- Where visible dust is occurring during material handling, increase dust suppression measures
- Reduce the drop height from the excavator bucket to the transport truck bed to reduce fugitive dust

If mitigation measures are found to be inadequate, the SSO/Site Foreman will halt on-site operations until effective control can be achieved.

6.2 HAZWOPER-DEFINED WORK AREA MONITORING

To assess the concentrations of airborne organic vapors that may be released during construction activities in HAZWOPER-defined work area, monitoring will be accomplished both in worker breathing zones and at the boundaries of HAZWOPER-defined work areas (Exclusion Zones). Table 3 details the requirements for monitoring instruments to be used. Table 4 provides information concerning the monitoring frequency and appropriate response actions.

6.2.1 HAZWOPER-defined Work Area (Exclusion Zone) Monitoring

HAZWOPER-defined work area monitoring must be sufficient to properly characterize employee exposures, and provide knowledge of work location conditions in enough detail to determine PPE requirements as work progresses.

Required air monitoring equipment, monitoring procedures, frequency and locations are specified in Tables 3 and 4. Response actions based upon monitoring results are included in Table 4. A list of alternative mitigation measures is presented in Section 6.2.2.

In general, monitoring will be used to evaluate worker breathing zone concentrations of site contaminants as a measure of exposure potential and for determination of the need for changes in specified respiratory protection.

6.2.2 HAZWOPER-defined Work Area Perimeter Monitoring

Monitoring will be conducted to assess release of contaminants to the surrounding "community" (the area, and anyone in it, not within the controlled work area(s) related to this project - see Section 9.1). The perimeter of any controlled area (Exclusion Zone) presents the highest possible airborne contaminant concentration which might occur in any "community" area. Assessment and control of the airborne concentrations of contaminants present at the perimeter of each controlled area (Exclusion Zone) will be accomplished to ensure that concentrations in "community" areas are acceptable.

Evaluation of Exclusion Zone perimeter airborne contaminant concentrations will be performed using instrumentation as specified in Table 3, and evaluated against the appropriate action level criteria specified in Table 4. In the event that concentrations of contaminants released at the work area perimeter exceed established action levels, the SSO will implement appropriate mitigation measures, such as:

Trenching

- Reduce the advance rate of the trenching action to reduce fugitive dust or generation of organic vapors
- Reduce the drop height from the excavator bucket to the transport truck bed to reduce fugitive dust or generation of organic vapors
- Where visible dust is occurring, increase dust suppression measures to reduce fugitive dust
- Where organic vapors are detected, implement vapor suppression measures to reduce vapor generation
- Mechanically ventilate the immediate area where trenching is being performed
- Seal trench to reduce organic vapor and/or fugitive dust emissions

Excavated Material Handling

- Cover temporary stockpiles with plastic
- Where visible dust or organic vapors are occurring, increase suppression measures
- Reduce the drop height from the excavator bucket to the transport truck bed to reduce fugitive dust or organic vapor emissions
- Remove temporary stockpiles into covered bins as soon as feasible (where used)

If mitigation measures are found to be inadequate (perimeter contaminant concentrations cannot be reduced below Table 4 requirements), the SSO/Site Foreman will halt on-site operations until effective control can be achieved.

6.2.3 Confined Space Monitoring

Confined space monitoring will be conducted prior to entry into any confined spaces. Monitoring will be performed in conformance with Contractor Confined Space Entry Program. Monitoring shall be performed by Contractor's Foreman or SSO. Where necessary or required under the project engineer's OCIP, confined space entry permits shall be completed and approved by the ECO.

6.3 ACP Negative Exposure Assessment

As part of implementation of the Asbestos Cement Pipe (ACP) Management Plan, a negative exposure assessment (NEA) may be performed to confirm that employee exposures do not exceed the limits identified in 8 CCR Section 1529 (r)(1). Additional information regarding the NEA is presented in the ACP Management Plan. This provision only applies if the Contractor subcontractor performing the ACP removal is only trained in the procedures for removal of intact ACP and not a California registered asbestos contractor.

6.4 NOISE EXPOSURE

Exposure to excessive noise can damage hearing ability and cause permanent hearing loss. It is the intent of Contractor to prevent permanent hearing loss from noise exposure.

When noise levels exceed 85 decibels on the A-weighted scale (85 dBA), workers are required to use appropriate hearing protection. The SSO is also empowered to designate work areas where hearing protection will be used by all personnel (the contractor employees, subcontractor personnel and/or visitors).

Potential sources of hazardous noise related to site investigation activities are limited to the various types of equipment used in the performance of work activities. Noise exposure levels can be expected to vary during the performance of the various investigation activities, dependent upon the equipment selected and used by each individual subcontractor. All Contractor field personnel who are medically monitored participate in a hearing conservation program meeting the requirements specified below. It is expected that where the contractor and subcontractor operations may expose their workers to hazardous noise that the employers will provide personnel who also participate in a hearing conservation program, which should include the following elements:

- Baseline survey of noise exposures
- Baseline audiometric testing
- Annual or bi-annual audiometric testing
- Annual training on the use and need for hearing protection
- Distribution of hearing protectors to employees in the program
- Maintenance of records

Subcontractors are individually responsible for the adequacy of their own hearing conservation program. The specific elements of any subcontractor's hearing conservation program shall meet the minimum requirements identified in this HASP. If there is a conflict between the requirements of this HASP and the subcontractor's hearing conservation program, the more stringent shall apply.

6.5 HEAT STRESS MONITORING

Due to the use of protective clothing and other equipment, there is a high potential for heat stress to pose a significant safety hazard to workers. To mitigate the effects of heat stress, it will be necessary to establish a

work routine that incorporates appropriate rest periods to allow workers to remove protective clothing, drink fluids (vital when extreme sweating is occurring) and rest.

The frequency and length of such work breaks must be determined by the individual work location supervisor based upon factors such as the ambient temperature and sunshine, the amount of physical labor being performed, the physical condition of the workers, and protective clothing being used. In any case, breaks must be sufficient to prevent workers from manifesting symptoms of heat stress, which can include irritability, confusion, lethargy, and headache.

During work operations where Level C PPE is utilized in HAZWOPER-defined work areas, monitoring for heat stress using the Wet Bulb Globe Temperature Threshold Limit Values (WBGT-TLVs) will be performed when the ambient air temperature exceeds 70°F or at the discretion of the Health and Safety Project Consultant. Monitoring techniques will be determined by the Health and Safety Project Consultant, and will conform with applicable ACGIH methods. If the WBGT is implemented to monitor heat stress, rest periods will be implemented as described in Table 5.

Workers in Level D PPE generally will not need Heat Stress monitoring. However, if excessive sweating is noticed of any site personnel, institute Heat Stress Monitoring using a WBGT immediately. If the WBGT is implemented to monitor heat stress, rest periods will be implemented as described in Table 5.

Workers are encouraged to immediately report any difficulties or heat-related problems that they may experience or observe in fellow workers. Supervisors will use this information to alter the work-break schedule to accommodate such problems. During breaks, workers should be encouraged to drink plenty of water or other liquids to replace lost fluids and to help cool off. If any worker exhibits signs of severe heat distress, such as profuse sweating, extreme confusion and irritability, or pale, clammy skin, that worker shall be relieved of all duties at once and made to rest in a cool location and drink plenty of water. Anyone exhibiting symptoms of heat stroke (red, dry skin, or unconsciousness) will be taken immediately to the nearest medical facility, taking steps to cool the person during transportation (clothing removal, wet the skin, air conditioning, etc.). Heat stroke is a life threatening condition that must be treated by competent medical authority.

6.6 COLD STRESS MONITORING

Where outside temperatures, weather conditions or wet site conditions could result in hypothermia, appropriate protective clothing and other personal protective equipment may need to be worn. To mitigate the effects of hypothermia, it will be necessary to establish a work routine that incorporates appropriate protective clothing and ability to stay warm.

The specific work routine must be determined for each individual work location by the Contractor Site Foreman based upon factors such as the ambient temperature and sunshine, the amount of physical labor being performed, the physical condition of the workers, and protective clothing being used. In any case, the work routine must be sufficient to prevent workers from manifesting symptoms of cold stress, which can include pain in the fingers and toes, severe shivering and excessive fatigue or drowsiness.

Workers are encouraged to immediately report any difficulties or cold stress-related problems that they may experience or observe in fellow workers. The Contractor Site Foreman will use this information to alter the work routine to accommodate such problems. If any worker exhibits signs of cold stress, that worker shall be removed from the work environment at once and made to rest in a warm location and drink plenty of water. Anyone exhibiting symptoms of severe hypothermia will be taken immediately to the nearest medical facility, taking steps to warm the person during transportation (removing wet clothing, cover with blankets, etc.). Severe hypothermia is a life threatening condition that must be treated by competent medical authority.

6.7 PERSONAL SAMPLING

Personal sampling is not anticipated to be performed as part of the implementation of this HASP. Personal air monitoring will be performed during the Negative Exposure Assessment for the ACP management plan implementation (if a California registered asbestos contractor is NOT used). Measurement of individual employee exposure to chemical contaminants other than asbestos will be performed at the discretion of the Health and Safety Project Consultant. Monitoring techniques will also be determined by the Health and Safety Project Consultant, and will conform to applicable OSHA and NIOSH sampling methods. Any analytical laboratory performing analysis of personal samples shall be accredited by the American Industrial Hygiene Association (AIHA).

Where exposure assessment (personal) sampling is performed, the Site Safety Officer will be responsible for informing contractor personnel and subcontractors of their monitoring results to comply with OSHA regulations and good occupational health practices. Each employee will be notified in writing of the results which represent that his/her exposure was within the OSHA permissible exposure limits (PELs) within 5 working days after the receipt of monitoring results.

Whenever the results indicate that an employee exposure exceeds the permissible exposure limit(s), notification shall be provided to the affected employee within 5 working days after the receipt of monitoring results, stating the specific permissible exposure limit (s) that was exceeded and providing a description of the corrective action taken to reduce exposure to a level below the PEL. Results of monitoring for other hazardous and harmful physical agents shall also be reported to employees in the same manner.

6.8 MAINTENANCE AND CALIBRATION OF EQUIPMENT

All monitoring equipment will be maintained and calibrated in accordance with manufacturer recommendations. Copies of annual calibration and/or service records will be maintained with the field monitoring equipment. Copies of all instrument manuals will be with the field monitoring equipment. All field instruments will be stored, transported, and handled with care to preserve the equipment's accuracy. Special care will be taken to shield equipment from extreme heat and wet weather conditions. Damaged and/or suspect equipment will be taken out of service until a qualified technician or qualified manufacturer representative repairs and recalibrates the unit.

Field instruments will be calibrated according to the schedule and procedure identified below:

- Organic Vapor Analyzer. The organic vapor analyzer will be equipped with a photoionization detector (OVA-PID). Calibration of the OVA-PID will be performed in the field prior to fieldwork using a standard calibration gas (isobutylene - 100 ppm). The unit will be tested at the beginning and end of each work day for calibration. The instrument shall be recalibrated if readings become erratic.
- Combustible Gas Indicator. The combustible gas indicator (CGI) will be capable of monitoring for explosivity (lower explosive limit [LEL] and upper explosive limit [UEL]), hydrogen sulfide, carbon monoxide, and oxygen. The CGI will be calibrated before use in the field. The CGI will be tested at the beginning and end of each work day for calibration. The instrument shall be recalibrated if readings become erratic.

All pertinent calibration data will be logged in a health and safety logbook, and maintained on site for the duration of site activities.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 PERSONAL PROTECTIVE CLOTHING

The harmful effects that chemical substances may have on the human body often necessitate the use of protective clothing. Proper selection of personal protective equipment (PPE) depends upon a number of factors. Protection against different types of chemicals and differing concentrations of those substances can be quite varied. The tasks to be performed and the probability of exposure to the substance must also be considered when specifying protective clothing.

Once the specific hazard has been identified, appropriate clothing can be selected. The protection level assigned must match the hazard confronted. Protective clothing ensembles range from safety glasses, hard hats, and safety shoes to fully encapsulating suits with a supplied source of breathing air. Selection of appropriate PPE is specified in the task hazard analyses found in Section 5.2 and Table 6, and upgrade criteria based upon on-site monitoring results are presented in Table 4. In addition, Section 7.2 provides additional guidance concerning the appropriate levels of protection which should be utilized during site activities.

7.1.1 Head Protection

Contractor personnel, subcontractors and other onsite personnel, including visitors, will wear hard hats during all onsite work activities. Ear protection and face shields may be attached to hard hats.

7.1.2 Eye Protection

Eye protection will be worn by all Contractor personnel, subcontractors, and other onsite personnel in conformance with their respective IIPP or when there is the potential for eye injury from the work task or activity being performed. Eye protection will meet the following requirements:

- Provide adequate protection against the particular hazards for which they are designed,
- Be reasonably comfortable when worn under the designated conditions, fit snugly and not unduly interfere with the wearer's movements,
- Be durable, and
- Be easily cleaned and disinfected.

Contact lenses do not provide adequate eye protection. Contact lens wearers must use the same additional eye protection as for non-lens wearers. Contact lenses may be worn under full-face respirators, but are generally not acceptable with half-face respirators.

Persons whose vision requires correction and are required to wear eye protection may wear goggles or spectacles of one of the following types:

- Spectacles whose protective lenses provide optical correction (Rx),
- Goggles that can be worn over corrective (Rx) spectacles without disturbing the adjustment of the spectacles, and
- Goggles that incorporate corrective (Rx) lenses mounted behind the protective lenses.

Due to the potential for high velocity impact hazards associated with the work activities, the use of sunglasses will not be permitted at the work sites. Subcontractor employees who do not have suitable eye protection will have an appropriate type of eye protection provided to them by their respective employers.

7.1.3 Hearing Protection

Appropriate hearing protection, including ear plugs, canal caps, and ear muffs, will be provided when noise may be a problem, such as around heavy machinery, power support equipment, and impact tools, or whenever normal conversation becomes difficult at distances of 3 feet or less due to background noise. Contractor employees, subcontractors and other onsite personnel who may be exposed to hazardous noise must be participants in a hearing conservation program which meets the requirements of 8 CCR §5096-5100 (29 CFR 1910.95).

7.1.4 Foot Protection

Contractor employees, subcontractors, and other onsite personnel will wear appropriate foot protection while working on site. Foot protection will consist of leather or water- and chemical-resistant boots with safety toes. Footwear (including leather work boots and chemical-resistant boots) must meet the specifications of ANSI Z41.1-1969, which is the standard for industrial footwear with safety toes. Protection against liquid hazardous chemicals requires boots of neoprene, polyvinyl chloride (PVC), butyl rubber, or other material selected for resistance to the specific chemical. For tasks where contact with contaminated materials is expected to be slight or nonexistent, leather work boots with safety toes are appropriate.

7.1.5 Hand Protection

Contractor employees, subcontractors and other onsite personnel will use appropriate hand protection when exposed to hazards that could cause injury to the hands. Gloves must resist puncturing and tearing as well as provide any necessary chemical resistance.

Protective clothing will be worn over glove cuffs to prevent any liquid from spilling into the gloves. A pair of inner gloves adds an extra layer of protection for the hands during the removal of outer gloves and other chemically protective items and will be worn at all times when outer protective gloves are required. Where necessary, heavy leather gloves may be worn over chemical protective gloves when doing heavy work. If they become contaminated, they will be discarded because leather is difficult to decontaminate.

7.1.6 Respiratory Protection

The use of respiratory protection will be required only for work activities performed within a HAZWOPER-defined work area for this project. Based on the results of air monitoring, the Health and Safety Project Consultant will determine a specific cartridge change-out schedule.

Where respiratory protection is used, the following requirements will be enforced:

- Only personnel who have been trained to wear and maintain respirators properly shall be allowed to use respiratory protection,
- Only properly cleaned, maintained, NIOSH-approved respirators equipped with an organic vapor/HEPA combination cartridges shall be used on site (or respirators offering higher protection),
- Selection of respirator cartridges for use will be made by the Health and Safety Project Consultant or his designee. On-site decisions regarding upgrading or downgrading of respiratory protection will be made by the SSO based upon site conditions and requirements specified in Table 4,
- Used air-purifying cartridges shall be replaced at the end of each shift. Powered Air-Purifying Respirator (PAPR) cartridges will be changed when flow falls below 4 cubic feet per minute (cfm) through the cartridge (determined by in-line flow meter or visual indicator) ,

- Positive and negative pressure tests shall be performed each time the respirator is donned,
- Only personnel who have been fit tested within the last 12 months will be allowed to work in atmospheres where respirators are required,
- Respirator users shall be instructed in the proper use and limitations of respirators,
- If an employee has difficulty in breathing during the fit test or during use, he/she shall be evaluated medically to determine if he/she can wear a respirator safely while performing assigned tasks,
- No employee shall be assigned to tasks requiring the use of respirators if, based upon the most recent examination, a physician determines that the health or safety of the employee will be impaired by respirator use,
- Air-supplied respirators shall be assembled according to manufacturer's specifications. Hose length, couplings, valves, regulators, manifolds, and all accessories shall meet American National Standards Institute (ANSI) and the manufacturer's requirements,
- Respirators shall be cleaned and sanitized daily after use,
- Respirators shall be inspected during cleaning. Worn or deteriorated parts shall be replaced,
- Facial hair that might interfere with a good face piece seal or proper operation of the respirator is prohibited, and
- When respiratory protection is in use, the SSO shall review the respiratory protection usage daily to ensure employees are properly wearing and maintaining their respirators and that the respiratory protection is adequately protecting the employees.

Contractor shall have individual Corporate Respiratory Protection Programs meeting the requirements of 8 CCR §5144 for those employees that are required to wear a respirator.

Contractor subcontractors whose personnel may be required to utilize respiratory protection will have a similar program, and will submit a copy of their respiratory protection program to Contractor. The specific elements of any subcontractor's respiratory protection program shall meet the minimum requirements identified in this HASP. If there is a conflict between the requirements of this HASP and the subcontractor's respiratory protection program, the more stringent shall apply.

7.1.7 Body Protection

Protective clothing and body protection is selected on the basis of the tasks to be performed and the hazards, both chemical and physical, to which the worker may be exposed. For all work areas, including the "clean" support and administrative areas, appropriate work clothing will be worn that at least covers from the knees to shoulders. Tank and halter tops are not appropriate. Bathing suits, shorts, and cut-off pants are not appropriate.

In more hazardous work areas, substantial pants and long sleeves are appropriate. Chemical-protective body protection will be selected using predicted chemical exposures and the clothing manufacturer's chemical-specific permeation and degradation information to provide optimum protection.

7.2 CHEMICAL PROTECTIVE ENSEMBLES

In order to aid in the selection of personal protective equipment (PPE), various ensembles have been developed which provide increasing levels of protection. These ensembles are designated, in increasing levels of complexity and protection, as Levels D, C, B, and A. The specific equipment comprising each level of protection will vary slightly, but are defined primarily by the type of respiratory protective equipment used, and secondarily by skin protection. The information presented below consists of a description of the equipment, applications and limitations for ensembles which might be utilized during investigation activities.

Specific PPE requirements for each task associated with this project are presented in Table 6, while upgrade criteria linked to results of on-site monitoring activities are provided in Table 4.

The following requirements shall apply to the use of any PPE:

- Only medically cleared individuals will be permitted to use PPE,
- Personnel will utilize only equipment which has been provided for use within the designated excavation project limit area (e.g. specified PPE Level for the work task). Designation of appropriate PPE is the responsibility of the Site Foreman,
- All PPE will be properly fitted to the individual user, and
- During use, if PPE should become damaged or significantly wetted with potentially contaminated material the user will cease work, exit the Exclusion Zone, and properly decontaminate and dispose of the contaminated clothing. Re-entry will occur only after PPE change-out has been accomplished.

7.2.1 Level D

Level D protection is the lowest level of personal protection allowed during activities at the site. Level D provides for physical protection only (i.e., against workplace physical hazards only), and includes no use of respiratory protection. The use of Level D personal protective equipment is permissible for all non-HAZWOPER work activities conducted outside HAZWOPER-defined excavation limits within the project area unless visual and instrument monitoring indicate that the increased PPE provisions of this HASP (Modified Level D of Level C) need to be implemented.

Level D personal protection equipment is permissible for use during ACP removal following completion of the NEA and provided the NEA shows that employee exposures are below the limits identified in 8CCR Section 1529 (r)(1).

Upgrading to greater levels of protection will be executed as required in the monitoring guidelines outlined in Table 4.

Typical Level D Equipment List

Hard hat
Work clothing (long pants, long-sleeved, button-down shirt)
Safety glasses/face shield
Safety-toed work boots
Hearing protection (as required)
Dust Mask (optional)
Safety vest with reflective elements

Where work tasks require handling of samples/sampling equipment which presents only a limited potential for skin contact with contaminated materials, personnel will utilize Level D PPE, with the addition of chemically protective gloves and chemically protective apron (as necessary). Acceptable gloves/aprons must be constructed of nitrile or butyl rubber compounds, and must be water tight. One acceptable glove is Best Safety's N-Dex glove, which is thin (allowing excellent dexterity) and provides proper chemical protective properties. Other similar gloves are also acceptable. Leather work gloves may be used over the chemically protective gloves to provide better physical protection, however such gloves will require disposal at the conclusion of sampling since proper decontamination is not feasible.

7.2.2 Modified Level D

If the potential exists for contact with chemical contaminants (e.g., splashes, "dirty operations," etc.), however the respiratory hazard is low, the use of a Modified Level D ensemble is appropriate. Modified Level D PPE will be used during all operations conducted within the Non-HAZWOPER-defined excavation limits. Modified Level D consists of protective clothing to preclude hazards due to contact with contaminated materials and provides increased respiratory protection through use of a P-95 face mask and filter. The use of protective clothing in the Modified Level D ensemble can also serve to aid in personal cleaning and decontamination efforts through the use of disposable outer protective garments.

The limitations specified above for Level D PPE apply equally to Modified Level D, except that in this ensemble some contact with contaminated material can be tolerated.

The use of Modified Level D PPE will be required for on-site operations involving soil sampling where contact with contaminated soils/samples can be expected and where dewatering operations may result in splash or contact with contaminated groundwater.

Typical Modified Level D Equipment List

- Chemical-resistant disposable outer coveralls (e.g., Tyvek™ or polyethylene-coated Tyvek™ coveralls)
- Chemical-resistant (e.g., nitrile) outer gloves (taped to outer coveralls)
- Chemical-resistant (e.g., nitrile) inner gloves
- Butyl apron (optional, for use where splash potential is high)
- Hard hat
- Safety glasses/face shield
- Chemical-resistant safety boots (taped to outer coveralls)
- Hearing protection (as required)
- P95 Particulate Mask (conforms to the requirements of 42 CFR Part 84)
- Safety vest with reflective elements

7.2.3 Level C

Level C protection is defined by the use of a respirator. Level C PPE provides levels of skin protection comparable to Modified Level D PPE, and also provides for increased respiratory protection. This level of protection can be used when low levels of contaminants of a known nature are present, sufficient oxygen is available, and contaminants are not considered immediately dangerous to life or health (IDLH).

Level C PPE will be required during excavation and waste management activities performed within a HAZWOPER-defined work area (Exclusion Zone).

Level C PPE will be required during all initial ACP removal operations until an NEA has been completed to document that employee exposure is below the limits identified in 8 CCR Section 1529 (r)(1).

Typical Level C Equipment List

Half or Full-face air-purifying respirator equipped with organic vapor/HEPA cartridges. HEPA cartridges required for all ACP removal operations.

Chemical-resistant disposable outer coveralls (e.g., Tyvek™ or polyethylene-coated Tyvek™ coveralls)

Chemical-resistant (e.g., nitrile or Silver Shield®) outer glove (taped to outer coveralls)

Chemical-resistant (e.g., nitrile) inner gloves

Butyl apron (optional, for use where splash potential is high)

Hard hat

Chemical resistant safety boots (taped to coveralls)

Hearing protection (as required)

Self-contained breathing apparatus (available for emergency use).

Safety vest with reflective elements

7.2.4 Level B

The need for the use of Level B protective equipment during site activities is considered to be highly unlikely. Should on-site monitoring indicate that Level C PPE is not adequate; the SSO will stop all work, and will contact the Health and Safety Project Consultant for further guidance. Upgrade to Level B PPE will not be permitted without the concurrence of the Health and Safety Project Consultant, and the preparation of supplemental Health and Safety requirements addressing the additional procedures which will be observed.

7.2.5 Level A

The use of Level A protective equipment is not permissible for this project. Where the use of Level B equipment is insufficient, all work operations will cease and the Health and Safety Project Consultant shall be contacted for appropriate response procedures.

8.0 DECONTAMINATION

Decontamination involves the physical removal and/or neutralization of harmful contaminants in order to prevent their migration to previously uncontaminated areas, and to minimize the potential for adverse health effects. The extent of decontamination depends on the hazard and the quantities of the contaminant.

Contamination can occur from:

- Contacting vapors, gases, mists, or air particulates during typical work/construction procedures
- Splashes while sampling or opening containers or while performing equipment decontamination
- Handling contaminated instruments or equipment
- Assisting contaminated personnel during routine operations, decontamination procedures, and emergencies

Decontamination of equipment and personnel will be performed upon exit from any Exclusion Zone (see Section 9.3). The contractor will provide all necessary decontamination equipment. The SSO is responsible for ensuring the set-up and implementation of decontamination procedures is adequate for the nature and level of contaminants which are encountered, consistent with the following requirements.

8.1 DECONTAMINATION PROCEDURES

Decontamination procedures appropriate for the existing work area and work tasks will be specified by the SSO. Such procedures must be in place before site operations begin, and they must remain in place (modified as necessary) throughout the period of activity. Wherever possible, the need for decontamination should be reduced through work practices that minimize contact with contaminants.

Decontamination will be performed only in designated areas. Separate areas may be set up for equipment and personnel. A Contamination Reduction Zone (CRZ - see Section 9.3) will be established outside each work location. Personnel and equipment must move through the CRZ upon exiting any Exclusion Zone, where all phases of the decontamination process will occur.

8.2 PERSONNEL DECONTAMINATION

Decontamination procedures are carried out on all personnel leaving any Exclusion Zone. Under no circumstances (except emergency evacuations) will personnel be allowed to leave the site without fully decontaminating.

Decontamination of personnel should consist primarily of soap and water washing and water rinse of exterior protective gear to remove contaminants, followed by doffing of the gear. Coveralls should be removed by turning the clothing inside out. Requirements appropriate to the degree of contamination expected for each protective equipment ensemble is established below, however modifications of these procedures may be necessary in response to specific conditions encountered at the work site(s).

8.2.1 Level D (Non-HAZWOPER Work Activity) Personnel Decontamination

Personnel exiting any work area who are utilizing Level D PPE (see Sections 5.2 and 7.2.1) will perform decontamination in accordance with the following guidelines:

- Place tools, instruments, samples and trash at an appropriate location. The equipment drop area should be clean and dry and at a minimum, plastic bags should be available for trash. Waste PPE will not be placed in the same containers as general trash.
- Inspect equipment, samples, and if applicable, tools for signs of residual amounts of contamination or excessive soil buildup. If present, soils and contamination must be completely cleaned off of equipment, samples, and tools prior to removal from the Exclusion Zone area.
- Personnel will visually check themselves for signs of excessive soils and possible contamination, especially work boots. If observed, soils and contamination will be completely removed before further decontamination is performed.
- Prior to exiting the work area, personnel will wash their hands with soap and water in order to minimize the potential for contaminant exposure.
- In the case of exiting areas where sewage-related materials are likely present, workers shall wash their hands with an anti-bacterial soap twice and rinse with water before exiting the work area.

8.2.2 Modified Level D Personnel Decontamination

Where work activities are performed in Modified Level D PPE (see Sections 5.2 and 7.2.2) personnel will perform decontamination using the following guidelines:

- Place tools, instruments, samples and trash at an appropriate location. The equipment drop area should be clean and dry and at a minimum, plastic bags should be available for trash. Waste PPE will not be placed in the same containers as general trash.
- Inspect equipment, samples, and if applicable, tools for signs of residual amounts of contamination or excessive soil buildup. If present, soils and contamination must be completely cleaned off of equipment, samples, and tools prior to removal from the Exclusion Zone area.
- Personnel will visually check themselves for signs of excessive soils and possible contamination. If observed, soils and contamination will be completely removed before further decontamination is performed.
- Wash and rinse outer work gloves and boots (boot covers) with soap and water.
- Wash/brush off outer protective coverall (Tyvek™).
- Untape wrists and ankles.
- Remove outer work gloves and place them in an appropriate container specified for waste PPE.
- Remove outer Tyvek™ coveralls and place them in an appropriate container specified for waste PPE.
- Wash, rinse, and remove inner protective gloves and place them in an appropriate container specified for waste PPE.
- Wash hands using soap and water (separate from other decontamination cleaners/solutions).
- In the case of exiting areas where sewage-related materials are likely present, workers shall wash their hands with an anti-bacterial soap twice and rinse with water before exiting the work area.

8.2.3 Level C (HAZWOPER or Asbestos Work Activity) Personnel Decontamination

Personnel performing Exclusion Zone work activities or removal of ACP where an NEA has not been completed which require the use of Level C PPE (see Section 7.2.3 and Table 6) will perform decontamination in accordance with the following guidelines:

- Place tools, instruments, samples and trash at an appropriate location. These areas should be clean and dry, and at a minimum contain plastic bags for trash. Waste PPE will not be placed in the same containers as general trash.
- Inspect equipment, samples and if applicable, tools for signs of residual amounts of contamination or excessive soil buildup. If present, soils and contamination must be completely cleaned off of equipment, samples and tools prior removal from the Exclusion Zone area.
- Personnel will visually check themselves for signs of excessive soils and possible contamination. If observed, soils and contamination will be completely removed before further decontamination is performed.
- Wash and rinse outer work gloves and boots (boot covers) with soap and water.
- Wash/brush off outer protective coverall (Tyvek).
- Untape wrists and ankles.
- Remove outer work gloves and place them in an appropriate container specified for waste PPE.
- Remove outer Tyvek coveralls and place them in an appropriate container specified for waste PPE.
- Remove respirator mask (also goggles if worn).
- Wash, rinse, and remove inner protective gloves and place them in an appropriate container specified for waste PPE.
- Wash hands and face using soap and water (separate from other decontamination cleaners/solutions).
- In the case of exiting areas where sewage-related materials are likely present, workers shall wash their hands with an anti-bacterial soap twice and rinse with water before exiting the work area.

8.3 EQUIPMENT DECONTAMINATION FOR HAZWOPER -DEFINED WORK AREAS

Decontamination of all equipment will be performed to prevent migration of earthen materials to previously uncontaminated areas, and to minimize the potential for adverse health effects. Where feasible, plastic tarps should be used as draping to minimize earthen materials from coming into contact with heavy equipment. This should include draping tires. Accumulated material on exposed equipment surfaces, including tires and treads, should be removed prior to moving heavy equipment to minimize the potential of contaminant migration.

Decontamination of equipment and personnel will be performed upon exit from any Exclusion Zone in conformance with the Health and Safety Plan. The contractor is responsible for providing all decontamination equipment and ensuring that the set-up and implementation of decontamination procedures are adequate for the nature and level of contaminants which are encountered, consistent with the requirements in the Health and Safety Plan.

Decontamination procedures must be in place before site operations begin, and they must remain in place (modified as necessary) throughout the period of activity. Wherever possible, the need for decontamination should be reduced through work practices that minimize contact with contaminants.

Decontamination will be performed only in designated areas. Separate areas may be set up for equipment and personnel. A Contamination Reduction Zone (CRZ) will be established outside each work location. Personnel and equipment must move through the CRZ, where all phases of the decontamination process will occur, upon exiting any Exclusion Zone.

Equipment to be decontaminated includes excavating equipment, tools, monitoring equipment, sampling equipment, and sample containers.

General equipment decontamination consists of a soap and water wash, and a water rinse. If soap and water alone cannot remove contamination, additional procedures may be used such as steam cleaning.

Tools: Tools will be dropped into a plastic pail, tub or other container in the Exclusion Zone. They will be brushed off, rinsed, and transferred into a second pail to be carried to the decontamination station. Generally, tools will be washed with a detergent solution only, followed by a clean-water rinse.

Avoid using wooden tools; they cannot be adequately decontaminated due to their absorptive properties. If used, wooden tools cannot be removed from the Exclusion Zone until the end of the project, and then only to be disposed of as appropriate.

Sampling Equipment: Sampling equipment will be decontaminated before and between sampling to prevent cross contamination, and when the equipment leaves the Exclusion Zone. Sampling equipment may include trowels, shovels, bailers, submersible pumps, geotechnical samplers, sleeves, and backhoe buckets.

All sampling equipment will be decontaminated using an Alconox wash, or equivalent, followed by two clean water rinses. The sampling tool will then be rinsed with deionized or distilled water and air dried.

Heavy Equipment: Backhoe buckets and other equipment which may contact contaminated soils/groundwater will be cleaned with high-pressure water or a portable high-pressure steam spray followed by a soap and water wash and rinse. Loose material shall be removed by brush.

All cleaning water should be collected and stored for disposal characterization.

Respirator Decontamination: Respirators when worn will be decontaminated daily. Taken from the drop area, the masks will be disassembled, the cartridges set aside or disposed of and the rest placed in a cleansing solution. Personnel will inspect their own masks to be sure of proper strap readjustment for correct fit.

Certain parts of contaminated respirators, such as the harness assembly or cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded, and replaced.

In addition to being decontaminated, all respirators must be sanitized before they can be used again. The insides of masks become soiled from exhalation, body oils, and perspiration. The manufacturer's instructions should be followed in sanitizing the respirator mask or a mask sanitizer can be used.

Other re-useable PPE: In addition to being decontaminated, all re-useable PPE (i.e. safety glasses, hard hats, etc.), protective clothing, and other personal articles must be sanitized before they can be used again. The insides re-useable PPE and clothing become soiled from exhalation, body oils, and perspiration. The manufacturer's instructions should be followed in decontaminating and sanitizing re-useable PPE. If practical, protective clothing should be machine washed after a thorough decontamination. Otherwise, it should be cleaned by hand.

Instruments: Monitoring equipment should be protected as much as possible from contamination. Drape, mask, or otherwise cover as much of the instruments as possible with plastic without hindering the operation of the unit. Contaminated instruments will be taken from the drop area, their protective coverings removed, and disposed of in appropriate containers. Any remaining dirt or obvious contamination will be brushed or wiped with a damp disposable paper wipe. The units can then be placed in a clean plastic tub, taken inside, wiped with damp disposable wipes and dried.

Be aware that many instrument manufacturers and rental companies will not accept contaminated equipment for repair, and that a heavily contaminated piece of equipment, if improperly handled, may have to be disposed of as hazardous waste.

8.4 DISPOSAL OF HAZWOPER-DEFINED ACTIVITY DECONTAMINATION WASTES

Wastes generated from decontamination activities collected during the project will be handled in conformance section 5.2.5 of the HASP. Waste PPE and equipment will also be placed into appropriate containers. Sampling of this waste is limited to use of the PID instrument to determine head space concentrations of organic vapors, and will present only minimal hazards to personnel. All activities involving these containers can be accomplished in Level D PPE.

8.5 DECONTAMINATION DURING EMERGENCIES

Often during emergencies the need to quickly respond to an accident or injury must be weighed against the risk to the injured party from chemical exposure. It may be that the time lost or the additional handling of an injured person during the decontamination process may cause greater harm to the individual than the exposure that would be received by undressing that person without proper decontamination.

Decisions concerning the appropriate decontamination process during an emergency must be made by the SSO, with consideration to the following:

Physical Injury: Physical injuries can range from minor to life threatening. In severe instances life-saving care should be instituted immediately without considering decontamination, however in most cases normal decontamination procedures can be followed.

Heat Stress: Heat-related illness ranges from heat fatigue to heat stroke, the latter being the most serious. Heat stroke requires prompt treatment to prevent irreversible damage to health or death, and protective clothing may have to be cut off to allow more rapid treatment. Less serious forms of heat stress may require prompt attention or they may lead to a heat stroke. As a guide, if the victim is able to adequately perform decontamination without unusual assistance, no special procedures should be attempted. If the victim is too incapacitated to perform a normal decontamination routine, then emergency decontamination and prompt medical care are warranted.

Cold Stress: Hypothermia ranges from impending hypothermia to severe hypothermia, the latter being the most serious. Severe hypothermia requires prompt medical treatment by medical professional to prevent irreversible damage to health or death. Less serious forms of cold stress may require prompt attention and removal of the individual from the work area to a warm environment. As a guide, if the victim is able to adequately perform decontamination without unusual assistance, no special procedures should be attempted. If the victim is too incapacitated to perform a normal decontamination routine, then emergency decontamination and prompt medical care are warranted.

Chemical Exposure: When protective clothing is grossly contaminated, contaminants may be transferred to the wearer or to treatment personnel and cause injuries. Using the same criteria as for heat stress, if the victim is able to adequately perform decontamination without unusual assistance, no special procedures should be attempted. If the victim is too incapacitated to perform a normal decontamination routine, then emergency decontamination and prompt medical care are warranted, but unless severe medical problems could result, any significantly contaminated protective clothing should be washed off as rapidly as possible and carefully removed.

9.0 WORK ACTIVITY SITE CONTROL AND WORK ZONES

9.1 NON-HAZWOPER WORK ACTIVITY SITE CONTROL

The contractor is responsible for the safety and protection of all personnel at work locations within the Project limits. Non-HAZWOPER work activities and site controls identified in Contractor's safety program will be implemented by Contractor's Site Foreman.

9.2 HAZWOPER WORK ACTIVITY SITE CONTROL

The contractor is responsible for the safety and protection of all personnel at work locations at the Site. Therefore, a control area will be established around each work location defined as a HAZWOPER-defined work activity area to protect untrained or unprotected workers from exposure to contaminants or other hazards. Access to the controlled areas, each of which will consist of an Exclusion Zone and Contamination Reduction Zone (see below), will be limited to authorized work personnel and visitors who comply with the requirements of this HASP.

The contractor will exercise control of work areas whenever work operations are in progress, or when hazards related to the presence of chemical contaminants due to work activities may be encountered. At the conclusion of each work period, the SSO is responsible for ensuring that all work location hazards have been eliminated, in order to allow unrestricted access during non-working periods.

The SSO is responsible for delineating the boundaries of each controlled work area, based upon requirements set forth in Section 9.3, results of monitoring obtained during work operations, and site-specific conditions (e.g., proximity of roads or buildings and terrain peculiarities).

9.3 HAZWOPER-DEFINED, LIMITED ACCESS AND ACP WORK AREAS

Requirements

Work locations where ongoing operations create the potential for contact with or inhalation of contaminants (above action levels), or exposure to physical hazards of work operations, are considered to be limited-access controlled areas. For purposes of this HASP, the controlled work area will be defined as any work area that has been identified as a HAZWOPER-defined work area, area where sewage-related materials may be encountered or ACP work area where an NEA has not been completed.

An Exclusion Zone must be established at each such work location to prevent unauthorized access by personnel when there is the potential for exposure to contaminants. Once work begins, no one will be allowed within the Exclusion Zone without wearing the designated level of protective equipment and meeting the training and medical monitoring requirements specified in this HASP.

A single entry/exit point should be established at the edge of each Exclusion Zone to facilitate control of personnel entering the area, and as the location for the set-up of decontamination stations outside the Exclusion Zone. An area 10 feet around this decontamination/entry area, but outside the perimeter of the Exclusion Zone itself, should be considered as having the potential for exposure to contaminants brought out of the Exclusion Zone by work personnel, and therefore should also be access-controlled. This area will be designated as the Contamination Reduction Zone (CRZ), and should be located upwind from the work location, if possible, or else cross-wind. The CRZ should never be downwind from the work area.

Initial requirements for Exclusion Zone set-up are presented here as a guide, however location-specific factors must also be considered. It must be emphasized that Exclusion Zone limits must be sufficient to prevent anyone outside the zone from being exposed to any contaminated materials, or airborne contaminants released during work activities in excess of the action levels established in Table 4, as well as physical hazards related to the operations. The CRZ must be large enough to encompass decontamination activities and prevent unauthorized personnel from approaching closer than is safe, typically 10 feet away from all activities (decontamination, etc.) in all directions except toward the Exclusion Zone (where full PPE use is in effect). Typical distances for initial set up of the Exclusion Zone are:

Excavation Operations: Twenty (20) feet will be cleared in all directions around active excavation areas.

Removing Friable Asbestos or Lead Paint: Twenty (20) feet will be cleared in all directions around active work area.

Removing Sections of ACP Pipe and/or Sewage-Related Work: Fifteen (15) feet will be cleared in all directions around active work area.

Trenching Operations: Ten (10) feet will be cleared in all directions along the alignment of the trench.

Soil Sampling: Ten (10) feet in all directions from the sampling location.

Decontamination: Thirty (30) feet in all directions from the decontamination station location for large vehicle efforts conducted at a decontamination pad. For personal and small parts decontamination conducted at the work location, keep decontamination activities within the applicable Exclusion/Contamination Reduction Zone established for that operation.

The Work-site Personal Decontamination Area can be located immediately outside the above distances set for the Exclusion Zone.

Control Zone Delineation and Security

Exclusion Zones should be delineated using traffic cones or barricades linked by yellow "CAUTION" tape, which provides a visible and physical barrier to prevent entry by unauthorized persons. Placement of vehicles and K rails can be used to provide additional security. The SSO/Task Leader will be responsible for maintaining the integrity of the perimeter during work activities. He/she will not assist in other work activities, but will maintain a surveillance of the Exclusion Zone to prevent unauthorized entry. If such an entry should occur, the trespasser will be immediately escorted outside the area, or all work at that location must cease.

All personnel, equipment and supplies which enter controlled-access areas must be decontaminated or containerized as waste prior to leaving should sewage-related materials, damaged ACP or contaminated soils be present.

At the conclusion of all hazardous work location tasks, controlled areas must be properly cleaned so as to be non-hazardous ("clean") prior to relaxation of entry control procedures and PPE requirements. Due to other requirements at the site, it may be necessary to "safe" each work location at the conclusion of each work period to allow for other, unrestricted uses of the site.

9.4 THE SUPPORT ZONE

The areas which lie outside any controlled work location (Exclusion Zones and CRZs) are considered to be free of work-related hazards. In this area, the requirements for protective equipment usage can be relaxed, and tasks which do not present significant hazards (including administrative/management activities), can be conducted. For convenience, the uncontrolled areas of the site will be referred to as the Support Zone. Access to these areas is unrestricted, and Support Zone areas are available for other uses during all non-working hours.

The Support Zone can be used for set up and storage of all equipment, vehicles and supplies which are not required for immediate use in the Exclusion Zone, and can serve as a work area for all non-hazardous tasks which might be undertaken (e.g., paperwork).

A break area will also be designated in the Support Zone where personnel can eat, drink, and smoke. The break area is the only place where such activities are permitted by the contractor and subcontractor personnel.

There are no requirements for delineation or marking of Support Zone boundaries since it encompasses all portions of the property where work activities or security considerations do not require access control.

9.5 EXCLUSION ZONE CONTROL RECORDS

Exclusion Zone control records will be maintained on a daily basis. Site visitors and personnel who enter any Exclusion Zone should be annotated as part of the work location control records. These records will be recorded and maintained as part of the health and safety records or appropriately annotated in the SSO's Field Log Book. Other information to be recorded will include details concerning monitoring efforts undertaken and results (if available), and unusual events that may occur.

10.0 HEALTH AND SAFETY OPERATING PROCEDURES

10.1 GENERAL

10.1.1 Smoking, Eating, and Drinking

In order to minimize the potential for exposure to site contaminants, smoking, eating, drinking, gum chewing and application of cosmetics will not be permitted inside Exclusion Zones (EZ) or Contamination Reduction Zones (CRZ) at any time. Field workers, even those working in Level D conditions (see Section 7.2.1), will wash hands and face prior to leaving a work area and prior to eating or drinking. Consumption of alcoholic beverages is prohibited at the site.

**SMOKING AND EATING IS PROHIBITED INSIDE
THE EXCLUSION ZONE (EZ) OR THE
CONTAMINATION REDUCTION ZONE (CRZ)**

10.1.2 Site Awareness

Field crew members shall be familiar with the physical characteristics and requirements of the work site, including:

- Accessibility to equipment and vehicles
- Communication
- Hot zones (Exclusion Zones or areas of known or suspected contamination)
- Site access
- Confined space locations
- Supplemental illumination by mobile lighting
- Emergency procedures and evacuation assembly points
- Location of protective and emergency equipment and relevant first-aid procedures.

The number of personnel and equipment permitted inside any Exclusion Zone should be minimized, consistent with site operations.

10.2 SITE HEALTH AND SAFETY MEETINGS

10.2.1 Site Safety Orientation

The SSO will conduct a site safety orientation for every person assigned to the project on the following occasions:

- Before field personnel begin work at the site
- When there are significant revisions or modifications to the Health and Safety Plan
- When additional workers or subcontractors begin field work and when authorized visitors are required to enter the Exclusion Zone Areas

A record of the site safety orientation will be documented by each personnel's signing of the signature page which accompanies each site-specific addendum. Additional meetings, including attendees, will be maintained in the project health and safety file. The Health and Safety Project Consultant will assist the SSO to develop the site safety orientation. As a minimum, the orientation and training meeting agenda must include:

- Distribution of this HASP
- A review of this HASP and the site-specific safety guidance document
- Verification of medical and safety training clearances, including respirator fit testing
- Hazard awareness of chemicals, asbestos, lead and sewage-related materials which may be encountered on site
- Confined space hazards
- Fire safety training, fire extinguishment, and evacuation procedures
- Attendee signatures to acknowledge receipt and understanding of the HASP and an agreement to comply

10.2.2 Field Safety Briefings

The Site Foreman will conduct a field safety briefing at the start of each work day. When necessary (at a minimum weekly), the SSO will review and discuss the health and safety issues associated with the work, problems encountered, and modifications to existing procedures during the field safety briefing. Documentation of the field safety briefings will be accomplished by using the safety briefing sign-in log located in Appendix B. The SSO maintains copies of all safety briefing sign-in logs in the project files. All field personnel associated with each day's project activities are required to attend these meetings.

10.3 ACCIDENT OR INCIDENT REPORTS

All accidents and incidents that occur on site during field activities associated with this project will be promptly reported to the SSO and the Site Supervisor. The Site Supervisor will provide timely notification to the Millennium H&S Project Manager. The supervisor of the injured employee or work crew will initiate the written report. For convenience, the *Supervisor's Report of Incident* form in Appendix B may be used to ensure all relevant information is recorded. The Site Superintendent or Site Foreman completes the "Supervisor" section of the form and forwards it to the Millennium Health and Safety Project Consultant. The Millennium Health and Safety Project Consultant completes the "Manager" section of the form and forwards it to the Health and Safety Project Consultant.

10.4 VISITOR CLEARANCES

Visitors will not be allowed within the Exclusion Zones unless they comply with the health and safety requirements of this HASP, and can demonstrate a need for entry into the work area which is acceptable to the SSO. All visitors (including the site owner or the owner's representative, or regulatory agency representatives) desiring to enter any Exclusion Zone must observe the following procedures:

- Provide the SSO with written confirmation that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
- Obtain a briefing from the SSO on the hazards associated with the site activities being performed, and acknowledge receipt of this briefing by signing the appropriate field safety briefing form and this HASP.

- Visitors will wear the same level of Personal Protective Equipment (PPE) as those workers are required to wear for each area.

If the site visitor requires entry to any Exclusion Zone, but does not comply with the above requirements, all work activities within the Exclusion Zone must be suspended and monitoring using direct reading instruments or visual clearance from the SSO must indicate that no airborne contaminant concentrations are likely to be present which exceed the established background levels. Until these requirements have been met, entry will not be permitted.

10.5 Contractor SAFETY

In addition to the requirements of this Health and Safety Plan, Contractor subcontractors will observe the rules outlined in the "General Safety Rules for Contractors" which are located in Appendix B of this document. Compliance with these rules will be observed by subcontractors during all phases of site activities.

10.6 BUDDY SYSTEM

Due to the potential for accident or injury, no person is permitted to work alone inside any Exclusion Zone. To ensure that this requirement is observed a buddy system will be implemented in which members of the work crew shall be paired off in teams of two who will maintain visual contact with each other at all times. Team members should observe each other for any signs of difficulty. Anyone exhibiting symptoms of potential overexposure or other difficulty should be taken immediately to the nearest medical facility.

In addition, during night work, any personnel leaving the CRZ will go with a buddy.

10.7 WASTE HANDLING

Non-hazardous excavated earthen materials will be managed in conformance with the approved Soil Disposal Plan. Waste handling requirements for soils excavated from a HAZWOPER-defined area are identified in Section 5.2.7, and will be identified in an approved Excavated Soil Management Plan. Waste PPE and other non-hazardous construction-generated wastes will be collected and managed in conformance with Section 5.2.6. Handling of all containers of capacity 10 gallons or greater will be accomplished in accordance with the following:

- When not in use drums/containers will be covered with a tight-fitting lid,
- At the conclusion of each working shift all drums/containers will be placed in the designated waste storage area. This area will be properly marked and secured,
- Drums or waste-storage containers shall be properly labeled from first use and securely closed,
- Contractor shall adhere to regulations regarding duration of storage of suspected or confirmed hazardous waste materials. Most regulations have a maximum of 90 days storage permitted on site.
- Manual lifting, carrying or moving of drums/containers will not be permitted. A drum handling cart or similar apparatus will be used for moving drums/containers from collection points to the designated storage area, and
- Sampling of containers for waste characterization purposes will be accomplished in accordance with the requirements in Section 5.2.5 and Section 8.4. Sampling of excavated soils that are determined to be impacted will be performed in conformance with approved Excavated Soil Management Plan.

10.8 WORKSITE SANITATION

During site activities work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. Solid waste BMPs identified in the Construction SWPPP will also be implemented. At no time will debris or trash be intermingled with waste PPE or contaminated materials. Anyone observed throwing contaminated material or PPE away with municipal wastes will be removed from the site.

10.8.1 Water Supply

A water supply meeting the requirements of Title 8 CCR §1524 will be utilized, consisting of the following:

Potable Water. An adequate supply of potable water will be available for field personnel consumption. Potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.

Non-Potable Water. Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. Any non-potable water sources will be clearly labeled as such.

10.8.2 Toilet Facilities

In accordance with Title 8 CCR §1526 access to a toilet facility will be available for workers. A designated toilet facility located within the facility will be available for use. During periods of night work, personnel using the designated toilet facility must follow the notification and buddy procedures.

10.8.3 Washing Facilities

In accordance with Title 8 CCR §1527, employees will be provided washing facilities (e.g., buckets with water and anti-bacterial soap) at each work location. The use of water and hand soap (or similar substance) will be used by each employee following exit from the Exclusion Zone, prior to breaks and at the end of daily work activities.

10.9 COMMUNICATIONS

Effective communication is essential to safe working conditions and the successful completion of the project. External communication is maintained by the contractor using cellular telephone links. Cellular phones will be required during all trenching activities to facilitate communications with the contractor personnel, and if necessary to notify appropriate emergency response units (e.g., police, ambulance teams, fire department, etc.).

Mobile radios may be used while on site however all site personnel must be on the same frequency and have access to such radios. Radios shall be provided by the General Contractor for the site.

11.0 EMERGENCY CONTINGENCY PLAN

The following responsibilities and response actions are in accordance with the requirements for an Emergency Response and Contingency Plan.

There are four major categories of emergencies that could occur during site investigation activities:

1. Illnesses and physical injuries (including injury-causing chemical exposure)
2. Catastrophic event (fire, explosion, earthquake, or chemical release)
3. Safety equipment problems
4. Minor spills or leaks of equipment fuel (e.g., gasoline) or decontamination fluids

Although a catastrophic event or severe medical emergency is unlikely to occur during work activity at the site, this emergency contingency plan has been prepared for this project should such critical situations arise. The purpose of this procedure is to establish the appropriate response actions for emergency situations, the means of communication, and the responsibilities of key personnel at the site.

11.1 RESPONSIBILITIES

11.1.1 Site Safety Officer (SSO)

The SSO (Contractor's Site Foreman) is the primary coordinator for all emergency activities. Responsibilities include:

- Evaluating the severity of the emergency,
- Implementing appropriate response action,
- Directing worker response activities,
- Summoning appropriate emergency services (fire department, ambulance, etc.), and
- Notifying all site personnel, the Health and Safety Project Consultant, and concerned authorities of the emergency situation.

11.1.2 Other Onsite Personnel

It will be the obligation of the field personnel to inform the SSO of all emergency situations and to abide by their issued response actions. Special medical problems of field personnel such as allergies to insects, plants, prescription medication, etc. will be reported to the SSO.

11.2 EMERGENCY EQUIPMENT

Provisions will be made to have appropriate emergency equipment available and in proper working condition.

11.2.1 First Aid Kits

Each work site shall have a first-aid kit meeting the following requirements:

- First-aid kits in weather-proof containers, meeting all regulatory requirements, shall be present at all locations where contractor personnel and subcontractors will be working,
- First-aid kits shall be available at each work location at all times, and
- Only certified first aid personnel will be permitted to use first-aid kits.

First aid kits will be maintained in the Contractor Foreman's vehicle since this individual will also be the SSO. The SSO can designate other Contractor vehicles where a first-aid kit will be maintained. The locations of first aid kits and the names of certified first aid personnel will be discussed at all tailgate safety meetings.

During all work operations, at least one individual will be present at all times who is a certified first aid provider.

11.2.2 Eyewash Units

Eyewash units meeting the requirements of ANSI Standard Z358.1-1981 will be available at each work location. These units will also comply with the provisions of 8 CCR §5162, and shall be capable of supplying hands-free irrigation for both eyes for at least 15 minutes at a flow rate of at least 0.4 gallons per minute. An eye wash unit will be maintained in the Contractor Foreman's vehicle since this individual will also be the SSO. The SSO can designate other Contractor vehicles where eye-wash units will be maintained. The locations of eye wash units will be discussed at all tailgate safety meetings.

11.2.3 Fire Extinguisher

A fire extinguisher capable of extinguishing Class A, B, and C fires will be available for use at the site at each work location at all times, and personnel will be readily aware of the location of the fire extinguisher for immediate use. At a minimum the fire extinguisher shall carry a rating of 1-A,10B,C.

A fire extinguisher will be maintained in the Contractor Foreman's vehicle since this individual will also be the SSO. The SSO can designate other Contractor vehicles where fire extinguishers will be maintained or deployed. The locations of fire extinguishers will be discussed at all tailgate safety meetings.

11.2.4 Spill Containment and Clean-up

Equipment for containment and clean-up of small spills of fuel or cleaning solvents will be available at each work site and where vehicle fueling will be performed. Since work site locations may change frequently, a spill kit will be maintained in a designated Contractor vehicle at each work location. The spill kit will be labeled so that it can be easily identified. The locations of spill kits will be discussed at all tailgate safety meetings.

If there is a spill of suspect or known sewage-related materials, all work shall cease immediately and trained and protected workers (see PPE requirements) will immediately shovel the contaminated liquids/soil into a holding tank or series of drums for later disposal. Workers shall then follow proper decontamination of all items which may have contacted the sewage related materials. Following this, workers shall perform a thorough personal decontamination using anti-bacterial soap and water at the decontamination area.

11.3 WORK STOPPAGE AND CORRECTIVE ACTIONS

The SSO will require temporary work stoppage and implementation of corrective actions if any of the following conditions are encountered:

- Air monitoring shows concentrations of airborne contaminants exceeding Level C requirements as presented in Table 4
- Concentrations of airborne contaminants outside any controlled area (see Section 9.1) exceed 50 percent of the unprotected exposure limits required by OSHA (OSHA PELs)
- Emergency conditions directly affect the health and safety of onsite workers or offsite residents or properties

Corrective actions may include modification of personal protection levels, ventilation, evacuation, or other necessary measures as determined by the SSO using guidance found in this HASP. The SSO is empowered to unilaterally stop work if necessary to meet health and safety requirements.

All work stoppages will be reported to the Project Engineer and/or Superintendent for review prior to resumption of work.

11.4 NON-CATASTROPHIC EMERGENCY RESPONSE ACTIONS

The following procedures will be implemented in response to specific non-catastrophic emergency situations:

11.4.1 Medical Emergencies

Medical emergencies can be described as situations that present a significant threat to the health of personnel. These can result from chemical exposures, heat stress, cold stress, and poisonous insect or snake bites. Medical emergencies must be dealt with immediately and proper care should be administered. This may be in the form of first aid and emergency hospitalization.

In the event of a medical emergency:

- All injured individuals may be given appropriate emergency first aid by a qualified individual trained and currently certified in first aid, and
- Severely injured personnel shall be transported to the designated hospital listed in Table 7.

The route to hospital is shown on Figures 3 thru 6.

11.4.2 Safety Equipment Problems

An emergency may develop due to malfunction or other problems associated with health and safety equipment being used by field personnel. These equipment problems must be corrected before proceeding with field activities. Health and safety problems that may occur include:

- Leaks or tears in protective clothing,
- Failure of respiratory protective devices (air-purifying respirators), and
- Encountering contaminants for which prescribed protective equipment may not be suitable.

Any person encountering a problem with protective equipment will evacuate the Exclusion Zone and will immediately decontaminate and remove all protective clothing and other equipment. As necessary, the affected employee can be evaluated by a physician if overexposure is suspected.

11.4.3 Fuel/Solvent Spills

In the event of a small spill of fuel or cleaning solvents, actions should be taken to immediately contain the spill. This can include the use of spill containment devices (spill “pillows”, etc.) or other barriers. The SSO will direct the clean-up of spilled material as quickly as possible. Clean-up will be performed using an absorbent material. Waste will be collected and containerized.

Equipment for containment and clean-up of small spills of fuel or cleaning solvents will be available at each work site and where vehicle fueling will be performed. Since work site locations may change frequently, a spill

kit will be maintained in a designated Contractor vehicle at each work location. The spill kit will be labeled so that it can be easily identified. The locations of spill kits will be discussed at all tailgate safety meetings

11.5 CATASTROPHIC EVENT PROCEDURES

In the event of a catastrophic incident:

- Work activities will cease and all project personnel will be evacuated from the work location (Exclusion Zone). The evacuation will proceed in a direction opposite of the critically affected area with all personnel assembling in a pre-designated location outside of the job site proper (determined and presented as part of the daily field briefing),
- A headcount will be taken by the SSO or designated alternate of the assembled employees and any injured individuals shall be administered first aid, and
- If not present at the affected work location, the SSO, the Site Foreman, the Site Supervisor, and the Millennium Health and Safety Project Consultant will be contacted immediately.

A universal signal for emergency evacuation (e.g., use of a horn), and designation of the evacuation assembly location, shall be established by the SSO and briefed to all workers during initial site-specific training. Any changes mandated by changing site conditions shall be determined by the SSO and communicated to workers during the daily field safety briefing.

**Table 1
Chemicals of Concern**

Chemical Family	Compound Name	Explosive/ Flammable Limits		Maximum Concentration (ppm/%)
		LEL (%)	UEL (%)	
TPH	TPH as gasoline (TPHg)	1.4	7.6	Non-Hazard Levels
TPH	TPH as diesel (TPHd)	0.7	6.0	Non-Hazard Levels
TPH	TPH as motor oil (TPHmo)	1.0	10.0	Non-Hazard Levels
VOCs	Benzene(s)	1.8	7.8	Non-Hazard Levels
VOCs	Toluene	1.1	7.1	Non-Hazard Levels
VOCs	Ethylbenzene	0.8	6.7	Non-Hazard Levels
VOCs	Xylenes	1.1	7.0	Non-Hazard Levels
VOCs	Perchloroethylene (PCE) and Degradates	NONE	NONE	Non-Hazard Levels
Lead	Lead	N/A	N/A	23,000 in Soil – Unknown on structure
Asbestos	Asbestos	N/A	N/A	40 % Chrysotile

TABLES

Table 2
Summary of Environmental Contaminant Properties

CHEMICAL/ PRODUCT NAME	OSHA PEL/STEL	ACGIH TLV/STEL	SIGNIFICANT HEALTH EFFECTS
Gasoline	Not Established	TLV: 300 ppm STEL: 500 ppm	Inhalation of vapors, skin contact with liquid may cause CNS Depression, Skin Irritation
Diesel Fuel	Not Established	TLV: 100mg/m ³ STEL: N/A	Inhalation of mist, ingestion may cause CNS depression. Prolonged skin contact with liquid may cause irritation
Benzene	PEL: 1 ppm STEL: 5 ppm AL: 0.5 ppm	TLV: 0.5 ppm STEL: 2.5 ppm	Known human carcinogen. Inhalation of vapors, prolonged skin contact may cause leukemia. Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause anemia, liver degeneration.
Toluene	PEL: 200 ppm STEL: 300 ppm	TLV: 20 ppm STEL: N/A	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Xylene	PEL: 100 ppm STEL: N/A	TLV: 100 ppm STEL: 150 ppm	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Ethylbenzene	PEL: 100 ppm STEL: N/A	TLV: 25 ppm STEL: N/A	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Perchloroethylene	PEL: 100 ppm STEL: 100 ppm	TLV: 300 ppm STEL: N/A	May cause irritation of the GI with vomiting. Mildly irritating to skin. Prolonged contact may cause burning of skin. Irritant to eyes. May cause headache, fatigue, nausea, vomiting, coughing, visual disturbances.
Asbestos	PEL: 0.1 f/cc STEL: 1 f/cc	TLV:0.1 f/cc STEL: N/A	Chronic exposures may cause lung cancer, asbestosis and mesothelioma
Lead	PEL: 0.05 mg/m ³ STEL: N/A	TLV: 0.05 mg/m ³ STEL: N/A	Chronic exposures may neurological disorders, kidney, lung and other organ damage.

Notes:

1. AL = Action Level
2. OSHA STEL for 30 minute avg; ACGIH STEL for 15 minute average
3. N/A = Not Established
4. AL = Action Limit

Table 3
Air Contaminant Monitoring Instrumentation

INSTRUMENT	MANUFACTURER/MODEL	SUBSTANCES DETECTED
Flame Ionization Detector (FID) (Required)	Foxboro OVA 108 Foxboro OVA 128	Combustible/organic vapors and gases, hydrocarbons
Photo Ionization Detector (PID) (Adequate substitute for FID)	H-Nu PI-101 Photovac MicroTIP MSA Photon Thermo Environmental OVM	Aromatic hydrocarbons
Detector Tube Kit	Draeger 81-01841	Benzene: 0.5-10 ppm TCE: 0.5 – 10 ppm PCE: 0.5 – 10 ppm
Multi-gas Detector (Required for confined spaces)	RKI Eagle Neotronics Exotox-55 ISC TMX-410 GasTech GX-91 MSA 360 or 361	Oxygen, %LEL (combustible and flammable vapors and gases)

Table 4
Monitoring Program Action Levels

Parameter	Location and Interval	Response Level (above background)	Response
Petroleum Hydrocarbons (Total by PID)	Breathing Zone, Continuous during intrusive activities	< 10 ppm	Continue Level D work and continue monitoring
		10 -15 ppm (sustained for more than 5 minutes)	Monitor for benzene. Continue Level D work unless benzene is present, continue monitoring
		15 – 50 ppm (sustained for more than 5 minutes)	Monitor for benzene. Contact SSO. Implement mitigation measures and upgrade PPE to Level C (organic vapor cartridge) if benzene is present. Continue monitoring
		> 225 ppm (sustained for more than 5 minutes)	Upgrade to Level C PPE
Petroleum Hydrocarbons (Total by PID)	Edge of Exclusion Zone Every 20 minutes during intrusive activities	< 10 ppm	Continue work and continue monitoring
		>10 ppm (sustained for more than 5 minutes)	Implement mitigation measures and contact SSO
Benzene (by Colorimetric tube)	Breathing Zone Every 10 minutes where indicated by PID readings	No color change	Continue work activities in required protective equipment
		Any color change	Upgrade to Level C PPE
		> 5 ppm	Upgrade to Level C PPE
Explosivity (CGI/Multi-gas Detector)	Inside trenches during intrusive work, and upon entering any excavation that has been closed for more than 4 hours (start at work, every 30 minutes thereafter)	< 10% LEL	Continue work activities
		> 10% LEL	Cease work, exit area and contact the SS)

Table 5

Permissible Heat Exposure TLVs
(All temperatures given in WBGT [°F])

Work-Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous Work	86	80	77
75% Work, 25% Rest (each hour)	87	82	78
50% Work, 50% Rest (each hour)	89	85	82
25% Work, 75% Rest (each hour)	90	88	86

Notes:

1. Heat stress monitoring will be performed when the ambient air temperature exceeds 70°F
2. Work-Rest regimen assumes that workers are acclimatized to work location

**Table 6
Task Specific PPE Guidance**

Activities to be performed:			
<input checked="" type="checkbox"/> Site Reconnaissance	<input checked="" type="checkbox"/> Trenching/Grading	<input checked="" type="checkbox"/> Monitoring	<input checked="" type="checkbox"/> Reconstruction Activities
<input checked="" type="checkbox"/> Utility Clearance	<input checked="" type="checkbox"/> Waste Management	<input checked="" type="checkbox"/> Night Work	<input checked="" type="checkbox"/> Soil Sampling
<input type="checkbox"/> Drum Sampling	<input checked="" type="checkbox"/> Demolition Activities	<input checked="" type="checkbox"/> Trench Dewatering	<input type="checkbox"/> Other: _____
Site Reconnaissance/Utility Clearance/Utility Construction (Non HAZWOPER-defined Work Area) PPE Level: Level D			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input type="checkbox"/> Polycoated Tyvek@	<input type="checkbox"/> Safety Goggles/Face Shield	<input checked="" type="checkbox"/> Safety Glasses
<input type="checkbox"/> Nomex© Coveralls	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Trench Dewatering (Non HAZWOPER-defined Work Area) PPE Level: Modified Level D			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input type="checkbox"/> Polycoated Tyvek@	<input type="checkbox"/> Safety Goggles/Face Shield	<input checked="" type="checkbox"/> Safety Glasses
<input type="checkbox"/> Nomex© Coveralls	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Sewer line Removal and Construction/Trench Dewatering/Excavated Soil Management (HAZWOPER-defined, Lead Mitigation or Asbestos Related Work Area): PPE Level: Level C			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input checked="" type="checkbox"/> Polycoated Tyvek@	<input checked="" type="checkbox"/> Safety Goggles/Face Shield	<input type="checkbox"/> Safety Glasses
<input checked="" type="checkbox"/> Air purifying Respirator	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Other H&S considerations:	<input checked="" type="checkbox"/> Apron during power washing for decontamination of equipment.		

**Table 7
Emergency Telephone Numbers**

Agency or Facility	Location of agency or Facility	Point of Contact	Primary & Secondary Phone Numbers
Police	Local Police Department	NONE	1°- 911 2°-
Fire Department & HAZMAT	Local Fire Department	El Dorado County Fire Protection Dist.	1°- 911 2°- (530) 644-9630
Hospital (primary)	Marshall Hospital 941 Spring St. Placerville, CA 95667	Emergency Department	1°- (530) 626-7661 2°- 911
Hospital/Clinic (secondary)	Marshall Medical Center 1100 Marshall Way Placerville, CA 95667	Emergency Department	1°- (530) 622-1441 2°- 911
Ambulance			1°- 911
Cal/OSHA	Region 2 Sacramento District Office	Enforcement Division	1°- (916) 263-2800
Contractor Management Team Personnel			
Contractor Corporate Health and Safety Officer	Office		
Contractor Project Manager	Office/Field		
Contractor Site Superintendent	Field		
Contractor Site Foreman/SSO (Competent Person)	Field		
Contractor Hazardous Materials	Office Field		
Health and Safety Project Manager	Office Field		
Health and Safety Consultant	Office Field		
Project Engineer	Office Field		
Project Geologist	Office Field		

* Primary project contacts for Contractor Project Management Team

**Table 1
Chemicals of Concern**

Chemical Family	Compound Name	Explosive/ Flammable Limits		Maximum Concentration (ppm/%)
		LEL (%)	UEL (%)	
TPH	TPH as gasoline (TPHg)	1.4	7.6	Non-Hazard Levels
TPH	TPH as diesel (TPHd)	0.7	6.0	Non-Hazard Levels
TPH	TPH as motor oil (TPHmo)	1.0	10.0	Non-Hazard Levels
VOCs	Benzene(s)	1.8	7.8	Non-Hazard Levels
VOCs	Toluene	1.1	7.1	Non-Hazard Levels
VOCs	Ethylbenzene	0.8	6.7	Non-Hazard Levels
VOCs	Xylenes	1.1	7.0	Non-Hazard Levels
VOCs	Perchloroethylene (PCE)	NONE	NONE	Non-Hazard Levels
Lead	Lead	N/A	N/A	23,000 in Soil – Unknown on structure
Asbestos	Asbestos	N/A	N/A	40 % Chrysotile

Table 2
Summary of Environmental Contaminant Properties

CHEMICAL/ PRODUCT NAME	OSHA PEL/STEL	ACGIH TLV/STEL	SIGNIFICANT HEALTH EFFECTS
Gasoline	Not Established	TLV: 300 ppm STEL: 500 ppm	Inhalation of vapors, skin contact with liquid may cause CNS Depression, Skin Irritation
Diesel Fuel	Not Established	TLV: 100mg/m ³ STEL: N/A	Inhalation of mist, ingestion may cause CNS depression. Prolonged skin contact with liquid may cause irritation
Benzene	PEL: 1 ppm STEL: 5 ppm AL: 0.5 ppm	TLV: 0.5 ppm STEL: 2.5 ppm	Known human carcinogen. Inhalation of vapors, prolonged skin contact may cause leukemia. Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause anemia, liver degeneration.
Toluene	PEL: 200 ppm STEL: 300 ppm	TLV: 20 ppm STEL: N/A	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Xylene	PEL: 100 ppm STEL: N/A	TLV: 100 ppm STEL: 150 ppm	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Ethylbenzene	PEL: 100 ppm STEL: N/A	TLV: 25 ppm STEL: N/A	Acute inhalation exposures may cause CNS depression. Skin contact with liquid may cause irritation. Chronic exposures may cause liver degeneration.
Perchloroethylene	PEL: 100 ppm STEL: 100 ppm	TLV: 300 ppm STEL: N/A	May cause irritation of the GI with vomiting. Mildly irritating to skin. Prolonged contact may cause burning of skin. Irritant to eyes. May cause headache, fatigue, nausea, vomiting, coughing, visual disturbances.
Asbestos	PEL: 0.1 f/cc STEL: 1 f/cc	TLV:0.1 f/cc STEL: N/A	Chronic exposures may cause lung cancer, asbestosis and mesothelioma
Lead	PEL: 0.05 mg/m ³ STEL: N/A	TLV: 0.05 mg/m ³ STEL: N/A	Chronic exposures may neurological disorders, kidney, lung and other organ damage.

Notes:

1. AL = Action Level
2. OSHA STEL for 30 minute avg; ACGIH STEL for 15 minute average
3. N/A = Not Established
4. AL = Action Limit

Table 3
Air Contaminant Monitoring Instrumentation

INSTRUMENT	MANUFACTURER/MODEL	SUBSTANCES DETECTED
Flame Ionization Detector (FID) (Required)	Foxboro OVA 108 Foxboro OVA 128	Combustible/organic vapors and gases, hydrocarbons
Photo Ionization Detector (PID) (Adequate substitute for FID)	H-Nu PI-101 Photovac MicroTIP MSA Photon Thermo Environmental OVM	Aromatic hydrocarbons
Detector Tube Kit	Draeger 81-01841	Benzene: 0.5-10 ppm TCE: 0.5 – 10 ppm PCE: 0.5 – 10 ppm
Multi-gas Detector (Required for confined spaces)	RKI Eagle Neotronics Exotox-55 ISC TMX-410 GasTech GX-91 MSA 360 or 361	Oxygen, %LEL (combustible and flammable vapors and gases)

Table 4
Monitoring Program Action Levels

Parameter	Location and Interval	Response Level (above background)	Response
Petroleum Hydrocarbons (Total by PID)	Breathing Zone, Continuous during intrusive activities	< 10 ppm	Continue Level D work and continue monitoring
		10 -15 ppm (sustained for more than 5 minutes)	Monitor for benzene. Continue Level D work unless benzene is present, continue monitoring
		15 – 50 ppm (sustained for more than 5 minutes)	Monitor for benzene. Contact SSO. Implement mitigation measures and upgrade PPE to Level C (organic vapor cartridge) if benzene is present. Continue monitoring
		> 225 ppm (sustained for more than 5 minutes)	Upgrade to Level C PPE
Petroleum Hydrocarbons (Total by PID)	Edge of Exclusion Zone Every 20 minutes during intrusive activities	< 10 ppm	Continue work and continue monitoring
		>10 ppm (sustained for more than 5 minutes)	Implement mitigation measures and contact SSO
Benzene (by Colorimetric tube)	Breathing Zone Every 10 minutes where indicated by PID readings	No color change	Continue work activities in required protective equipment
		Any color change	Upgrade to Level C PPE
		> 5 ppm	Upgrade to Level C PPE
Explosivity (CGI/Multi-gas Detector)	Inside trenches during intrusive work, and upon entering any excavation that has been closed for more than 4 hours (start at work, every 30 minutes thereafter)	< 10% LEL	Continue work activities
		> 10% LEL	Cease work, exit area and contact the SS)

Table 5

Permissible Heat Exposure TLVs
(All temperatures given in WBGT [°F])

Work-Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous Work	86	80	77
75% Work, 25% Rest (each hour)	87	82	78
50% Work, 50% Rest (each hour)	89	85	82
25% Work, 75% Rest (each hour)	90	88	86

Notes:

1. Heat stress monitoring will be performed when the ambient air temperature exceeds 70°F
2. Work-Rest regimen assumes that workers are acclimatized to work location

**Table 6
Task Specific PPE Guidance**

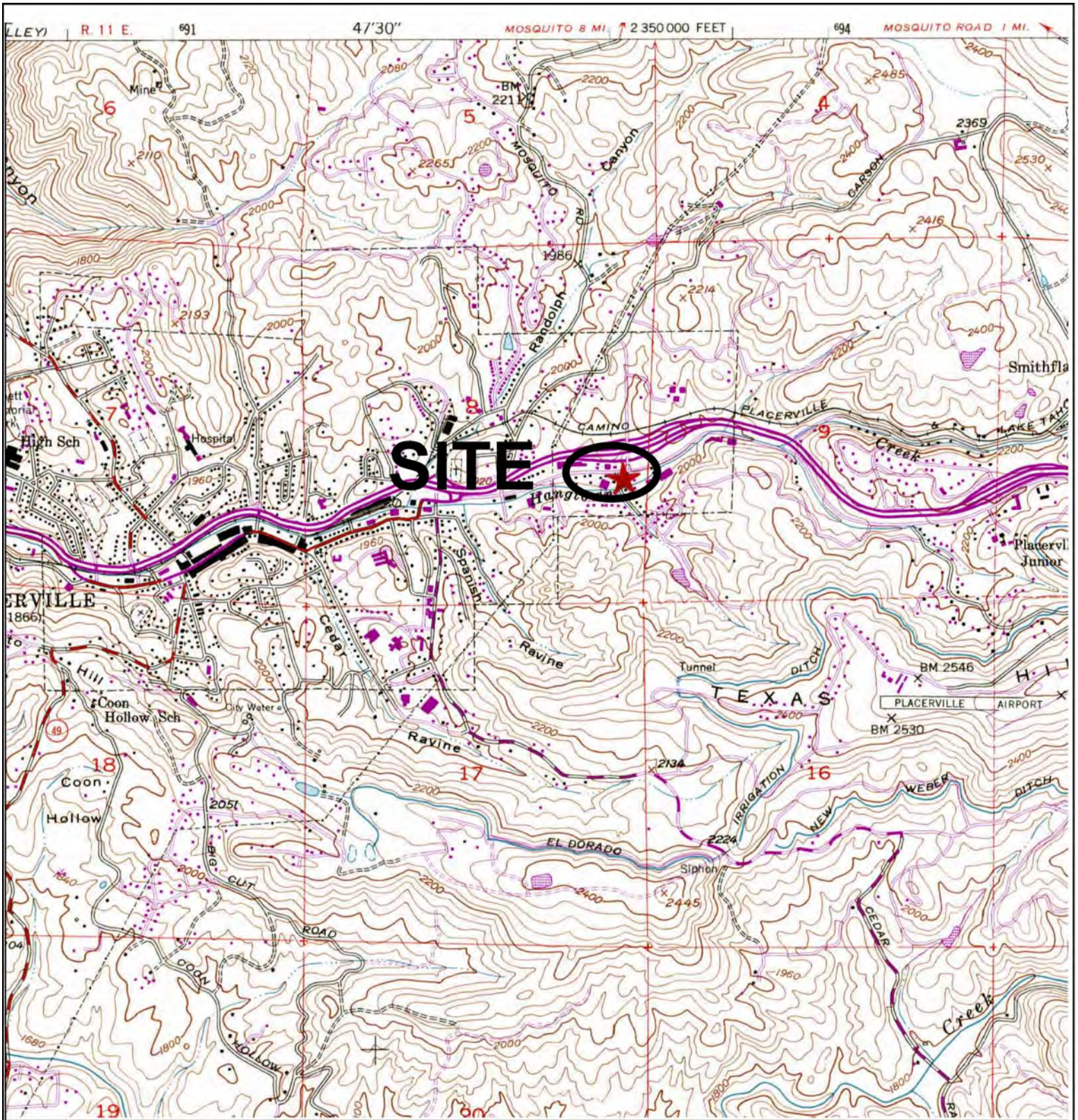
Activities to be performed:			
<input checked="" type="checkbox"/> Site Reconnaissance	<input checked="" type="checkbox"/> Trenching/Grading	<input checked="" type="checkbox"/> Monitoring	<input checked="" type="checkbox"/> Reconstruction Activities
<input checked="" type="checkbox"/> Utility Clearance	<input checked="" type="checkbox"/> Waste Management	<input checked="" type="checkbox"/> Night Work	<input checked="" type="checkbox"/> Soil Sampling
<input type="checkbox"/> Drum Sampling	<input checked="" type="checkbox"/> Demolition Activities	<input checked="" type="checkbox"/> Trench Dewatering	<input type="checkbox"/> Other: _____
Site Reconnaissance/Utility Clearance/Utility Construction (Non HAZWOPER-defined Work Area) PPE Level: Level D			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input type="checkbox"/> Polycoated Tyvek@	<input type="checkbox"/> Safety Goggles/Face Shield	<input checked="" type="checkbox"/> Safety Glasses
<input type="checkbox"/> Nomex© Coveralls	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Trench Dewatering (Non HAZWOPER-defined Work Area) PPE Level: Modified Level D			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input type="checkbox"/> Polycoated Tyvek@	<input type="checkbox"/> Safety Goggles/Face Shield	<input checked="" type="checkbox"/> Safety Glasses
<input type="checkbox"/> Nomex© Coveralls	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Sewer line Removal and Construction/Trench Dewatering/Excavated Soil Management (HAZWOPER-defined, Lead Mitigation or Asbestos Related Work Area): PPE Level: Level C			
<input checked="" type="checkbox"/> Typical Work Uniform	<input checked="" type="checkbox"/> Outer Protective Gloves	<input type="checkbox"/> Tyvek@ Coveralls	<input checked="" type="checkbox"/> Safety-Toe Boots
<input checked="" type="checkbox"/> Hard Hats	<input checked="" type="checkbox"/> Polycoated Tyvek@	<input checked="" type="checkbox"/> Safety Goggles/Face Shield	<input type="checkbox"/> Safety Glasses
<input checked="" type="checkbox"/> Air purifying Respirator	<input checked="" type="checkbox"/> Inner Protective Gloves	<input checked="" type="checkbox"/> Hearing Protection	
Other H&S considerations:	<input checked="" type="checkbox"/> Apron during power washing for decontamination of equipment.		

**Table 7
Emergency Telephone Numbers**

Agency or Facility	Location of agency or Facility	Point of Contact	Primary & Secondary Phone Numbers
Police	Local Police Department	NONE	1°- 911 2°-
Fire Department & HAZMAT	Local Fire Department	El Dorado County Fire Protection Dist.	1°- 911 2°- (530) 644-9630
Hospital (primary)	Marshall Hospital 941 Spring St. Placerville, CA 95667	Emergency Department	1°- (530) 626-7661 2°- 911
Hospital/Clinic (secondary)	Marshall Medical Center 1100 Marshall Way Placerville, CA 95667	Emergency Department	1°- (530) 622-1441 2°- 911
Ambulance			1°- 911
Cal/OSHA	Region 2 Sacramento District Office	Enforcement Division	1°- (916) 263-2800
Contractor Management Team Personnel			
Contractor Corporate Health and Safety Officer	Office		
Contractor Project Manager	Office/Field		
Contractor Site Superintendent	Field		
Contractor Site Foreman/SSO (Competent Person)	Field		
Contractor Hazardous Materials	Office Field		
Health and Safety Project Manager	Office Field		
Health and Safety Consultant	Office Field		
Project Engineer	Office Field		
Project Geologist	Office Field		

* Primary project contacts for Contractor Project Management Team

FIGURES



SCALE: 1:24,000

USGS
"PLACERVILLE" CA
QUADRANGLE 7.5 MINUTE
SERIES (TOPOGRAPHIC)
DATE 1973

Taber
 Since 1954

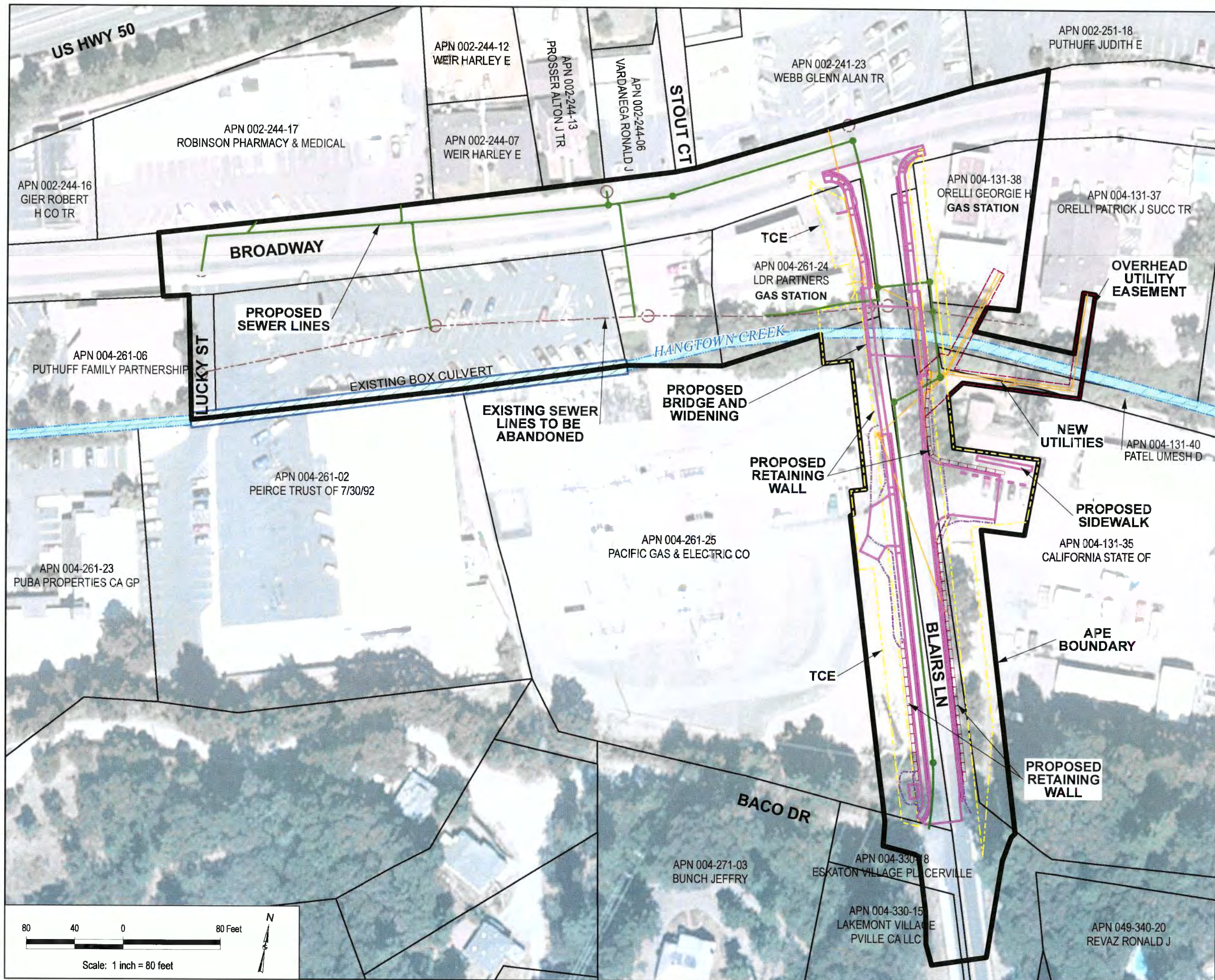
Taber Consultants
 Engineers and Geologists
 3911 West Capitol Avenue
 West Sacramento, CA 95691-2116
 916.371.1690 Fax 916.371.7265
 www.taberconsultants.com

Quincy Engineering, Inc.
 Blairs Lane Bridge at Hangtown Creek
 El Dorado County, California
 Existing Bridge 25C0012
 Vicinity Map

1P2/304/175

November 2014

Figure 1



**BLAIRS LANE BRIDGE (25C-0012)
REPLACEMENT PROJECT
AT HANGTOWN CREEK
EL DORADO COUNTY,
CALIFORNIA**

Federal Aid Project No. BRLS-5925(030)

AREA OF POTENTIAL EFFECTS MAP

ED 2/26/14
Erin Dwyer Date
PQS/PI - Preshistoric Archaeology
Environmental Management M1, Caltrans D3

BR 2/26/14
Local Assistance Project Engineer Date
Office of Local Assistance, Caltrans D3

**ARCHAEOLOGICAL-
Prehistoric and Historic**
The Area of Potential Effects includes all existing (and proposed)
Right of Way and temporary construction easements.

- Area of Potential Effects (APE)
- Hangtown Creek
- Existing Box Culvert
- GIS Parcel boundaries
- Road and Bridge Improvements
- Proposed Sewer Alignment
- Proposed New Service Utilities
- Proposed Retaining Wall
- Limits of Grading
- Temporary Construction Easement (TCE)
- Overhead Utility Easement
- Existing Sewer Line

Proposed: 95% Submittal Construction Plans on Blair Lane For
Hangtown Creek Bridge Replacement Project, CAD: p196rhv_ACAD.dwg
by Quincy Engineering (17 December 2013);
Microsoft Imagery, ESRI ArcGIS Basemap Service Layer
Parcels and Roads: El Dorado County, GIS datasets (Dec 2011)
Aerial Photograph: 14 August 2011, UC-G, US-CA-Placerville,
Note: Aerial is not orthorectified.



A 3144 Blairs Ln, Placerville, CA 95667

B 941 Spring St, Placerville, CA 95667

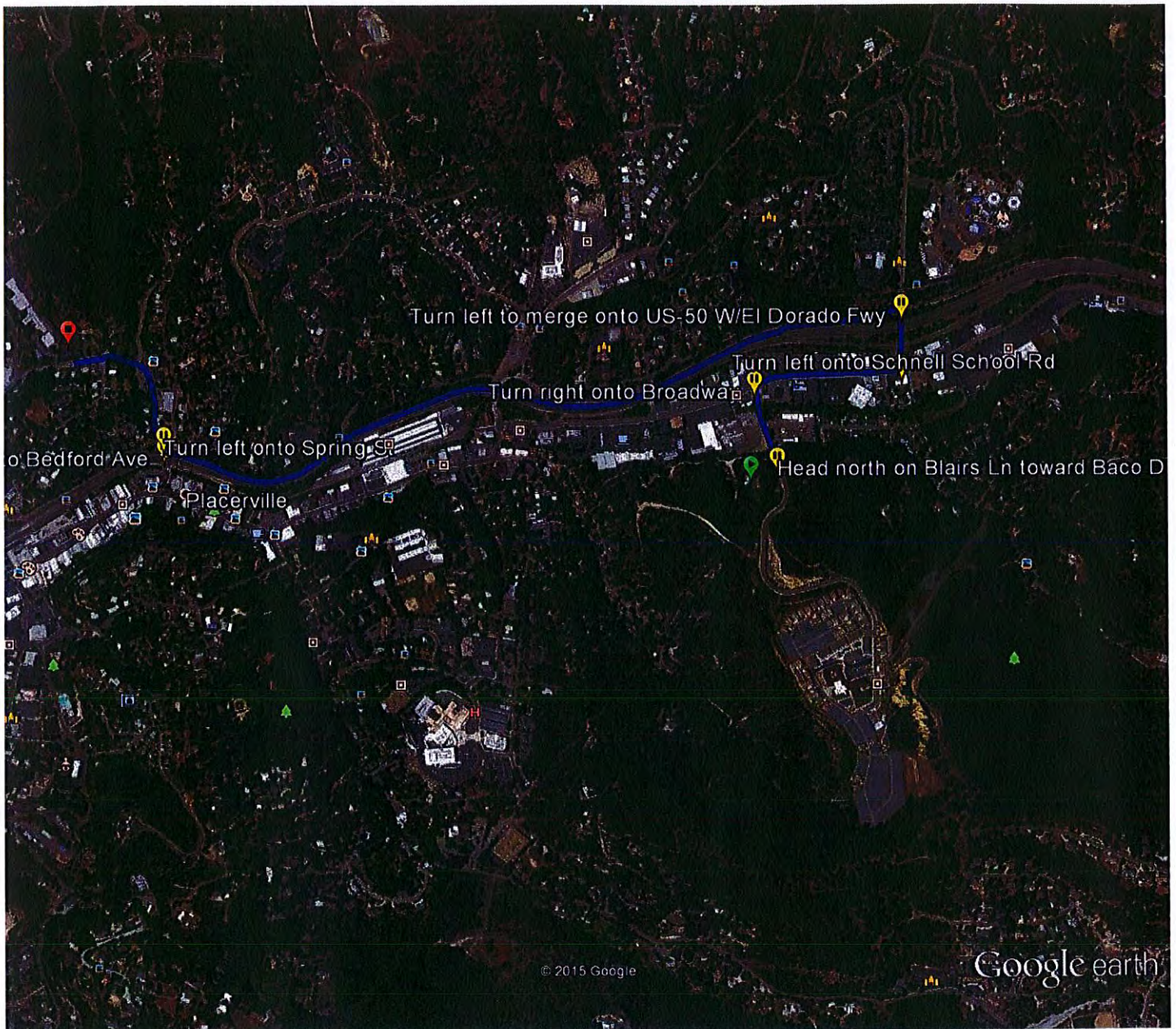
Suggested routes

El Dorado Fwy	1.8 miles, 4 min
Broadway and Main St	1.3 miles, 5 min
Broadway and Main St	1.3 miles, 28 min

A 3144 Blairs Ln

1. Head **north** on **Blairs Ln** toward **Baco Dr**
0.1 mi
2. Turn **right** onto **Broadway**
0.2 mi
3. Turn **left** onto **Schnell School Rd**
449 ft
4. Turn **left** to merge onto **US-50 W/El Dorado Fwy**
1.1 mi
5. Turn **right** onto **Bedford Ave**
82 ft
6. Turn **left** onto **Spring St**
0.2 mi

B 941 Spring St



Google earth





A 3144 Blairs Ln, Placerville, CA 95667

B 1100 Marshall Way, Placerville, CA 95667

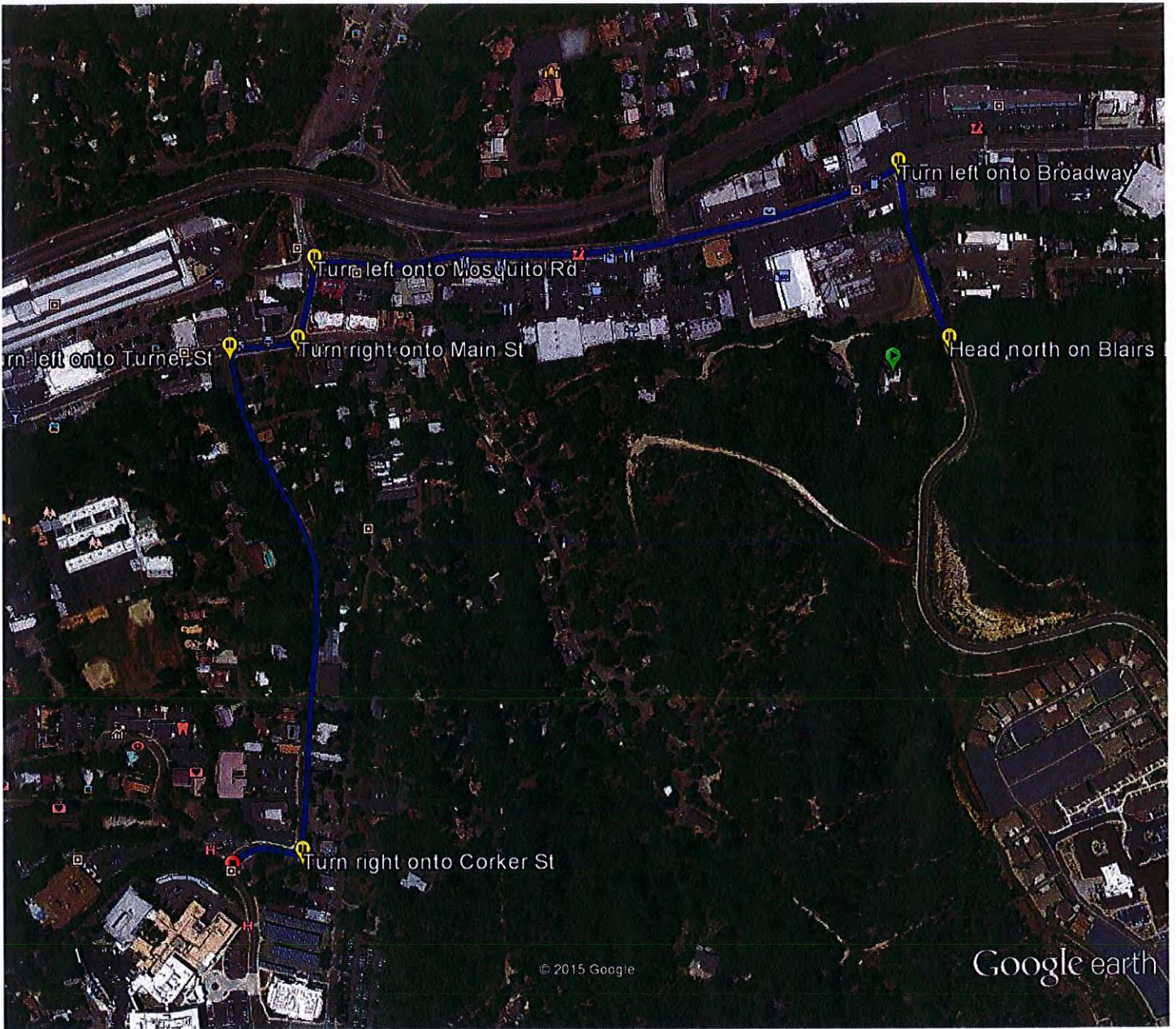
Broadway and Turner St

1.0 mile, 20 min

A3144 Blairs Ln

1. **Head north** on **Blairs Ln** toward **Baco Dr**
0.1 mi
2. **Turn left** onto **Broadway**
0.4 mi
3. **Turn left** onto **Mosquito Rd**
272 ft
4. **Turn right** onto **Main St**
233 ft
5. **Turn left** onto **Turner St**
0.3 mi
6. **Turn right** onto **Corker St**
262 ft

B1100 Marshall Way



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Google earth

Google earth



Appendix A

Health and Safety Forms

Supervisor's Report of Incident

This is an official document to be initiated by the injured employee's supervisor. Please answer all questions completely. This report must be forwarded to the Health and Safety Section office within 24 hours of the injury.

Injured's name		Soc Sec. No.	Sex	Birthdate
Home address		City	State	Zip
Job Title	Section	Hire date	Hourly wage	Phone

Supervisor

Date of incident	Time	Time reported	To whom
Client name	Client address		Time shift began
Exact location of incident		Did injured leave work?	When?
Has injured returned to work? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did employee miss a regularly scheduled shift? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Doctor/hospital name		Address	
Witness name		Statements attached <input type="checkbox"/> Yes <input type="checkbox"/> No	
Nature of injury		Body part	
Medical attention			
Job assignment at time of accident			
Describe incident			
What caused the accident?			
What corrective action has been taken to prevent recurrence?			
Supervisor/foreman Print name		Signature	Date

Supervisor's Report of Incident

Manager

Comments on incident and corrective action		
Manager Print name	Signature	Date

Health and Safety

Concur with action taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Remarks:		
OSHA classification <input type="checkbox"/> Incident only <input type="checkbox"/> First aid <input type="checkbox"/> No lost work days <input type="checkbox"/> Lost work days <input type="checkbox"/> Restricted activity <input type="checkbox"/> fatality		
Days away from work	Days of restricted work	Total days charged
HS Professional Print name	Signature	Date

Appendix B

General Safety Rules and Safe Working Practices

GENERAL SAFETY RULES FOR CONTRACTORS

INTRODUCTION

The safety rules and requirements contained in this attachment have been written for the guidance of Contractors conducting general demolition and construction activities. These activities could disturb hazardous materials that could impact workers, the environment and the public. Contractors are responsible for implementing and monitoring provisions of the Project Site Safety and Health Plan (PSSHP). This PSSHP Appendix prescribes general requirements and regulatory references only. Where revisions to such documents provide more stringent guidelines than established here, the new guidelines will be followed. Additional specific rules may be necessary to ensure the safety of workers on a particular job or work task. The Contractor will be expected to establish such additional rules and procedures as may be necessary to conduct a safe operation and comply with all requirements in the PSSHP, regulatory, and insurance requirements and those of the client's.

Contractors are expected to brief their employees on the requirements in the PSSHP and this PSSHP Appendix and enforce these rules with their employees. The SSO may stop or suspend work at any time the Contractor fails to comply with the Project Site Safety and Health Plan.

The prime Contractor is responsible for informing its subcontractors of the requirements in the PSSHP (including this appendix), for directing and supervising work of subcontractors, and for assuring that its subcontractors adhere to the requirements herein. The Owner or the Owner's representative may request the Contractor to provide proof of its subcontractor's adherence to all rules and regulations and will prohibit access to the job sites under this contract for those Contractors not in compliance.

The Contractor may engage the services of a health and safety and/or industrial hygiene (HS/IH) consultant to assist the Contractor in implementing the requirements of this PSSHP. In order to assist the Contractor in following these instructions, the HS/IH consultant's representative may be assigned to the Contractor to act as his agent in health and safety matters relative to work activities at the project site¹. Under no circumstances shall any work be started until the HS/IH representative has been contacted, a job orientation has been conducted by the HS/IH representative, and all permits, insurance, PSSHP/HS/IH, client, and regulatory pre job requirements have been met.

The HS/IH representative is authorized to stop any work which he/she may consider hazardous to HS/IH personnel or equipment or Contractor personnel. This authority may be delegated to appropriate individuals.

¹ The HS/IH representative could be a consultant engaged by the Contractor or the designated Site Safety Officer (SSO) identified in the plan. The SSO will be a Contractor employee.

GENERAL SAFETY RULES FOR CONTRACTORS

General Safety Rules and Requirements

Accident Reporting

All accidents (personal and property damage) shall be reported orally to the HS/IH Representative as soon as emergency conditions no longer exist. A written report shall follow within 7 days after emergency conditions are resolved.

Alcohol, Firearms, etc.

Alcoholic beverages, illegal drugs or narcotics, or guns and ammunition are not permitted on HS/IH property or job sites. Personnel under the influence of alcohol or drugs shall not be allowed on the property or job sites.

Approvals

The Contractor shall be required to obtain pertinent work permits or authorization and approval from applicable regulatory agencies before:

- Working on existing pipelines or equipment
- Entering tanks or closed vessels
- Entering any designated high-hazard areas
- Using torches, electrodes, electronic motors, forges, soldering irons, any open flames, or any device which could produce sparks or ignition source
- Closing walkways, roads, or restricting traffic
- Starting excavations
- Removing tanks from excavations
- Backfilling excavations
- Using utilities such as steam, water, compressed air, or electricity
- Sandblasting, spray painting, or guniting
- Storing flammable materials such as gasoline, oil, paints, oxygen cylinders, etc.
- Walking or working on roofs of buildings or equipment
- Drilling, boring, preparing test pits, or using geophysical equipment or any other exploratory equipment requiring penetration of surfaces
- Operating cranes or similar equipment near overhead power lines or pipelines
- Opening cutting through firewalls or berms
- Fueling or repairing Contractor operating equipment on HS/IH property or job sites.

Security

For security reasons, entrance to and exit of job sites is restricted to those areas designated as the Contractor's work area. Where the Contractor's work area is defined in the project specifications, the Contractor shall not work outside the defined work area without first obtaining approval from the Owner or the Owners designated representative. The Contractor will work within the established laydown or contractor support areas specified in the contract documents.

GENERAL SAFETY RULES FOR CONTRACTORS

Speed Limits

All vehicles must observe a maximum speed limit of 10 mph unless otherwise posted.

Vehicle Safety

- All vehicles must be parked in authorized areas only.
- There will be no passing of moving vehicles at job sites where there are narrow roads and short-sight distances.
- Vehicles will only be operated by personnel with valid licenses and good driving records.
- Vehicles shall have all required inspection and operating permits.
- Seat belts shall be used.
- Construction equipment will have audible alarms that are activated automatically when the equipment is operated in reverse or backing up.
- Vehicles and equipment operating at airport sites shall be equipped with necessary flagging, beacons or other safety equipment required by the airport, airport authority or Owner.

Safe Work Practices

Communication

Communication and coordination is vital to prevent accidents on construction sites. Every worker must be aware of equipment operating in his vicinity.

Confined Space Entry

Confined spaces include storage tanks, bins, sewers, in-ground vaults, degreasers, boilers, vessels, tunnels, manholes, pits, etc. These enclosures, because of inadequate ventilation and/or the introduction of hazardous gases and vapors, may present conditions that could produce asphyxiation or injury.

Before entering a confined space, Contractor must notify the HS/IH Representative of intent to enter. The HS/IH Representative will review with the Contractor the safe entry requirements which include:

Removal of Contents. Before entering, confined spaces should be as clean and free of hazardous materials and chemicals as possible. Where appropriate, confined spaces may be purged using water or other suitable means. Purging with hazardous solvents should be avoided where possible.

Isolation. All input lines which discharge into the confined space shall be disconnected and capped or isolated. The use of a single in-line valve shut-off as the sole means of isolating the confined space from any input lines is prohibited.

However, the use of a double in-line valving arrangement with a vent or drain in between the two

GENERAL SAFETY RULES FOR CONTRACTORS

valves is acceptable provided that dangerous air contaminants are not introduced by such venting. Isolation valves shall be locked closed, vent or drain valves shall be locked open, and the key shall be kept by that person performing the job.

Electrical Lockout. Where electrical devices located within the confined space {motors, switches, etc.) are to be repaired or worked on, the line-disconnect switches supplying the power must be tagged and locked in the "OFF" position. The lock key is to be kept by the person performing the job, and only this person is authorized to unlock the switch and remove the tag upon completion of the job. Where more than one person is working on the line, each must place a lock on the switch and retain his own key.

Where there are multiple sources of power to an electrical device that supplies power to the device through an automatic or manual bus transfer switch, lockout devices must be placed on the breaker nearest to the electrical device that is to be isolated, and an electrician shall test the power supply lines to ensure that power has been secured.

Line-disconnect switches supplying power to any mechanical apparatus in the confined space (mixers, conveyors, etc.) must also be tagged and locked in the "OFF" position. This must be done for any entry, even though work will not be performed on the apparatus itself.

Securing of Covers. All manhole and cleanout covers shall be removed and the openings maintained clear of any obstructions. When hinged doors or lids are provided, they shall be secured so they cannot close. See Excavations and Trenches for guarding requirements.

Testing Atmosphere. A qualified person (NIOSH Publication No. 80-106) using only equipment approved and tagged for Class 1, Division 1 locations shall make appropriate tests of the atmosphere in the confined space and place a record of the test results at the entrance to the confined space. Testing shall ensure the following:

- Combustible gas and vapor concentrations do not exceed 10 percent of the lower explosive limit
- Oxygen content is no less than 20 percent and no greater than 25 percent
- Appropriate respiratory protective equipment and other appropriate personal protective devices have been provided for all employees when concentrations of toxic materials exceed established threshold limit values (TLVs).

Continuous Monitoring. If the nature of the work to be performed introduces, or has the potential to introduce, harmful air contaminants, continuous monitoring of the atmosphere and/or the oxygen content drops below 20 percent, all personnel shall evacuate the confined space immediately.

Ventilation. All confined spaces found to be unsafe must be ventilated by means of mechanical exhaust systems arranged so as to avoid recirculating contaminated air. The Contractor must contact the HS/IH Representative to obtain approval not to ventilate. Personnel shall be evacuated immediately in the event of failure of the mechanical ventilation system. The confined space shall be retested prior to reentry following ventilation system repair.

GENERAL SAFETY RULES FOR CONTRACTORS

Buddy System. At least two workers shall remain outside the confined space. One standby worker shall be stationed just outside the access opening of the any confined space while such space is occupied. This person shall:

- Maintain continuous awareness of the activities and well-being of the occupant in the confined space
- Be able to maintain communication at all times
- Be alert and fully capable of quickly summoning help
- Be physically able and equipped to assist in the rescue of an occupant from a confined space under emergency conditions.

Safety Gear and Personal Protective Equipment. All Contractor employees must be instructed in accordance with OSHA regulations regarding safety gear and personal protective clothing, hard hats, respirators, lifelines, and harnesses. Such instructions shall be received and documented before entering any confined space.

Confined Space Entry Permit. Each subcontractor engaging in the entry of a confined space shall utilize an entry permit meeting the requirements of 29 CFR 1910.146. The permit shall be approved and signed by the HS/IH or the Contractor's SSO prior to initiation of the entry procedure.

Compressed Gas Cylinders

Valve protection caps. Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored.

Cylinder valves. Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved.

Compressed gas cylinders. Compressed gas cylinders shall be secured against rolling or tipping (roped or chained) at all times, except when cylinders are actually being hoisted or carried.

Gas regulators. Gas regulators shall be in proper working order while in use.

Leaks. If a leak develops in a gas cylinder, after donning appropriate safety equipment, immediately remove it to a safe location. If the leak cannot be corrected, report it to the HS/IH Representative.

Identification of Contents. Cylinders should be permanently marked or stenciled to identify the type of gas in the cylinder.

Breathing Air. All compressed breathing air shall meet OSHA specifications for breathing air quality. All compressed breathing air cylinders shall have their contents checked at the job site for correct oxygen concentration and rejected for breathing air if the oxygen concentration is not 20.7% \pm 0.2%.

Oil and oily rags. Oil and oily rags shall be kept away from oxygen equipment.

GENERAL SAFETY RULES FOR CONTRACTORS

Cranes, Hoists, and Other Heavy Equipment

Contractor personnel will not be permitted to use hoists and powered apparatus belonging to HS/IH unless approval is obtained in each instance from the HS/IH Representative.

ROPs. Roll over protection shall be used when conditions or regulations call for such use.

Cutting or Welding

Hot Work/Welding/Burning. "Hot Work" authorization must be obtained from the HS/IH Representative before any welding, cutting, or other "hot work" is done. "Hot work" permits and results of tests are to be submitted to the HS/IH Representative at the completion of the job or at the end of each workday.

Welding Flash. Noncombustible or flame-proof shields or screens must be provided to protect welder or others who might be harmed by direct rays or arc.

Personal Protective Equipment. Goggles, gloves, aprons, and other personal protective equipment appropriate to the job shall be used.

High Fire-Hazard Areas

Contractor personnel are responsible to see that a fire watch is maintained and all adjacent combustible materials are protected or removed as designated by the HS/IH Representative. Contractor shall provide his own calibrated combustible gas meter or other instruments for checking areas before hot work.

Documentation of calibration shall be submitted to the HS/IH Representative for review by the Contractors SSO.

Contractor is responsible for all testing and monitoring required by applicable regulations and to assure work place safety.

HS/IH representative and the Contractors SSO shall have the right, not the responsibility, to perform additional testing. Testing by the HS/IH representative shall not be in lieu of Contractor's requirements.

In the event of a bona fide emergency, such as emergency spill response work, and where the Contractor warrants that he cannot conduct the required testing, the HS/IH representative may upon written agreement then conduct all tests necessary to assure safety and regulatory compliance. The Contractor shall cosign the "hot work" permit form when tests are conducted by HS/IH representative.

Contractor shall provide his own fire extinguisher(s) for welding and cutting, as designated by the HS/IH Representative.

GENERAL SAFETY RULES FOR CONTRACTORS

Electrical Safety

Grounding. The noncurrent-carrying metal parts of fixed, portable, or plug-connected equipment shall be grounded. Electrical connections shall include a ground-fault interrupter system. Ground wires shall be tested with an electrical resistance meter to assure conductivity as often as necessary to assure safety. Portable tools and appliances protected by an approved system of double insulation need not be grounded.

Extension Cords. Extension Cords shall be the three-wire type for grounded tools (two-wire is permissible for double-insulated tools) and shall be protected from damage; do not fasten with staples or extend across an aisle way or walkway. Worn or frayed cords shall not be used. Cords shall not be run through doorways where the door could cut or damage them.

Light Bulbs. Exposed bulbs on temporary lights shall be guarded to prevent accidental contact, except where bulbs are deeply recessed in the reflector. Temporary lights shall not be suspended by their electric cords unless designed for this use. Explosion-proof bulb covers shall be used when contact with flammable vapors or gases is likely and shall meet Class I, Division I requirements.

Electrical Receptacles. Receptacles for attachment plugs shall be of the approved, dead-front, concealed contact type. Where different voltages, frequencies, or types of current are supplied, receptacles shall be of such design that attachment plugs are not interchangeable.

Wet Environments. Work done in wet environments shall require ground fault interrupters and water-tight connectors.

Emergency Equipment

The Contractor's fire equipment is not to be moved, relocated, or otherwise rendered inaccessible unless specific permission is granted in each case by the HS/IH Representative or SSO.

Self-contained breathing apparatus, first aid equipment, fire blankets, stretchers, eyewash fountains, and deluge showers are not to be moved, relocated, or blocked without the express permission of the SSO or the HS/IH representative.

Excavations and Trenches

Permits. Before any excavation work begins, all required permits shall be obtained.

Underground Service Alert. Before any excavation work begins, the existence and location of underground pipes, electrical conductors, etc., must be determined by Contractor who shall in turn notify the HS/IH representative. Contractor shall contact USA or other designated underground utility location body to mark known underground utilities within the planned excavation limits. Contractor shall contact USA at least 48 hours prior to start of work. Contractor shall obtain a USA "Ticket Number" for all excavation work to document that USA was contacted. Where discrepancy between marked and as-built drawings occurs that cannot be reconciled, Contractor shall engage the services of an independent utility locating service or shall pothole the location to clear the discrepancy.

GENERAL SAFETY RULES FOR CONTRACTORS

Cave In Protection. The walls and spaces of all excavations and trenches (which will be entered by people) more than 4 feet deep shall be guarded by shoring, sloping of the ground, or some other equivalent means, in accordance with Cal/OSHA regulations. Contractor shall have a designated excavation “competent person” onsite while excavation activities are being performed. The competent person shall inspect all active excavations at the start of work and periodically during the conduct of the excavation

Daily Inspections. Daily inspections of excavations shall be made by the Contractor. If there is evidence of possible cave-in or slide, all work in the excavation shall cease until the necessary safeguards have been taken.

Egress. Trenches more than 4 feet deep shall have ladders or steps located so as to require 10 feet or less of lateral travel between means of access.

Backfill. All trenches shall be backfilled as soon as practical after work is completed and all associated equipment removed.

Housekeeping. All Contractor equipment, such as pipe, rebar, etc., shall be kept out of traffic lanes and access ways. Equipment shall be stored in a manner which ensures the safety of HS/IH and Contractor employees at all times.

Fall In Protection. All trenches shall be completely guarded on all sides. Standard guardrails are preferred. However, when wooden or metal barricades are used for trench guarding, they shall be spaced no further apart than 20 feet, and at least two feet from the edge of the trench. Such barricades shall be at least 36 inches high when erected.

Barricades. Battery-lighted barricades shall be used as follows:

- A minimum of two battery-lighted barricades shall be used at corners, one on each side of the barricade.
- At least one battery-lighted barricade shall be used where vehicular traffic approaches the trench at right angles.
- Where trenches parallel roadway, distance between battery-lighted barricades shall not exceed 40 feet unless this requirement conflicts with Item (I), above, and additional units are required.
- All battery-lighted units shall be serviced as necessary to ensure equipment is operating.
- Caution tape shall be stretched securely between barricades. The caution tape shall be at least 314-inch-wide and shall be yellow or yellow and black and may have the words "CAUTION - DO NOT ENTER"
- Barricaded sections immediately adjacent to where pedestrians cross trenches shall be arranged to direct pedestrians to the walkway or bridge.

Encroachment. Use of other trench excavating equipment, or storage of equipment or supplies within a distance equal to the depth of the trench, will not be permitted without approval by the HS/IH Representative.

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Bridges. All pedestrian bridges shall be of sufficient strength to prevent no greater vertical deflection than one-half inch when a 250-pound weight is applied to the center of the bridge.

- Handrails shall consist of intermediate and top rails on both sides of the bridge. The top rail shall be between 42 and 45 inches above the walking surface and be capable of withstanding a lateral force of 200 pounds against the center of the top rail.
- All surfaces which a person could reasonably contact should be sufficiently free of splinters, nails, or protrusions which may cause injury.
- All bridges intended for vehicular traffic shall be constructed to withstand twice the load of the heaviest vehicle anticipated.

Earth Grading Activity

Vest. All persons within an area where earthmoving are operating shall wear a safety vest or jacket at all times. Vests may be red, orange, or day-glo green in color, but bright or fluorescent orange is preferred. Significantly faded or damaged vest must be replaced.

Communication. Anytime a test pit is to be excavated, the technician shall notify the grading contractor's **authorized** representative for that area. That individual may be acting in the capacity as a dump man, operator, or supervisor from an independent vehicle. Advise that representative of the test pit location and request their cooperation to promote safety during the test period. This should include their advising those under their supervision of your existence in the grading area. Make a notation on your records of the name of the individual with whom you spoke so that the communication is documented.

- Provide notice to the grading contractor
- Identify location of test pit
- Request the cooperation through the completion of the tests and document accordingly.
- A flag must be affixed to any vehicle driving in an earth grading activity area and hazard warning lights shall be operated.

Flags. Every over-the-road vehicle operating in the area of earthmoving equipment activity must carry a flag. The flag must be at least 300 square inches in area with no dimension less than 12 inches. Flags must be high visibility red, orange, day-glo green and mounted approximately 12 feet above grade level.

Hazard Warning Lights. Every over-the-road vehicle operating in the area of earthmoving equipment activity must operate the hazard warning flashers at all times.

Rotating or Flashing Beacon. All vehicles stationary in the grading area shall use a rotating or flashing amber beacon or strobe light on the top of the cab of the vehicle during all field testing.

Orientation of Test Pits. The technician is responsible for selecting a test pit location. Of paramount concern is the technician's safety. The test pit should be located behind the established pattern of grading equipment and outside any existing patterns. The orientation of the pit should include the use of the technician's vehicle as a barrier to potential oncoming traffic. The waste pile created from the excavation of the test pit should be opposite the vehicle so that the test pit is

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positioned between the vehicle and the waste pile. A flag shall be placed immediately on top of the waste (spoil) pile, satisfying the same requirements as the vehicle flag.

Zone of Non-Encroachment. The location of the test pit must be selected so that no earthmoving equipment will approach closer than 50 feet from the center of the test pit. This is not only for the technician's safety, but to ensure the integrity of the test. Excessive vibration from the operation of earthmoving equipment operating too closely may impair the accuracy or spoil the test results.

Completion of Tests. Immediately upon completion of tests, record the data and withdraw flags and vehicles outside the grading area to record notes and do calculations.

Fire Prevention

The HS/IH Representative, or his designee, is authorized to correct any condition which he may consider a fire hazard. In any emergency, the site personnel are authorized to act directly with Contractor's Foreman in regard to fire hazards without waiting for the HS/IH Representative.

Floor Openings

Openings shall be guarded by substantial barriers, railings, and/or covering materials strong enough to sustain twice the load of pedestrians or vehicular traffic. Barriers will be supplied by the Contractor. Where a danger of falling exists for personnel, elevated floor areas must be provided with guardrails. In addition, toe boards shall be provided when the possibility of falling objects striking personnel below exists.

High-Hazard Areas

Although this list may not be all inclusive, there are certain areas and operations at HS/IH facilities and job sites where extra precautions must be taken because of the nature of the hazards. When starting up any operation, the Contractor is required to check with the HS/IH Representative for a review of the safety and health rules which apply before entering any of the following areas:

- Confined spaces (tanks, manholes, vaults, pits, etc.)
- Laboratories
- Chemical storage and disposal areas.

The contractor is also required to check with the HS/IH Representative before any work is done on a flammable gas or solvent line; a tank or vessel that presently contains, or has contained, a flammable material; and before making an excavation anywhere on the site.

Housekeeping

Material should be carefully stacked and located so that it does not block aisles, doors, self-contained breathing apparatus, fire extinguishers, fire blankets, stretchers, emergency eyewash fountains, emergency safety showers, fixed ladders, stairways, or electrical breaker panels.

- Nails protruding from boards must be removed or bent over.

GENERAL SAFETY RULES FOR CONTRACTORS

- All work areas shall be kept clear of *form* and scrap lumber and all other debris.
- Combustible scrap, waste materials, and debris shall be removed at regular and frequent intervals.
- Containers shall be provided for the collection and separation of refuse by type. Covers shall be provided on containers used for flammable, combustible, or harmful substances.
- Overhead storage of debris, tools, equipment, pipes, etc., is prohibited.
- At the end of each work day, Contractor shall provide for pick up of all debris such as paper, rags, empty cans and bottles, etc.

Ladders

The use of ladders with broken or missing rungs or steps, broken or split handrails, or with other faulty or defective construction is prohibited.

- Ladders must not be placed adjacent to a door unless the door is locked or guarded.
- Metal ladders shall not be used for electrical work.
- Tie off top of ladder to structure.

Medical Service and First Aid

Emergency Medical Service. Preplanned emergency medical service shall be provided as designated by Contractor and approved by the HS/IH Representative.

First Aid Kit. Each Contractor shall provide a first aid kit for his employees which meets minimum OSHA requirements.

Mobile Cranes

Mobile cranes, including portable crane derricks, power shovels, or similar equipment, shall not be operated within ten feet of overhead electrical power lines.

Overhead Work

No overhead work shall be performed when, as a result of that work, the possibility of a falling object striking any person exists. Do not work above any person at any time.

Personal Protective Clothing and Equipment

In certain construction and maintenance operations, personal protective equipment such as safety glasses, chemical goggles, respirators, hard hats, and protective clothing is required. The type of protective equipment to be worn will be determined by the degree of exposure to the potential hazard. There will be very few occasions when hard hats and eye protection will not be required at HS/IH job sites. When in doubt of the safety measures to be observed, Contractor shall contact the HS/IH Health and Safety Section. This shall not, however, relieve Contractor of his responsibilities to determine appropriate protection.

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Eye protection is required when engaging in such operations as the following:

- Drilling, chipping, grinding, wire brushing
- Handling caustics and acids
- Breaking bricks or concrete
- Hammering chisels, drift pins, etc.
- Burning or welding
- Other situations which create a possible eye hazard, e.g., chemical environments.

Photographs

Only HS/IH, Contractor's SSO and Contractor's Superintendent are permitted to carry cameras or take pictures. If progress or finished construction photographs are desired, request for same should be made through the Contractor's Superintendent.

Power Tools

Power and Air-Actuated Tools. Gasoline-powered, electric, or air-actuated tools are not to be used on job sites without prior approval from the SSO unless specified in the Contractor's IIPP. To obtain approval, Contractor must contact the HS/IH Representative and/or SSO.

Explosive-Actuated Tools. Explosive-actuated (powder-actuated) fastening tools shall meet the design requirements in "American National Standard Safety Requirements for Explosive-Actuated Fastening Tools" (ANSI A10.3-1970). A tool which does not meet these design standards cannot be used. Power tools shall never be left unattended in a place where they would be available to unauthorized persons. Power tools shall not be used in explosive or flammable atmospheres.

Fall Protection

Appropriate fall protection, such as safety harness and lanyard, must be worn when worker is exposed to falling more than 6 feet. Lanyard or lifeline must be tied off to appropriate structure capable of supporting five times the weight of the person (nominal 1000 pounds).

Appropriate fall protection, such as safety harness and lanyard, must be worn when working above eight feet on straight or extension ladders when the work involves pushing, pulling, or action which may dislodge the person from the ladder.

Safety harnesses are also required on swinging or portable scaffolds when handrails and toeboards are not provided (six feet or more above ground or floor level).

Safety harnesses and lifelines (including extraction devices for top entry spaces) are required on all work performed in confined spaces where an oxygen deficiency or toxic vapors may exist.

All lifelines shall be safety secured to stable and adequate supports.

Safety harnesses and lifelines must be worn on rooftops where there are no guardrails and where the work is within ten feet of the edge.

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Salamanders

"Hot work" authorization must be obtained from the HS/IH representative or SSO before using a salamander.

Salamanders must be a Factory Mutual or Underwriters Laboratories-approved type.

Position salamanders away from all combustible material to reduce the possibility of uncontrolled fire.

Guard salamanders from traffic to prevent them from being overturned.

Scaffolds

All scaffolds, whether fabricated on site, purchased, or rented, shall conform to the specifications found in ANSI A10.8-1988, Safety Requirements for Scaffolding. Rolling scaffolds shall maintain a three-to-one height-to-base ratio.

The footing or anchorage for a scaffold shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

Unstable objects, such as barrels, boxes, loose bricks, or concrete blocks, shall not be used to support scaffolds or planks. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

Scaffolds and their components shall be capable of supporting at least four times the maximum intended load without failure.

Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor.

Scaffolds measuring four to ten feet in height, and having a horizontal dimension of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform.

Wire, synthetic, or fiber rope used for suspended scaffolds shall be capable of supporting at least six times the rated load.

No riveting, welding, burning, or open flame work shall be performed on any staging suspended by means of fiber or synthetic rope.

Tested fiber or approved synthetic ropes shall be used for or near any work involving the use of corrosive substances.

All scaffolds, boatswain's (bosun's) chairs, and other work access platforms shall conform to the requirements set forth in the federal OSHA Regulations for Construction (29 CFR 1926.451) except where the specifications in ANSI A10.8 or state or local regulations are more rigorous.

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Smoking and Open Flames

Smoking and the use of open flames are strictly prohibited in areas where flammable liquids, gases, or highly combustible materials are stored, handled, or processed. Obey "No Smoking" signs. Smoke only in designated areas.

Solvents and Paints

Adequate ventilation must be maintained at all times when paints or solvents are used. Personnel should use proper respiratory protection and protective clothing when toxicity of the material requires such protection. Flammable solvents and materials must be used with extreme caution when possible sources of ignition exist. Flammable paints and solvents must be stored in an approved (Factory Mutual or Underwriters Laboratories) flammable liquids storage cabinet when storage is required inside the buildings. If an approved cabinet is not available, paints and solvents must be removed from the building when not in use.

Flammable liquids must be dispensed in safety cans with flash arresters bearing a Factory Mutual or Underwriters Laboratories approval. These containers must be clearly identified as to their contents. Material Safety Data sheets, for materials used by the Contractor, shall be maintained by the Contractor, and a copy provided to the HS/IH Representative.

Tarpaulins

When tarpaulins are required for the detection of hot slag, dust, paint drippings, etc., or as security barriers, they shall be flame-resistant and in good condition.

Tools

Hand and power tools shall be kept in safe operating condition. Mushroomed heads on cold chisels, star drills, etc., are unsafe and should not be used. Hammers should have handles which are not cracked, split, or broken.

Non sparking tools may be necessary in certain areas where flammable materials are handled or where sparks could create an explosion.

Transporting Material and Equipment

Extreme care must be taken while carrying sections of pipe, conduit, and other materials to assure safety to HS/IH personnel, Contractor, and client personnel and property. This includes, but is not limited to, flagging and use of two people to carry pipe of lengths greater than 10 feet. Tools, materials, and equipment must not be left unattended in access ways. Tools, material, and equipment shall not be removed from the job site without permission of the HS/IH Representative.

Walking and Work Surfaces

Workroom floors shall be clean and, to the extent possible, dry. Drainage mats, platforms, or false floors should be used where wet processes are performed. Floors shall be free from protruding nails, splinters, holes, and loose boards or tiles. Permanent aisles or passageways shall be marked. Floor

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holes shall be protected by covers that leave no openings of more than one inch wide. Floor openings into which persons can accidentally walk shall be guarded by standard railing and toe boards. Open-sided floors, platforms, and runways higher than four feet shall be guarded by standard railings. Toe boards shall be used wherever people can pass below, or where hazardous equipment or materials are located below.

Warning Signs

All posted warning, safety, and security signs and barriers shall be observed. Additionally, Contractor shall provide warning signs, barriers, barricades, etc. wherever such protection is needed. Where signs and barricades do not provide adequate protection, particularly along a road, flagmen shall be used. Where lead abatement, asbestos abatement or other regulated material is being removed, necessary regulated areas will be established and regulatory required signage will be placed and maintained.

Regulatory References

1. *Standard Operating Safety Guides*, USEPA, November 1984
2. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH 85-115, 1985
3. Title 29 of the Code of Federal Regulations, Part 1910 (29 CFR 1910), Occupational Safety and Health Standards (USDOL/OSHA), with special attention to Section 120, Hazardous Waste Operations and Emergency Response
4. Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR 1926), Safety and Health Regulations for Construction (USDOL/OSHA)
5. Title 8 of the California Code of Regulations, Chapter 4, Subchapter 7, (commencing with Section 3200) General Industry Safety Orders (Cal/OSHA), with special attention to Section 5192, Hazardous Waste Operations and Emergency Response
6. Title 8 of the California Code of Regulations, Chapter 4, Subchapter 4, (commencing with Section 1500) Construction Safety Orders (Cal/OSHA)
7. Title 22 of the California Code of Regulations, Division 4, Chapter 30 (commencing with Section 66000) Environmental Health Standards for the Management of Hazardous Waste (California Environmental Protection Agency, Department of Toxic Substances Control)
8. Title 22 of the California Code of Regulations, Division 2, Chapter 3, (commencing with Section 12000) Safe Drinking Water and Toxic Enforcement Act Regulations (California Health and Welfare Agency)
9. National Oil and Hazardous Substances Contingency Plan

Appendix C

General Contractor

IIPP, Respiratory Protection Plan

Excavation Safety Plan

OSHA Training Certificates

Appendix D

General Contractor Confined Space Program

Appendix E

Caltrans Standard Special Provisions

Replace section 7-1.02K(6)(j)(iii) with:

7-1.02K(6)(j)(iii) Earth Material Containing Lead

Section 7-1.02K(6)(j)(iii) includes specifications for handling, removing, and disposing of earth material containing lead.

Submit a lead compliance plan.

Lead is present in earth material on the job site. The average lead concentrations are below 1,000 mg/kg total lead and below 5 mg/L soluble lead. The material on the job site:

1. Is not a hazardous waste
2. Does not require disposal at a permitted landfill or solid waste disposal facility

Lead is typically found within the top 2 feet of material in unpaved areas of the highway. Reuse all of the excavated material on the right-of-way. Haul and place the surplus excavated material on the right-of-way at _____.

Lead has been detected in material to a depth of _____ in unpaved areas of the highway. Levels of lead found on the job site range from less than _____ to _____ mg/kg total lead with an average concentration of _____ mg/kg total lead as analyzed by EPA test method 6010 or EPA test method 7000 series and based upon a 95 percent upper confidence limit. Levels of lead found within the project limits have a predicted average soluble concentration of _____ mg/L as analyzed by the California Waste Extraction Test and based upon a 95 percent upper confidence limit.

Handle the material under all applicable laws, rules, and regulations, including those of the following agencies:

1. Cal/OSHA
2. CA RWQCB, Region _____
3. CA Department of Toxic Substances Control
4. _____

Manage the material as shown in the following table.

Earth Material Management

Location	Depth	Management requirements

If the material is disposed of:

1. Disclose the lead concentration of the material to the receiving property owner when obtaining authorization for disposal on the property
2. Obtain the receiving property owner's acknowledgment of lead concentration disclosure in the written authorization for disposal
3. You are responsible for any additional sampling and analysis required by the receiving property owner

If you choose to dispose of the material at a commercial landfill:

1. Transport it to a Class III or Class II landfill appropriately permitted to receive the material
2. You are responsible for identifying the appropriately permitted landfill to receive the material and for all associated trucking and disposal costs, including any additional sampling and analysis required by the receiving landfill

Replace section 14-11.11 with:

14-11.11 MANAGEMENT OF ASBESTOS CONTAINING MATERIALS

14-11.11A General

14-11.11A(1) Summary

Section 14-11.11 includes specifications for surveying and sampling or, removal, and disposal of asbestos-containing material (ACM). Friable ACM generated as part of this work is Department-generated hazardous waste under 14-11.02F.

14-11.11A(2) Definitions

asbestos: Includes chrysotile, amosite, crocidolite, tremolite, anthrophyllite, actinolite and any of these minerals that has been chemically treated and/or altered.

asbestos-containing material (ACM): Any building material, including asbestos cement pipe containing commercial asbestos in an amount greater than 1% by weight, area, or count.

certified asbestos consultant (CAC): An asbestos consultant certified by Cal/OSHA under 8 CA Code of Regs § 341.15 and 1529.

regulated asbestos-containing material (RACM): any material containing more than one percent friable asbestos as determined using Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Includes Category I non-friable ACM which has become friable, or will be subjected to sanding, grinding, cutting or abrading; or Category II non-friable ACM which may become or has become friable.

friable ACM: Any material containing more than 1 percent asbestos by area that hand pressure can crumble, pulverize or reduce to powder when dry".

non-friable ACM: Asbestos fibers are tightly bound into the matrix of the material and should not become an airborne hazard as long as the material remains intact and undamaged, and is not sawed, sanded, drilled or otherwise abraded during removal (Asbestos Hazard Emergency Response Act (AHERA)).

14-11.11A(3) Asbestos Survey Results

Asbestos was detected at _____ in _____. Portions of the survey report are included in the "Information Handout." The complete report entitled "_____" is available at the Department of Transportation, Construction Office, located at _____

14-11.11A(4) Submittals

14-11.11A(4)(a) Asbestos Surveying Work Plan for Sampling

Before starting removal or renovation, submit an asbestos inspection work plan that establishes the procedures to comply with requirements for asbestos surveying and sampling. The plan must be prepared and signed by a CAC and include:

1. Sampling procedures. ACM sampling methods must meet USEPA, SW-846, "Test Methods for Evaluating Solid Waste," Volume II: Field Manual, Physical/Chemical, Chapter Nine Section 9.1. Include the name of the laboratory that will perform the asbestos analyses and a copy of the laboratory's Environmental Laboratory Accreditation Program (ELAP) certification.
2. Analytical method for analyses. Samples must be analyzed for asbestos according to Analytical Method 600/R-93-116 under 40 CFR Part 763 Subpart F, Appendix A (Polarized Light Microscopy).
3. Sample handling and preservation. Transport samples under chain of custody to the laboratory within 24 hours of sampling. The laboratory must test the samples within 48 hours. Submit laboratory results as soon as they are available. Supply a summary report of sampling protocols, photographs of the structures and of the locations where samples were taken, chain of custody, analysis and laboratory data sheets to the Engineer within 10 days of completion of sampling.

Under 40 CFR §61.145(a), thoroughly inspect regulated facility, including the concrete and any other suspect material is required before demolition or renovation. Do not start sampling and analysis work until the work plan is authorized by the Engineer. If the work plan is unacceptable, it will be returned to you

within 5 business days of the submittal for revision. Revise the plan within 5 business days and resubmit. The Engineer has 5 days to review and authorize or reject the revised plan from the date the revised plan is received. Sampling and analysis must comply with USEPA "Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance."

Collect a minimum of 1 sample for each suspected ACM location. For pipes and other linear components of suspected ACM, collect samples sufficient to determine suspected asbestos content of the material. Sample all exposed suspected ACM on the structure. If bridge concrete will be disturbed, sample concrete based on color, texture and the type of structure portion to be impacted (deck, railing, etc.) Sample suspected ACM encapsulated in concrete when exposed during demolition.

14-11.11A(4)(b) Asbestos Sampling and Analysis Report

Submit a report on the asbestos inspection within 10 days after completion of the inspection. The report must include:

1. Sampling protocols
2. Photographs of the structures and of the locations where samples were taken
3. Assessment of condition of ACM (friable/non-friable)
4. Quantification of ACM
5. Recommendations for removal and disposal of confirmed ACM.
6. Chain of custody
7. Laboratory data
8. Documentation that report was prepared by Cal-OSHA Certified CAC.

Allow 5 business days for the Engineer to review and authorize the report. Make any changes requested for acceptance within business 5 days. Submit 2 copies of the final report.

14-11.11A(4)(c) Air Quality Management District (AQMD) or Air Pollution Control District (APCD) Notification of Demolition

Submit a copy of the NESHAP notification form and attachments to Engineer, required under section 14-9.02, before submittal to the AQMD or APCD under 40 CFR §61.145(b).

14-11.11A(4)(d) Asbestos Compliance Plan

Prepare an Asbestos Compliance Plan (ACP) to prevent or minimize exposure to asbestos during removal work. The ACP must be signed by a CIH before submission to the Engineer for review and authorization. Submit the ACP to the Engineer at least 15 business days before beginning removal work in areas containing or suspected to contain asbestos. The ACP must contain:

1. Identification of key personnel for the project
2. Scope of work and equipment that will be used
3. Job hazard analysis for work assignments
4. Summary of risk assessment
5. Personal protective equipment
6. Delineation of work zones on-site
7. Decontamination procedures
8. General safe work practices
9. Security measures
10. Emergency response plans
11. Worker training
12. Certification of completion of safety training for all trained personnel before starting work in areas containing or suspected to contain asbestos.

14-11.11A(4)(e) Removal Work Plan

Prepare a work plan for the removal, storage, transportation and disposal of ACM. Allow up to 10 days for Engineer to review and authorize.

The work plan must include:

1. Installing asbestos warning signs at perimeters of abatement work areas

2. Summary of methods and techniques for handling, packaging, labeling, storing, transporting and disposing of waste materials
3. Wetting asbestos materials with sprayers
4. Containing large volumes of asbestos materials in disposal bins for temporary storage until removed from the site
5. Providing manifests for disposal upon completion for the Engineer to sign
6. Providing transporters registered to transport hazardous waste in the state of California under the Health and Safety Code Ch 6.5, Div 20 and 22 CA Code of Regs, Div 4.5
7. Disposing of asbestos materials at an appropriately permitted disposal facility in California
8. Compliance with federal, state, and local requirements for asbestos work, transport, and disposal

14-11.11A(4)(f) ACM Removal Report

Submit ACM Removal Report to Engineer and APCD or AQMD within 30 days after ACM is removed from job site. ACM Removal Report must address all items in work plan.

14-11.11A(5) Quality Control and Assurance

14-11.11A(5)(a) Qualifications

The person in charge of asbestos removal and abatement planning must be a CAC.

The CAC in charge of asbestos removal must be registered under Labor Code § 6501.5 and certified under Bus & Prof Code § 7058.6.

Laboratories used to perform asbestos analysis must be certified by the CDPH Environmental Laboratory Accreditation Program for all analyses to be performed.

14-11.11A(5)(b) Regulatory Requirements

Codes which govern removal and disposal of materials containing asbestos include:

1. CA Health and Safety Code, Division 20, Chapter 6.5, Hazardous Waste Control
2. 8 CA Code of Regs, General Industry Safety Order 5208 Asbestos
3. 8 CA Code of Reg, § 1529 and 341
4. 22 CA Code of Regs, Division 4.5
5. Cal/OSHA, Part 26 (amended), of 29 CFR
6. 40 CFR, Part 61, subpart M

14-11.11B Materials

Not used

14-11.11C Construction

14-11.11C(1) General

Notify the APCD or AQMD of changes in work locations or conditions.

Before starting work in areas containing or suspected to contain asbestos, provide safety training to State personnel who may enter the work area that meets the requirements of 8 CA Code of Regs § 1529.

Provide training, personal protective equipment, and medical surveillance required by the Asbestos Compliance Plan to ___ State personnel.

14-11.11C(2) Unanticipated Suspected ACM discovered During Demolition or Excavation

If unanticipated ACM is discovered during demolition, stop portion of work in ACM area and notify the Engineer. ACM will be removed by the State.

Notify the APCD or the AQMD of changes to removal or demolition plans, including discovery of ACM during demolition, within 2 business days of the change.

Removal and disposal of ACM not identified in the ACM survey prior to demolition or renovation is change order work.

14-11.11C(3) Removal

Comply with 8 CA Code of Regs § 1529 and § 341. Remove friable ACM using the wetting method. Remove and handle all non-friable ACM to prevent breakage. The removal of ACM encased in concrete or other similar structural material is not required before demolition, but the ACM must be adequately wetted whenever exposed during demolition. Prevent visible emissions from all ACM removal activities.

Mark all regulated work areas with the following or equivalent warning:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY**

14-11.11C(4) Packaging

Comply with 22 CA Code of Regs, Div 4.5, Chapter 12, Article 3 requirements for packaging and labeling removed ACM. Place removed ACM in approved containers (double ply, 0.06-inch minimum thickness, plastic bags) with caution labels affixed to bags. Caution labels must have conspicuous, legible lettering, that spells out the following or equivalent warning:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD**

Place removed materials containing asbestos directly into a covered, lockable roll off or drop box that has the same caution label affixed on all sides.

If hazardous waste is removed, submit a copy of the hazardous waste manifest for each shipment of hazardous waste. The Engineer will sign all manifests as the generator.

14-11.11C(5) Transportation

All haulers of friable ACM must have current registration with DTSC for transporting hazardous waste and must have a U.S. Environmental Protection Agency Identification Number (U.S. EPA I.D. Number). All vehicles used to transport hazardous waste material must carry a valid registration during transport. Transport non-friable (non-hazardous waste) ACM to the disposal facility with a shipping document or waste shipment record.

14-11.11C(6) Disposal

Dispose of friable and non-friable waste containing asbestos at a disposal facility permitted to accept the waste and that meets all the requirements specified by federal, state and local regulations. Notify the proper authorities at the disposal site in advance of delivery of ACM.

Submit documentation from disposal facility indicating proper disposal of all hazardous ACM waste and nonhazardous ACM waste within 5 days of transporting the waste from the job site.

14-11.11D Payment

Not Used

Replace section 14-11.11 with:

14-11.11 MANAGEMENT OF ASBESTOS CONTAINING MATERIALS

14-11.11A General

14-11.11A(1) Summary

Section 14-11.11 includes specifications for surveying and sampling or, removal, and disposal of asbestos-containing material (ACM). Friable ACM generated as part of this work is Department-generated hazardous waste under 14-11.02F.

14-11.11A(2) Definitions

asbestos: Includes chrysotile, amosite, crocidolite, tremolite, anthrophyllite, actinolite and any of these minerals that has been chemically treated and/or altered.

asbestos-containing material (ACM): Any building material, including asbestos cement pipe containing commercial asbestos in an amount greater than 1% by weight, area, or count.

certified asbestos consultant (CAC): An asbestos consultant certified by Cal/OSHA under 8 CA Code of Regs § 341.15 and 1529.

regulated asbestos-containing material (RACM): any material containing more than one percent friable asbestos as determined using Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Includes Category I non-friable ACM which has become friable, or will be subjected to sanding, grinding, cutting or abrading; or Category II non-friable ACM which may become or has become friable.

friable ACM: Any material containing more than 1 percent asbestos by area that hand pressure can crumble, pulverize or reduce to powder when dry".

non-friable ACM: Asbestos fibers are tightly bound into the matrix of the material and should not become an airborne hazard as long as the material remains intact and undamaged, and is not sawed, sanded, drilled or otherwise abraded during removal (Asbestos Hazard Emergency Response Act (AHERA).

14-11.11A(3) Asbestos Survey Results

Asbestos was detected at _____ in _____. Portions of the survey report are included in the "Information Handout." The complete report entitled "_____" is available at the Department of Transportation, Construction Office, located at _____

14-11.11A(4) Submittals

14-11.11A(4)(a) Asbestos Surveying Work Plan for Sampling

Before starting removal or renovation, submit an asbestos inspection work plan that establishes the procedures to comply with requirements for asbestos surveying and sampling. The plan must be prepared and signed by a CAC and include:

1. Sampling procedures. ACM sampling methods must meet USEPA, SW-846, "Test Methods for Evaluating Solid Waste," Volume II: Field Manual, Physical/Chemical, Chapter Nine Section 9.1. Include the name of the laboratory that will perform the asbestos analyses and a copy of the laboratory's Environmental Laboratory Accreditation Program (ELAP) certification.
2. Analytical method for analyses. Samples must be analyzed for asbestos according to Analytical Method 600/R-93-116 under 40 CFR Part 763 Subpart F, Appendix A (Polarized Light Microscopy).
3. Sample handling and preservation. Transport samples under chain of custody to the laboratory within 24 hours of sampling. The laboratory must test the samples within 48 hours. Submit laboratory results as soon as they are available. Supply a summary report of sampling protocols, photographs of the structures and of the locations where samples were taken, chain of custody, analysis and laboratory data sheets to the Engineer within 10 days of completion of sampling.

Under 40 CFR §61.145(a), thoroughly inspect regulated facility, including the concrete and any other suspect material is required before demolition or renovation. Do not start sampling and analysis work until the work plan is authorized by the Engineer. If the work plan is unacceptable, it will be returned to you

within 5 business days of the submittal for revision. Revise the plan within 5 business days and resubmit. The Engineer has 5 days to review and authorize or reject the revised plan from the date the revised plan is received. Sampling and analysis must comply with USEPA "Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance."

Collect a minimum of 1 sample for each suspected ACM location. For pipes and other linear components of suspected ACM, collect samples sufficient to determine suspected asbestos content of the material. Sample all exposed suspected ACM on the structure. If bridge concrete will be disturbed, sample concrete based on color, texture and the type of structure portion to be impacted (deck, railing, etc.) Sample suspected ACM encapsulated in concrete when exposed during demolition.

14-11.11A(4)(b) Asbestos Sampling and Analysis Report

Submit a report on the asbestos inspection within 10 days after completion of the inspection. The report must include:

1. Sampling protocols
2. Photographs of the structures and of the locations where samples were taken
3. Assessment of condition of ACM (friable/non-friable)
4. Quantification of ACM
5. Recommendations for removal and disposal of confirmed ACM.
6. Chain of custody
7. Laboratory data
8. Documentation that report was prepared by Cal-OSHA Certified CAC.

Allow 5 business days for the Engineer to review and authorize the report. Make any changes requested for acceptance within business 5 days. Submit 2 copies of the final report.

14-11.11A(4)(c) Air Quality Management District (AQMD) or Air Pollution Control District (APCD) Notification of Demolition

Submit a copy of the NESHAP notification form and attachments to Engineer, required under section 14-9.02, before submittal to the AQMD or APCD under 40 CFR §61.145(b).

14-11.11A(4)(d) Asbestos Compliance Plan

Prepare an Asbestos Compliance Plan (ACP) to prevent or minimize exposure to asbestos during removal work. The ACP must be signed by a CIH before submission to the Engineer for review and authorization. Submit the ACP to the Engineer at least 15 business days before beginning removal work in areas containing or suspected to contain asbestos. The ACP must contain:

1. Identification of key personnel for the project
2. Scope of work and equipment that will be used
3. Job hazard analysis for work assignments
4. Summary of risk assessment
5. Personal protective equipment
6. Delineation of work zones on-site
7. Decontamination procedures
8. General safe work practices
9. Security measures
10. Emergency response plans
11. Worker training
12. Certification of completion of safety training for all trained personnel before starting work in areas containing or suspected to contain asbestos.

14-11.11A(4)(e) Removal Work Plan

Prepare a work plan for the removal, storage, transportation and disposal of ACM. Allow up to 10 days for Engineer to review and authorize.

The work plan must include:

1. Installing asbestos warning signs at perimeters of abatement work areas

2. Summary of methods and techniques for handling, packaging, labeling, storing, transporting and disposing of waste materials
3. Wetting asbestos materials with sprayers
4. Containing large volumes of asbestos materials in disposal bins for temporary storage until removed from the site
5. Providing manifests for disposal upon completion for the Engineer to sign
6. Providing transporters registered to transport hazardous waste in the state of California under the Health and Safety Code Ch 6.5, Div 20 and 22 CA Code of Regs, Div 4.5
7. Disposing of asbestos materials at an appropriately permitted disposal facility in California
8. Compliance with federal, state, and local requirements for asbestos work, transport, and disposal

14-11.11A(4)(f) ACM Removal Report

Submit ACM Removal Report to Engineer and APCD or AQMD within 30 days after ACM is removed from job site. ACM Removal Report must address all items in work plan.

14-11.11A(5) Quality Control and Assurance

14-11.11A(5)(a) Qualifications

The person in charge of asbestos removal and abatement planning must be a CAC.

The CAC in charge of asbestos removal must be registered under Labor Code § 6501.5 and certified under Bus & Prof Code § 7058.6.

Laboratories used to perform asbestos analysis must be certified by the CDPH Environmental Laboratory Accreditation Program for all analyses to be performed.

14-11.11A(5)(b) Regulatory Requirements

Codes which govern removal and disposal of materials containing asbestos include:

1. CA Health and Safety Code, Division 20, Chapter 6.5, Hazardous Waste Control
2. 8 CA Code of Regs, General Industry Safety Order 5208 Asbestos
3. 8 CA Code of Reg, § 1529 and 341
4. 22 CA Code of Regs, Division 4.5
5. Cal/OSHA, Part 26 (amended), of 29 CFR
6. 40 CFR, Part 61, subpart M

14-11.11B Materials

Not used

14-11.11C Construction

14-11.11C(1) General

Notify the APCD or AQMD of changes in work locations or conditions.

Before starting work in areas containing or suspected to contain asbestos, provide safety training to State personnel who may enter the work area that meets the requirements of 8 CA Code of Regs § 1529.

Provide training, personal protective equipment, and medical surveillance required by the Asbestos Compliance Plan to ___ State personnel.

14-11.11C(2) Unanticipated Suspected ACM discovered During Demolition or Excavation

If unanticipated ACM is discovered during demolition, stop portion of work in ACM area and notify the Engineer. ACM will be removed by the State.

Notify the APCD or the AQMD of changes to removal or demolition plans, including discovery of ACM during demolition, within 2 business days of the change.

Removal and disposal of ACM not identified in the ACM survey prior to demolition or renovation is change order work.

14-11.11C(3) Removal

Comply with 8 CA Code of Regs § 1529 and § 341. Remove friable ACM using the wetting method. Remove and handle all non-friable ACM to prevent breakage. The removal of ACM encased in concrete or other similar structural material is not required before demolition, but the ACM must be adequately wetted whenever exposed during demolition. Prevent visible emissions from all ACM removal activities.

Mark all regulated work areas with the following or equivalent warning:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY**

14-11.11C(4) Packaging

Comply with 22 CA Code of Regs, Div 4.5, Chapter 12, Article 3 requirements for packaging and labeling removed ACM. Place removed ACM in approved containers (double ply, 0.06-inch minimum thickness, plastic bags) with caution labels affixed to bags. Caution labels must have conspicuous, legible lettering, that spells out the following or equivalent warning:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD**

Place removed materials containing asbestos directly into a covered, lockable roll off or drop box that has the same caution label affixed on all sides.

If hazardous waste is removed, submit a copy of the hazardous waste manifest for each shipment of hazardous waste. The Engineer will sign all manifests as the generator.

14-11.11C(5) Transportation

All haulers of friable ACM must have current registration with DTSC for transporting hazardous waste and must have a U.S. Environmental Protection Agency Identification Number (U.S. EPA I.D. Number). All vehicles used to transport hazardous waste material must carry a valid registration during transport. Transport non-friable (non-hazardous waste) ACM to the disposal facility with a shipping document or waste shipment record.

14-11.11C(6) Disposal

Dispose of friable and non-friable waste containing asbestos at a disposal facility permitted to accept the waste and that meets all the requirements specified by federal, state and local regulations. Notify the proper authorities at the disposal site in advance of delivery of ACM.

Submit documentation from disposal facility indicating proper disposal of all hazardous ACM waste and nonhazardous ACM waste within 5 days of transporting the waste from the job site.

14-11.11D Payment

Not Used

Replace section 14-11.03 with:

14-11.03 MATERIAL CONTAINING HAZARDOUS WASTE CONCENTRATIONS OF AERIALY DEPOSITED LEAD

14-11.03A General

14-11.03A(1) Summary

Section 14-11.03 includes specifications for hazardous waste management while excavating, stockpiling, transporting, placing, and disposing of material containing hazardous waste concentrations of aerially deposited lead (ADL).

ADL is present within the project limits.

The Department has received from the DTSC a variance regarding the use of material containing ADL. The variance applies if Type Y-1 or Y-2 material are shown. The variance is available for inspection at the Department of Transportation, District _____, _____.

14-11.03A(2) Definitions

Type Y-1: Material that contains ADL in average concentrations (using the 90 percent Upper Confidence Limit) of 1.5 mg/L or less extractable lead (based on a modified waste extraction test using deionized water as the extractant) and 1,411 mg/kg or less total lead. This material is a California hazardous waste that may be reused as permitted under the variance of the DTSC provided that the lead contaminated soil is placed a minimum of 5 feet above the maximum historic water table elevation and covered with at least 1 foot of non-hazardous soil.

Type Y-2: Material that contains ADL in average concentrations (using the 90 percent Upper Confidence Limit) that exceed either 1.5 mg/L extractable lead (based on a modified waste extraction test using deionized water as the extractant) or 1,411 mg/kg total lead but are less than 150 mg/L extractable lead (based on a modified waste extraction test using deionized water as the extractant) and less than 3,397 mg/kg of total lead. This material is a California hazardous waste that may be reused as permitted under the variance of DTSC provided that the lead contaminated soil is placed a minimum of 5 feet above the maximum historic water table elevation and protected from infiltration by a pavement structure which will be maintained by the Department.

Type Z-2: Material that contains ADL in average concentrations (using the 95 percent Upper Confidence Limit) greater than or equal to 1,000 mg/kg total lead, greater than or equal to 5.0 mg/L soluble lead (as tested using the California Waste Extraction Test), and the material is surplus; or material that contains ADL in average concentrations greater than 150 mg/L extractable lead (based on a modified waste extraction test using deionized water as the extractant) or greater than 3,397 mg/kg total lead. This material is a Department-generated California hazardous waste and must be transported to and disposed of at a California Class I disposal site.

Type Z-3: Material that contains ADL in average concentrations (using the 95 percent Upper Confidence Limit) greater than 5.0 mg/L soluble lead, (as tested using the Toxicity Characteristic Leaching Procedure). This material is a Department-generated federal hazardous waste and must be transported to and disposed of at a California Class I disposal site.

14-11.03A(3) Site Conditions

ADL concentration data and sample locations maps are included in the *Information Handout*.

Type Y-1 material exists between _____ and _____ feet, measured horizontally from the edges of existing pavement, from _____ to _____ station, and from a depth of _____ to _____ feet below existing grade, as shown.

Type Y-2 material exists between _____ and _____ feet, measured horizontally from the edges of existing pavement, from _____ to _____ station, and from a depth of _____ to _____ feet below existing grade, as shown.

Type Z-2 material exists between _____ and _____ feet, measured horizontally from the edges of existing pavement, from _____ to _____ station, and from a depth of _____ to _____ feet below existing grade, as shown.

Type Z-3 material exists between ____ and ____ feet, measured horizontally from the edges of existing pavement, from ____ to ____ station, and from a depth of ____ to ____ feet below existing grade as shown.

14-11.03A(4) Submittals

14-11.03A(4)(a) Lead Compliance Plan

Submit a lead compliance plan under section 7-1.02K(6)(j)(ii).

Include perimeter air monitoring incorporating upwind and downwind locations as shown or as authorized. Monitor with personal air samplers using National Institute of Safety and Health Method 7082. Sampling must achieve a detection limit of 0.05 µg/ m³ of air per day. Conduct daily monitoring while clearing and grubbing and performing earthwork operations. Analyze a single representative daily sample for lead. Analyze the sample and provide results to the Engineer within 24 hours. Analyses must be performed by a laboratory accredited by the Environmental Lead Laboratory-Accreditation Program of the American Industrial Hygiene Association. Average lead concentrations must not exceed 1.5 µg/ m³ of air per day and 0.15 µg/ m³ per day on a rolling 90-day basis. Calculate average daily concentrations based on monitoring to date, and projection based on those monitoring trends for the next 90 days or to the end of work subject to the lead compliance plan if less than the specified averaging period. If concentrations exceed these levels stop work and modify the work to prevent release of lead. Monitor under the direction of a CIH. The air monitoring data must be reviewed by and signed by the CIH.

14-11.03A(4)(b) Excavation and Transportation Plan

Within ____ days after approval of the Contract, submit 3 copies of an excavation and transportation plan. Allow ____ days for review. If revisions are required, as determined by the Engineer, submit the revised plan within ____ days of receipt of the Engineer's comments. For the revision, allow ____ days for the review. Minor changes to or clarifications of the initial submittal may be made and attached as amendments to the excavation and transportation plan. In order to allow construction to proceed, the Engineer may conditionally approve the plan while minor revisions or amendments are being completed.

Prepare the written, project specific excavation and transportation plan establishing the procedures you will use to comply with requirements for excavating, stockpiling, transporting, and placing or disposing of material containing ADL. The plan must comply with the regulations of the DTSC and Cal/OSHA and the requirements of the variance. The sampling and analysis portions of the excavation and transportation plan must meet the requirements for the design and development of the sampling plan, statistical analysis, and reporting of test results contained in US EPA, SW 846, "Test Methods for Evaluating Solid Waste," Volume II: Field Manual Physical/Chemical, Chapter Nine, Section 9.1. The plan must include the following elements:

1. Excavation schedule by location and date
2. Temporary locations of stockpiled material
3. Sampling and analysis plans for areas after removal of a stockpile. Include the following:
 - 3.1. Location and number of samples
 - 3.2. Name and address of the CDPH Environmental Laboratory Accreditation Program (ELAP) certified laboratory where the analysis was performed
4. Survey methods for Type Y-1 or Y-2 material burial locations
5. Sampling and analysis plan for soil cover
6. Sampling and analysis plan for post excavation from ____ to ____ station as shown.
7. Dust control measures
8. Air monitoring. Include the following information:
 - 8.1. Location and type of equipment
 - 8.2. Sampling frequency
 - 8.3. Name and address of the accredited laboratory where the analysis was performed
9. Transportation equipment and routes
10. Method for preventing spills and tracking material onto public roads
11. Truck waiting and staging areas
12. Site for disposal of hazardous waste
13. Example of bill of lading to be carried by trucks transporting Type Y-1 or Y-2, material. The bill of lading must include:
 - 13.1. US Department of Transportation (US DOT) description including shipping name
 - 13.2. Hazard class

- 13.3. Identification number
- 13.4. Handling codes
- 13.5. Quantity of material
- 13.6. Volume of material
- 14. Spill Contingency Plan for material containing ADL

14-11.03A(4)(c) Burial Location Report

Within 5 business days of completing placement of Type Y-1 or Y-2 material at a burial location, submit a report for that burial location, including "Burial Location of Soil Containing Aerial Deposited Lead" form and electronic geospatial vector data shapefiles of the top and bottom perimeters of the burial location. Submit to the Engineer and to:

ADL@dot.ca.gov

The Engineer notifies you of acceptance or rejection of the burial location report within 5 business days of receipt. If the report is rejected, you have 5 business days to submit a corrected report.

Not Used

14-11.03A(4)(d) Bill of Lading

Copies of the bills of lading must be submitted as an informational submittal upon placement of Type Y-1 or Y-2 material in its final location.

14-11.03A(5) Quality Control and Assurance

Excavation, reuse, and disposal of material with ADL must comply with rules and regulations of the following agencies:

1. US DOT
2. US EPA
3. California Environmental Protection Agency
4. CDPH
5. DTSC
6. Cal/OSHA
7. California Department of Resources Recycling and Recovery
8. RWQCB, Region __, _____
9. California Air Resources Board
10. _____ Air Quality Management District

Transport and dispose of material containing hazardous levels of lead under federal and state laws and regulations and county and municipal ordinances and regulations. Laws and regulations that govern this work include:

1. Health & Safety Code, Division 20, Chp 6.5 (California Hazardous Waste Control Act)
2. 22 CA Code of Regs, Div. 4.5 (Environmental Health Standards for the Management of Hazardous Waste)
3. 8 CA Code of Regs

14-11.03B Materials

Not Used

14-11.03C Construction

14-11.03C(1) General

Not Used

14-11.03C(2) Material Management

Place Type Y-1 material as shown and cover with a minimum ____ foot layer of nonhazardous soil or the pavement structure. Temporary surplus material may be generated on this project due to the requirements of stage construction. Do not transport temporary surplus outside the job site. It may be necessary to:

1. Stockpile material for subsequent stages.
2. Construct some embankments out of stage.
3. Handle temporary surplus material more than once.

Place Type Y-2 material as shown and cover with the pavement structure. Temporary surplus material may be generated on this project due to the requirements of stage construction. Do not transport temporary surplus material outside the job site. It may be necessary to:

1. Stockpile material for subsequent stages.
2. Construct some embankments out of stage.
3. Handle temporary surplus material more than once.

Transport excavated Type Z-2 material using:

1. Hazardous waste manifest
2. Hazardous waste transporter with a current DTSC registration certificate and CA Highway Patrol (CHP) Biennial Inspection of Terminals (BIT) Program compliance documentation.

Transport excavated Type Z-3 material using:

1. Hazardous waste manifest
2. Hazardous waste transporter with a current DTSC registration certificate and CHP BIT Program compliance documentation

14-11.03C(3) Dust Control

Excavation, transportation, placement, and handling of material containing ADL must result in no visible dust migration. A water truck or tank must be on the job site at all times while clearing and grubbing or performing earthwork operations in work areas containing ADL. Apply water to prevent visible dust.

14-11.03C(4) Surveying Type Y-1 or Y-2 Material Burial Locations

Survey the location of the bottom and top perimeters of each area where you bury Type Y-1 or Y-2 material (burial locations). The survey must be performed by or under the direction of one of the following:

1. Land surveyor licensed under the Bus & Prof Code, Chp 15 (commencing with § 8700)
2. Civil engineer licensed prior to January 1, 1982 under the Bus & Prof Code, Chp 7 (commencing with § 6700)

Survey 10 points to determine each burial location horizontally and vertically within the specified accuracies and to create closed polygons of the perimeters of the bottom and top of the burial location. If 10 points are not sufficient to define the polygon, add additional points until the polygon is defined. Establish the position of the bottom and top perimeters before placing subsequent layers of material that obstruct the location.

Report each burial location in California State Plane Coordinates in US Survey feet within the appropriate zone of the California Coordinate System of 1983 (CCS83) and in latitude and longitude. Horizontal positions must be referenced to CCS83 (epoch 2007.00 or later National Geodetic Survey [NGS] or California Spatial Reference Center [CSRC] published epoch) to an accuracy of 3 ft horizontally. The elevation of points identifying the burial location must locate the bottom and top of Type Y-1 or Y-2 material to an accuracy of 1 ft vertically. Elevations of the bottom and top of Type Y-1 or Y-2 material must be referenced to North American Vertical Datum of 1988 (NAVD88). Report accuracy of spatial data in US Survey feet under Federal Geographic Data Committee (FGDC)-STD-007.1-1998.

Not Used

14-11.03C(5) Material Transportation

Before traveling on public roads, remove loose and extraneous material from surfaces outside the cargo areas of the transporting vehicles and cover the cargo with tarpaulins or other cover, as outlined in the approved excavation and transportation plan. You are responsible for costs due to spillage of material

containing lead during transport. Transportation routes for Type Y-1 or Y-2 material must only include the highway.

14-11.03C(6) Disposal

Analyze surplus material for which the lead content is not known for lead before removing the material from within the project limits. Submit a sampling and analysis plan and the name of the analytical laboratory at least 15 days before beginning sampling and analysis. Use a CDPH ELAP certified laboratory. Sample at a minimum rate of 1 sample for each 200 cu yd of surplus material and test for lead using US EPA Method 6010B or 7000 series.

The Engineer will obtain the State of California Board of Equalization identification no, for hazardous waste disposal. The Engineer will sign all hazardous waste manifests. Notify the Engineer 5 business days before the manifests are to be signed.

Not Used

14-11.03D Payment

Payment for a lead compliance plan is not included in the payment for environmental stewardship work.

The Department does not pay for stockpiling of material containing ADL, unless the stockpiling is ordered. The Department does not pay for sampling and analysis unless it is ordered. The Department does not pay for additional sampling and analysis required by the receiving landfill.

Sampling, analyses, and reporting of results for surplus material not previously sampled is change order work.

Replace section 14-11.04 with:

14-11.04 MINIMAL DISTURBANCE OF MATERIAL CONTAINING HAZARDOUS WASTE CONCENTRATIONS OF AERIALY DEPOSITED LEAD

14-11.04A General

14-11.04A(1) Summary

Section 14-11.04 includes specifications for minimal disturbance of material containing hazardous waste concentrations of Aerially Deposited Lead (ADL).

Compliance with 22 CA Code of Regs is not required where there is minimal disturbance of hazardous waste concentrations of ADL.

14-11.04A(2) Project Conditions

Hazardous waste concentrations of ADL are typically found within the top 2 feet of material in unpaved areas of the highway.

Levels found in the area of minimal disturbance range from less than ___ to ___ mg/kg total lead with an average concentration of ___ mg/kg total lead (using the 90 percent Upper Confidence Limit), as analyzed by US EPA Method 6010 or US EPA Method 7000 series.

Minimal disturbance of hazardous waste concentrations of ADL will occur at the following locations:

- 1.
- 2.

14-11.04A(3) Quality Control and Assurance

Handling material containing aerially deposited lead must comply with rules and regulations of the following agencies:

1. Cal/OSHA
2. RWQCB, Region ___—_____

14-11.04A(4) Lead Compliance Plan

Submit a lead compliance plan under section 7-1.02K(6)(j)(ii).

14-11.04B Materials

Not Used

14-11.04C Construction

14-11.04C(1) General

Not Used

14-11.04C(2) Soil Handling

Handling of material containing ADL must result in no visible dust migration. Use dust control measures. A means of controlling dust must be available at all times when handling material in work areas containing ADL at hazardous waste concentrations.

Separate material from vegetation. The resulting soil must remain on the job site.

Surplus material from the areas containing hazardous waste concentrations of ADL must remain in the area of disturbance. Do not dispose of surplus material outside the highway.

14-11.04D Payment

Payment for a lead compliance plan is not included in the payment for environmental stewardship work.

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Replace "Reserved" in section 14-11.08 with:

14-11.08A General

Section 14-11.08 includes specifications relating to the disturbance of existing paint systems.

The existing paint system on bridge number _____ contains _____. Any work that disturbs the existing paint system exposes workers to health hazards and produces:

1. Debris containing heavy metal in amounts that exceed the thresholds established in 8 CA Code of Regs and 22 CA Code of Regs. This debris is a Department-generated hazardous waste.
2. Toxic fumes when heated.

Grime and detritus already on the bridge before the start of work may also contain lead. Consider this grime and detritus part of the existing paint system. The Department is the hazardous waste generator if the Engineer accepts waste-characterization test results demonstrating that the debris is a hazardous waste.

Contain all debris produced when the existing paint system is disturbed. If containment measures are inadequate to contain and collect debris produced when the existing paint system is disturbed, stop the work and do not perform additional work until:

1. Revised debris containment and collection plan has been authorized
2. Released material has been collected and contained

Handle, store, transport, and dispose of debris produced when the existing paint system is disturbed under applicable federal, state, and local hazardous waste laws.

14-11.08B Submittals

14-11.08B(1) General

Not Used

14-11.08B(2) Debris Containment and Collection Plan

Submit a debris containment and collection plan. The plan must:

1. Identify materials, equipment, and methods to be used when the existing paint system is disturbed
2. Include shop drawings of:
 - 2.1. Containment systems complying with section 59-2.03B(3)
 - 2.2. Components that provide ventilation, air movement, and visibility for worker safety
3. Include the name and location of the analytical laboratory that will perform the analyses
4. Identify the hazardous waste transporter that will haul the debris and provide documentation of
 - 4.1 Current DTSC registration
 - 4.2 Compliance with the CA Highway Patrol Biennial Inspection of Terminals Program
5. Include the name and location of the disposal facility that will accept the hazardous waste

Allow 20 days for review.

If required, submit a revised debris containment and collection plan.

14-11.08B(3) Lead Compliance Plan

Submit a lead compliance plan under section 7-1.02K(6)(j)(ii).

14-11.08B(4) Air Monitoring Reports

Air monitoring reports, including test results for samples taken after corrective action, must be prepared by the CIH and submitted:

1. Verbally within 48 hours after sampling
2. As an informational submittal within 5 days after sampling

Air monitoring reports must include:

1. Date and location of sample collection, sample number, contract number, bridge number, full name of the structure, and District-County-Route-Post mile
2. Name and address of the certified laboratory that performed the analyses
3. Chain of custody documentation
4. List of emission control measures in place when air samples were taken
5. Air sample results compared to the appropriate permissible exposure limit (PEL)
6. Corrective action recommended by the CIH to ensure exposure to airborne metals outside containment systems and work areas is within specified limits
7. Signature of the CIH who reviewed the data and made recommendations

Not Used

14-11.08B(5) Soil Sampling Results for Debris Containment Verification

Submit test results of soil analysis verifying debris containment, including results for soil samples taken after corrective action:

1. Verbally within 48 hours after sampling
2. Within 5 days after sampling

Soil sampling results must include:

1. Date and location of sample collection, sample number, contract number, bridge number, full name of the structure and District-County-Route-Post mile
2. Concentrations of heavy metals expressed in mg/kg and mg/L
3. Name and address of the certified laboratory that performed the analyses
4. Chain of custody documentation

Not Used

14-11.08B(6) Waste-Characterization Test Results

Submit waste-characterization test results for the debris and chain of custody documentation before:

1. Requesting the Engineer's signature on the disposal facility's waste profile document
2. Requesting a generator's EPA Identification Number
3. Removing the debris from the site

14-11.08B(7) Request for U.S. Environmental Protection Agency Identification Number

Submit a request for the generator's EPA Identification Number when the Engineer accepts waste-characterization test results documenting that the debris is a hazardous waste.

14-11.08B(8) Disposal Documentation

Submit documentation from the receiving landfill or recycling facility confirming proper disposal within 5 business days of transporting debris from the project.

14-11.08C Safety and Health Provisions

14-11.08C(1) General

Comply with 8 CA Code of Regs, including § 1532.1.

14-11.08C(2) Protective Work Clothing and Washing Facilities

Supply clean protective work clothing for 5 Department personnel:

1. Whenever there is possible exposure to heavy metals or silica dust
2. During application of paint undercoats

Replace protective work clothing as needed.

Protective work clothing and washing facilities must be inspected and authorized for use by Department personnel before starting any activity with the potential for lead exposure.

Protective work clothing remains your property upon completion of the Contract.

14-11.08D Work Area Monitoring

14-11.08D(1) General

Monitor the ambient air and soil in and around the work area to verify the effectiveness of the containment system. Work area monitoring includes:

1. Collecting, analyzing, and reporting air and soil test results
2. Recommending corrective action when specified air or soil concentrations are exceeded

Collect air and soil samples at locations designated by the Engineer.

Not Used

14-11.08D(2) Air Monitoring

Air monitoring must be performed under the direction of a CIH.

Collect and analyze air samples to detect lead under the National Institute of Occupational Safety and Health (NIOSH) Method 7082 using a detection limit of at least $0.05 \mu\text{g}/\text{m}^3$. Collect and analyze air samples to detect other metals under NIOSH Method 7300 using a detection limit of at least 1 percent of the appropriate PEL specified by Cal/OSHA. You may use alternative methods of sampling and analysis with equivalent detection limits.

Concentrations of airborne metals outside containment systems and work areas must not exceed any of the following:

1. Average of $1.5 \mu\text{g}/\text{m}^3$ of air per day and $0.15 \mu\text{g}/\text{m}^3$ per day on a rolling 90-day basis. Calculate average daily concentrations based on monitoring to date and projections based on monitoring trends for the next 90 days or to the end of work subject to the lead compliance plan if less than the specified averaging period.
2. 10 percent of the action level specified for lead by 8 CA Code of Regs §1532.1.
3. 10 percent of the appropriate PELs specified for other metals by Cal/OSHA.

Collect air samples daily during work activities that disturb the existing paint system. Air samples must be analyzed within 48 hours by a facility accredited by the Environmental Lead Laboratory Accreditation Program of the American Industrial Hygiene Association. If concentrations of airborne metals exceed allowable levels, modify the containment system or work activities to prevent further release of metals. If the CIH recommends corrective action, collect and analyze additional samples after implementing the corrective action unless directed otherwise.

Not Used

14-11.08D(3) Soil Sampling for Debris Containment

Collect ___ soil samples before starting work and collect ___ soil samples within 36 hours after cleaning existing steel. A soil sample consists of 5 plugs, each $3/4$ inch in diameter and $1/2$ inch deep, taken at each corner and center of a 1 sq yd area. Analyze soil samples for:

1. Total _____ by US EPA Method 6010B or US EPA Method 7000 Series
2. Soluble _____ by California Waste Extraction Test (CA WET)

The laboratory that analyzes the samples must be certified by CDPH's Environmental Laboratory Accreditation Program (ELAP) for all analyses to be performed.

Concentrations of heavy metals in the work area soil must not increase when the existing paint system is disturbed. If soil sampling shows an increase in the concentrations of heavy metals after completing the work:

1. Clean the affected area
2. Resample until soil sampling and testing shows concentrations of heavy metals less than or equal to the concentrations collected before the start of work

In areas without exposed soil, the concentrations of heavy metals in the work area must not increase when the existing paint system is disturbed. Any visible increase in the concentrations of heavy metals must be removed.

14-11.08E Debris Management

14-11.08E(1) Debris Storage

Debris produced when the existing paint system is disturbed must not be temporarily stored on the ground. Before the end of each work shift, remove accumulated debris from the containment system. Store the debris as a hazardous waste.

14-11.08E(2) Debris Waste Characterization

Perform waste characterization testing on the debris as required by the disposal facility including:

1. Total _____ by US EPA Method 6010B
2. Soluble _____ by California Waste Extraction Test (CA WET)
3. Soluble _____ by Toxicity Characteristic Leaching Procedure (TCLP)

From the first 220 gal of hazardous waste or portion thereof, if less than 220 gal of hazardous waste are produced, a minimum of 4 randomly selected samples must be taken and analyzed individually. Samples must not be composited. From each additional 880 gal of hazardous waste or portion thereof, if less than 880 gal are produced, a minimum of 1 additional random sample must be taken and analyzed.

Use chain of custody procedures consistent with chapter 9 of US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) while transporting samples from the job site to the analytical laboratory. The laboratory must be certified by the CDPH's Environmental Laboratory Accreditation Program (ELAP) for all analyses to be performed.

Before performing the analyses, the laboratory must homogenize each sample. The homogenization process must not include grinding of the samples. A sample aliquot must be:

1. Obtained in an amount large enough for all analyses to be performed
2. Homogenized a 2nd time
3. Used for the total and soluble analyses after the 2nd homogenization

14-11.08E(3) Debris Transport and Disposal

14-11.08E(3)(a) General

For bidding purposes, assume the debris is a hazardous waste.

14-11.08E(3)(b) Hazardous Waste Debris

After the Engineer accepts the waste-characterization test results, dispose of the debris:

1. Within ___ days after accumulating 220 lb of debris
2. At an appropriately permitted Class I facility located in California

Make all arrangements with the operator of the disposal facility.

If less than 220 lb of hazardous waste is generated in total, dispose of it within ___ days after the start of accumulation of the debris.

Use a hazardous waste manifest and a transporter using vehicles with current DTSC registration certificate when transporting hazardous waste. The Engineer provides the generator's EPA Identification Number and signs all manifests as the hazardous waste generator within 2 business days of accepting the waste-characterization test results and receiving your request for the generator's EPA Identification Number.

14-11.08E(3)(c) Nonhazardous Waste Debris

If waste characterization test results demonstrate that the debris is a nonhazardous waste and the Engineer accepts the results, dispose of the debris at an appropriately permitted CA Class II or CA Class III facility or recycle it. Make all arrangements with the operator of the disposal facility and comply with the facility's requirements.

You may dispose of nonhazardous debris at a facility equipped to recycle the debris if:

1. Copper slag abrasive blended by the supplier with a calcium silicate compound is used for blast cleaning.
2. You make all arrangements with the recycling facility's operator and perform any facility-required testing of the debris.

The Department does not adjust payment for disposal of nonhazardous debris at a recycling facility.

Replace section 14-11.09 with:

14-11.09 TREATED WOOD WASTE

14-11.09A General

14-11.09A(1) Summary

Section 14-11.09 includes specifications for handling, storing, transporting, and disposing of treated wood waste (TWW).

Wood removed from _____ is TWW. Manage TWW under 22 CA Code of Regs, Div. 4.5, Chp. 34.

14-11.09A(2) Submittals

For disposal of TWW, submit as an informational submittal a copy of each completed shipping record and weight receipt within 5 business days.

14-11.09B Materials

Not Used

14-11.09C Construction

14-11.09C(1) General

Not Used

14-11.09C(2) Training

Provide training to personnel who handle TWW or may come in contact with TWW. Training must include:

1. Applicable requirements of 8 CA Code of Regs
2. Procedures for identifying and segregating TWW
3. Safe handling practices
4. Requirements of 22 CA Code of Regs, Div. 4.5, Chp. 34
5. Proper disposal methods

Maintain records of personnel training for 3 years.

14-11.09C(3) Storage

Store TWW before disposal using the following methods:

1. Elevate on blocks above a foreseeable run-on elevation and protect from precipitation for no more than 90 days.
2. Place on a containment surface or pad protected from run-on and precipitation for no more than 180 days.
3. Place in water-resistant containers designed for shipping or solid waste collection for no more than 1 year.
4. Place in a storage building as defined in 22 CA Code of Regs, Div. 4.5, Chp. 34, § 67386.6(a)(2)(C).

Prevent unauthorized access to TWW using a secured enclosure such as a locked chain-link-fenced area or a lockable shipping container located within the job site.

Resize and segregate TWW at a location where debris from the operation including sawdust and chips can be contained. Collect and manage the debris as TWW.

Provide water-resistant labels that comply with 22 CA Code of Regs, Div. 4.5, Chp. 34, §67386.5, to clearly mark and identify TWW and accumulation areas. Labels must include:

1. Caltrans, District number, Construction, Construction Contract number
2. District office address
3. Engineer's name, address, and telephone number
4. Contractor's contact name, address and telephone number
5. Date placed in storage

14-11.09C(4) Transporting and Disposal

Before transporting TWW, obtain an agreement from the receiving facility that the TWW will be accepted. Protect shipments of TWW from loss and exposure to precipitation. For projects with 10,000 lb or more of TWW, request a generator's EPA Identification Number at least 5 business days before the 1st shipment. Each shipment must be accompanied by a shipping record such as a bill of lading or invoice that includes:

1. Caltrans with district number
2. Construction Contract number
3. District office address
4. Engineer's name, address, and telephone number
5. Contractor's contact name and telephone number
6. Receiving facility name and address
7. Waste description: Treated Wood Waste with preservative type if known or unknown/mixture
8. Project location
9. Estimated quantity of shipment by weight or volume
10. Date of transport
11. Date of receipt by the receiving TWW facility
12. Weight of shipment as measured by the receiving TWW facility
13. Generator's EPA Identification Number for projects with 10,000 lb or more of TWW

The shipping record must be at least a 4-part carbon or carbonless 8-1/2-by-11-inch form to allow retention of copies by the Engineer, transporter, and disposal facility.

Dispose of TWW at an approved TWW facility. A list of currently approved TWW facilities is available at:

<http://www.dtsc.ca.gov/HazardousWaste/upload/lanfillapr11pdated1.pdf>

Dispose of TWW within:

1. 90 days of generation if stored on blocks
2. 180 days of generation if stored on a containment surface or pad
3. 1 year of generation if stored in a water-resistant container or within 90 days after the container is full, whichever is shorter
4. 1 year of generation if storing in a storage building as defined in 22 CA Code of Regs, Div. 4.5, Chp. 34, § 67386.6(a)(2)(C)

14-11.09D Payment

Not Used

Add to section 14-9.02A

Notify the following agencies as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR Part 61, Subpart M, and California Health and Safety Code section 39658(b)(1). Notification must take place not less than 10 days before starting demolition or renovation activities as defined in the NESHAP regulations. Notification forms and other information are available from the California Air Resources Board web site at: <http://www.arb.ca.gov/enf/oasse.htm#asb>.

The contractor must mail the original notification form with any necessary attachments to:

U.S. EPA, REGION IX
ASBESTOS NESHAP NOTIFICATION (AIR-5)
75 HAWTHORNE STREET
SAN FRANCISCO, CA 94105

Mail a copy or send a fax of the notification form and any necessary attachments to:

CALIFORNIA AIR RESOURCES BOARD
ENFORCEMENT DIVISION
ASBESTOS NESHAP NOTIFICATION
POST OFFICE BOX 2815
SACRAMENTO, CA 95812
Fax: (916) 445-7986

Notify other local permit agencies and utility companies before starting any demolition activities. Submit a copy of the notification form and attachments as an informational submittal before starting demolition or renovation activities.

Add to section 14-9.02A

<http://www.arb.ca.gov/capcoa/roster.htm>.

Notify the Air Pollution Control District (APCD) or Air Quality Management District (AQMD) identified below as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR Part 61, Subpart M, and California Health and Safety Code section 39658(b)(1). Notification must take place no less than 14 days before starting demolition or renovation activities as defined in the NESHAP regulations. Notification forms and other information are available from:

Forms and information may also be obtained from the air district's web site at:
<http://www.aqmd.gov>.

Mail or otherwise deliver the original notification form with any necessary attachments to:

Notify other local permit agencies and utility companies before starting any demolition activities. Submit a copy of the notification form and attachments as an informational submittal before starting demolition or renovation activities.

Appendix F

Geotechnical Report

Appendix G

HAZWOPER Health and Safety Training
Medical Surveillance Documentation
HAZWOPER Provisions

Appendix H

Asbestos Management Plan

HASP APPENDIX H

ASBESTOS MANAGEMENT PLAN

FOR

**REMOVAL, IN-PLACE ABANDONMENT AND
DISPOSAL OF ASBESTOS CEMENT PIPE
And
ON-STRUCTURE ASBESTOS CONTAINING
MATERIALS**

**BLAIRS LANE BRIDGE REPLACEMENT
PLACERVILLE, CA**

Prepared for:

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February 2015

Millennium Project No. 20037.2000

Asbestos Management Plan
For Removal, In-Place Abandonment and
Disposal of
Asbestos Cement Pipe
And/or
On-Structure Asbestos Containing Materials

Blairs Lane Bridge Replacement
Placerville, Ca

Millennium Project No. 20037.2000

REVIEWED AND APPROVED BY:



Mark Milani, P.E., CAC
CAC #08-4469, Exp. 2/19/2016



Date

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The Site Description was taken from Taber Consultants' Foundation Report to QEI dated May 30, 2007 as incorporated in Taber Initial Site Assessment and Preliminary Site Investigation Work Plan (ISA), dated December 16, 2014. The Project description was taken from the Addendum to the Adopted Mitigated Negative Declaration for Blairs Lane Bridge (25C-0012) at Hangtown Creek Replacement Project SCH# 2006122001 dated July 2014 as incorporated in the ISA as indicated above.

The project site is located on Blairs Lane and Broadway in Placerville approximately 450 feet south of Highway 50 (See Figure 1). The GPS coordinates of the site are latitude 38.731449° N and longitude -120.783225° W.

Hangtown Creek follows a generally straight course through the project area and flows to the west (Figure 1). The existing Blairs Lane Bridge is a single-span concrete deck on steel girder structure approximately 30 feet long and 20 feet wide. It is supported on reinforced concrete wall abutments slightly skewed to match the channel. A concrete sill / weir structure is located in the channel just below the downstream (west) side of the bridge. Natural channel banks are moderately steep and heavily vegetated in the immediate vicinity of the existing bridge. Walls and hardened bank areas exist both up and downstream of the site. Channel bottom is about 10 feet below deck on the upstream side of the sill and 11± feet below deck on the downstream side.

The proposed project consists of replacing the existing 31-foot long single span, steel stringer bridge with a concrete deck supported on concrete abutments with a 41-foot long single span cast in place pre-stressed concrete bridge.

The proposed project provides a tangent horizontal alignment in approximately the same location as the existing roadway. Most of the road widening associated with the proposed project will be located on the east side of Blairs Lane. Road widening will require right of way (ROW) acquisition on both sides of the road to provide two standard 12-foot wide travel lanes, five-foot wide sidewalks on the west and an approximately 125 feet long sidewalk segment portion to the east.

Retaining walls will be used where feasible to avoid existing utilities, oak trees, and other improvements south of Bridge 25C0012. Retaining wall types include Caltrans standard cantilever wall and modular block landscaping walls.

North of Bridge 25C0012, Blairs Lane will be raised approximately two feet from the existing grade in order to accommodate hydraulic design constraints. The road profile at the intersection of Blairs Lane and Broadway will not be changed. This allows Broadway to maintain its existing grade. The two gas station driveways north of the bridge will be raised and reconstructed to match the proposed Blairs Lane road profile.

The project will relocate an existing 6 inch sewer line in Blairs Lane from Baco Drive which connects to a 12 inch sewer line on the north side of the creek. The existing 6 inch sewer line is attached to the bridge. Existing north-south aligned underground utilities present along Blairs Lane include 10 inch water lines (one line along west side of the bridge and one line along the eastside of the bridge), the 6 inch existing inch sewer line to be relocated, Comcast television, and a 36 inch storm drain that outlets at both north and south creek banks. Existing east-west aligned underground utilities present adjacent to Hangtown Creek include a 4 inch sewer and 2 inch water service adjacent to the south bank and a 12 inch sewer line adjacent to the north bank.

Depth to existing dry utilities below grade can be assumed to be roughly 3 feet. The existing north-south aligned 6 inch sewer depth ranges from approximately 3 to 8 feet (to invert of pipe). The approximate depth of the existing north-south aligned waterline is 4 feet (to invert of pipe). The approximate depth of the existing 12 inch sewer line adjacent to the north bank of the creek is 7 feet.

The Project will relocate the existing 6 inch sewer line in Blairs Lane from Baco Drive north to a point just south of the new bridge structure. The relocated 6 inch sewer line will transition to an 8 inch sewer main and will be placed in a trench beneath the bed of Hangtown Creek.

Installation of the relocated sewer main will require excavation of a trench perpendicular to Hangtown Creek. Maximum depth of excavation below the bed of the Hangtown Creek for the creek crossing would be approximately 3 feet. Maximum depth of excavation in the adjacent creek banks and uplands areas would be approximately 13 feet below existing grade.

The Project will relocate the existing 12 inch sewer line that parallels Hangtown Creek approximately 130 feet north, placing it beneath Broadway and extending it west approximate 550 feet to reconnect with the existing sewer line on Lucky Street. Depth of excavation required along Broadway would range from approximately 15 feet near the intersection of Blairs Lane to about 6 feet near Lucky Street. The relocated pipe will be 15 inch diameter. The existing sewer line segment paralleling Hangtown Creek and the sewer line segment along the north edge of Broadway will be abandoned (filled with slurry). Relocation of the sewer line in Broadway will require installation of two short (each less than 100 feet in length) 6 inch sewer laterals to connect service lines to existing businesses.

The existing waterline beneath Blairs Lane will be relocated and a pressure reducing station will be installed on the west side of Blairs Lane, north of Baco Drive. The relocated waterline will be attached to the east side of the new bridge. The Project requires relocation of overhead electrical utility and telephone lines across Hangtown Creek. PG&E or their subcontractor will perform activities associated with the relocation of electrical utilities associated with the project. Ground disturbance associated with relocation of electrical utility and telephone lines is comprised of the installation of one new wooden utility pole near the southeast corner the new bridge and installation of a replacement wooden utility pole and a small utility box within a utility easement between the Caltrans maintenance yard and the south bank of Hangtown Creek. Tree trimming and tree removal will be necessary to provide line clearance for the existing and relocated electrical utility and telephone lines over Hangtown Creek. Tree trimming and tree removal will be conducted by the City, PG&E, or their contractors.

1.2 PURPOSE

Exposure to asbestos can seriously impact human health. This document is designed to communicate proper construction methods for working with Asbestos and Finable/non-Friable Asbestos Containing Materials (ACM) including handling, stockpiling, transport and disposal.

1.3 CONTRACTOR RESPONSIBILITIES

The Contractor is responsible for complying with all provisions of this Asbestos Management Plan for the duration of the project and any time Asbestos or other Friable/non-Friable ACM's are encountered on this project. Contractor is also responsible for filing all required notifications and obtaining all necessary permits to complete the work as detailed in the project scope (see section 8.2). Notification of "Report of Use" under 8 CCR §5203 may not be required since non-destructive removal of Asbestos used outside of buildings is not defined as "Asbestos-related Work" under 8 CCR §1529 (r)(1). However, removal of on-structure ACM may

require notification of “Report of Use”. The Hazardous Material Contractor shall be responsible for ensuring that all proper notifications have been made in ample time before the project commences.

This Asbestos Management Plan assumes that Contractor personnel involved in the removal and abandonment of Asbestos have completed training to perform non-destructive removal of asbestos cement pipe used outside of building as described in 8 CCR §1529(r)(1).

Contractor is responsible for providing a “competent person”, as defined per 8 CCR §1529, onsite at all times Asbestos is encountered. This person shall be capable of identifying and anticipating asbestos hazards at the site and have the authority to take prompt corrective measures to eliminate hazardous exposures, including the ability to stop work until the hazard is mitigated. The competent personal shall make frequent and regular inspections of the job sites, materials, and equipment. The competent personal shall also confirm that the work activities comply with the NEA sampled practices (see section 4.0).

A Hazardous Material Contractor (HMC) is required to remove, handle, transport and dispose of the on-structure ACM’s. The HMC shall be a C-22 California licensed and registered asbestos remediation contractor. The HMC personnel shall all have current training and California state certifications for asbestos worker or Contractor Supervisor.

The HMC competent personal shall perform or supervise the following duties, as applicable:

- Set up the regulated area, enclosure, or other containment;
- Ensure (by on-site inspection) the integrity of the enclosure, containment, or regulated area;
- Set up procedures to control entry to and exit from the enclosure and/or area;
- Supervise all employee exposure monitoring and ensure that it is conducted as required;
- Ensure through on-site supervision, that employees set up, use, and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements;
- Ensure that employees use the hygiene facilities and observe the decontamination procedures;
- Ensure that, through on-site inspection, engineering controls are functioning properly and employees are using proper work practices; and,
- Ensure that notification requirements are met.

1.4 SITE DESCRIPTION

See Section 1.1 above for Site Description.

All work will be conducted within the existing public roads and utility easements in the streets identified above. The specific work locations for removal and abandonment of the ACP are shown on Figure 3.

1.5 APPLICABLE REFERENCES

Regulatory references related to Asbestos are as follows:

Code of Federal Regulations (CFR) Publications:

29 CFR 1910.1001	Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite
29 CFR 1910.1101	Asbestos
29 CFR 1910.1200	Hazard Communication

29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.132	General Requirements - Personal Protective Equipment
29 CFR 1910.133	Eye and Face Protection
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.145	Specifications for Accident Prevention, Signs and Tags
29 CFR 1926.1101	Asbestos Construction Standard
40 CFR 61, Subpart A	General Conditions
40 CFR 61, Subpart M	National Emission Standards for Asbestos
40 CFR 61.152	Standard for Waste Disposal for Manufacturing, Demolition, Renovation, Spraying and Fabrication Operations

Title 8 California Code of Regulations (CCR):

Section 1529	Asbestos Construction Industry
Section 5144	Respiratory Protective Equipment
Section 5203	Carcinogen Report of Use
Section 5208	General Industry Safety Orders
Section 5194	Hazard Communication

Title 22 California Code of Regulations (CCR):

Section 66621	Hazardous Waste
Section 66268	Landfill Notification/Treatment

Non-regulatory references related to Asbestos are as follows:

American National Standard Institute (ANSI) Publications:

Z88.2-1980	Practices for Respiratory Protection
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American Society for Testing Materials (ASTM) Publications:

E 849-82	Safety and Health Requirements Relating to Occupational Exposures to Asbestos
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National Institute of Occupational Safety and Health (NIOSH) Publications:

Manual of Analytical Methods, 2nd Ed., Vol. 1.
 Physical and Chemical Analysis Method (P&CAM):
 Method 7400 Fibers (N1, 3rd Ed., Vol. 1.)

These publications form a part of this work plan only to the extent referenced.

1.6 ORGANIZATION

The Asbestos Management Plan is organized into nine (9) sections. Section 1 gives an introduction and identifies project objectives and other background information. Section 2 addresses site management. Sections 3 through 8 address specific requirements and/or procedures to be implemented under the Asbestos Management Plan.

Tables and figures referenced in the report are incorporated into the tabbed Table and Figures section of the plan. Backup information is provided in five (5) appendices to the Asbestos Management Plan.

AMP Appendix A includes copies of Asbestos training records and HMC asbestos training records.

AMP Appendix B and C include medical and respirator fit test records. These must be inserted by the Hazardous Material Contractor (HMC).

AMP Appendix D includes additional pertinent information not included elsewhere in the Asbestos Management Plan.

AMP Appendix E includes the asbestos report for on-structure ACM's by NAL Laboratories (12/16/14)

2.0 SITE MANAGEMENT

2.1 HEALTH AND SAFETY

This Asbestos Management Plan assumes that Contractor personnel involved in removal and abandonment of Asbestos to be performed under the Asbestos Management Plan have completed training to perform non-destructive removal of asbestos cement pipe used outside of building as described in 8 CCR §1529(r)(1).

Asbestos removal and abandonment activities are covered under the Site Safety and Health Plan (HASP). The Asbestos Management Plan is incorporated into the HASP as Appendix H. As described in the HASP, if and unknown environmental condition is encountered, Contractor shall immediately cease all work in the area where the unknown environmental condition has been exposed. Unknown environmental conditions are defined to include either contaminated materials (soil or groundwater) or asbestos cement pipe that is found to be damaged or deteriorated such that the material has become potentially friable.

The Site Safety Officer (SSO) will notify the Contractor Project Manager. The Contractor Project Manager will notify the Project Engineer that Contractor has ceased work at the location where the previously unidentified contaminated material or potentially friable asbestos was encountered and will request direction from the Project Engineer on how to proceed. No work shall be performed in the area until a hazard assessment has been completed, and a determination has been made that there is no hazard or until additional measures, procedures, and/or engineering controls to effectively mitigate the identified site hazard have been developed and implemented.

The hazard assessment will be performed upon direction from the Project Engineer to proceed. Hazard assessment associated with impacted soil and/or groundwater shall be performed either by a Certified Industrial Hygienist (CIH) or by an appropriate California Registered Professional (PE, RG). Hazard assessment associated with determining if damaged or deteriorated Asbestos shall be reclassified from a Category II Non Friable ACM to friable ACM shall be performed by a State of California Certified Asbestos Consultant (CAC).

The HASP also includes an Asbestos-related work provision that will be implemented in the unlikely event that friable asbestos is encountered along the planned alignment. If the asbestos cement pipe is found to be damaged or deteriorated such that the material is considered friable, the necessary documentation including: work plan, licensing, emergency notification, health and safety training, medical surveillance, respirator fit test records and other required documentation for asbestos-related work will be included in Appendix G to the HASP as a separate supplemental submittal.

2.2 PROPOSED LOCATIONS FOR TEMPORARY STOCKPILING

Waste materials will be stored in a lockable, plastic lined 40 cubic yard bin (with hard lid) posted with the appropriate signage (see section 7.3). The bin will be located within a designated parking area on the street and, will be moved (if necessary) as the project moves along the street. All efforts will be made to prevent transporting the waste Asbestos any further than necessary onsite. The bin will be located outside the regulated area limits.

The Asbestos storage bin will be placed in a location field approved by the Project Engineer.

Excavated soil material will be managed in conformance with the Construction Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is a separate submittal.

2.3 CONSTRUCTION STORM WATER AND GROUNDWATER CONTROL

Management of construction storm water and groundwater during Asbestos removal and abandonment operations will be performed in conformance with a site specific SWPPP and the Trench Dewatering/Groundwater Characterization and Sewer Bypass Management Plan.

2.4 SECURITY

Because of the location of the work, Contractor may not be able to set up a secure work zone. However, any time Asbestos is being disturbed, Contractor must set up and maintain a regulated work area (see section 6.1).

2.5 DUST PREVENTION

A water supply shall be available at all times that work is taking place. Visible dust emissions inside or outside of the work area are prohibited. Should such a condition exist, work will be stopped until the materials can be properly handled.

Prior to and during all Asbestos disturbance work, the Asbestos materials must be wetted with amended water (water containing a surfactant) in order to avoid fiber release. Such wetting shall continue until disturbance is complete and all waste materials have been containerized.

3.0 TRAINING REQUIREMENTS

3.1 Training for Handling Asbestos Cement Pipe (ACP)

Personnel contacting Asbestos in any manner during removal (handling, transportation, and disposal) shall be trained in the hazards of asbestos and proper handling techniques. Such training for ACP shall be a minimum of four hours (workers and supervisors), shall be performed by a Cal/OSHA registered Asbestos training provider and shall include the following topics (at a minimum):

- The physical characteristics and health hazards of asbestos;
- The types of asbestos cement pipe an employee may encounter in his or her specific work assignments;
- Safe practices and procedures for minimizing asbestos exposures from operations involving asbestos cement pipe;
- A review of general industry and construction safety orders relating to asbestos exposure; and,
- Hands-on instruction using pipe and the tools and equipment employees will use in the work place.

Annual refreshers shall be at least two hours in length and shall review the important elements covered in the initial course along with any changes in federal and state asbestos regulations and the latest developments in state of the art practices for work involving asbestos cement pipe. See section 8.3.1 for personnel training records.

3.2 Training for Removing On-Structure Asbestos Containing Materials

All HMC personnel shall have asbestos workers with a minimum of 32 hours of EPA-approved training. Workers shall be certified by the State of California as Asbestos Workers and have their card and certifications with them while on-site.

HMC Competent Person shall have a minimum of 40 hours of EPA-approved training as a Contractor Supervisor. Competent Person shall have a California State Certification as a Contractor Supervisor with them at all times while on the site.

4.0 EXPOSURE ASSESSMENT

Prior to commencing excavation in order to remove Asbestos Cement Pipe (ACP), the Contractor shall assume that potential exposure to workers will be above the permissible exposure limit (PEL) and short term exposure limit (STEL):

- PEL = 0.1 fibers/cubic centimeter as an 8 hour time weighted average
- STEL = 1.0 fibers/cubic centimeter as a 30 minute time weighted average, collected during expected peak exposures

Contractor shall make arrangements to conduct an initial exposure assessment of workers in compliance with (CAL/OSHA) 8 CCR §1529(f)(2)(C) and 8 CCR §1529(r)(1). The Contractor shall notify the project engineer when the initial exposure assessment will be performed.

The goal shall be to develop a negative exposure assessment (NEA) which demonstrates that employee exposure to airborne asbestos fibers during non-destructive removal of ACP is expected to be consistently below the permissible exposure limit (0.1 fibers/cubic centimeter for an eight-hour time weighted average) and below the short term exposure limit (1.0 fibers/cubic centimeter for a thirty minute time weighted average during the period of highest expected exposure).

The negative exposure assessment shall be for the exclusive use of the Contractor and valid only for the removal of Asbestos under conditions similar to those which were sampled (i.e., same processes, type of material, control methods, work practices, environmental conditions and level of employee training). The contractor shall provide a copy of the completed NEA to the Project Engineer.

A new exposure assessment shall be obtained annually or any time a change is made in the work practices used to remove Asbestos or a change of personnel. Should the results of the exposure assessment indicate that employees may be exposed over the PEL or STEL, a negative exposure assessment is not valid and additional measures will be required to protect employee health (e.g., change in work practices, training, medical clearances for respirators, additional PPE, etc.).

NOTE: The above Exposure Assessment is only required if the General Contractor performs disturbance or removal of ACP.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Level C personal protective equipment (PPE) shall be worn by all personnel within the regulated work area until a negative exposure assessment is obtained (If ACP disturbance is performed by a General Contractor).

Such PPE consists of: work boots (meeting the specifications of California Title 8 CCR Section 3385 (c)(1)); hard hats; safety glasses, goggles or a face shield; high visibility safety vest; disposable protective work gloves; disposable outer coveralls with attached head and foot covering (Tyvek or equivalent); and, a half face air purifying respirator with HEPA cartridges (or a respirator offering higher protection).

The following written respiratory protection program requirements will be enforced for the use of respirators at the site:

- Contractor must have a current written respiratory protection program.
- Only personnel who have been medically approved, fit-tested, and trained to wear and maintain respirators properly shall be allowed to use respiratory protection.
- Respirator users shall be instructed in the proper use and limitations of respirators.
- Only personnel who have been deemed by a physician as having the health and physical conditions necessary to physically perform the work while wearing a respirator shall be allowed to use respiratory protection.
- Only personnel who have been fit tested within the last 12 months will be allowed to work in atmospheres where respirators are required.
- If an employee has difficulty in breathing during the fit test or during respirator use, he/she shall be evaluated medically to determine if he/she can wear a respirator safely while performing assigned tasks.
- Facial hair that might interfere with a good face piece seal or proper operation of the respirator is prohibited.
- Only properly cleaned, maintained, NIOSH-approved respirators equipped with HEPA cartridges shall be used (or a respirator offering higher protection for the contaminants of concern).
- A sufficient number of respirator models and sizes shall be offered to employees so that the respirator is acceptable to, and correctly fits, the user.
- Air-supplied respirators, if used, shall be assembled according to manufacturer's specifications. Hose length, couplings, valves, regulators, manifolds, and all accessories shall meet American National Standards Institute (ANSI) and the manufacturer's requirements.
- Used HEPA air-purifying cartridges shall be replaced when breathing resistance is experienced. Powered Air-Purifying Respirator (PAPR) cartridges will be changed when the supply air flow falls below 4 cubic feet per minute (cfm) through the cartridge (as determined by the in-line flow meter or other visual indicator).
- Respirators shall be inspected prior to each donning. Worn or deteriorated parts shall be replaced before a respirator is put in use.
- Positive and negative pressure tests shall be performed each time the respirator is donned.
- Respirators shall be cleaned and sanitized daily after use.
- Respirators shall be stored in accordance with manufacturer's recommendations and in a manner to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Respirators shall be packed or stored to prevent deformation of the face piece and exhalation valve.

- When respiratory protection is in use, the Competent Person shall ensure daily that employees are properly wearing and maintaining their respirators and that the respiratory protection is adequately protecting the employees.

Once a negative exposure assessment is obtained, personal protective equipment requirements may be reduced to Level D, which shall consist of: Work boots (meeting the specifications of California Title 8 CCR Section 3385 (c)(1)); hard hats; safety glasses, goggles or a face shield; high visibility safety vest and, protective gloves.

A copy of the Contractor's respiratory protection program shall be included in the HASP.

Hearing protection shall be required when normal conversation becomes difficult at distances of 3 feet or less due to background noise (e.g., near heavy equipment operations). Contractor employees and other onsite personnel who may be exposed to hazardous noise must be participants in a hearing conservation program which meets the requirements of 8 CCR §5096-5100.

Note: Requirements for foot protection under Title 8 CCR Section 3385 (c)(1) are as follows:

(c)(1) Protective footwear for employees purchased after January 26, 2007 shall meet the requirements and specifications in American Society for Testing and Materials (ASTM) F 2412-05, Standard Test Methods for Foot Protection and ASTM F 2413-05, Standard Specification for Performance Requirements for Foot Protection which are hereby incorporated by reference.

6.0 WORK PRACTICES

6.1 REGULATED WORK AREA

A regulated work area must be established at least 15 feet (in all directions) from all Asbestos Cement Pipe removal areas. A regulated work area must be established at least 20 feet (in all directions) during removal of Friable Asbestos ACM on-structure. The regulated work area is designed to limit access to personnel that are trained and capable of handling the Asbestos. Once the regulated area is established, no access is permitted except to personnel who are trained per section 3.0 and wearing the proper personal protective equipment.

Place signs and barrier tape using the most current Global Harmonization System (GHS) language around the regulated area which states at least the following (Use most current signage):

DANGER

Asbestos

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

If they are required, the sign should additionally state:

RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

6.2 EXCAVATION AND HANDLING

The safest way to handle Asbestos ACP is to make sure the material stays non-friable by keeping the material in a condition such that asbestos fibers may not be released easily. Asbestos ACP is usually considered non-friable, unless mishandled, damaged or badly weathered. Non-friable material must be handled, transported, and disposed of in a way that prevents it from becoming friable and releasing asbestos fibers.

Prior to work starting, obtain contact information for a California licensed asbestos abatement contractor. Should the Asbestos become friable, the Contractor shall ensure that its workers are properly trained and use the required procedures for handling and disposing of friable asbestos containing materials. The Asbestos Cement Pipe (ACP) should remain in a non-friable condition if the following procedures are used:

1. Carefully machine-excavate the work area to expose the Asbestos. Plan the excavation operations carefully so that pipe damage does not occur prior to removal.
2. Determine cut locations such that the Asbestos is removed in as few pieces and as intact as possible, with accommodations for the size and weight of pipe being removed.
3. Where cuts or breaks in the Asbestos ACP are planned, evacuate the underlying areas by hand.
4. If possible, place a sheet of polyethylene below the area of the Asbestos to be disturbed. This helps to ease clean-up should small chips of Asbestos ACP be released.
5. Place a layer of polyethylene (poly) sheeting next to the trench. This poly shall act as a drop cloth and waste packaging.
6. Wet the Asbestos ACP at the cut locations with amended water (water containing a surfactant). Keep the material wet at all times
7. Use a snap cutter (also called a wheel cutter) whenever possible to make the necessary pipe breaks. Avoid sanding, sawing, grinding, chipping or using power tools on Asbestos ACP as these methods can render the Asbestos Cement Pipe friable.

AC coupling removal may be accomplished by disengaging the coupling. After the top of the coupling has been split, a crowbar or similar tool is used as a lever to split the bottom of the coupling. Loose debris shall be picked up and properly disposed of immediately.

8. Wet, wrap and seal ends of the Asbestos in poly of 6mil thickness (or thicker). Securely fasten the poly using spray glue and duct tape such that they poly will not fall off of the pipe during handling.
9. Lift the pipe out of the trench using lifting straps and place onto the poly drop cloth next to the trench. Use extreme caution while moving the pipe – dropping the pipe may cause it to break and become friable.
10. Promptly clean up any remaining debris (excluding clean soil) in the work area and place inside a poly bag of at least 6mil thickness. Ensure that this material is adequately wet before securing the opening with duct tape. Place this bag within another bag of the same type and secure the opening with duct tape. ***Always clean up before rest breaks, lunch periods and the end of the work shift.***
11. Wrap the poly drop cloth sheet completely around the pipe and seal with duct tape.
12. Label the waste pipe and any waste bags (see section 7.1)
13. Place the wrapped waste pipe and any waste bags into a lockable storage bin or other lockable location for stockpiling (see Section 2.1) and eventual haul away as non-hazardous asbestos containing waste.

As stated in the HASP, if an unknown environmental condition is encountered, Contractor shall immediately cease all work in the area where the unknown environmental condition has been exposed.

6.2.1 Prohibited Practices

The following practices are not allowed when contacting Asbestos:

- Visible emissions of dust are prohibited. Should visible dust emissions exist beyond the work area, including visible soil dust, all work will cease until the materials can be managed properly.
- No compressed air shall be used on or around disturbed Asbestos.
- Dry sweeping, shoveling or other dry clean-up of dust and debris containing asbestos is not allowed. Use wet methods for cleanup.
- The use of non-HEPA vacuums is not allowed. Where vacuums are used, they must utilize a HEPA filtered exhaust.
- High-speed abrasive disc saws are not allowed unless they are equipped with a point of cut ventilator or enclosure, with HEPA filtered exhaust air.
- Employee rotation as a means of reducing employee exposure to asbestos is not allowed.

6.2.2 Damaged or Deteriorated Asbestos Cement Pipe

The HASP includes an Asbestos-related Work Provision that will be implemented in the unlikely event that friable asbestos is encountered along the planned alignment. If the asbestos cement pipe is found to be damaged or deteriorated such that the material is considered friable, the necessary documentation including: work plan, licensing, emergency notification, health and safety training, medical surveillance, respirator fit test records and other required documentation for asbestos-related work will be included in Appendix G to the HASP as a separate supplemental submittal.

6.2.3 Removal and Abandonment of Asbestos Cement Pipe

Asbestos removal will be performed as described in Section 6.2 above. The approximate locations where Asbestos will be removed and/or abandoned in place are shown on Figure 3 (shown as Sheet 22 by CTA Engineering). Where the Asbestos will be abandoned in-place, a section of Asbestos ACP will need to be removed to enable access to the end of the Asbestos to be abandoned. The ends of the Asbestos ACP line to be abandoned in-place shall have an earth and concrete plug installed at each end of the pipe. The earth and concrete plug shall conform to the project engineer requirements.

6.3 REMOVAL OF ON-STRUCTURE ASBESTOS CONTAINING MATERIALS

A site asbestos survey was conducted by National Analytical Laboratories (NAL) to determine if there were asbestos-containing materials associated with the actual bridge structure. NAL identified the following materials associated with the bridge structure to contain greater than 1% asbestos and therefore are considered as hazardous materials. Refer to NAL report dated December 16, 2014 for more information.

- a. Thermal System Insulation (TSI) – Pipe insulation located beneath the bridge – East side pipe (approx.. 30 LF). This material is highly Friable (RACM) and must be removed by a C-22 California licensed asbestos contractor prior to any disturbance of the bridge structure.
- b. Compression Shims – Category II non-friable ACM located on I Beams and Foot Support (approx.. 10 SF). This material must be removed by a C-22 California licensed asbestos contractor prior to any disturbance of the bridge structure.

6.3.1 Removal of Friable TSI and Non-Friable Compression Shims on structure

The Hazardous Materials Contractor (HMC) shall remove all suspect TSI from the bridge structure. If allowed, the HMC may perform a “wrap and cut” by wrapping the entire line with TSI, sealing all ends and seams and then cutting the pipe off at both ends. Ensure that the final length will fit into the hazardous debris bin. Ensure that the removed section is properly labelled before putting in hazardous debris bin.

If the Project Engineer will not allow the “wrap and cut”, perform glove bagging of the TSI in accordance with California 8 CCR 1529 Asbestos in Construction regulation. Put the glove bag in a second 6 mil labeled bag, seal and label before putting in hazardous debris bin.

For either procedure, the following requirements/procedures apply:

- a. Before starting any removal, perform a thorough inspection beneath the bridge and pick up any possible materials that may be suspect asbestos containing. This includes, pipe wrap, TSI, pieces of compression shims or any other suspect materials. Put debris into a labelled 6-mil commercially-available asbestos disposal bag and dispose in the hazardous material bin.
- b. After all ACM has been picked up, install a 6-mil plastic sheeting under the bridge to extend at least 10 feet on both sides of the bridge. Secure plastic to prevent from moving.
- c. Using all safe procedures, remove the TSI and compression shim materials and put into labelled 6-mil asbestos bags and place sealed bags into hazardous waste bin. Remove all visible traces of asbestos materials. **NOTE: there may be small pieces of compression shims that are inaccessible. DO NOT loosen or remove any structural fasteners/bolts without the specific approval of the project engineer.**
- d. If allowed, remove fasteners and remaining compression shims. Otherwise remove after bridge sections with compression shims have been exposed during deconstruction.

- e. Clean the entire area and bag and dispose of plastic sheeting in hazardous debris bin.

6.4 DECONTAMINATION

6.4.1 Equipment

Once all Asbestos work has been completed, the waste pipe and other on-structure ACM's have been removed from the work area and all visible debris has been removed, equipment decontamination shall take place. All tools shall be washed and rinsed or wet wiped prior to leaving the regulated work area. No visible particulate may exist on the surfaces of any equipment leaving the regulated work area.

6.4.2 Personnel

Under no circumstances, except emergency evacuations, will personnel be allowed to leave the regulated work area without fully decontaminating.

A poly drop cloth shall be laid out at the entrance to the regulated work area and extend at least 3 feet into the regulated work area. Decontamination should begin when workers step onto the poly extending into the work area (decontamination zone). In addition to a poly waste bag for used PPE and a HEPA vacuum, a hand and face wash station shall be provided in the decontamination zone.

Decontamination procedures are as follows:

1. Beginning at the head, HEPA vacuum any visible loose debris on protective clothing (or work clothing), gloves and boots (especially bottoms of boots).
2. Work gloves shall be removed and placed into a poly waste bag.
3. If protective suits are being worn, they should be removed by rolling them down the body such that they are turned inside out. Once removed, the coveralls should be placed into the waste bag.
4. If respirators are being worn, they should be removed by holding the face piece with one hand and removing the straps with the other. The respirator shall be wet wiped prior to being placed in its storage container.
5. Wash hands, face and any other exposed skin surfaces thoroughly with soap and water.
6. Exit the regulated work area.
7. Where there may be the presence of sewage-related bacteria, all personnel who may contact sewage-related materials must thoroughly wash with anti-bacterial soap and clean water.

All waste bags containing used PPE shall be disposed of as non-hazardous asbestos containing waste.

7.0 WASTE HANDLING

Unless the Asbestos has been made friable, it may be disposed of as non-hazardous asbestos containing waste. Friable materials must be disposed of as hazardous asbestos containing waste, and will require additional labeling and manifest documentation. Notify the owner if such a condition should arise. Section 6.2.3 addresses handling of damaged and deteriorated Asbestos that may be considered to be friable.

7.1 ASBESTOS WASTE PACKAGING

All Asbestos wastes shall be double bagged (or wrapped) in 6 mil (or thicker) polyethylene sheeting. For the Asbestos, the first layer of waste packaging is the poly used to seal the ends of the pipe. All wastes shall be labeled with the generators name and address and the following:

Place labels using the most current Global Harmonization System (GHS) language on asbestos materials to be disposed which states at least the following (Use most current labels):

DANGER
CONTAINS Asbestos FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

7.2 ASBESTOS WASTE LOAD OUT

A waste load out area shall be established by the poly drop cloth placed next to the regulated work area (see section 6.2). This area shall move as work progresses along the street/trench.

7.3 ASBESTOS WASTE STORAGE

Waste materials will be stored in a lockable, plastic lined 40 cubic yard bin (with hard lid). The bin shall be posted with the following signage:

Place signs using the most current Global Harmonization System (GHS) language on the Hazardous Waste Bin which states at least the following (Use most current signage):

DANGER
CONTAINS Asbestos FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

The bin will be located within a designated parking area on the street and will be moved as the project moves along the street. All efforts will be made to prevent transporting the waste Asbestos any further than necessary onsite.

Once the waste bin is full, it will be removed from the site and hauled away to an approved landfill and replaced with an empty bin of the same type.

7.4 ASBESTOS WASTE MANIFESTING

All wastes removed from the site shall be documented on a non-hazardous waste manifest. Generator information, including the site address may be required. An EPA ID number is not required.

7.5 ASBESTOS WASTE TRANSPORTATION

All Asbestos waste will be transported in a poly lined and hard lid covered waste bin. Wastes shall be packed in a manner that prevents tipping, spilling, or breaking during transport.

Asbestos waste will be hauled by a California certified and registered, DOT approved Hazardous Waste Hauler. The Hazardous Material Contractor shall be responsible for filling out the hazardous material manifest, having it signed by the appropriate party on the site and the waste hauler.

The Hazardous Material Contractor shall be responsible to ensure that a copy of the final completely signed manifest is forwarded from the hazardous disposal site to the Project Engineer or other responsible project manager.

7.6 EXCAVATED SOIL MANAGEMENT

Excavated soil material generated during Asbestos ACP removal and grouting will be managed in conformance with the Construction Storm Water Pollution Prevention Plan (SWPPP) and approved soil disposal plan.

8.0 DOCUMENTATION

8.1 WASTE MANIFESTS

Waste manifest records shall be maintained by the Contractor for the duration of the project. Copies shall be delivered by to the Project Engineer upon signature (at the time of waste removal). A copy will be delivered by the waste site to the Project Engineer by the once final disposal has been made.

8.2 PERMITS AND NOTIFICATIONS

Contractor shall make all notifications and shall obtain all required permits prior to the start of work.

The following notifications are not required for the Asbestos ACP removal since non-destructive removal of Asbestos ACP is not classified as Asbestos-related Work under 8 CCR §1529(r)(1).

- Cal/OSHA one time carcinogen report of use (8 CCR 5203(d))
- Cal/OSHA temporary worksite notification (8 CCR 5203(e))
- NESHAPS notification to the Bay Area Air Quality Management District notification.

NESHAPs notification is not required because the removal of Asbestos that is located outside a building does not constitute demolition or renovation.

Cal/OSHA report of use may be necessary for the on-structure removal of ACMs. The Hazardous Materials Contractor is responsible for making all required notifications for any hazardous material work on the site.

8.3 PERSONNEL RECORDS

8.3.1 Training Documentation

Records of EPA or Cal/OSHA-approved Asbestos training for all employees shall be retained shall maintain all employee training records for one (1) year beyond the last date of employment by that employer. See Appendix A for current employee training documentation.

8.3.2 Medical Evaluations

All records of physician evaluations to determine employee fitness, including for the purposes of using a respirator in the workplace, shall be retained by Contractor for a period of 30 years. See Appendix B for current employee medical evaluations for fitness of duty.

8.3.3 Fit Testing

Records of fit tests shall be retained by Contractor until the next fit test is performed (typically annually). See Appendix C for current employee fit testing results.

8.3.4 Employee Exposure

All employee exposure records collected as part of this project shall be retained by Contractor for a period of 30 years.

8.4 DISPOSAL FACILITY

8.4.1 Proposed Asbestos Disposal Facility

Waste will be disposed at _____.
This landfill must be licensed and capable of accepting non-hazardous asbestos containing waste.

8.4.2 Proposed Waste Treatment Methods

No waste treatment methods are proposed for this project. Wetting asbestos waste does not constitute treatment.

Appendix A

Contractor submitted Asbestos Control Plan,
Asbestos training records and
HMC asbestos training records

Appendix B

HMC Contractor Employee Medical And Respirator Approvals

Appendix C

HMC Contractor Respirator Fit Test Records

Appendix D

Additional Asbestos Management Plan Information

Appendix E

NAL Asbestos Report for

Blairs Lane Bridge

12/16/14

*Asbestos Building
Inspection Report For:*

Blairs Lane Bridge, at Hangtown Creek

*+38.73167, -120.78333
Placerville, CA 95667
PO # 14-253*

Presented To:

Ellen Pyatt

*Taber Consultants
3911 West Capitol Avenue
West Sacramento, CA 95619*

By:

*Michael Lee
Certified Asbestos Consultant*

*National Analytical Laboratories, Inc.
2201 Francisco Dr., Ste.140-261
El Dorado Hills, CA 95762
(916) 361-0555 Fax: (916) 361-0540
E-Mail: NAL1@NAL1.com Web Page: www.NAL1.com*



December 16, 2014

Ellen Pyatt
Taber Consultants
3911 West Capitol Avenue
West Sacramento, CA 95619

RE: Asbestos Inspection – Blairs Lane Bridge, at Hangtown Creek

Dear Ms. Pyatt,

The following report is in regards to the asbestos building inspection completed at the, Blairs Lane Bridge, at Hangtown Creek, located at +38.73167, -120.78333, in Placerville, CA. Of the six (6) suspected asbestos containing samples collected, two (2) were found to contain asbestos containing construction materials (ACCM). Michael Lee, Certified Asbestos Consultant and Registered Environmental Property Assessor (REPA), conducted the inspection.

Mr. Lee performed an entire bridge walk around to visually assess the bridge structure. The bridge system is a concrete deck (overlaid with asphalt) over a Metal I beam support system mounted on a concrete abutments (North & South) with a Wood rail system.

The inspection was completed on December 15, 2014. The inspection was completed according to the EPA's Asbestos Containing Building Materials (ACBM) In-Schools Rule; 40 CFR 763.85 (Inspection and Re-Inspection). Currently, EPA regulations classify ACBM as materials containing more than 1-percent (1%) of asbestos. Cal-OSHA currently regulates asbestos to 1/10th of 1% (0.1%) and requires that a certified asbestos worker conduct this work.

MicroTest Laboratories, Inc., located in Fair Oaks, California analyzed the bulk suspect asbestos containing samples, utilizing Polarized Light Microscopy (PLM) Method. National Voluntary Laboratory Accreditation Program (NVLAP) Certification #200999-0 certifies MicroTest.

Based on the sample results the Compression Shim and the TSI (thermal systems insulation) were found to contain ACCM. All square footage should be verified by contractor. No destructive sampling was conducted during the site visit, in the event that future renovation and/or demolition work reveals any unforeseen suspect materials; the contractor shall contact the project manager for further testing.

Federal and state regulations require that anyone disturbing asbestos containing materials are properly trained certified and have the required respiratory protection and medical surveillance.

Although not all the rooms or materials throughout the site were sampled, the like materials that were not tested will be treated as homogeneous to the materials that were tested and will be considered as containing ACCM.

breath easy....

2201 Francisco Dr., Ste.140-261 | El Dorado Hills, CA 95762
Phone: (916) 361-0555 | Fax: (916) 361-0540

34782

The location and results of suspect samples found to contain ACCM are as follows:

Sample ID#	Material	Location	Category	Results
BLB-1	TSI	East Side Pipe (30 lf)	RACM	40% Chrysotile
BLB-2	Compression Shim	South Side I Beam, Foot Support (-10 sf)	II	40% Chrysotile

The TSI is considered Friable-Hazardous Materials that when disturbed and/or removed must be disposed of at a regulated waste facility. The Compression Shim is considered Category II, non-friable/non hazardous material that can be removed and disposed of at a non-hazardous waste facility.

N.A.L. recommends that a certified asbestos abatement contractor be retained to remove the friable and non-friable materials prior to any scheduled renovation/demolition work being completed at the site. Prior to the work process starting a work plan or specifications in regards to the abatement process should be completed and distributed to the abatement contractors during the job walk at the site.

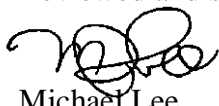
On-Site Observation should be conducted by N.A.L.'s Certified Asbestos Consultant or Certified Site Surveillance Technician to verify that the work plan/specification is being followed. This will verify that during the abatement work the outside air was clean. Once a certified asbestos contractor has removed the ACCM, following EPA and OSHA requirements; a visual inspection and air clearance sampling should be completed. Clearances will confirm that the general contractor can reoccupy the work area(s), without concern for exposure to asbestos airborne fibers to their employees thus allowing the renovation or demolition work to be completed by the general contractor.

The following samples were non-asbestos containing materials:

Sample ID#	Material	Location	Results
BLB-3	Asphalt Compression Felt	South Side Abutment/Dec Intersection (-300 sf)	None Detected
BLB-4	Structural Concrete	Concrete Abutment System, South Side, East and West areas, Multi-Hit Composite (-800 sf)	None Detected
BLB-5	Structural Concrete	Concrete Deck System, East and West Sides, Middle, and South Side of Span Multi-Hit Composite (-150 sf)	None Detected
BLB-6	White Paint	Wood Rail System, East and West Sides, Various Area (-175 sf)	None Detected

If you have any questions regarding this report or if we can be of further assistance, please contact our office.

Reviewed and submitted by:



Michael Lee
Certified Asbestos Consultant 06-4047





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TSI (Thermal Systems Insulation) 40% Chrysotile

breath easy....

2201 Francisco Dr., Ste.140-261 | El Dorado Hills, CA 95762
Phone: (916) 361-0555 | Fax: (916) 361-0540



Compression Shim – 40% Chrysotile



breath easy...



breath easy....



breath easy....

2201 Francisco Dr., Ste.140-261 | El Dorado Hills, CA 95762
Phone: (916) 361-0555 | Fax: (916) 361-0540

MicroTest™ Laboratories, Inc.
NVLAP Lab Code 200999-0
5150 Sunrise Blvd, Suite B-1 Fair Oaks, CA 95628
Phone (916) 567-9808 or (800) 713-3334
microtestlabsinc@yahoo.com

Client : NAL 2201 Francisco Drive, Suite 140-2611 El Dorado Hills, CA 95762	Contact Name: Anthony De Arcos Contact Name: Paula Lee Sampler: Michael Lee	Accession : 28530-28535 Analyst: A. Nagra
Project: Blairs Lane Bridge at Hangtown Creek +38.73167, -120.78333 Placerville, CA	Sampling Date: 12/15/14 Receipt Date: 12/16/14 Report Date: 12/16/14	Samples Received: 6 Samples Analyzed: 6

Polarized Light Microscopy Test Report, EPA/600/R-93/116

Sample ID	Description	Fibrous/Non-Fibrous Material	Asbestiform Minerals
East Side BLB-1 Lab ID: 28530	White TSI	Binder 60%	40% Chrysotile Asbestos
South Side BLB-2 Lab ID: 28531	Gray Compression Shim	Binder 60%	40% Chrysotile Asbestos
South Side BLB-3 Lab ID: 28532	Black Felt	Cellulose 10% Binder 90%	None Detected
Concrete Abutment BLB-4 Lab ID: 28533	Gray Concrete	Binder 99%	None Detected
Concrete Deck BLB-5 Lab ID: 28534	Gray Concrete	Binder 99%	None Detected
Wood Rail BLB-6 Lab ID: 28535	White Paint	Binder 99%	None Detected

This constitutes a final report. Due to the limitations of PLM, some samples classified as containing no asbestos in materials such as floor tiles, warrant a recommendation for further analysis by TEM. These results relate only to the items tested. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U. S. Government. All samples may be disposed of after 30 days, according to State/Federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.





28530 - 28535

NAL LOG-IN RECORD

Login # 34782

Ph: 916.361.0555 Fx: 916.361.0540

National Analytical Laboratories, Inc.

Job Site/Job #:

Client#-Lot#

4443 / 27

Blairs Lane Bridge at Hangtown Creek

Date 12/15/2014

Taber Consultants

+38.73167, -120.78333

Sampling Date: 12/15/2014

Phone Number

Placerville, CA

Sampling Time 8:00:00 AM

FAX Number

PO # 14-253

Type of Work: PLM-BI

Contact

Job #: 1P2 304 175

No. of Samples 6

E-Mail Address

Turnaround: 6 hours

Num.	Sample ID#	Location/Description
1	BLB-1	East Side Pipe (30 lf) / TSI
2	BLB-2	South Side I Beam, Foot Support (-10 sf) / Compression Shim
3	BLB-3	South Side Abutment/Dec Intersection (-300 sf) / Asphalt Compression Felt
4	BLB-4	Concrete Abutment System, South Side, East and West areas, Multi-Hit Composite (-800 sf) / Structural Concrete
5	BLB-5	Concrete Deck System, East and West Sides, Middle, and South Side of Span Multi-Hit Composite (-150 sf) / Structural Concrete
6	BLB-6	Wood Rail System, East and West Sides, Various Area (-175 sf) / White Paint

28530
31
32
33
34
35

***IF RESULTS ARE LESS THAN 1%, PLEASE 400 POINT COUNT**

Chain of Custody Information

Released By Signature	Date/Time	Received By Signature	Date/Time	Due:
	12/15/14 1453		12-16-14 1010A	
Released By Signature	Date/Time	Received By Signature	Date/Time	At:

Appendix I

Lead Compliance Plan

APPENDIX I

LEAD COMPLIANCE PLAN
for
Blair's Lane Bridge Replacement
at Hangtown Creek
Placerville, California

Prepared for:

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Prepared by:

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February 2015

Project No. 20037.2000

Lead Compliance Plan
For Removal and Disposal of Lead-Containing Building
Materials and Lead Impacted Soil


Blairs Lane Bridge Replacement
Placerville, CA

Millennium Project No. 20037.2000

REVIEWED AND APPROVED BY:



Mark Milani, PE, CLSP
CE 35120, Exp. 9/30/2015
CDPH CLSP, Exp. 4/6/2015



Date



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Appendix A – Taber Consultants Report of Lead Sampling at Blairs Lane Bridge

1.0 INTRODUCTION

1.1 General Project Background and Site Description

This Lead Compliance Plan (LCP) addresses lead work activities associated with the removal, handling, transport and disposal of on-structure components as well as degraded paint which has fallen off the structure and contaminated the soil beneath the structure (Blairs Lane Bridge at Hangtown).

The Site Description was taken from Taber Consultants' Foundation Report to QEI dated May 30, 2007 as incorporated in Taber Initial Site Assessment and Preliminary Site Investigation Work Plan (ISA), dated December 16, 2014. The Project description was taken from the Addendum to the Adopted Mitigated Negative Declaration for Blairs Lane Bridge (25C-0012) at Hangtown Creek Replacement Project SCH# 2006122001 dated July 2014 as incorporated in the ISA as indicated above.

The project site is located on Blairs Lane and Broadway in Placerville approximately 450 feet south of Highway 50 (See Figure 1). The GPS coordinates of the site are latitude 38.731449° N and longitude -120.783225° W.

Hangtown Creek follows a generally straight course through the project area and flows to the west (Figure 1). The existing Blairs Lane Bridge is a single-span concrete deck on steel girder structure approximately 30 feet long and 20 feet wide. It is supported on reinforced concrete wall abutments slightly skewed to match the channel. A concrete sill / weir structure is located in the channel just below the downstream (west) side of the bridge. Natural channel banks are moderately steep and heavily vegetated in the immediate vicinity of the existing bridge. Walls and hardened bank areas exist both up and downstream of the site. Channel bottom is about 10 feet below deck on the upstream side of the sill and 11± feet below deck on the downstream side.

The proposed project consists of replacing the existing 31-foot long single span, steel stringer bridge with a concrete deck supported on concrete abutments with a 41-foot long single span cast in place pre-stressed concrete bridge.

The proposed project provides a tangent horizontal alignment in approximately the same location as the existing roadway. Most of the road widening associated with the proposed project will be located on the east side of Blairs Lane. Road widening will require right of way (ROW) acquisition on both sides of the road to provide two standard 12-foot wide travel lanes, five-foot wide sidewalks on the west and an approximately 125 feet long sidewalk segment portion to the east.

Retaining walls will be used where feasible to avoid existing utilities, oak trees, and other improvements south of Bridge 25C0012. Retaining wall types include Caltrans standard cantilever wall and modular block landscaping walls.

North of Bridge 25C0012, Blairs Lane will be raised approximately two feet from the existing grade in order to accommodate hydraulic design constraints. The road profile at the intersection of Blairs Lane and Broadway will not be changed. This allows Broadway to maintain its existing grade. The two gas station driveways north of the bridge will be raised and reconstructed to match the proposed Blairs Lane road profile.

The project will relocate an existing 6 inch sewer line in Blairs Lane from Baco Drive which connects to a 12 inch sewer line on the north side of the creek. The existing 6 inch sewer line is attached to the bridge. Existing north-south aligned underground utilities present along Blairs Lane include 10 inch water lines (one line along west side of the bridge and one line along the eastside of the bridge), the 6 inch existing inch sewer line to be relocated, Comcast television, and a 36 inch storm drain that outlets at both north and south creek banks. Existing east-west aligned underground utilities present adjacent to Hangtown Creek include a 4 inch sewer and 2 inch water service adjacent to the south bank and a 12 inch sewer line adjacent to the north bank.

Depth to existing dry utilities below grade can be assumed to be roughly 3 feet. The existing north-south aligned 6 inch sewer depth ranges from approximately 3 to 8 feet (to invert of pipe). The approximate depth of the existing north-south aligned waterline is 4 feet (to invert of pipe). The approximate depth of the existing 12 inch sewer line adjacent to the north bank of the creek is 7 feet.

The Project will relocate the existing 6 inch sewer line in Blairs Lane from Baco Drive north to a point just south of the new bridge structure. The relocated 6 inch sewer line will transition to an 8 inch sewer main and will be placed in a trench beneath the bed of Hangtown Creek.

Installation of the relocated sewer main will require excavation of a trench perpendicular to Hangtown Creek. Maximum depth of excavation below the bed of the Hangtown Creek for the creek crossing would be approximately 3 feet. Maximum depth of excavation in the adjacent creek banks and uplands areas would be approximately 13 feet below existing grade.

The Project will relocate the existing 12 inch sewer line that parallels Hangtown Creek approximately 130 feet north, placing it beneath Broadway and extending it west approximately 550 feet to reconnect with the existing sewer line on Lucky Street. Depth of excavation required along Broadway would range from approximately 15 feet near the intersection of Blairs Lane to about 6 feet near Lucky Street. The relocated pipe will be 15 inch diameter. The existing sewer line segment paralleling Hangtown Creek and the sewer line segment along the north edge of Broadway will be abandoned (filled with slurry). Relocation of the sewer line in Broadway will require installation of two short (each less than 100 feet in length) 6 inch sewer laterals to connect service lines to existing businesses.

The existing waterline beneath Blairs Lane will be relocated and a pressure reducing station will be installed on the west side of Blairs Lane, north of Baco Drive. The relocated waterline will be attached to the east side of the new bridge. The Project requires relocation of overhead electrical utility and telephone lines across Hangtown Creek. PG&E or their subcontractor will perform activities associated with the relocation of electrical utilities associated with the project. Ground disturbance associated with relocation of electrical utility and telephone lines is comprised of the installation of one new wooden utility pole near the southeast corner the new bridge and installation of a replacement wooden utility pole and a small utility box within a utility easement between the Caltrans maintenance yard and the south bank of Hangtown Creek. Tree trimming and tree removal will be necessary to provide line clearance for the existing and relocated electrical utility and telephone lines over Hangtown Creek. Tree trimming and tree removal will be conducted by the City, PG&E, or their contractors.

1.2 Removal Scope

Because lead-containing materials will be disturbed by project related work, the work will be subject to various regulations including the lead in construction standard under CAL/OSHA Regulation 1532.1. Under this regulation, a Lead Compliance Plan is required to be developed and implemented during all disturbance of lead-contaminated soils.

Removal of soil containing lead contamination as well as on-structure components which contain lead will dictate that all personnel adhere to California regulations regarding disturbance of lead materials.

The Blairs Lane bridge will be deconstructed and replaced. All suspect lead-containing materials including but not limited to paint, coatings, sealants or other suspect materials must be handled in accordance with Title 8 CCR 1532.1.

Contaminated soil beneath the bridge must be removed, profiled for disposal including Federal TCLP tests prior to removing off-site and disposed at an approved landfill.

1.3 Applicable Regulations and Requirements

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. This list constitutes the most common, but not all regulations and requirements which could govern the work on this project. The Contractor is obligated to follow all Federal, State and local requirements.

Occupational Safety and Health Administration (OSHA)

- Title 29 Code of Federal Regulation (29 CFR) 1926.62 Lead Exposure in Construction; Interim Final Rule, 4 May 1993.
- 29 CFR 1910.20 Access to Employee Exposure and Medical Records
- 29 CFR 1926.21 Safety, Training, and Education

California Division of Occupational Safety and Health (Cal/OSHA)

- Title 8 California Code of Regulations (8 CCR), Subchapter 4 Construction Safety Orders
- 8 CCR, Subchapter 4, Section 1532.1 Lead in Construction

California Environmental Protection Agency (CalEPA)

- 17 CCR, Division 4, California Department of Health Services (DHS) requirements for lead certification, training and work practices
- 17 CCR, Division 8, Proposition 65 Requirements for Hazard Notification
- 22 CCR Division 4.5 (Environmental Health) Classification and Management of Hazardous and Extremely Hazardous Waste

1.4 Definitions

Terms referenced in the regulations identified above and used in this LCP shall have the following meaning:

Action Level - means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m³) calculated as an 8 hour time-weighted average (TWA).

Air Monitoring - The process of measuring the lead content of a specific volume of air to measure for airborne lead dust both at the breathing zone of the worker and in the surrounding air.

Amended Water - Water to which a surfactant has been added for use in wetting LBP to control airborne lead dust.

Breathing Zone - A hemisphere forward of the shoulders with a radius of approximately 6" to 9".

Bridging Encapsulant - An encapsulant that forms a discrete layer on the surface of an existing lead material.

Site Owner - The legal entity, including a lessee, which exercises control over management and record-keeping functions relating to a building and/or facility in which activities covered by this Operations and Maintenance Program take place.

Classification of Lead Work:

Class I - covers the following tasks:

- Manual demolition of structures (for example drywall)
- Manual scraping (includes chemical stripping) or sanding
- Using a heat gun to remove Lead Based Paint (LBP)
- Spray painting with lead-based paint

Class II - covers the following tasks:

- Using lead-based mortar
- Burning lead
- Rivet Busting
- Power tool cleaning without HEPA dust collection systems
- Cleanup activities where dry expendable abrasive are used
- Moving or tearing down the enclosure used for abrasive blasting

Class III - covers the following tasks:

- Abrasive Blasting
- Welding
- Cutting
- Torch burning

Clean Room - an uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.

Competent Person - means one who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

Critical Barrier -One or more layers of polyethylene taped in place over openings into a work area. Openings to be covered include doors, windows, diffusers, and any other opening that could allow outside air into a work area.

Decontamination Area - an enclosed area adjacent and connected to the regulated area consisting of an equipment room, shower area, and clean room.

Disposal Bag - Properly labeled 6 mil (0.15 mm) thick (or thicker) leak-tight plastic bags used for transporting lead waste from work and to disposal site.

Drop Cloth - A layer of polyethylene on the floor of a work area to protect the floor below from contamination and to facilitate the clean up of dust or debris generated during the work.

Encapsulant - A material that surrounds or embeds lead contamination in an adhesive matrix, to prevent release of lead particulate.

Enclosure - The construction of an air-tight, impermeable, permanent barrier around lead containing material to control the release of lead dust into the air.

EPA - U.S. Environmental Protection Agency.

High Efficiency Particulate Air (HEPA) filters - A filter capable of trapping and retaining at least 99.97% of all particles 0.3 microns in diameter or larger.

Industrial Hygienist - A professional qualified by education, training and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

Medical Surveillance - A periodic comprehensive review of a workers health status. The required elements of an acceptable medical surveillance program are listed in the Occupational Safety and Health Administration standards for lead (29 CFR 1926.62).

Lead - means metallic lead and all inorganic lead compounds. Excluded from this definition are all other organic lead compounds.

Lead O&M Work - Cleaning, maintenance, repair or renovation work involving lead containing materials where the intent of the activity is not to remove lead.

Mini-Enclosures -An enclosure constructed of polyethylene sheeting used for small scale, short duration, lead maintenance or renovation work. Mini enclosures can be small enough to restrict entry to the lead work; area to one worker.

Negative Pressure System - A local exhaust system intended to prevent the escape of contaminated air to the surrounding environment. It utilizes HEPA filtration capable of maintaining a pressure differential with a lower pressure inside the Work Area than in any adjacent area. This system recirculates clean air and/or generates a constant flow of clean air from adjacent areas into the work area.

Negative Pressure Respirator - A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in reaction to the air pressure outside atmosphere.

National Emission Standard for Hazardous Air Pollutants (NESHAP) - EPA Rules under the Clean Air Act.

The National Institute for Occupational Safety and Health (NIOSH) - Established by the Occupational Safety and Health Act of 1970. The primary functions of NIOSH are to conduct research, issue technical information, and certify respirators.

Operations and Maintenance Program (O&M) -A program of work practices to maintain LBP in good condition, ensure clean up of lead dust previously released and prevent further release by minimizing and controlling LBP disturbance or damage.

Occupied Areas - An area where personnel are present and are performing this normal activities intended for the areas (such as in a typical office area from 8:00 -5:00 pm, Monday -Friday).

OSHA - Occupational Health and Safety Administration.

Permissible Exposure Limit (PEL) - an airborne concentration of lead of 50 ug/m³ averaged over an 8-hour period without regard to respirators.

Personal Air Samples - An air sample taken with a sampling pump directly attached to the worker with the collecting filter and cassette placed in the worker's breathing zone.

Protection Factor - The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

Regulated Area - An area established by the employer to demarcate areas where Class I, II, and III lead work is conducted, and any area adjoining where debris and waste from such work

Remove - For operations and maintenance work on LBP, “remove” refers to removal of LBP as needed to perform a maintenance or repair O&M activity.

Repair - Returning damaged LBP to an undamaged condition or to an intact state so as to prevent fiber release.

Respirator - A device designed to protect the wearer from the inhalation of harmful particulates.

Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

Temporary Barriers -One or more layers of 6 mil polyethylene installed to isolate a work area from the other portions of a facility.

Time Weighted Average (TWA) - In air sampling, this refers to the average air concentration of contaminants during a particular time period.

Work Area -The area where lead related work or removal operations are performed which is defined and/or isolated to prevent the spread of lead dust or debris, and entry by unauthorized personnel.

Work Practices -Procedures designed to be followed to avoid or minimize fiber release during activities affecting LBP.

2.0 EXPOSURE ASSESSMENT

2.1 Operations That Cause Exposure to Lead

Construction operations and work tasks that generate lead dust and fumes include the following:

- Flame-torch cutting, welding, and grinding of lead painted surfaces in repair, reconstruction, dismantling, and demolition work;
- Using a powder-activated ramset to attach metal straps to painted surfaces
- Using torches, heat guns, and sanding machines during removal of lead-based paint
- Hand scraping or manual demolition lead containing components or building materials.

2.2 OSHA Trigger Tasks

OSHA has designated “trigger tasks” as those work practices or operations which must be assumed to cause lead exposure over an established threshold. Until a complete exposure assessment including air monitoring establishes that exposures are less than the regulatory threshold for each trigger task, the employer must assume exposures are in excess and shall provide all necessary worker protection, training, medical surveillance and decontamination facilities. The trigger tasks are listed in Title 8 CCR 1531.1 (d)(2)(A), (d)(2)(B), (d)(2)(C) and (d)(2)(D) and are included in this LCP in the following subsections

2.2.1 Class 1 Trigger Tasks

Class 1 Trigger Tasks include the following:

- Any work activity that disturbs lead where the exposure may exceed the Permissible Exposure Level (PEL) of 50 ug/m³.
- Where lead containing coatings or paint are present and manual demolition of structures (e.g. drywall), manual scraping, manual sanding, heat gun applications, and power tool cleaning with HEPA dust collection are used.
- Spray painting with lead paint.

2.2.2 Class 2 Trigger Tasks:

Class 2 Trigger Tasks include the following:

- Any work activity that disturbs lead where the exposure will exceed 50ug/m³ but will be less than 500 ug/m³ (10 x PEL)
- Using lead containing mortar; lead burning
- Where lead containing coatings or paint are present: rivet busting, power tool cleaning without HEPA dust collection systems, cleanup activities where dry expendable abrasives are used, and abrasive blasting enclosure movement and removal.

2.2.3 Class 3 Trigger Tasks

Class 3 Trigger Tasks include the following:

- Exposures will exceed 500ug/m³ but will less than 2,500ug/m³ (50 x PEL)
- Abrasive Blasting
- Welding
- Cutting and;
- Torch Burning

2.3 Properties of Lead

Physical and chemical properties of lead are summarized as follows:

DPIM: LCF000 Hazard Rating: 3
Chemical Abstract System (CAS) Number: 7439-92-1
Atomic Formula: Pb
Atomic Number: 82
Atomic Weight: 207.19

Physical Properties:

Color: Bluish-gray, soft metal
Melting Point (mp): 327.43°C
Boiling Point (bp): 1755°C,
Molecular density: 11.34 g/cm³@ 20°C
Vapor pressure (vp): 1 mm @ 973°C.

Consensus Reports:

IARC Cancer Review: Group 2B IMEMDT 7,230,87; Animal Inadequate Evidence IMEMDT 23,325,80. Lead and its compounds are on the Community Right-To-Know List. Reported in EPA TSCA Inventory. EPA Genetic Toxicology Program.

Standards and Recommendations:

OSHA PEL: TWA 0.05 mg(Pb)/m³
ACGIH TLV: TWA 0.15 mg(Pb)/m³; BEI: 50 mg(lead)/L in blood; 150 mg(lead)/g creatinine in urine.

SAFETY PROFILE:

Suspected carcinogen. Poison by ingestion. Moderately toxic by intraperitoneal route. Human systemic effects by ingestion and inhalation: loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis and liver changes. The major organ systems affected are the nervous system, blood system, and kidneys. Lead encephalopathy is accompanied by severe cerebral edema, increase in cerebral spinal fluid pressure, proliferation and swelling of endothelial cells in capillaries and arterioles, proliferation of glial cells, neuronal degeneration and areas of focal cortical necrosis in fatal cases. Experimental evidence now suggests that blood levels of lead below 10 mg/dL can have the effect of diminishing the IQ scores of children. Low levels of lead impair neurotransmission and immune system function and may increase systolic blood pressure. Reversible kidney damage can occur from acute exposure. Chronic exposure can lead to irreversible vascular sclerosis, tubular cell atrophy, interstitial fibrosis, and glomerular sclerosis. Severe toxicity can cause sterility, abortion, and neonatal mortality and morbidity. An experimental teratogen. Experimental reproductive effects. Human mutation data reported. Very heavy intoxication can sometimes be detected by formation of a dark line on the gum margins, the so-called "lead line."

When lead is ingested, much of it passes through the body unabsorbed, and is eliminated in the feces. The greater portion of the lead that is absorbed is caught by the liver and excreted, in part, in the bile. For this reason, larger amounts of lead are necessary to cause toxic effects by this route, and a longer period of exposure is usually necessary to produce symptoms. On the other hand, upon inhalation, absorption takes place easily from the respiratory tract and symptoms tend to develop more quickly. For industry, inhalation is much more important than is ingestion. For the general population, exposure to lead occurs from inhaled air, dust of various types, and food and water, with an approximate 50/50 division between inhalation and ingestion routes. Lead occurs in water in either dissolved or particulate form. At low pH, lead is more easily dissolved. Chemical treatment to soften water increases the solubility of lead. Adults absorb about 5-15% of ingested lead and retain less than 5%. Children absorb about 50% and retain about 30%.

Lead produces a brittleness of the red blood cells so that they hemolyze with slight trauma; the hemoglobin is not affected. Due to their increased fragility, the red cells are destroyed more rapidly in the body than is normal, producing an anemia that is rarely severe. The loss of circulating red cells stimulates the production of new young cells, which, on entering the blood stream, are acted upon by the circulating lead, with resultant coagulation of their basophilic material. These cells, after suitable staining, are recognized as "stippled cells." There is no uniformity of opinion regarding the effect of lead on the white blood cells.

In addition to its effect on the red blood cells, lead produces a damaging effect on the organs or tissues with which it comes in contact. No specific or characteristic lesion is produced. Autopsies in deaths attributed to lead poisoning and experimental work on animals have shown pathological lesions of the kidneys, liver, male gonads, nervous system, blood vessels, and other tissues. None of these changes, however, has been found consistently. In cases of severe lead poisoning, the amount of lead found in the blood is frequently in excess of 0.07 mg per 100 cc of whole blood. The urinary lead excretion generally exceeds 0.1 mg per liter of urine.

2.4 Employer Responsibility for Exposure Assessment

Until the employer shows that exposures for each trigger task are less than the projected maximum level as indicated, the employer shall assume the worst case exposure and provide the following interim controls:

1. Appropriate respiratory protection in accordance with subsection (f) of Title 8 CCR 1532.1
2. Appropriate personal protective clothing and equipment in accordance with subsection (g) of Title 8 CCR 1532.1.
3. Change areas in accordance with subsection (i)(2) of Title 8 CCR 1532.1.
4. Hand washing facilities in accordance with subsection (i)(5) of Title 8 CCR 1532.1.
5. Biological monitoring in accordance with subsection (j)(1)(A) of Title 8 CCR 1532.1, to consist of blood sampling and analysis for lead and zinc protoporphyrin levels.
6. Training as required under subsection (l)(1)(A) of Title 8 CCR 1532.1 regarding section 5194, Hazard Communication Standard,
7. Training as required under subsection (l)(2)(C) of Title 8 CCR 1532.1, regarding use of respirators; and
8. Training in accordance with section 1510 of Title 8 CCR 1532.1, Safety Instruction for Employees.

2.5 Activity Hazard Analysis

The Hazard Analysis for this project indicates that the primary route of exposure will be by inhalation of lead-contaminated dust particulates. The secondary route of exposure will be by ingestion of lead-contaminated dust.

The tasks which will generate potentially harmful levels of lead-contaminated dust include:

Work Activity A: Excavating, grading or other earth moving – One or more backhoes or excavators will be used to remove the lead-contaminated soil beneath the bridge.

Work Activity B: Loading and Transporting Lead-Contaminated Soil to Stockpile Management Area (SMA). Lead-contaminated soil will be placed into 10-wheel trucks and transported to a designated soil stockpile management area (SMA) located within the project limits or directly into a hazardous waste bin or individual drums depending on suspected quantity. The SMA location will be identified in the Soil Management Plan included in the project construction SWPPP. If the lead-contaminated soil is placed directly into a hazardous waste bin or individual drums, this hazard storage area will be regulated, delineated by barrier tape and include current and proper signage.

Work Activity C: Transporting non-lead-contaminated soil from SMA to Trench Reuse Areas – Soil not destined for Hazardous Waste disposal will be placed into 10-wheel trucks and transported to a designated soil stockpile staging area located within the project limits. The location will be identified in the Soil Management Plan included in the project construction SWPPP.

Work Activity D: Stockpile Management – At the stockpile management area (SAM), the soil handling activities will be conducted to manage the stockpile in conformance with best management practices identified in the construction SWPPP. One or more backhoes or excavators will be used to manage the lead-contaminated soil in the SMA.

2.6 Hazard Control

Engineering controls, work practices and personal protective equipment will be evaluated daily when considering lead hazard control. The following criteria shall be considered during this daily assessment:

- air monitoring results
- potential for exposure
- changes in site conditions
- work phases and job tasks
- weather and temperature extremes

Changes in the hazard assessment, considering all the above variables, shall be brought to the Project Engineers' attention.

Changes in engineering controls, work practices or PPE shall be communicated to the employees immediately by the Project Engineer and/or the Certified Industrial Hygienist (CIH)/Project Health and Safety Consultant.

Workers shall be notified either through the safety meetings or site specific training by the Contractor at whatever frequency is necessary to ensure the safe and efficient completion of the project. These meetings shall take place not less than once per week.

a. Upgrade or downgrade in level of personal protective equipment.

Changes in PPE requirements shall be based on the factors listed above and monitoring results. The Contractor or his designee shall maintain constant vigilance and implement changes up or down as necessary to protect the workers.

b. Work stoppage and/or emergency evacuation of onsite personnel.

If any of the following criteria or conditions exist, the workers shall be notified by the emergency horn signal (three short blasts) to evacuate immediately to the designated Controlled meeting place.

1. Work Stoppage

- Exceeding the PEL on two consecutive days.
- Any serious injury requiring major medical attention.
- Any report of suspected contaminant-related illness.
- Any emergency requiring evacuation.

2. Evacuation

- Any apparent acute contaminant-related illness.
- Any emergency requiring evacuation.
- At the Contractor's discretion.

c. Prevention and/or minimization of public exposures to hazards created by site activities.

The greatest risk would occur during waste load out/transport to SMA operations. During this time, the soil will be placed into 10-wheel trucks. To prevent exposure to motorists on the highway, there will be vehicle decontamination prior to the trucks being allowed to enter the haul road.

To prevent the public from exposure, access is restricted to authorized personnel at all times.

Minimization of public risk shall be through the careful packaging, handling, transport and disposal of all wastes. The Contractor shall inspect the work practices and soil load-out operations to minimize significant risk potential.

Waste shall be stored at the designated SMA to prevent exposure to workers at the site and passing motorists.

3.0 PROJECT SCHEDULE

3.1 General Construction Schedule

Unknown at this time.

4.0 LEAD COMPLIANCE PLAN IMPLEMENTATION

4.1 Lead Work Areas

Work activities involving lead-contaminated soil and removal of lead-containing structural components will be conducted at one location (the bridge site).

Soil Management Plan should be included as an Appendix to the construction SWPPP. Lead work areas boundaries shall be established at a minimum of 20 feet on all sides from the bridge, which will ensure airborne exposure above the action level outside the boundary will not occur.

4.2 Support and Decontamination Areas

Support areas will be set up a minimum of 100 feet from the bridge structure to prevent potential contamination from lead particulate. The Contractor shall set up the support area upwind of the average prevailing wind for this area.

4.3 Air Sampling and Monitoring Program

The Contractor shall follow the monitoring requirements of 8 CCR 1532.1 or other applicable regulations which are more stringent.

The Contractor will supply an individual trained and competent in sampling for lead exposure.

The Contractor will then review monitoring results and modify work procedures and/or protective equipment as necessary. The Contractor/CIH may decrease respiratory protection requirements or discontinue personal monitoring as indicated by statistically reliable monitoring results.

Employees, or their designated representatives shall have an opportunity to observe monitoring of employee exposure within the work area. When observation of the monitoring requires entry into the regulated area, the observer shall follow all requirements and wear protective devices as necessary.

4.3.1 General Requirements-Personnel Monitoring:

Determinations of employee exposure will be made from breathing zone air samples that are representative of the TWA of affected employees. The Contractor shall perform daily personal air monitoring to determine the airborne concentrations of lead that would occur if the employee were not using respiratory protective equipment. Personal monitoring shall include initial monitoring, daily monitoring, calibration and other related air sampling procedures as described below.

(A) Initial Monitoring:

The purpose of Initial Lead Monitoring is to determine the exposure levels within the work areas and to ensure that the Contractor will provide for a selection of respiratory protective equipment that have adequate protection factors. Therefore, each area or work operation covered by the Lead Standard, 8 CCR 1532.1 is required to perform initial air monitoring at the beginning of each phase of the project.

(B) Daily Monitoring:

Each new lead operation will require the Contractor to conduct full-shift daily air monitoring of personnel, that is representative of the exposure of each employee who is working within a regulated area.

(C) Calibration:

The Contractor or independent industrial hygienist shall perform calibration of the sampling equipment prior to initiation of sampling. Sample pumps shall be calibrated with a filter cassette like that used for lead sampling, but not the same specific cassette as an individual sample. A calibrated rotameter shall be used to verify in-line flow rates for calibration. Samples will be calibrated before and after sampling. If the pre- and post flow rates differ by more than 10%, the sample will be voided.

(D) Collection Devices:

Personal sampling will be performed using a low-flow personal sampling pump rated from 1-5 Liters/min. Sampling will be performed at 2-3 liters per minute for personal sampling. Batteries of personal pumps will be charged daily and capable of functioning for a minimum full 8-hour shift.

(E) Filter Media:

All air samples for lead will be collected on 37mm MCEF 2 or 3 piece filters in the closed face configuration. Calibration will be performed with such a filter in line.

(F) Collection Process:

Personal samples will be collected in the breathing zone for full-shift or the full duration of the process, whichever is greater. Workers shall be instructed in maintaining care of sampling equipment and filter cassettes to ensure reliable, valid samples. Samples will be checked periodically by the Contractor or Industrial Hygienist and changed as needed.

(G) Reporting Process:

Results of the previous day's monitoring shall be posted on the information board at the worksite for workers to review.

The Contractor shall also report the previous day's sampling results via telephone to the Project Engineer or his representative if any air sample results are greater than the 50 ug/m³ Permissible Exposure Level (PEL). Additionally, when air sample results exceed the 50 ug/m³ PEL, the Contractor shall investigate the reason for the exposure, institute stricter controls, and write a written report to the Project Engineer within 3 working days.

4.3.2 Sample Handling and Data Management

All samples shall be collected in accordance with requirements set forth for the particular type of sampling.

(A) Sample Labeling, Packaging and Transportation:

Sample collection shall be carefully coordinated, and samples shall be sent for analysis at the end of each day the samples are collected. In this way, all preservation/retention times shall be strictly adhered to.

Samples shall either be picked up by courier or Fed Express for transport, or driven by the Contractor or his designee to the lab on a daily basis.

Samples shall be labeled and packaged in the following manner:

Label Information:

- (1) Site Name
- (2) Sample Number
- (3) Sample Location
- (4) Sample Type
- (5) Date of Sample

In addition, a chain of custody/sample sheet shall accompany the samples from the site to the laboratory.

(B) Chain of Custody

Custody of samples must be maintained and documented from the time of sample collection up to completion of the analyses. Each sample will be considered to be in the sampler's custody and the sampler will be personally responsible for the care and custody of the samples until they are delivered to the courier for delivery to the laboratory.

The Chain of Custody Record forms shall be filled out with indelible ink. When the samples are transferred from one party to another, the individuals shall sign, date, and note the time on the form. A separate form shall accompany each delivery of samples to the laboratory. This form shall be included in the shipping or transport container used for preservation and transport of the samples. The sampling personnel shall retain a copy of the form.

All persons handling or receiving custody of the samples shall sign the chain of custody sheet. The laboratory having final custody of the samples shall sign the chain of custody and send a copy to The Contractor for official record. This signed form shall be included in the final closeout record for the project.

In addition, the laboratory shall provide facsimile copy of the signed chain of custody to The Contractor within 48 hours after receipt of the samples.

(C) Contract Laboratories:

The following laboratories will be used to analyze all lead samples including personal lead air samples, perimeter/area lead air samples or bulk lead (soil) samples collected as part of implementation of this LCP.

Table 1 : CONTRACT LABORATORIES

Analyte/Test	Contract Laboratory	Point Of Contact Phone Number
Lead Air, Personal and Bulk testing.		

4.4 Medical Surveillance Program

The Contractor shall provide a comprehensive medical surveillance program prior to assignment and at least annually thereafter for all employees. As part of the medical surveillance program, the Contractor shall provide a respiratory physical to evaluate pulmonary status as required by 8 CCR 5144 and 8 CCR 1532.1 for all lead workers.

Medical examinations shall include a work history and a medical history, with particular attention to past lead exposure (occupational and non-occupational); personal habits (smoking, hygiene); past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological problems; a thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems; and a blood pressure measurement.

A blood sample and analysis which determines blood lead level; hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology; zinc protoporphyrin, blood urea nitrogen and serum creatinine; a routine urinalysis with microscopic examination; and any laboratory or other test which the examining physician deems necessary by sound medical practice.

Copies of written opinions pertaining to both respiratory protection and lead exposure by the physician performing the physicals shall be available for each employee at the job site for the Contractor or his designee review.

The workers' blood lead levels shall be provided prior to start of work to document that all are below the 25 ug/dl of whole blood level.

4.5 Employee Training Requirements

The Contractor shall provide all employees involved in lead work activities or demolition training necessary to comply with the requirements of California Title 8 CCR 1532.1. The Contractor shall assure that all employees with the potential to be exposed to dust containing lead are informed of the following:

- The specific nature of the operations which could result in exposure to lead above the action level.
- The purpose and function of the respiratory protection program and the selection, use, limitations and care of respirators.
- The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females).
- The engineering controls and work practices associated with the employees' job assignments.
- The contents of this lead work plan.
- Names of employees and alternates responsible for safety and health.
- Acute and chronic effects of the specific job-site hazards. Hazard analysis of site conditions.
- Hazard Communication under 8 CCR 1532.1 and/or Title 8 CCR 5194.
- Employee rights under OSHA.
- Engineering controls
- The use, requirements and limitations of the personal protective clothing, equipment and respirators to be used (PPE).
- Medical surveillance requirements including recordkeeping.
- Personal and Environmental Monitoring Procedures.
- Standard operating, emergency & evacuation procedures.
- Work Practices for removal, handling, transportation and disposal of lead containing materials.
- Hands on training for the type of work performed
- Heat and cold stress symptoms and prevention
- Decontamination.
- Site control measures (including security)

A record of this training shall be available at the job site.

4.6 Recordkeeping

A copy of the air monitoring records for this and all projects shall be maintained as part of the permanent job file for a minimum of 30 years beyond the completion of the project. The Contractor shall maintain records including the Chain of Custody Form, sample data form (dates, number, duration, location and results of each sample, description of the sampling process), description of the sampling and analytical process, type of respirator and PPE, name of person monitored, social security number, job classification, environmental variables which could affect the samples.

The air sample results shall contain the following:

- Date sample collected and analyzed
- Sample number and type (personal or area)
- Sample period (start, stop and total time)
- Sampling pump manufacturer
- Average Flow rate and Total Volume
- Sample results
- Location/activity/name where sample collected
- Calibration method (rotameter)
- Name and location of the analytical lab
- Print name, signature and date for Contractor who reviewed data.

Field training records for air monitoring shall include the date and location of training, subjects covered, attendees, and signature of the individual giving the training.

The Contractor shall make available upon written request, monitoring records as applicable under 29 CFR 1926.62 to affected employees, former employees, designated employee representatives, and the Assistant Secretary of Labor for OSHA, in accordance with OSHA standard 29 CFR 1910.20.

4.7 Engineering Controls

The Contractor shall implement engineering and work practice controls (including administrative controls) to minimize employee exposure to lead. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposure below the action level, the employer shall nonetheless use them to reduce exposures to the lowest feasible level and shall supplement them by the use of respiratory protection.

Engineering Controls to be used (but not limited to) are:

- Wet Methods, Water Truck for dust control.
- HEPA-assisted tools where necessary.
- 6-mil plastic for covering equipment and removal/decontamination areas.
- 13-mil plastic as covering and underlayment for stockpiles containing ADL-impacted soil per Specification Section 02224, Part 3.03(A).

4.8 Personal Protective Equipment

The following personal protective equipment are typical for lead removal/handling:

1. Tyvek, full-body disposable coveralls
2. Rubber gloves
3. Half-face HEPA-filtered Respirator
4. Safety glasses when face protection is not provided by the respirator.
5. Steel-toed, steel shank safety shoes
6. Hard Hat
7. Reflective Traffic Vests
8. Hearing protection as required by the Contractor

The Contractor shall provide and assure that each employee uses appropriate protective clothing such as full-body disposable clothing, in accordance with 8 CCR 1532.1. The Contractor shall assure that all protective clothing is removed at the completion of a work shift and left on site. Personnel shall be prohibited from wearing potentially contaminated clothing off the site.

The removal of dust from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air shall be prohibited. The Contractor shall provide for the disposal of protective clothing.

(A) Disposable full-body coveralls. The coveralls will be of a quality fabric that will not tear or rip easily. The clothing should fit comfortably and employees should duct tape the ankles and wrists to ensure debris is not coming into contact with the skin. The hoods are form fitting for a tight fit around the face.

The Contractor shall inspect protective clothing at least once per workshift for rips or tears. Protective clothing shall be replaced or repaired immediately, if rips or tears are detected, to maintain their effectiveness.

Protective clothing will be removed only in the change rooms supplied by The Contractor. Contaminated clothing will not be handled except by authorized personnel.

Contaminated work clothing shall be containerized and disposed of as hazardous waste. Containers shall bear the appropriate LEAD warning labels.

Removal of gross debris from clothing by blowing or shaking is prohibited. HEPA vacuums are to be used for this purpose.

Laundering of contaminated clothing is prohibited.

(B) Gloves and foot coverings will be required.

(C) Hard hats are to be used. Overhead workers and flying objects are to be considered as potential safety hazards.

(D) Eye Protection will be provided when not provided with respiratory protection.

4.9 Respiratory Protection Program

The Contractor shall implement and submit a Respiratory Protection Program according to 8 CCR 5144 and 8 CCR 1532.1. The Contractor shall require that all employees wear only approved Half-face respirators with High Efficiency Particulate Air (HEPA) filters.

The Contractor shall assure where respirators are used that workers are not exposed to environments where lead concentrations exceed 500 ug/m³ if half-mask air purifying respirators are utilized, or 2500 ug/m³ if full-face air purifying respirators are utilized.

Records shall be maintained by the Contractor regarding issue of respirators, fit test records, maintenance and parts changing logs.

5.0 LEAD-CONTAMINATED MATERIAL WORK PROCEDURES

5.1 Lead Containment Procedures

A regulated area will be established around each work area where lead-contaminated soil will be removed, handled or placed as backfill. In scheduled Lead-contaminated excavation areas, the regulated area will be thoroughly inspected for any utilities or pipes which need to be disconnected or removed prior to excavation.

Boundary cones or markers will be used to establish the lead-contaminated excavation area. The boundary will be set up to prevent exposures outside of the boundary area. Signs shall be posted at sufficient distance to adequately warn persons and prevent unauthorized entry. See sign language below.

All work areas shall be posted for authorized entry only. The posting shall be at any possible entry into the area. Only personnel who have met the training and medical surveillance requirements shall be allowed to enter. A log of all entrants to the work area shall be kept.

The Contractor shall assure that no food, beverage, and/or tobacco are present or used in the work area. At any possible entry into the area, the following bilingual warning signs (printed in English and Spanish if necessary) must be posted:

NOTE: Contractor shall use the most current Global Harmonization System (GHS)-approved labels with current language for all signs, labels, barrier tape, etc.

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

Personnel who do not meet the requirements for entry or who do not follow the requirements for entry shall not be permitted on the site.

5.2 Lead-contaminated Soil Lead Handling Procedures

The lead-contaminated soil/lead materials/dust shall be wetted with water continuously to minimize the spreading of contaminated dust.

Any spills will be cleaned up continuously and all surfaces will be maintained in a clean, non-hazardous condition.

All residues, plastic, tape, rags or towels or any other contaminated items will be disposed of as hazardous waste to be profiled for disposal.

5.3 Methods of Dust and Debris Control:

Dust and debris from lead removal on structure shall be controlled by the following:

- a. Don't remove lead on structure if winds exceed 15 mph (trees are swaying slightly).
- b. Install a 6-mil poly sheeting completely under the bridge extending completely up both ends and for at least 10 feet on both sides (laterally). This will ensure that any dislodged lead will fall on the plastic sheeting, making it easier to clean-up.
- c. Deconstruct components in a manner that dislodges the paint the least. IF paint is loose and flaking, either remove all the loose and flaking paint before any deconstruction OR stabilize all the paint on every painted surface before deconstruction.
- d. Maintain a HEPA vacuum at the bridge site and use it continuously to pick up loose pieces of paint.

- e. Ensure that after all components have been removed and the plastic picked up, bagged in lead waste bags and disposed, that a thorough sweep under and around the bridge structure is performed to remove all traces of lead paint contamination.

Appropriate wet methods or controlled work practices shall be used to minimize the amount of debris or dust present.

5.4 Decontamination Procedures

The Contractor shall provide hygiene facilities for employees as required by 8 CCR 1532.1. The Contractor shall establish a decontamination area that is adjacent to the regulated area for the decontamination of employees.

(A) Personal Decontamination Procedures:

Specific decontamination procedures are as follows:

At a minimum, The Contractor shall furnish facilities which provide soap and water for hand and face washing.

Water used for washing of face and hands shall be collected and stored for further waste profiling. Store in DOT 17-H drums and label until waste characterization has been performed. Results from waste testing shall dictate disposition of waste water.

All used protective suits, filters, respirators, plastic or other materials which may have become contaminated during activities at this site shall be placed into labeled drums or labeled 6-mil bags and stored for further waste characterization as indicated above.

(B) Vehicle Decontamination Procedures:

The Contractor shall establish a vehicle decontamination area between the zone of lead contamination and entrance to any public roadway. Vehicle decontamination procedures and Best Management Practices (BMP's) shall be found in the ADL-Impacted Soil Management Plan.

5.5 WASTE HANDLING AND DISPOSAL

All soil waste shall be placed directly into a hazardous waste bin or placed in DOT drums immediately. Waste containers shall be sealed and secured against opening or damage. Waste containers shall be labelled with the most current version of the Global Harmonization System (GHS) required labels.

Waste bins or drums shall be stored in a secure and dry area for a maximum of 90 days or the most current limit on hazardous waste storage.

Waste shall be profiled with TTLC, STLC and TCLP (if STLC exceed 5mg/L).

Waste designated as hazardous shall be transported to an Project Engineer approved landfill by a DOT registered, California-certified waste hauler under a Uniform Hazardous Waste Manifest.

The Contractor shall be responsible for ensuring the Project Engineer receives a copy of the final signed waste manifest from the approved landfill.

6.0 EMERGENCY PROCEDURES

In the event of an emergency due to a natural disaster, equipment malfunction or injury, the emergency procedures identified in Sections 10 and 11 in the HASP shall be implemented. Refer to Table 7 in the HASP for contact information. A route to hospital map is included in the tabbed “Figures” section of the HASP as Figures 3-6.

APPENDIX A
BLAIR BRIDGE LEAD DATA

TABLE 3
GRAB GROUNDWATER ANALYTICAL RESULTS
 Blairs Lane Bridge (Replacement) at Hangtown Creek
 City of Placerville, El Dorado County, California

Sample Name	Location	Sample Type	Total Lead (mg/kg)	STLC Lead (mg/l)
LBP-1	Lateral railing on southwest corner of bridge railing	White Paint	10	--
LBP-2	Vertical posts on southwest corner of bridge railing	White Paint	86	--
LBP-3	Lateral surfaces in southeast corner of bridge railing	White Paint	6,200	--
LBP-4	Lateral surfaces in northwest corner of bridge railing	Orange Paint	23,000	--
S-1	Southwest corner near abutment below paint dripline	Soil	110	17

Explanation

mg/kg = milligram per kilogram.
 mg/l = milligram per liter.

LBP = Lead Based Paint
 S = Soil

-- = Sample not analyzed

Total lead analyzed using EPA method 6010B.

STLC = Soluble Threshold Limit Concentration lead analyzed using EPA method 6010B with citric acid extraction (CA-WET).

**BLAIRS LANE BRIDGE (25C-0012)
REPLACEMENT PROJECT
AT HANGTOWN CREEK
EL DORADO COUNTY,
CALIFORNIA**

Federal Aid Project No. BRLS-5925(030)

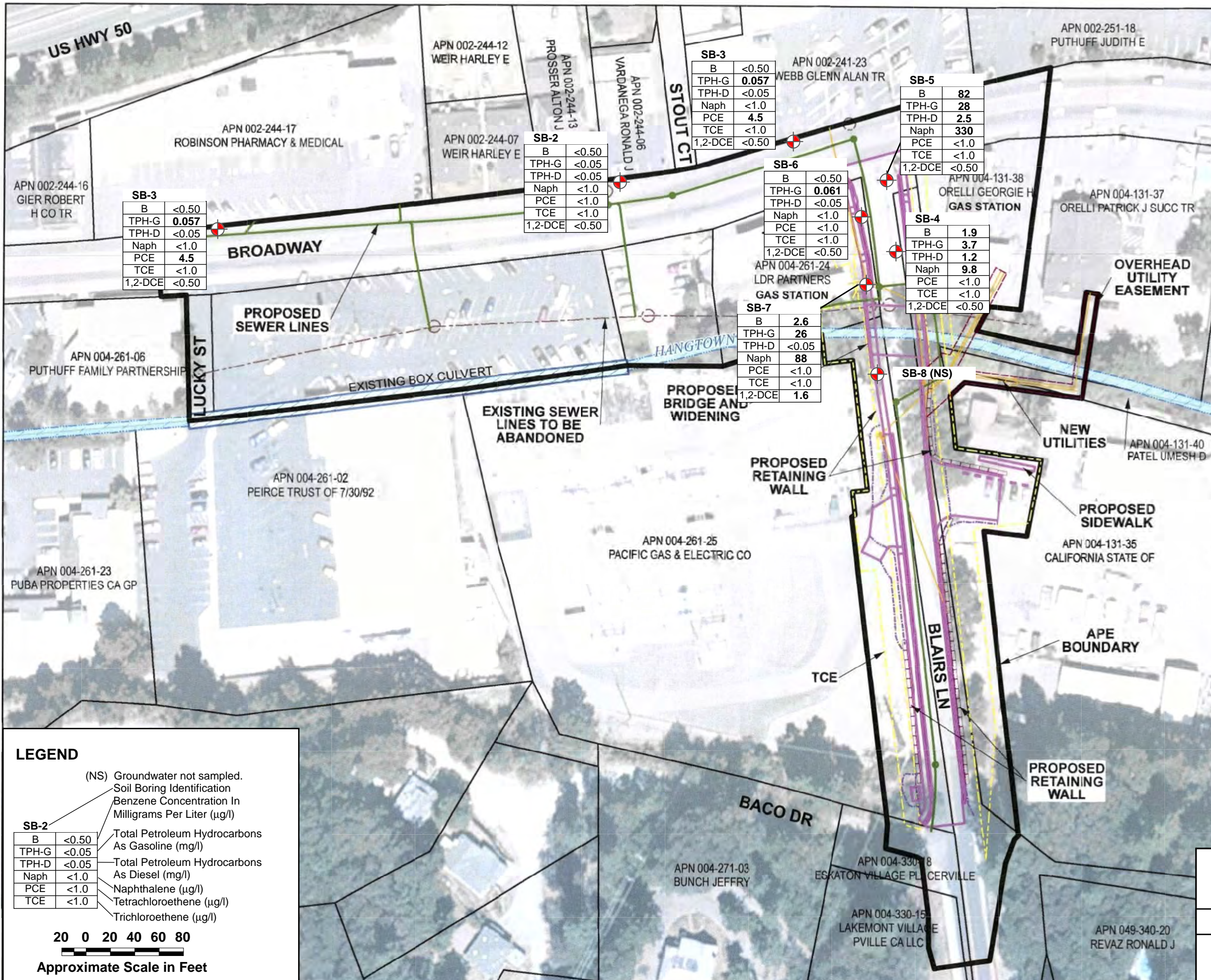
AREA OF POTENTIAL EFFECTS MAP

ED 2/26/14
Erin Dwyer Date
PQS/PI - Preshistoric Archaeology
Environmental Management M1, Caltrans D3

BR 2/26/14
Local Assistance Project Engineer Date
Office of Local Assistance, Caltrans D3

**ARCHAEOLOGICAL-
Prehistoric and Historic**
The Area of Potential Effects includes all existing (and proposed)
Right of Way and temporary construction easements.

- Area of Potential Effects (APE)
- Hangtown Creek
- Existing Box Culvert
- GIS Parcel boundaries
- Road and Bridge Improvements
- Proposed Sewer Alignment
- Proposed New Service Utilities
- Proposed Retaining Wall
- Limits of Grading
- Temporary Construction Easement (TCE)
- Overhead Utility Easement
- Existing Sewer Line
- Proposed Boring Location



SB-3

B	<0.50
TPH-G	0.057
TPH-D	<0.05
Naph	<1.0
PCE	4.5
TCE	<1.0
1,2-DCE	<0.50

SB-5

B	82
TPH-G	28
TPH-D	2.5
Naph	330
PCE	<1.0
TCE	<1.0
1,2-DCE	<0.50

SB-2

B	<0.50
TPH-G	<0.05
TPH-D	<0.05
Naph	<1.0
PCE	<1.0
TCE	<1.0
1,2-DCE	<0.50

SB-6

B	<0.50
TPH-G	0.061
TPH-D	<0.05
Naph	<1.0
PCE	<1.0
TCE	<1.0
1,2-DCE	<0.50

SB-4

B	1.9
TPH-G	3.7
TPH-D	1.2
Naph	9.8
PCE	<1.0
TCE	<1.0
1,2-DCE	<0.50

SB-3

B	<0.50
TPH-G	0.057
TPH-D	<0.05
Naph	<1.0
PCE	4.5
TCE	<1.0
1,2-DCE	<0.50

SB-7

B	2.6
TPH-G	26
TPH-D	<0.05
Naph	88
PCE	<1.0
TCE	<1.0
1,2-DCE	1.6

SB-8 (NS)

LEGEND

(NS) Groundwater not sampled.
Soil Boring Identification

SB-2

B	<0.50	Total Petroleum Hydrocarbons As Gasoline (mg/l)
TPH-G	<0.05	Total Petroleum Hydrocarbons As Diesel (mg/l)
TPH-D	<0.05	Naphthalene (µg/l)
Naph	<1.0	Tetrachloroethene (µg/l)
PCE	<1.0	Trichloroethene (µg/l)
TCE	<1.0	

20 0 20 40 60 80
Approximate Scale in Feet

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Quincy Engineering, Inc.
Blairs Lane Bridge at Hangtown Creek
El Dorado County, California
Existing Bridge 25C0012
Soil Analytical Summary

1P2/304/175 January 2015 Figure ___

TABLE 1
SOIL ANALYTICAL RESULTS
 Blairs Lane Bridge (Replacement) at Hangtown Creek
 City of Placerville, El Dorado County, California

Sample Location	Soil Sample Depth (feet)	Date	TPH-G (mg/kg)	TPH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	m,p-Xylenes (mg/kg)	o-Xylene (mg/kg)	Naphthalene (mg/kg)	PCE (mg/kg)	n-Butylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	tert-Butylbenzene (mg/kg)	Isopropylbenzene (mg/kg)	n-Propylbenzene (mg/kg)	p-Isopropyltoluene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)
SB-1	10	12/18/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-2	5	12/18/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-3	8	12/18/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-4	15	12/19/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-5	6	12/19/14	79	20	0.13	0.013	0.61	0.1	<0.005	1.2	<0.005	0.46	0.13	0.012	0.26	0.87	0.12	0.032	0.0095
SB-6	6.5	12/22/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-6	11	12/22/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-7	6	12/22/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	0.013	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
SB-7	10.5	12/22/14	15	190	<0.005	<0.005	<0.005	<0.010	<0.005	1.1	<0.005	2.2	0.29	0.033	0.013	1.8	0.006	<0.005	<0.005
SB-8	3.5	12/22/14	<0.5	<10	<0.005	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005

mg/kg = milligrams per kilogram

TPH-G = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8260B.

TPH-D = Total petroleum hydrocarbons as diesel, analyzed by EPA Method 8015C.

Benzene, toluene, ethylbenzene, total xylenes, naphthalene, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Isopropylbenzene, n-Propylbenzene, p-Isopropyltoluene, 1,3,5-Trimethylbenzene, and 1,2,4-Trimethylbenzene analyzed by EPA Method 8260B.

PCE = Tetrachloroethene analyzed by EPA Method 8260B.

Other constituents analyzed by EPA Method 8260 were not detected above the laboratory reporting limit.

TABLE 2
GRAB GROUNDWATER ANALYTICAL RESULTS
 Blairs Lane Bridge (Replacement) at Hangtown Creek
 City of Placerville, El Dorado County, California

Sample ID	Date	TPH-G (mg/l)	TPH-D (mg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	m,p-Xylenes (µg/l)	o-Xylene (µg/l)	PCE (µg/l)	TCE (µg/l)	cis-1,2-DCE (µg/l)	Naphthalene (µg/l)	n-Butylbenzene (µg/l)	sec-Butylbenzene (µg/l)	tert-Butylbenzene (µg/l)	Isopropylbenzene (µg/l)	n-Propylbenzene (µg/l)	p-Isopropyltoluene (µg/l)	1,3,5-Trimethylbenzene (µg/l)	1,2,4-Trimethylbenzene (µg/l)	
SB-1	12/18/2014	0.081	<0.05	<0.50	<0.50	<0.50	<1.0	<0.50	92	10	44	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25
SB-2	12/18/2014	<0.05	<0.05	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	<1.0	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25
SB-3	12/18/2014	0.057	<0.05	<0.50	<0.50	<0.50	<1.0	<0.50	4.5	<1.0	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25
SB-4	12/19/2014	3.7	1.2	1.9	1.4	0.82	3.4	1.2	<1.0	<1.0	<0.50	9.8	29	12	1.5	4.9	21	<1.0	<1.0	<25	<25
SB-5	12/19/2014	28	2.5	82	16	1,200	2,700	5.4	<1.0	<1.0	<0.50	330	110	28	4.0	82	500	86	560	1,600	
SB-6	12/22/2014	0.061	<0.05	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	<1.0	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25
SB-7	12/22/2014	26	<0.05	2.6	<0.50	3.6	<1.0	<0.50	<1.0	<1.0	1.6	88	290	86	22	66	340	2.8	<1.0	<25	<25
WQNL		21	56-140	1	150	300	1,750	1,750				170									

Notes:

µg/l - micrograms per liter

WQNL - Water Quality Numerical Limit. Table 1. RWQCB Tri Regional Guidelines. April 16, 2004

Cells highlighted in yellow are greater than WQNLs

TPH-G = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8260B.

TPH-D = Total petroleum hydrocarbons as diesel, analyzed by EPA Method 8015C.

Benzene, toluene, ethylbenzene, m,p-xylenes and o-xylene analyzed by EPA Method 8260B.

PCE = Tetrachloroethene analyzed by EPA Method 8260B.

TCE = Trichloroethene analyzed by EPA Method 8260B.

cis-1,2-DCE= 1,2-Dichloroethene analyzed by EPA Method 8260B.

Naphthalene, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Isopropylbenzene, n-Propylbenzene, p-Isopropyltoluene, 1,3,5-Trimethylbenzene, and 1,2,4-Trimethylbenzene analyzed by EPA Method 8260B.

Other constituents analyzed by EPA Method 8260 were not detected above the laboratory reporting limit.

Appendix J

Addendums to HASP