INFORMATION HANDOUT

For Contract No. 08-0G8424
At 08-SBd-15-R107.3

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Project ID 0814000184

MATERIALS INFORMATION

Revised Foundation Investigation Report

Asbestos and Lead Based Paint Survey Report

Aerially Deposited Lead (ADL) Investigation Report

ELECTRICAL INFORMATION

Historical SCADA Screen Pages

REVISED FOUNDATION INVESTIGATION REPORT

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Serious drought.
Help save water!

To: MR. JOE ESFANDIARY
Branch Chief
Office of Transportation Architecture
Structure Design Services
Division of Engineering Services

Date: November 18, 2015

File: 08-SBD-015-107.3
08-0G8401
C. V. Kane SRRA

Attention: Mr. Gang Hong

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design South 2

Subject: Revised Foundation Investigation Report

The Office of Transportation Architecture has requested a final foundation investigation report for the remodel construction of the C.V. Kane SRRA near SBD-015-107.3, between Field Road OC and Afton Canyon Road OC, in San Bernardino County.

The recommendations provided in this report are based on the Request for Final Foundation Report for the C.V. Kane SRRA, dated October 14, 2009, and the seven (7) soil borings completed on the site(s) between December 15 and 16 of 2009. No other plans or documents were made available for our review at this time.

The purpose of this revised report is to update the seismic recommendations of the original foundation investigation report dated 04/01/2010 to current California Building Code (CBC, 2013) standards as you have requested.

Project Description/History

The site is previously developed as two rest areas, one on the northbound (south side) of the Mojave Freeway and the other along the southbound (north side). Each rest area has been previously graded to provide paved drives and parking areas, the respective building pads, landscape mounds, drainage, and retention basins. Minor amounts of fill have been placed for leveling of the drives, parking areas, building pads, and landscape mounds. Shallow cuts have been graded for onsite drainage and retention basins. Recently, the northbound rest area has been replace and only the southbound rest area remains to be replaced.

It is understood that the existing improvements for the southbound rest areas will be demolished and replaced with new construction.

A total of seven test borings were advanced using an 8-inch Hollow Stem Auger to a maximum depth of 51.5 feet deep below the existing grade for this investigation. Two borings were located on each side of the roadway for the several respective rest area buildings, one boring on each

side of the roadway for the jacking pits, and one boring for the water treatment facility to be located on the western portion of the northbound rest area. Standard Penetration Tests (SPT) were obtained at five foot intervals as each boring was advanced. The samples obtained from the SPT test were visually classified and recorded on the boring logs. The respective locations of the borings are depicted on the Site Plan and the log of each boring is presented on the Log Of Test Borings (LOTB). Both are attached to end of this report

Geology

The C.V. Kane SRRA is located within the central Mojave Desert Geomorphic Province of California. The Mojave desert is the elevated western most extension of the Sonoran Desert, situated between the Transverse Ranges across the San Andres fault on the southwest, the Sierra Nevada Mountains and Basin and Range province across the Garlock fault on the north, and the Sonora Desert towards the south and east extending out of California. The Mojave Desert is an internally draining area, comprised of broad desert alluvial plains and lacustrine basins that are separated by mountainous bedrock blocks, controlled by the northwest-southeast trending strike slip fault pattern of the region.

Locally, the site is situated on the late Pleistocene to Holocene aged alluvial fan materials washed from the Alvord Mountain highlands to the north of the site. The depth to bedrock like materials underlying the site is unknown, but estimated to be on the order of several hundred feet deep. The ephemeral Mojave River is located south of the site and flows to the east.

The borings advanced for this investigation showed the presence of shallow artificial fills, alluvial sand and gravels. The Log of Test Borings will be forwarded when completed.

Surface and Ground Water Data

Surface drainage of the respective area is predominantly by sheet flow from the north into the local swales and onsite retention basins. The C.V. Kane SRRA is situated between two ephemeral drainages, the Midway Ditch on the west and the Telephone Wash on the east. Both drain from the Alvord Mountains and highlands on the north, to the Mojave River located about 1 mile to the south of the site.

Topographically, the C. V. Kane SRRA may be considered as two sites. The northbound site is located along the south side of the freeway at approximately the 1740 feet elevation (MSL). The southbound site is located across the freeway on the north side at approximately the 1750 feet elevation (MSL).

Ground water was NOT encountered within the upper 50 feet of the soil profile to the maximum depths drilled for this investigation. The nearest reported water well is located near Afton Road about 4 miles northeast of the site. The record for well No. 11N05E16J001S (SBBM) reports the groundwater elevation at 1440 feet, with a historic high elevation of 1485 feet, a respective depth in excess of 180 feet below the well head elevation at 1638. The ephemeral Mojave River is

located about 1 mile south east of the site at and elevation of about 1525 or 220 feet below that of the site.

Seismic Data Evaluation

The site is situated within the Eastern California Shear Zone area, with controlling fault for the proposed site improvements is the Manix-Afton Hills Fault, which is located approximately 2 miles (3.3 km) to the southeast. This is a left lateral strike slip fault with a MCE of 6.7. The site is not considered prone to surface rupture due to fault movement since there are no known faults projecting towards or passing through the project site. The faulting and seismicity information provided above is based on the 2013 Caltrans California Fault Database and Deterministic Seismic Hazard Map.

Recommended Seismic Design Parameters

For preliminary design purposes, the **Soil Profile** at this site is classified as **Type C** as defined in Table 20.3-1 of the ASCE 7-10.

The site coefficient mapped spectral acceleration for both the short period (S_S) and 1-second period (S_1) are: **S_S = 1.0g and S_1= 0.37g.** Both have been determined in accordance with Section 1613.3 and Figures 1613.3.1(1) and 1613.3.1(2) of the CBC (2013) respectively.

Lateral Loading

The allowable passive bearing pressure is 300 lbs/ft^2/ft for compacted sandy fill. The coefficient of friction for compacted fill is 0.45.

Corrosion

Selected samples obtained from the SPT tests were forwarded to the lab for corrosion testing Test results indicate that the site may be considered to be not corrosive to foundation elements and metals in contact with the soil. However, the results should be reviewed when considering a specific type of metal and design application, such as pipe jacking conduit. The lab report is summarized below and the results are attached to this report.

Table 1 - Soil Corrosion Test Results

Boring No	Sample Depth (Ft.)	Minimum Resistivity[1] (ohm-cm)	pH [2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
A-09-006	5.0 – 6.5	1194	9.31		
A-09-006	10.0 – 11.5	1080	9.70		
A-09-007	5.0 – 6.5	542	8.83	491	554
A-09-007	10.0 – 11.5	748	8.93	293	175

[1]) CTM 643 [2]) CTM 643 [3]) CTM 422 [4]) CTM 417

Liquefaction

Due to the dense nature of the underlying soils and the absence of groundwater, liquefaction is not anticipated to occur on the site.

Settlement

Settlement induced by the construction is expected. With the given loads overall settlement should be less than one inch while the differential settlement should be less than a ½ inch over a distance of 40 feet.

Subgrade Modulus K

Following our recommendations, the subgrade modulus **K is estimated to be approximately 300 lbs/in^3**. This was determined by general characteristics of the soil, being a recompacted gravelly sand (SW or SP). Without specific plate load tests, which are unrealistic to perform for these types of investigations and for the type of structures anticipated at this time, this value can only be approximated. The approximation was derived by using the Table 4.1 presented in "Army Technical Manual TM 5-809-12" dated August 1987.

Foundation and Slab Recommendations

The Office of Transportation Architecture has requested an investigation concerning the utilization of spread footings.

The field investigation was of a limited extent. It is probable, despite the fact that this is not shown in the "Log of Test Borings", that cobbles and gravel may be encountered at any depth of excavation. Cobbles encountered during excavation are to be removed.

Table 2 - Foundation Design Recommendations for Spread Footings[1]

Location	Type of Footing	Minimum Footing Embedment Depth	Minimum Width	Ultimate Bearing	Allowable Bearing
Main Buildings	Continuous	2 feet below grade	24 inches	4000 psf	2000 psf
Main Buildings	Columns	2 feet below grade	36 inch square	4000 psf	2000 psf

[1]This table is only applicable if the following remedial foundation work is utilized. The maximum bearing value applies to combined dead and sustained live loads

Due to the nature of the underlying soil, and in order to provide a uniform support for the foundations due to the cuts and fills placed by prior grading, remedial grading will be necessary

Areas to be graded should be cleared of any existing structures, vegetation, associated root systems and debris. All areas scheduled to receive fill should be cleared of old fills and any

irreducible matter. The debris should be removed and legally disposed of off site. Voids left by obstructions should be properly backfilled as structural fill.

In order to achieve a uniform, firm, and unyielding bearing surface, overexcavation and recompaction throughout the building areas will be required. All low density native and fill soils soil should be removed to a depth of at least 3 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper. Remedial grading should extend laterally, a minimum of five feet beyond the building perimeter. The exposed surface should then be scarified, moisture conditioned to within two percent of optimum moisture content, and compacted to at least 95 percent relative compaction as determined by ASTM D1557. Observation and testing of the exposed native soil within the excavation bottoms should be performed during grading to verify adequacy.

In leiu of complete overexcavation of the entire building pad area, and to limit the extent of the overexcavations, a strip overexcavation extending three (3) feet each way outside the perimeters of the foundation elements, and 3 feet below the bottoms of the foundations may be required.

As an alternative to any overexcavation, the foundation elements are to be embedded at least one (1) foot into the undisturbed native onsite soils. Accordingly, some of the foundation elements will need to be deepened to achieve the required embedment into the bearing soils. All the foundation excavations art to be observed by a geotechnical engineer or engineering geologist from the Office of Geotechnical Design Services South-2 for verification of embedment into the undisturbed native soils.

For slab support, once all existing fills have been removed to native, or the native soils exposed at the slab subgrade, the subgrade should be overexcavated an additional 12 inches and recompacted back to subgrade elevations.

Soil to be used as structural fill should be free of organic material, debris, environmental contaminants, and other deleterious substances. All fill materials should be placed in thin lifts, not exceeding six inches in their loose state, moisture condition as necessary and compacted. If import fill is required, the material should be similar to that existing on the site.

The subgrade and all fills should be compacted with acceptable compaction equipment, to at least 95 percent relative compaction. Compaction testing should be performed on all lifts in order to ensure proper placement of the structural fill materials.

Slab thickness and reinforcement must be determined by the structural engineer. Support slab reinforcement should be placed on supports during placement to ensure that the reinforcement is placed at slab mid-height in the finished slab.

Slabs with moisture sensitive surfaces should be underlain with a moisture vapor retarder barrier consisting of a polyvinyl chloride membrane such as 10-mil Visqueen, or equivalent. All seams within the membrane should be sealed or overlapped by at least 6 inches in accordance with

current CBC requirements. At least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the overlying concrete slab. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, a 2-inch thick leveling course of clean sand should be placed across the pad surface prior to placement of the membrane.

Concentrated flows from roof downspouts or area drains should be collected and conducted away from the structure foundations in a non-erosive method. As settling is not currently considered as an issue, these slab structures do not need only have structure backfill placed two foot below the subgrade vapor barrier membrane and sand.

All final grades are to have a positive gradient away from foundations. Water is not to be allowed to pond on or immediately adjacent to foundations.

General Notes:

Recommendations are based on the foundation load data provided by Structure Design. Obstructions, consisting partially of existing fill material or facilities, are likely to be encountered while excavating through the overlying fill. Fill is likely to consist of soils and debris.

If you have any questions or need additional information, please call Douglas Cook at 916-227-4514 or Angel Perez-Cobo at 916-227-7167.

Date: 11/20/2015

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ASBESTOS AND LEAD BASED PAINT SURVEY REPORT

ASBESTOS AND LEAD BASED PAINT SURVEY REPORT

C.V. Kane Safety Roadside Rest Area (SRRA)
San Bernardino County, California

Prepared for:
California Department of Transportation, District 8
Task Order No. 08
Contract No. 08A1542
EA No.: 0G8400

August 5, 2008

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APPENDICES

1.0 INTRODUCTION

This document describes the results of an asbestos containing materials (ACM) and lead-based paint (LBP) survey performed at the request of the California Department of Transportation, District 8 (Caltrans), for the C.V. Kane Safety Roadside Rest Area (SRRA), Northbound and Southbound Facilities. The ACM/LBP surveys were performed to support Caltrans proposed demolition and reconstruction of the SRRA facilities and to expand parking. The purpose of this Task Order is to perform an asbestos and lead-based paint survey for all structures affected by the demolition including restroom buildings, picnic and planter areas, concrete paving and asphalt parking areas.

The objectives of the surveys were to identify, estimate quantities of, and assess the condition/friability of asbestos within the SRRA building components, and the content of lead on painted surfaces of the Site improvements. These objectives were met by completing the following tasks:

- Perform a visual inspection and destructive sampling for asbestos following criteria outlined in the Asbestos Hazard Emergency Response Act (AHERA) to identify sources of friable and non-friable ACMs.
- Collect bulk samples of suspect asbestos containing materials.
- Collect paint chip samples of painted surfaces.
- Submit bulk samples to a certified laboratory for analysis.
- Consolidate the findings into a report format.
- Ensure the technical quality of all work by using AHERA-accredited Inspectors and Management Planners, Certified Consultants, and a proven Quality Assurance/Quality Control (QA/QC) Program.

The ACM/LBP survey field activities were performed on July 22, 2008, and consisted of a visual inspection and sampling of the representative building components to identify potential ACMs and LBP.

Bulk samples of suspect ACMs and LBP were collected using destructive techniques in selected representative locations. The visual inspection, bulk sampling, and survey documentation was performed by Ms. Tammy Lapp. Ms. Lapp is accredited by the California Division of Occupational Safety and Health (Cal-DOSH) as a Certified Asbestos Consultant, No. 91-2969 and by the California Department of Health Services (Cal-DHS) as a Lead Inspector/Assessor and Project Monitor No. 12810. Qualifications are presented in Appendix C.

Attempts were made to access all areas of the structures, however, during renovation and demolition activities if any suspect ACM/LBP materials are uncovered that were not

previously sampled, representative samples should be collected and analyzed prior to disturbance.

2.0 SITE DESCRIPTION

At the time of the Site inspection, the rest areas were a functional part of the State Freeway I-15 system located thirty miles east of the City of Barstow, in San Bernardino, California

The C.V. Kane SRRA comprises two rest areas (northbound and southbound) that are similar in age, construction, and configuration. Each facility is improved with the following general elements:

- One, approximately 1,600 square foot single-story men's and women's restroom building constructed of masonry block walls, and a wood-framed flat roof built on a concrete foundation. Interior improvements include two women's restrooms and two men's restrooms that have ceramic tile floors and walls, with wood-beamed ceilings. A small maintenance crew (storage) room is located at the center of the building dividing the men's and women's restroom facilities. The room has concrete floors and plywood walls and houses maintenance equipment, water heaters, and associated exposed plumbing.
- Attached to the restroom building is an 800-square foot lattice covered picnic area. The area has a concrete foundation with concrete and wood picnic tables and a three-foot high surrounding wall.
- Concrete walkways,
- Circular planters with attached concrete and wood picnic tables.
- An asphalt parking lot, with a designated truck parking area.
- Overhead light posts and landscaped areas.

A photographic log of current site conditions is included in Appendix A.

3.0 ASBESTOS SURVEY

3.1 BACKGROUND

Asbestos is a common term for a group of naturally occurring mineral fibers. Due to its durability and insulating quality, it was used in a wide variety of building products including structural fireproofing, pipe and duct insulation, plasters, roofing, floor tile, and vinyl floor sheeting. Adverse health effects have been associated with the inhalation of airborne asbestos fibers by asbestos industry workers. The asbestos fibers that are tightly bound in building materials do not represent an exposure hazard unless disturbed in such a way that releases airborne fibers (i.e., cutting, drilling, or sanding). By June of 1978, the U.S. EPA had effectively banned the use of asbestos in spray application products such as structural fireproofing and acoustic ceilings, pipe-lagging, joint compounds, and spackles. Asbestos is still used in the manufacture of non-friable products such as vinyl floor tile and roofing materials.

3.2 CURRENT REGULATIONS

The following is a summary of current state and federal regulations which contain requirements related to the performance of building surveys for asbestos. These summaries are not intended to be all inclusive and do not contain every aspect of the regulations discussed. Regulations pertaining to the removal and disposal of ACMs are not included.

3.2.1 EPA NESHAP

Under the National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, regulation, no visible emissions are allowed during building demolition or renovation activities which involve regulated asbestos-containing materials (RACMs). For this reason, all buildings must be surveyed for ACMs prior to demolition or renovation. The USEPA and/or the local air quality management district which implements USEPA actions must be notified prior to any building demolition even if no ACMs are present. RACM is defined as any material with an asbestos content of greater than one percent and is friable, or Category I non-friable ACM that has or will become friable, or Category II friable ACM that may become or will become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.

According to NESHAP, ACM is material containing more than one percent asbestos as determined using the methods specified in Appendix A, Subpart E, 40 CFR Part 763, Section 1, PLM. The NESHAP classifies ACM as friable or non-friable. Friable ACM is ACM that contains more than one percent asbestos and when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable ACM also contains more than one percent asbestos and is further classified as either Category I ACM or Category II ACM. The materials are distinguished by their potential to release fibers when damaged. Category I ACMs are much more likely to release fibers when damaged. Examples of Category I ACM include asbestos-containing resilient floor coverings removed by mechanical means and acoustical ceilings. Category II materials are less likely to release fibers. Examples of Category II ACM include other non-friable ACM; such as transite pipe, asbestos cement shingles, and transite boards or panels.

In accordance with the USEPA's NESHAPs regulation facilities planned for renovation or demolition must be surveyed for the total amount of RACM, Category I Non-friable Asbestos Containing Materials, and Category II Non-friable Asbestos Containing Materials prior to the planned renovation or demolition.

3.2.2 Mojave Desert Air Quality Management District, Rule 1002

The Mojave Desert Air Quality Management District (MDAQMD) is the government agency that regulates sources of air pollution within San Bernardino County to protect public health. In response to the NESHAP requirements, MDAQMD implemented Rule 1002 that pertains to demolition/renovation activities including the removal and associated disturbance of ACMs. These requirements for demolition and renovation activities include notification, ACM removal procedures, time schedules, ACM handling and cleanup procedures, storage, disposal, and landfill requirements for asbestos-containing waste materials. Rule 1002 is applicable to owners and operators of demolition or renovation activity and associated disturbance of ACMs. Failure to comply with Rule 1002 requirements could result in violations that carry daily penalties (penalties assessment is based upon the size of the project and severity of noncompliance).

3.2.3 Asbestos Hazard Emergency Response Act (AHERA)

AHERA requires performance of asbestos surveys and the development of Asbestos Management Plans for all of the nation's primary and secondary schools. The general procedures mandated under AHERA are considered the industry standard and are applied to all surveys performed.

3.2.4 California Occupational Safety and Health Administration (Cal-OSHA)

Per Cal-OSHA standards 1926.1101, Asbestos-Containing Construction Materials (ACCMs) are defined as any materials with an asbestos content greater than one-tenth of one percent (>0.1%). Cal-OSHA sets forth work requirements for disturbance of ACCMs including removal operations for all types of ACCMs. The requirements have been classified as Class I, Class II, Class III, or Class IV Asbestos related Work. The classes are distinguished by their potential to release fibers. Cal-OSHA prescribes specific engineering controls and work practices for each Class of Asbestos related Work.

- Class I – This Class refers to removal of ACMs identified as Thermal System Insulation (TSI) or surfacing (sprayed-on or troweled-on) materials. These materials are generally considered friable.

- Class II – This Class refers to removal of ACMs identified that are not TSI or surfacing materials. These materials are generally considered non-friable.

- Class III – This Class refers to repair and maintenance operations of all identified ACMs.

- Class IV – This Class refers to incidental contact with identified ACMs such as custodial staff.

3.2.5 California Health and Safety Code

The California Health and Safety Code 25915 (former Connelly Bill) requires all building owners in the State of California to provide written notification to employees, tenants, and contractors of the presence and location of asbestos-containing construction materials (ACCMs) within their buildings. Some exclusion to the notification rule for restricted access areas is allowed. All documentation related to asbestos surveys (and air monitoring) must be made available to employees, tenants, or contractors for review. ACCMs are defined as any materials with an asbestos content greater than one-tenth of one percent (>0.1%).

The California Health and Safety Code also require that a seller with any knowledge of ACMs on a property disclose such information or knowledge to other parties involved in a real estate transaction.

3.3 ASBESTOS REMOVAL AND BUILDING DEMOLITION/RENOVATION

In accordance with the EPA's NESHAPs regulation and the SCAQMD, all structures planned for renovation or demolition must be surveyed for ACMs prior to the planned renovation or demolition. Subsequent removal of identified ACMs is also required. Removal involves, to the greatest extent practical, the complete removal, disposal, and replacement, if necessary, of the asbestos-containing building material (ACBM). Removal usually also requires encapsulation of the remaining structure to lock down residual fibers which may exist. Removal of ACMs is required prior to renovation and/or demolition activities.

The EPA and SCAQMD require removal of all Regulated Asbestos Containing Materials (RACMs) prior to demolition or renovation. RACMs include friable and non-friable (Category I and II) which have or will become friable by demolition or renovation activities.

3.4 ACM SURVEY METHODOLOGY

3.4.1 Visual Inspection

Building materials were visually inspected for asbestos using the methods presented in the Federal AHERA regulations (40 CFR, Part 763) as a guideline. The principles presented under the EPA Asbestos-Containing Materials in Schools, Final Rule and Notice is generally accepted as the industry standard for ACM inspections. Potential ACMs were also physically assessed for friability, condition, and disturbance factors.

Reasonable efforts have been made by Stantec personnel to locate and sample materials representative of the entire site. However, for any facility the existence of unique or concealed materials or debris is a possibility. It is common practice to collect additional bulk samples during actual abatement or demolition activities when hidden suspect ACMs are discovered.

3.4.2 Bulk Sampling for Asbestos

Bulk samples of all homogeneous materials containing suspect ACMs were collected. A homogeneous material is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in use, color, and texture. Examples of homogeneous materials include: roofing and grout.

Bulk samples were collected to determine if there is any asbestos in representative material. The sample result identifies the percentage of each type of asbestos detected.

AHERA sample criteria guidelines are followed to determine the number of samples collected of each homogeneous area as identified in the following table.

AHERA Sample Criteria

Type of Material (homogeneous area)	AHERA Recommended Number of Samples per Homogeneous Material
Surfacing (sprayed or troweled) such as acoustical ceilings	
Less than 1000 ft^2	3
1000 – 5000 ft^2	5
Greater than 5000 ft^2	7
Thermal System Insulation such as pipe insulation and wrap	3
Miscellaneous Materials such as (but not limited to) floor tile, drywall, and roofing	Number of samples is the discretion of the Building Inspector. Typically 2 to 3 samples collected.

A sample approximately one-half square inch in size was collected of each suspect ACM. The sample was collected by removing the material using a chisel or other sharp instrument to cut a representative piece away. No attempt was made to replace or repair these materials. However, the removal of small pieces of building materials does not typically compromise structural integrity. A plastic bag was used to contain the sample of suspect material and quickly sealed to prevent the escape of the material or the introduction of contamination from outside sources. A unique sample number was assigned to each sample.

3.4.3 Asbestos Laboratory Testing

Environmental Management Consultant (EMC) Analytical Laboratories of Phoenix, Arizona, analyzed select samples. EMC is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP), and the State of Arizona and California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) for the analysis of asbestos in bulk building material samples.

All samples were analyzed using Polarized Light Microscopy (PLM) techniques in accordance with methodology approved by the EPA. According to the EPA, ACM is defined as material containing more than one percent asbestos. The lower limit of reliable detection for asbestos using the PLM method is approximately one percent by volume; however, Cal-OSHA defines ACMs as those materials having an asbestos content greater than one-tenth of one percent (>0.1%).

When "None Detected" (ND) appears in this report, it should be interpreted as meaning no asbestos was observed in the sample material above the reliable limit of detection for the PLM method which is material dependent and is something less than one percent.

4.0 LEAD-BASED PAINT SURVEY

4.1 BACKGROUND

Lead is a pliable, soft metal that is used in the construction of pipes, rods, and containers. Before 1978, lead was a common ingredient in paint because it added strength, shine and extended the life of the paint. Lead-based paint is recognized as a potential health risk due to the known toxic effects of lead exposure (primarily through ingestion) on the central nervous system, kidneys, and blood stream. Concern for lead-based paint is primarily related to residential structures, which in addition, may apply to commercial structures. The risk of lead toxicity of lead-based paint varies based upon the condition of the paint and the year of its application. The U.S. Department of Housing and Urban Development (HUD) has identified the follow risk factors, based on the age of the structure:

- The maximum risk is from paint applied before 1950.
- There is severe risk from paint applied before 1960.
- There is moderate risk from deteriorated paint applied before 1970.
- There is a slight risk from paint that is intact but applied before 1977.
- Paint applied in 1977 or later is not expected to contain lead.

4.2 CURRENT REGULATIONS

The following is a summary of current state and federal regulations which contain requirements regarding lead-based paint. These summaries are not intended to be all inclusive and do not contain every aspect of the regulations discussed. Regulations pertaining to the removal and disposal of lead-based paint are not included.

4.2.1 Department of Housing and Urban Development (HUD)

The *Guidelines for the Evaluation and Control of Lead-based Paint Hazards in Housing,* Department of Housing and Urban Development (HUD), 1995 (revised September 1997) and;.*Lead Requirements for Lead-based Paint Activities in Target Housing and Child-Occupied Facilities: Final Rule*, (40 CFR Part 745), US Environmental Protection Agency (EPA), 29 August 1996 define Lead-Based Paint as: paint, varnish, shellac, or other coating on surfaces that contain 1.0 mg/cm^2 or more of lead or 0.5 percent or more lead by weight.

4.2.2 Cal-OSHA

The California Occupational Safety and Health Administration (Cal-OSHA) governs all construction work where an employee may be occupationally exposed to lead (Construction Lead Standard, CCR Title 8, Section 1432.1). The Cal-OSHA Construction Lead Standard was effective as of November 4, 1993.

The Lead Standard states that work which involves the disturbance of materials containing more than 0.50 percent lead by weight must be conducted in accordance with

the standard. In addition, OSHA regulations (Standards – 29CFR 1926.62 App A) would apply to workers exposed to lead through inhalation. The permissible exposure limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air, averaged over an 8-hour workday.

As outlined in the Cal-OSHA Construction Lead Standard, construction work (of lead-containing material) includes, but is not limited to the following:

- Demolition or salvage of structures
- Removal or encapsulation
- New construction, alteration, repair or renovation
- Installation of products
- Lead contamination/emergency cleanup
- Transportation, disposal, storage or containment
- Maintenance operations.

Painted surfaces which are in good condition do not require any action. However, if the painted surfaces are disturbed so as the paint delaminates or becomes flaking or peeling, the above Standard applies.

4.2.3 State of California Department of Health Services (DHS)

Under California regulation; Title 17, CCR, Division 1, Chapter 8, notification to the California Department of Health Services that a lead hazard evaluation survey was conducted at a Site is required. A copy of the Lead Hazard Evaluation Report for the Site is included in Appendix D.

4.3 LEAD PAINT REMOVAL REQUIREMENTS

The Cal-OSHA Lead Standard states that work which involves the disturbance of materials containing more than 0.5 percent lead by weight, or if the permissible exposure limit of airborne lead particulate of 50 micrograms per cubic meter of air is exceeded, then the work must be conducted in accordance with the standard. The U.S. Department of Housing and Urban Development (HUD) and Cal-OSHA have defined lead-based paint as any paint which contains more than 0.5 percent lead by weight.

LBP noted to be in a good, non-flaky condition that would be removed with the paint intact, would require no special handling of the painted surface prior to demolition. However, it would be recommended that identified LBP in good condition be encapsulated by a paint film stabilizer prior to demolition. If the LBP paint would be disturbed and rendered in a flaky condition during demolition, removal of the paint prior to demolition would be required.

4.4 LBP SURVEY METHODOLOGY

4.4.1 Visual Inspection

Building materials were visually inspected for evidence of blistered or peeling paint. Painted surfaces exhibiting evidence of peeling or blistering were documented in the

field notes along with a description of the structural member and approximate area observed to be peeling or blistered.

4.4.2 Bulk Sampling for LBP

Representative bulk samples of paint were collected from the various types of paint and painted surfaces. A sample approximately one-half square inch in size was collected from each painted surface. The sample was collected by removing the paint using a chisel or other sharp instrument to cut a representative piece away. No attempt was made to replace or repair these materials. However, the removal of small pieces of building materials does not typically compromise structural integrity.

Each sample was placed in a Ziploc® plastic resealable bag and labeled (sample date, unique identifying number, sampler name, and job site), recorded on a chain of custody sheet and securely packaged for delivery to the laboratory. The sample number, location, material type, etc. were also recorded on field logs.

4.4.3 LBP Laboratory Testing

Environmental Management Consultant (EMC) Analytical Laboratories of Phoenix, Arizona, analyzed select samples. EMC is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP), and the State of Arizona and California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) for the analysis of LBP.

Samples were analyzed by EMC SOP Method #L01/1, after EPA SW-846 Method 7420. US Environmental Protection Agency (EPA), defines Lead-Based Paint as: paint, varnish, shellac, or other coating on surfaces that contains 0.5 percent or more lead by weight.

5.0 ASSESSMENT RESULTS

5.1 ASBESTOS SURVEY

An inspection of the accessible portions of the structures was conducted to evaluate whether suspect asbestos-containing materials (ACMs) were present. As part of the asbestos survey, representative bulk material samples were collected of suspect ACM containing materials.

Collected building material samples were submitted to EMC Analytical Laboratories. EMC is accredited under the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP), and the States of Arizona and California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) for the analysis of asbestos in bulk building material samples.

All samples were analyzed using Polarized Light Microscopy (PLM) techniques in accordance with methodology approved by the EPA. According to the EPA, ACM is defined as material containing more than one percent asbestos. According to Cal-OSHA, ACBM is identified as 0.1 percent asbestos. The lower limit of reliable detection for asbestos using the PLM method is approximately 1 percent by volume. However, the PLM technique can identify Cal-OSHA ACBMs. Although PLM methodology cannot quantify the exact percentage of asbestos detected less than 1 percent, if a sample had any quantity of asbestos, the laboratory, using PLM techniques, would be identified these materials as “Trace” amounts of asbestos (< 1 percent). Only materials containing no fibers at all are identified as “None Detected”.

As part of the asbestos survey, bulk material samples were collected from representative homogeneous building materials on the structures. All samples were analyzed using Polarized Light Microscopy (PLM) techniques in accordance with methodology approved by the EPA. According to the EPA, ACM is defined as material containing more than one percent asbestos. The sample locations and laboratory results are provided in the table section (Table 1). The sample locations are shown on the attached Figures 2.

Based upon the laboratory results (Appendix B), the following materials are described by the Environmental Protection Agency (EPA), as Regulated Asbestos Containing Materials (RACM), that may become friable if disturbed (such as renovation or demolition activities):

- **Roofing Mastic –** Gray/Black tar-looking representative roofing mastics (possibly patch material) observed on the roof of both the northbound and southbound maintenance buildings contains greater than one percent asbestos. The material cannot be crushed by hand pressure and is therefore considered a non-friable material that may become friable upon demolition. The mastic material appeared in good condition. Representative samples of the roofing

material did not test positive for asbestos. Stantec estimates there could be up to 50 square feet of mastic patch on the roof, however this should be verified by the asbestos removal (abatement) contractor.

Stantec recommends that, prior to demolition activities, a licensed asbestos abatement firm be contracted to remove identified RACMs. The RACMs identified were generally in good condition. The identified RACMs will require removal prior to demolition activities in accordance with the USEPA NESHAP and the local Mojave Desert Air Quality Management District (MDAQMD) Rule 1002. And, this work should be completed following the MDAQMD Rule 1002 guidelines. In addition, the demolition contractor should comply with and provide at least 10 days notification prior to demolition.

The following materials were sampled and no asbestos was detected. (This list should not be construed as being a complete listing of all building materials observed within the structures.)

Restroom:

- Exterior Stucco
- Foam Pipe Insulation (Maintenance Rooms)
- Concrete Slab Foundation
- Concrete Walkways
- Roofing Materials

Picnic Shelter Areas:

- Concrete Foundations
- Concrete Picnic Tables
- Surrounding Concrete Sidewalks
- Perimeter Concrete Sidewalks
- Asphalt Paved Parking

The following materials are suspect-RACMs and although not visually observed, may be present at the Site. Asbestos is presumed to be present in these materials.

- **Transite Water Pipe** – Transite water pipe, a cement pipe material used in various underground conduit situations, was widely used for water transfer purposes. Most transite water pipe is buried several feet below ground surface and is typically discovered during grading activities. The pipe is typically whitish to grayish in color.

If during future renovation or demolition transite pipe is discovered, it must not be disturbed. The pipe must be tested for asbestos and if applicable, removed by a licensed asbestos abatement contractor in accordance with all applicable laws, including OSHA guidelines.

5.2 LEAD-BASED PAINT SURVEY

The Cal-OSHA Lead Standard (the "Standard") states that work which involves the disturbance of materials containing more than 0.5 percent lead by weight, or if the permissible exposure limit of airborne lead particulate of 50 micrograms per cubic meter of air is exceeded, then the work must be conducted in accordance with the Standard.

An inspection of the interior and exterior of the site improvements was conducted to evaluate the condition of painted surfaces and random surfaces suitable for lead-based paint sampling. Table 2 the attached Figures identify the areas where lead-based paint samples were collected. In addition, representative ceramic tile walls and flooring observed in the restroom areas was collected and tested for lead content.

The method of removing paint to the substrate was followed during the collection of paint chip samples. Environmental Management Consultant (EMC) Analytical Laboratories of Phoenix, Arizona, analyzed the samples. All samples were analyzed by EMC SOP Method #L01/1, after EPA SW-846 Method 7420.

None of the representative paint chips or ceramic tile collected and analyzed as part of this survey contained lead greater than 0.5% lead by weight. The representative materials sampled and analyzed for lead were,

- Picnic Shelters (Brown)
- Picnic Shelter Walls (Tan)
- Restroom Exterior Walls (Tan)
- Restroom Exterior Trim (Brown)

None of the representative paint chip samples collected at the C.V. Kane SRRA were greater than 0.5 percent lead-by weight. Therefore, no special requirements pertaining to lead-based paint appear to be applicable to future demolition or renovation of the above tested materials.

6.0 LIST OF PREPARERS

This ACM/LBP investigation report has been prepared under the direction of the following environmental professionals.

Preparers

Kevin K. Miskin, P.E., Stantec Consulting, M.S., Civil Engineering, Purdue University, West Lafayette, Indiana. ACM/LBP Report Senior Reviewer.

Tammy Lapp, Stantec Consulting. Certified Asbestos Consultant/Cal-DOSH, Lead-Related Construction Inspector/Cal DHS. ACM/LBP Investigation Report Author.

If you have any questions or comments regarding the information enclosed herein, please contact the undersigned at your convenience.

Respectfully submitted,
Stantec Consulting Corporation

Tammy Lapp, CAC 91-2969
Stantec Task Order Manager
Certified Asbestos Consultant/Cal-DOSH
LRCIA No. 12810

Kevin K. Miskin, PE C48458
Stantec Project Manager

7.0 CLOSURE

The conclusions and recommendations contained in this report/assessment are based upon professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted engineering standards and practices applicable to this location and are subject to the following inherent limitations:

The data and findings presented in this report are valid as of the dates when the investigations were performed. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the site, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in the report.

The data reported and the findings, observations, and conclusions expressed in the report are limited by the Scope of Work outlined in the Work Plan dated June 18, 2007.

Unless otherwise stated in the report, because of the limitations stated above, the findings observations, and conclusions expressed in this report are not, and should not be, considered an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state or local law or regulation.

No warranty or guarantee, whether express or implied, is made with respect to the data or the reported findings, observations, and conclusions, all of which, however, accurately reflect site conditions in existence at the time of investigation.

This report presents professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, state or local governmental agencies. Any use constitutes acceptance of the limits of liability. The report preparer's liability extends only to those parties contracted to complete this project and not to any other parties who may obtain the Report. Issues raised by the report should be reviewed by appropriate legal counsel.

This report is based, in part, on unverified information supplied to the report preparer by third-party sources. While efforts have been made to substantiate this third-party information, the report preparer cannot guarantee its completeness or accuracy.

TABLES

TABLE 1
C.V. Kane Safety Roadside Rest Area
Asbestos Sample Log and Analysis Results

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYSIS RESULTS	Condition Friable Yes/No	If ACM, Estimated Square Footage
THE FOLLOWING SAMPLES WERE COLLECTED FROM THE NORTHBOUND FACILITY:					
01S	North Side Restroom Building	Exterior Stucco	ND	Good/ Not Friable	-------
02S	South Side Restroom Building	Exterior Stucco	ND	Good/ Not Friable	-------
03S	South Wall, Covered Picnic	Exterior Stucco	ND	Good/ Not Friable	-------
04S	East Side Restroom Building	Exterior Stucco	ND	Good/ Not Friable	-------
05S	East Side RR Building, Entry	Exterior Stucco	ND	Good/ Not Friable	-------
06S	West Side RR Building, Entry	Exterior Stucco	ND	Good/ Not Friable	-------
07S	West Side RR Building, Entry	Exterior Stucco	ND	Good/ Not Friable	-------
08C	North Side Picnic Area	Concrete Surface	ND	Good/ Not Friable	-------
09C	North Side Building	Concrete Surface	ND	Good/ Not Friable	-------
10C	South Side Picnic Area	Concrete Surface	ND	Good/ Not Friable	-------
11C	South Side Building	Concrete Surface	ND	Good/ Not Friable	-------
12C	Near Telephones	Concrete Surface	ND	Good/ Not Friable	-------
13C	East Side Building	Concrete Surface	ND	Good/ Not Friable	-------
14C	Western Circular Planter	Concrete Surface	ND	Good/ Not	-------

TABLE 1 (Continued)
Asbestos Sample Log and Analysis Results

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYSIS RESULTS	Condition Friable Yes/No	If ACM, Estimated Square Footage
				Friable	
15A	Parking, Center/East	Asphalt Pavement	ND	Good/ Not Friable	-------
16A	Parking, East End	Asphalt Pavement	ND	Good/ Not Friable	-------
17A	Parking, Center	Asphalt Pavement	ND	Good/ Not Friable	-------
18A	Parking, Center	Asphalt Pavement	ND	Good/ Not Friable	-------
19A	Parking, Center/West	Asphalt Pavement	ND	Good/ Not Friable	-------
20A	Parking, West End	Asphalt Pavement	ND	Good/ Not Friable	-------
21I	Storage/Maintenance Room	Pipe Insulation, Black	ND	Good/ Not Friable	-------
22I	Storage/Maintenance Room	Pipe Insulation, Black	ND	Good/ Not Friable	-------
23R	Roof, NE, End	Roofing	ND	Good/ Not Friable	-------
24R	Roof, NW End	Roofing	ND	Good/ Not Friable	-------
25R	Roof, South End	Roof Mastic, White/Black Patch	5% Chrysotile	Good/ Not Friable	Up to 50 Sq. Ft.
26R	Roof, South End	Roofing	ND	Good/ Not Friable	-------
27R	Roof, SW End	Roofing	ND	Good/ Not Friable	-------
28R	Roof, South End	Roof Mastic, Black/Tar (Patch)	ND	Good/ Not Friable	-------

"

TABLE 1 (Continued)
Asbestos Sample Log and Analysis Results

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYSIS RESULTS	Condition Friable Yes/No	If ACM, Estimated Square Footage
THE FOLLOWING SAMPLES WERE COLLECTED FROM THE SOUTHBOUND FACILITY:					
29S	Picnic Area Wall	Exterior Stucco	ND	Good/ Not Friable	-------
30S	East Side, Women's RR Entry	Exterior Stucco	ND	Good/ Not Friable	-------
31S	East Side Building	Exterior Stucco	ND	Good/ Not Friable	-------
32S	East Side Building	Exterior Stucco	ND	Good/ Not Friable	-------
33S	East Side Building	Exterior Stucco	ND	Good/ Not Friable	-------
34S	SE Corner	Exterior Stucco	ND	Good/ Not Friable	-------
35S	SW Corner	Exterior Stucco	ND	Good/ Not Friable	-------
36C	Men's Restroom	Concrete Surface	ND	Good/ Not Friable	-------
37C	North of Covered Picnic	Concrete Surface	ND	Good/ Not Friable	-------
38C	South of Covered Picnic	Concrete Surface	ND	Good/ Not Friable	-------
39C	SW of Building	Concrete Surface	ND	Good/ Not Friable	-------
40C	West Side, Women's RR Entry	Concrete Surface	ND	Good/ Not Friable	-------
41C	East Side, Concrete Planter	Concrete Surface	ND	Good/ Not Friable	-------
42C	West Side, Concrete Planter	Concrete Surface	ND	Good/ Not Friable	-------
43I	Storage/Maintenance Room	Pipe Insulation,	ND	Good/ Not	-------

"

TABLE 1 (Continued)
Asbestos Sample Log and Analysis Results

SAMPLE #	SAMPLING LOCATION	MATERIAL DESCRIPTION	ANALYSIS RESULTS	Condition Friable Yes/No	If ACM, Estimated Square Footage
		Black		Friable	
44I	Storage/Maintenance Room	Pipe Insulation, Black	ND	Good/ Not Friable	-------
45A	Parking, East End	Asphalt Pavement	ND	Good/ Not Friable	-------
46A	Paring, East/Center	Asphalt Pavement	ND	Good/ Not Friable	-------
47A	Parking, Center	Asphalt Pavement	ND	Good/ Not Friable	-------
48A	Parking, Center	Asphalt Pavement	ND	Good/ Not Friable	-------
49A	Parking, Center/West	Asphalt Pavement	ND	Good/ Not Friable	-------
50A	Parking, West End	Asphalt Pavement	ND	Good/ Not Friable	-------
51R	Roof, North Side	Roofing	ND	Good/ Not Friable	-------
52R	Roof, SE Corner	Roofing	ND	Good/ Not Friable	-------
53R	Roof, South, Center	Roofing	ND	Good/ Not Friable	-------
54R	Roof, East Side	Roofing	ND	Good/ Not Friable	-------
55R	Roof, West Side	Roofing	ND	Good/ Not Friable	-------
56R	Roof, North Side	Mastic, Tan/Black	ND	Good/ Not Friable	-------
57R	Roof, West Side	Mastic, White	ND	Good/ Not Friable	-------
58R	Roof, West Overhang	Mastic, Gray/Black (Patch)	8% Chrysotile	Good/Not Friable	Up to 50 Sq. Feet

"

TABLE 1 (Continued)
Asbestos Sample Log and Analysis Results

ND = No asbestos detected.
NOTE: Asbestos sample locations are depicted on attached Figures.
Bulk sample analyses completed by polarized light microscopy (PLM)

"

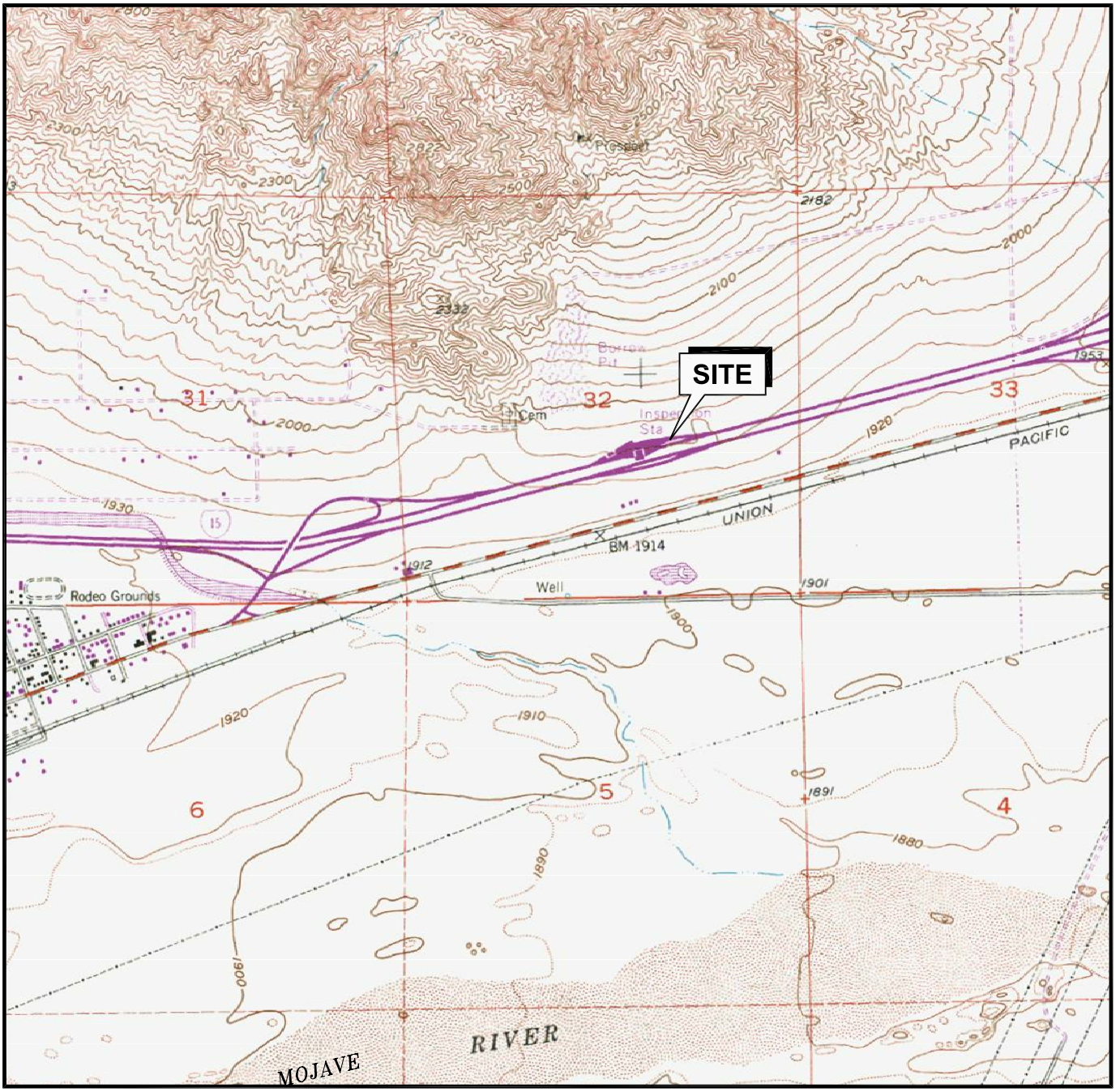
TABLE 2
C.V. Kane Safety Roadside Rest Area
Paint Chip and Ceramic Tile Sample Log and Analysis Results

Sample Number	SAMPLING LOCATION	%Pb by Weight
THE FOLLOWING SAMPLES WERE COLLECTED FROM THE NORTHBOUND FACILITY:		
L01	Beige/Western Planter	Below Reportable Limits
L02	Brown/Picnic Table	Below Reportable Limits
L03	Brown/Picnic Bench	Below Reportable Limits
L04	Tan/Picnic Wall	Below Reportable Limits
L05	Brown/Eave-SW End	Below Reportable Limits
L06	Brown/West Side Building	Below Reportable Limits
L07	Ceramic Tile, Women's' Restroom - Wall	Below Reportable Limits
L08	Ceramic Tile, Women's' Restroom Wall	Below Reportable Limits
L09	Ceramic Tile, Women's' Restroom - Floor	Below Reportable Limits
L10	Ceramic Tile, Women's' Restroom Floor	Below Reportable Limits
THE FOLLOWING SAMPLES WERE COLLECTED FROM THE SOUTHBOUND FACILITY:		
L11	Tan/Western Planter	Below Reportable Limits
L12	Brown/Eave, North Side Building	Below Reportable Limits
L13	Tan/Picnic Wall	Below Reportable Limits
L14	Brown/Eave, West Side Building	Below Reportable Limits
L15	Brown/Eave, South Side Building	Below Reportable Limits
L16	Ceramic Tile, Women's' Restroom - Wall	Below Reportable Limits
L17	Ceramic Tile, Women's' Restroom Wall	Below Reportable Limits
L18	Ceramic Tile, Women's' Restroom - Floor	Below Reportable Limits
L19	Ceramic Tile, Women's' Restroom Floor	Below Reportable Limits

Pb = Lead

Analytical documentation is in Appendix B. Paint Chip sample locations are depicted on the attached Figure. Sample analyses completed by ECM SOP Method #L01/1, EPA SW-846 Method 7420

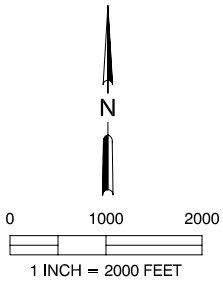
FIGURES



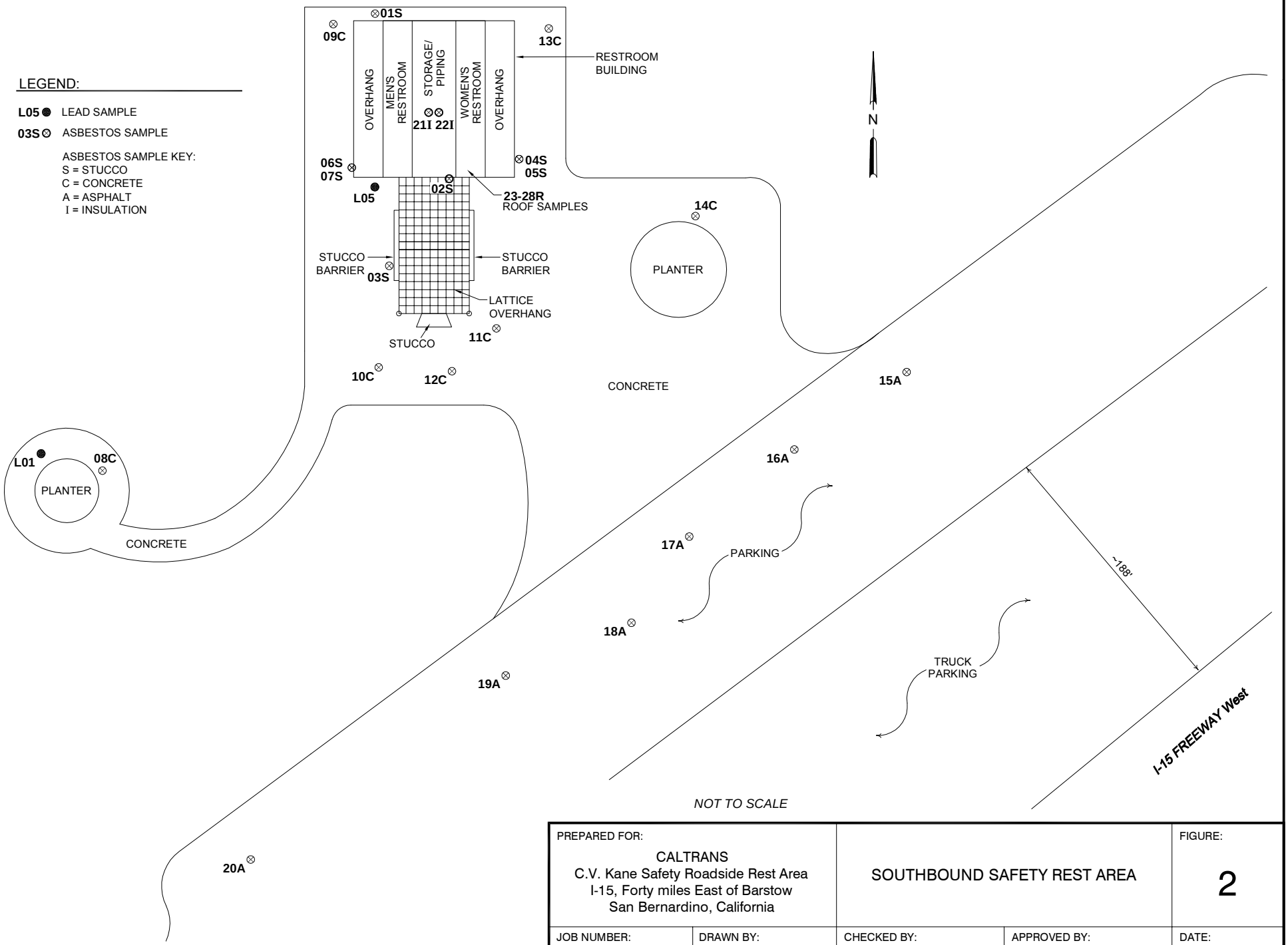
QUADRANGLE LOCATION

Reference:

Terrain Navigator–U.S.G.S., 1953, Saticoy, California Quadrangle. 7.5–Minute Topographic Map. Photorevised 1970.



PREPARED FOR:		SITE LOCATION MAP		FIGURE:
CALTRANS C.V. Kane Safety Roadside Rest Area I-15, Forty miles East of Barstow San Bernardino, California				1
JOB NUMBER: 04OT.A1542.08	DRAWN BY: RO	CHECKED BY: TL	APPROVED BY:	DATE: 08/04/08



PREPARED FOR:				FIGURE:
CALTRANS C.V. Kane Safety Roadside Rest Area I-15, Forty miles East of Barstow San Bernardino, California		SOUTHBOUND SAFETY REST AREA		2
JOB NUMBER: 04OT.A1542.08	DRAWN BY: RO	CHECKED BY: TL	APPROVED BY:	DATE: 07/29/08

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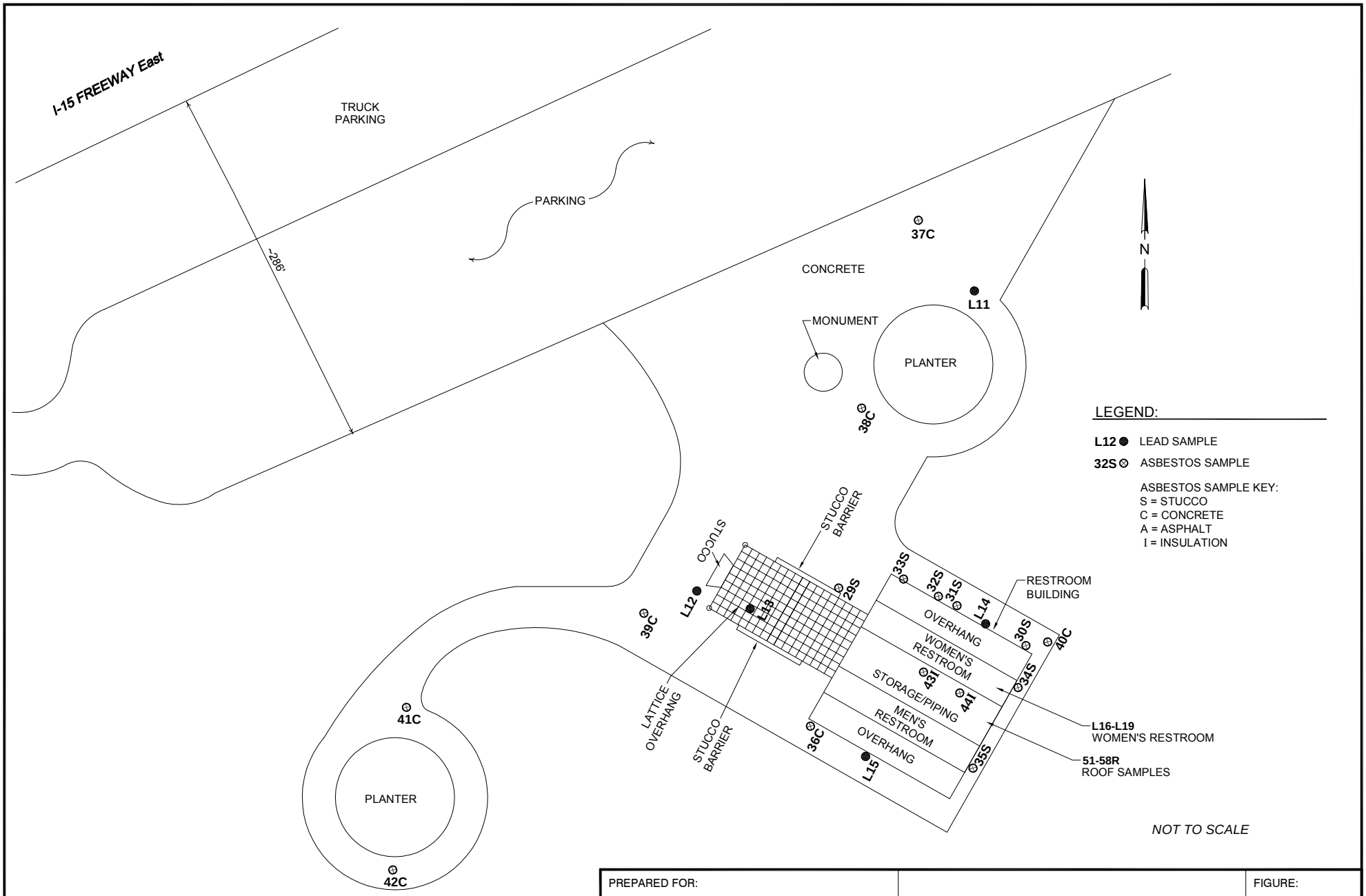
Ventura Professional Center



PREPARED FOR:		NORTHBOUND SAFETY REST AREA		FIGURE:
CALTRANS C.V. Kane Safety Roadside Rest Area I-15, Forty miles East of Barstow San Bernardino, California				3
JOB NUMBER: 04OT.A1542.08	DRAWN BY: RO	CHECKED BY: TL	APPROVED BY:	DATE: 07/29/08

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Ventura Professional Center

APPENDIX A
PHOTOGRAPHIC LOG

Photograph No. 1
View of Northbound Facility C.V. Kane Safety Roadside Rest Area (SRRA)

Photograph No. 2
View of Northbound Facility – Maintenance Crew Room.

Photograph No. 3
View of Northbound Facility Picnic Shelter Area.

Photograph No. 4
View of Northbound Facility Picnic/Planter Area.

Photograph No. 5
Representative view of Northbound Facility Restroom.

Photograph No. 6
Representative view of Northbound Facility Parking Lot.

Photograph No. 7
View of Southbound Facility C.V. Kane Safety Roadside Rest Area (SRRA)

Photograph No. 8
View of Southbound Facility – Maintenance Crew Room.

Photograph No. 9
View of Southbound Facility Picnic Shelter Area.

Photograph No. 10
View of Southbound Facility Picnic/Planter Area.

Photograph No. 11
Representative view of Southbound Facility Restroom.

Photograph No. 12
Representative view of Southbound Facility Parking Lot.

APPENDIX B
ANALYTICAL LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/ Address:	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-001 01S	NORTH SIDE-N. SIDE BLDG	Exterior Stucco, Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-002 02S	NORTH SIDE-S. SIDE BLDG	Exterior Stucco, Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-003 03S	NORTH SIDE-S. WALL-PICNIC	Exterior Stucco, Beige	No			
					Carbonates Quartz Gypsum Binder/Filler	100%
0066993-004 04S	NORTH SIDE-E. SIDE BLDG-RR ENTRY	Exterior Stucco, Beige	No			
					Carbonates Quartz Gypsum Binder/Filler	100%
0066993-005 05S	NORTH SIDE-E. SIDE LBDG-RR ENTRY	Exterior Stucco, Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-006 06S	NORTH SIDE-W. SIDE BLDG-RR ENTRY	Exterior Stucco, Beige	No			
					Carbonates Quartz Gypsum Binder/Filler	100%
0066993-007 07S	NORTH SIDE-W. SIDE BLDG-RR ENTRY	Exterior Stucco, Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-008 08C	NORTH SIDE-N. SIDE PICNIC	Concrete Surface, Gray/ Brown	No		Cellulose Fiber	<1%
					Gypsum Quartz Carbonates Binder/Filler	99%
0066993-009 09C	NORTH SIDE-N. SIDE BLDG	Concrete Surface, Gray/ Brown	No			
					Gypsum Quartz Carbonates Binder/Filler	100%
0066993-010 10C	NORTH SIDE-S. SIDE PICNIC	Concrete Surface, Gray/ Brown	No			
					Gypsum Quartz Carbonates Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-011 11C	NORTH SIDE-S. SIDE BLDG	Concrete Surface, Gray/ Brown	No		Gypsum Quartz Carbonates Binder/Filler	100%
0066993-012 12C	NORTH SIDE-NEAR TELEPHONES	Concrete Surface, Gray/ Brown	No		Cellulose Fiber Gypsum Quartz Carbonates Binder/Filler	<1% 99%
0066993-013 13C	NORTH SIDE-E. SIDE BLDG	Concrete Surface, Gray/ Brown	No		Gypsum Quartz Carbonates Binder/Filler	100%
0066993-014 14C	NORTH SIDE-WESTERN CIRCULAR PAINTER	Concrete Surface, Gray/ Brown	No		Gypsum Quartz Carbonates Binder/Filler	100%
0066993-015 15A	NORTH SIDE-PARKING-CENTER EAST	Asphalt, Brown/ Black	No		Quartz Gypsum Carbonates Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-016 16A	NORTH SIDE-E. END	Asphalt, Brown/ Black	No			
					Quartz Gypsum Carbonates Binder/Filler	100%
0066993-017 17A	NORTH SIDE-CENTER	Asphalt, Brown/ Black	No			
					Quartz Gypsum Carbonates Binder/Filler	100%
0066993-018 18A	NORTH SIDE-CENTER	Asphalt, Brown/ Black	No			
					Quartz Gypsum Carbonates Binder/Filler	100%
0066993-019 19A	NORTH SIDE-CENTER W.	Asphalt, Brown/ Black	No			
					Quartz Gypsum Carbonates Binder/Filler	100%
0066993-020 20A	NORTH SIDE-W. END	Asphalt, Brown/ Black	No			
					Quartz Gypsum Carbonates Binder/Filler	100%
0066993-021 21I	NORTH SIDE-STORAGE	Pipe Insulation, Black	No			
					Gypsum Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/ Address:	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0066993-022 22I	NORTH SIDE-STORAGE	Pipe Insulation, Black	No			Gypsum Binder/Filler	100%
0066993-023 23R	NORTH SIDE-NE END	Roofing, Gray/ Black	No			Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
0066993-024 24R	NORTH SIDE-NW END	Roofing, Gray/ Black	No			Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
0066993-025 25R	NORTH SIDE-S. END	Roof Mastic, White/ Black	Yes	Chrysotile	5%	Carbonates Quartz Binder/Filler	 95%
0066993-026 26R	NORTH SIDE-S. END	Roofing, Gray/ Black	No			Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
0066993-027 27R	NORTH SIDE-SW END	Roofing, Gray/ Black	No			Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
0066993-028 28R	NORTH SIDE-S. END	Roof Mastic/ Tar, Black	No			Gypsum Binder/Filler	100%

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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
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Project Name/ Address:	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-029 29S	SOUTH SIDE-PICNIC WALL N.	Exterior Stucco, Lt. Brown/ Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-030 30S	SOUTH SIDE-E. SIDE WOMENS RM	Exterior Stucco, Lt. Brown/ Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-031 31S	SOUTH SIDE-E. SIDE BLDG	Exterior Stucco, Lt. Brown/ Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-032 32S	SOUTH SIDE-E. SIDE BLDG	Exterior Stucco, Lt. Brown/ Beige	No			
					Carbonates Quartz Gypsum Binder/Filler	100%
0066993-033 33S	SOUTH SIDE-E. SIDE BLDG	Exterior Stucco, Lt. Brown/ Beige	No			
					Carbonates Quartz Gypsum Binder/Filler	100%

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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
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Project Name/ Address:	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-034 34S	SOUTH SIDE-SE CORNER	Exterior Stucco, Lt. Brown/ Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-035 35S	SOUTH SIDE-SW CORNER	Exterior Stucco, Lt. Brown/ Beige	No		Cellulose Fiber	<1%
					Carbonates Quartz Gypsum Binder/Filler	99%
0066993-036 36C	SOUTH SIDE-MENS RR	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Mica Binder/Filler	100%
0066993-037 37C	SOUTH SIDE-N. OF PICNIC	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Mica Binder/Filler	100%
0066993-038 38C	SOUTH SIDE-S. OF PICNIC	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Mica Binder/Filler	100%

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Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

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Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-039 39C	SOUTH SIDE-SW OF BLDG	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Binder/Filler	100%
0066993-040 40C	SOUTH SIDE-W. SIDE-WOMENS RR	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Mica Binder/Filler	100%
0066993-041 41C	SOUTH SIDE-E. NEAR CONCRETE PLANTER	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Mica Binder/Filler	100%
0066993-042 42C	SOUTH SIDE-W. NEAR CONCRETE PLANTER	Concrete Surface, Gray	No			
					Gypsum Quartz Carbonates Binder/Filler	100%
0066993-043 43I	SOUTH SIDE-STORAGE	Pipe Insulation, Black	No			
					Gypsum Binder/Filler	100%
0066993-044 44I	SOUTH SIDE-STORAGE	Pipe Insulation, Black	No			
					Gypsum Binder/Filler	100%

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Bulk Asbestos Analysis by Polarized Light Microscopy

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Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-045 45A	SOUTH SIDE-E. END	Asphalt Parking, Black	No			
					Quartz Gypsum Carbonates Mica Binder/Filler	100%
0066993-046 46A	SOUTH SIDE-E. CENTER	Asphalt Parking, Black	No			
					Quartz Gypsum Carbonates Mica Binder/Filler	100%
0066993-047 47A	SOUTH SIDE-CENTER	Asphalt Parking, Black	No			
					Quartz Gypsum Carbonates Mica Binder/Filler	100%
0066993-048 48A	SOUTH SIDE-CENTER	Asphalt Parking, Black	No			
					Quartz Gypsum Carbonates Mica Binder/Filler	100%
0066993-049 49A	SOUTH SIDE-CENTER W.	Asphalt Parking, Black	No			
					Quartz Gypsum Carbonates Mica Binder/Filler	100%

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Laboratory Report
0066993

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	SECOR	Job# / P.O. #:	040TA1542.08
Address:	25864-F BUSINESS CENTER DRIVE REDLAND CA 92374	Date Received:	07/29/2008
		Date Analyzed:	08/01/2008
Collected:	07/22/2008	Date Reported:	08/01/2008
Project Name/ Address:	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0066993-050 50A	SOUTH SIDE-W. END	Asphalt Parking, Black	No			
					Quartz	
					Gypsum	
					Carbonates	
					Mica	
					Binder/Filler	100%
0066993-051 51R	SOUTH SIDE-N. SIDE	Roofing, Brown/ Black	No		Fibrous Glass	15%
					Carbonates	
					Quartz	
					Binder/Filler	85%
0066993-052 52R	SOUTH SIDE-SE CORNER	Roofing, White/ Black	No		Fibrous Glass	15%
					Carbonates	
					Quartz	
					Binder/Filler	85%
0066993-053 53R	SOUTH SIDE-S. CENTER	Roofing, Brown/ Black	No		Fibrous Glass	15%
					Carbonates	
					Quartz	
					Binder/Filler	85%
0066993-054 54R	SOUTH SIDE-E. SIDE	Roofing, White/ Black	No		Fibrous Glass	15%
					Carbonates	
					Quartz	
					Binder/Filler	85%
0066993-055 55R	SOUTH SIDE-W. SIDE	Roofing, Brown/ Black	No		Fibrous Glass	15%
					Carbonates	
					Quartz	
					Binder/Filler	85%

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Bulk Asbestos Analysis by Polarized Light Microscopy

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Project Name/	CALTRANS-CV KANE SR RA	EPA Method:	EPA 600/M4-82-020
Address:		Submitted By:	TAMMY H. LAPP
		Collected By:	Customer

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)		Non-Asbestos Constituents	
0066993-056 56R	SOUTH SIDE-N. SIDE	Roof Mastic/ Tar, Black	No			Cellulose Fiber	<1%
						Carbonates Binder/Filler	99%
0066993-057 57R	SOUTH SIDE-W. SIDE	Roof Mastic, White	No			Cellulose Fiber	2%
						Carbonates Gypsum Binder/Filler	98%
0066993-058 58R	SOUTH SIDE-W. OVERHANG	Roof Mastic, Gray/ Black	Yes	Chrysotile	8%		
						Carbonates Quartz Binder/Filler	92%

Analyst - Kurt Kettler

Signatory - Lab Director - Kurt Kettler

EMC LABS, INC.

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emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES
EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L34145	**DATE RECEIVED:**	07/29/08
CLIENT:	Secor	**REPORT DATE:**	08/01/08
		DATE OF ANALYSIS:	08/01/08
CLIENT ADDRESS:	2586-4 Business Center Drive Redland, CA 92374	**P.O. NO.:**	
PROJECT NAME:	CalTrans-CV Kane SRRA-	**PROJECT NO.:**	040TA1542.08

EMC # L34145-	SAMPLE DATE /08	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
1	07/22	L01	Beige/Western Planter-North Side	0.010	BRL
2	07/22	L02	Brown/Picnic Table-North Side	0.010	BRL
3	07/22	L03	Brown/Picnic Bench-North Side	0.010	BRL
4	07/22	L04	Tan/Picnic Wall-North Side	0.010	BRL
5	07/22	L05	Brown/Eave-SW End-North Side	0.010	BRL
6	07/22	L06	Brown/W. Side Bldg.-North Side	0.010	BRL
7	07/22	L07	Ceramic-Women's RR Wall –North Side	0.010	BRL

^ = Dilution Factor Changed * = Excessive Substrate May Bias Sample Results **BRL** = Below Reportable Limits # = Very Small Amount Of Sample Submitted, May Affect Result

This report applies to the standards or procedures identified and to the samples tested only. The test results are not necessarily indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. Unless otherwise noted, all quality control analyses for the samples noted above were within acceptable limits. Blank correction is performed if the result for the blank is higher than the reporting limit.

Where it is noted that a sample with excessive substrate was submitted for laboratory analysis, such analysis may be biased. The lead content of such sample may, in actuality, be greater than reported. EMC makes no warranty, express or implied, as to the accuracy of the analysis of samples noted to have been submitted with excessive substrate. Resampling is recommended in such situations to verify original laboratory results.

ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

EMC LABS, INC.

9830 South 51st Street, Suite B-109 / PHOENIX, ARIZONA 85044 / 480-940-5294 or 800-362-3373 / FAX 480-893-1726
emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES
EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L34145	**DATE RECEIVED:**	07/29/08
CLIENT:	Secor	**REPORT DATE:**	08/01/08
		DATE OF ANALYSIS:	08/01/08
CLIENT ADDRESS:	2586-4 Business Center Drive Redland, CA 92374	**P.O. NO.:**	
PROJECT NAME:	CalTrans-CV Kane SRRA-North Side	**PROJECT NO.:**	040TA1542.08

EMC # L34145-	SAMPLE DATE /08	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
8	07/22	L08	Ceramic-Women's RR Wall-North Side	0.010	BRL
9	07/22	L09	Ceramic-Women's RR Floor-North Side	0.010	BRL
10	07/22	L10	Ceramic-Women's RR Floor-North Side	0.010	BRL
11	07/22	L11	Tan-Western Planter-South Side	0.010	BRL
12	07/22	L12	Brown-Eave-N. Side-South Side	0.010	BRL
13	07/22	L13	Tan-Picnic Wall-South Side	0.010	BRL

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These reports are for the exclusive use of the addressed client and are rendered upon the condition that they will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. Samples not destroyed in testing are retained a maximum of sixty (60) days.

ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

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emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES
EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L34145	**DATE RECEIVED:**	07/29/08
CLIENT:	Secor	**REPORT DATE:**	08/01/08
		DATE OF ANALYSIS:	08/01/08
CLIENT ADDRESS:	2586-4 Business Center Drive Redland, CA 92374	**P.O. NO.:**	
PROJECT NAME:	CalTrans-CV Kane SRRA-North Side	**PROJECT NO.:**	040TA1542.08

EMC # L34145-	SAMPLE DATE /08	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
14	07/22	L14	Brown-Eave W. Side-South Side	0.010	BRL
15	07/22	L15	Brown-Eave E. Side-South Side	0.010	BRL
16	07/22	L16	Ceramic-Women's RR Wall-South Side	0.010	BRL
17	07/22	L17	Ceramic-Women's RR Wall-South Side	0.010	BRL
18	07/22	L18	Ceramic-Women's RR Floor-South Side	0.010	BRL
19	07/22	L19	Ceramic-Women's RR Floor-South Side	0.010	BRL

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ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

Page 1 of 4

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 66993
TAT: 3day
Rec'd: JUL 29 P.M.

COMPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
CONTACT: Tammy Lapp
Phone/Fax: (909) 335-6116 / (909) 335-6120
Email: TLAPP@SECOR.COM

BILL TO: (If different location)

E-MAILED AUG 01 2008

Now Accepting: VISA – MASTERCARD

Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. **TURNAROUND TIME:** [4hr rush] [8hr rush] [1-Day] [2-Day] X [3-Day] [5-Day] [6-10 Day]
   - Prior confirmation of turnaround time is required
   - Additional charges for rush analysis (please call marketing department for pricing details)
   - Laboratory anaylsis may be subject to delay if credit terms are not met
2. **TYPE OF ANALYSIS:** X [Bulk-PLM] [Air-PCM] [Lead] [Point Count]
3. **DISPOSAL INSTRUCTIONS:** X [Dispose of samples at EMC] / [Return samples to me at my expense]
   (If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. **Project Name:** CALTTANS - CV KANE SRRA - NORTH SIDE
   P.O. Number: _____ **Project Number:** 040TA1542.08

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
1	01 S	7-22-08	EXTERIOR STUCCO - N. SIDE BLDG	Y N			
2	02 S		S. SIDE BLDG	Y N			
3	03 S		S. WALL - PICNIC	Y N			
4	04 S		E. SIDE BLDG RR ENTRY	Y N			
5	05 S		E. SIDE BLDG RR ENTRY	Y N			
6	06 S		W. SIDE BLDG RR ENTRY	Y N			
7	07 S		W. SIDE BLDG R.R. ENTRY	Y N			
8	08 C		CONCRETE SURFACE - N SIDE PICNIC	Y N			
9	09 C		N. SIDE BLDG	Y N			
10	10 C		S. SIDE PICNIC	Y N			
11	11 C		S. SIDE BLDG.	Y N			
12	12 C		NEAR TELEPHONES	Y N			
13	13 C		E. SIDE BLDG	Y N			
14	14 C		WESTERN CIRCULAR PLANTER	Y N			
15	15 A		ASPHALT - PARKING - CENTER	Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) TAMMY LAPP (Signature) _____

Relinquished by: T. LAPP Date/Time: 7-24-08 Received by: Diana Federico Date/Time: 7/29/08

Relinquished by: Diana Federico Date/Time: 7/29/08 Received by: _____ Date/Time: AUG 01 2008

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be i Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

age 2 of 4

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: 66993
Rec'd:

OMPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
ONTACT: Tammy Lapp
one/Fax: (909) 335-6116 / (909) 335-6120
mail: TLAPP@SECOR.COM

BILL TO: (If different location)

low Accepting: VISA – MASTERCARD Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [5-Day] [6-10 Day]
- Prior confirmation of turnaround time is required
- Additional charges for rush analysis (please call marketing department for pricing details)
- Laboratory anaylsis may be subject to delay if credit terms are not met

2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60-days from analysis.)

4. Project Name: CALTRANS - CV KANE SRRA - NORTH SIDE
P.O. Number: _____ Project Number: 040TA 1542.08

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
16	16 A	7-22-08	Asphalt Parking - E. END	Y N			
17	17 A		Center	Y N			
18	18 A		Center	Y N			
19	19 A		Center W.	Y N			
20	20 A		W. end	Y N			
21	21 I		Foam Pipe Insulation - Storage	Y N			
22	22 I			Y N			
23	23 R		Roofing NE END	Y N			
24	24 R		NW END	Y N			
25	25 R		Roof Mastic - S. end	Y N			
26	26 R		Roofing S. end	Y N			
27	27 R		SW end	Y N			
28	28 R		Roof Mastic - S. end	Y N			
				Y N			
				Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) TAMMY LAPP (Signature) _____

Relinquished by: T LAPP Date/Time: 7-24-08 Received by: Diana Federico Date/Time: 7/29/08

Relinquished by: Diana Federico Date/Time: 7/29/08 Received by: _____ Date/Time: AUG 01 2008

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: 46993
Rec'd:

COMPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
CONTACT: Tammy Lapp
Phone/Fax: (909) 335-6116 / (909) 335-6120
Email: TLAPP@SECOR.COM

BILL TO: (if different location)

Now Accepting: VISA – MASTERCARD

Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. **TURNAROUND TIME:** [4hr rush] [8hr rush] [1-Day] [2-Day] X[3-Day] [5-Day] [6-10 Day]
   - Prior confirmation of turnaround time is required
   - Additional charges for rush analysis (please call marketing department for pricing details)
   - Laboratory analysis may be subject to delay if credit terms are not met
2. **TYPE OF ANALYSIS:** X [Bulk-PLM] [Air-PCM] [Lead] [Point Count]
3. **DISPOSAL INSTRUCTIONS:** X[Dispose of samples at EMC] / [Return samples to me at my expense]
   (If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. **Project Name:** CALTRANS - CV KANE SRRA – SOUTH SIDE
   P.O. Number: _____ **Project Number:** 040TA 1542.08

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
29	29 S	7-22-08	EXTERIOR Stucco - PICNIC WALL	Y N			
30	30 S		E side Women's Room	Y N			
31	31 S		E side Bldg	Y N			
32	32 S		E Side Bldg	Y N			
33	33 S		E Side Bldg	Y N			
34	34 S		SE corner	Y N			
35	35 S		SW corner	Y N			
36	36 C		Concrete Surface - Mens RR	Y N			
37	37 C		N. of Picnic	Y N			
38	38 C		S of Picnic	Y N			
39	39 C		SW of Bldg	Y N			
40	40 C		N Side - Womens RR	Y N			
41	41 C		NE Near Concrete Plants	Y N			
42	42 C		W. Near Concrete Plants	Y N			
43	43 I		Foam Pipe N Sil. Storage	Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) TAMMY LAPP (Signature) _____

Relinquished by: T LAPP Date/Time: 7-24-08 Received by: Diana Federico Date/Time: 7/29/08

Relinquished by: Diana Federico Date/Time: 7/29/08 Received by: _____ Date/Time: AUG 01 2008

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

– In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

age 4 of 4

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: 66993
Rec'd:

MPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
NTACT: Tammy Lapp
one/Fax: (909) 335-6116 / (909) 335-6120
ail: TLAPP@SECOR.COM

BILL TO: (If different location)

ow Accepting: VISA – MASTERCARD Price Quoted: $_____ / Sample $_____ / Layers

OMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] X[3-Day] [5-Day] [6-10 Day]

*Prior confirmation of turnaround time is required
**Additional charges for rush analysis (please call marketing department for pricing details)
***Laboratory analysis may be subject to delay if credit terms are not met

. TYPE OF ANALYSIS: X [Bulk-PLM] [Air-PCM] [Lead] [Point Count]

. DISPOSAL INSTRUCTIONS: X[Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. Project Name: CALTRANS - CV KANE SRRA – SOUTH SIDE

P.O. Number: _____ Project Number: 040TA 1542.08

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
44	44 I	7-22-08	Foam Pipe Insu- Storage	Y N			
45	45 A		Asphalt Parking - E end	Y N			
46	46 A		E. Center	Y N			
47	47 A		Center	Y N			
48	48 A		Center	Y N			
49	49 A		Center W.	Y N			
50	50 A		W. end	Y N			
51	51 R		Roofing - N Side	Y N			
52	52 R		SE corner	Y N			
53	53 R		S. Center	Y N			
54	54 R		E side	Y N			
55	55 R		W. side	Y N			
56	56 R		Roof Mastic - N. Side	Y N			
57	57 R		W. Side	Y N			
58	58 R		W. Overhang	Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) TAMMY LAPP (Signature) [signature] Date/Time: 7/29/08

Relinquished by: T LAPP Date/Time: 7-24-08 Received by: Diana Federico Date/Time: 7/29/08

Relinquished by: Diana Federico Date/Time: 7/29/08 Received by: [signature] Date/Time: AUG 01 2008

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

* In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Page 1 of 2

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: L34145
TAT: 3 days
Rec'd: JUL 29 A.M.

COMPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
CONTACT: Tammy Lapp
Phone/Fax: (909) 335-6116 / (909) 335-6120
Email: TLAPP@SECOR.COM

BILL TO: (If different location)
E-MAILED AUG 01 2008

Now Accepting: VISA – MASTERCARD Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] [3-Day] [5-Day] [6-10 Day]
   - Prior confirmation of turnaround time is required
   - Additional charges for rush analysis (please call marketing department for pricing details)
   - Laboratory analysis may be subject to delay if credit terms are not met
2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count]
3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
   (If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. Project Name: CALTRANS - CV KANE SRRA (-NORTH SIDE
   P.O. Number: _____ Project Number: 040LA1542.0B

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Y or N	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
1	L01	7-22-08	Beige Western Planter	Y N			
2	L02		Brown Picnic Bench Table	Y N			
3	L03		Brown Picnic Bench	Y N			
4	L04		Tan Picnic Wall	Y N			
5	L05		BROWN - EAST - SW end	Y N			
6	L06		Brown - W side Bldg	Y N			
7	L07		Ceramic - Woman RR wall	Y N			
8	L08		Woman RR wall	Y N			
9	L09		Woman RR Floor	Y N			
10	L 10		Woman RR Floor	Y N			
1				Y N			
				Y N			
				Y N			
				Y N			
				Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) TAMMY LAPP (Signature) _____

Relinquished by: T LAPP Date/Time: 7-24-08 Received by: Diana Frederick Date/Time: 7/29/08

Relinquished by: Diana Frederick Date/Time: 7/29/08 Received by: _____ Date/Time: 7/29/08

Relinquished by: _____ Date/Time 8/1/8 7:15 Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be i Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Page 2 of 2

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#:
TAT: R3415
Rec'd:

OMPANY NAME: SECOR
2586-4 Business Center Drive
Redland, CA 92374
ONTACT: Tammy Lapp
hone/Fax: (909) 335-6118 / (909) 335-6120
mail: TLAPP@SECOR.COM

BILL TO: (If different location)

low Accepting: VISA – MASTERCARD Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

. TURNAROUND TIME: [4hr rush] [8hr rush] [1-Day] [2-Day] X[3-Day] [5-Day] [6-10 Day]
**Prior confirmation of turnaround time is required
**Additional charges for rush analysis (please call marketing department for pricing details)
**Laboratory analysis may be subject to delay if credit terms are not met

. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] X[Lead] [Point Count]

. DISPOSAL INSTRUCTIONS: X[Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. Project Name: CALTTANS - CV KANE SRRA — SOUTH SIDE

P.O. Number: _____ Project Number: 040TA 1542.08

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
11	L 11	7-22-08	TAN - Western Planter	Y N			
12	L 12		Brown - EAVE - N side	Y N			
13	L 13		TAN PICNIC WALL	Y N			
14	L 14		Brown - EAVE W side	Y N			
15	L 15		Brown - EAVE E side	Y N			
16	L 16		Ceramic Woman RR WALL	Y N			
17	L 17		Woman RR WALL	Y N			
18	L 18		Woman RR FLOOR	Y N			
19	L 19		Woman RR FLOOR	Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			

SPECIAL INSTRUCTIONS:

Sample Collector: (Print) TAMMY LAPP (Signature)

Relinquished by: T LAPP Date/Time: 7-24-08 Received by: Diana Frederico Date/Time: 7/29/08

Relinquished by: Diana Frederico Date/Time: 7/29/08 Received by: Date/Time: 7/29/8

Relinquished by: Date/Time 8/1/8 Received by: Date/Time:

In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

APPENDIX C
QUALIFICATIONS

LRCIA

State of California Department of Public Health

Lead-Related Construction Certificate | Certificate Type: Inspector/Assessor | Expiration Date: 10/12/2008

Tammy H. Lapp ID# 12810

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Tammy Helen Lapp
Name

Certification No. 01-2969

Expires on 07/20/09

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code

---

Certificate of Completion

SECOR *International Incorporated*
is pleased to present this certificate to

Tammy Lapp

Who has successfully completed a course entitled
8-Hour Refresher Course: OSHA HAZWOPER Standard 29 CFR 1910.120
held at SECOR International Incorporated
Redlands, California on May 2, 2007

State of California
California Environmental Protection Agency
Department of Toxic Substances Control

REGISTERED ENVIRONMENTAL ASSESSOR I

Issued to: Tammy Lapp REA I 06825

Annual Expires on: 6/30/2009

Signature:

United Rentals

Rent the Right Equipment Right Now

Tammy Lapp
Name of Operator

Has completed an instructional program which covered the safe and proper operation of equipment listed on the reverse.

1-14-08
Date

Instructor's Signature

PARKVIEW CENTER FOR OCCUPATIONAL MEDICINE

This is to certify that

Tammy Lapp

is approved for respirator use in the course of employment with Secor
Employer

having passed the medical evaluation required by state law.

Robert M Loomis MD 11/15/07
Signature of evaluating physician Date

9041 Magnolia Ste 107 Rvsd, Ca. 92503
Address

API WorkSafe

Safety Key

Name: Tammy Lapp

Company: SECOR International Incorporated

Completed: 23-Jan-07 05:05

Expires: 23-Jan-08

American Heart Association®
Learn and Live.

Heartsaver® First Aid

Tammy Lapp

This card certifies that the above individual has successfully completed the objectives and skills evaluations in accordance with the curriculum of the AHA for Heartsaver First Aid Program.

Modules Completed: Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

November 2007
Issue Date

November 2009
Recommended Renewal Date

APPENDIX D
LEAD HAZARD EVALUATION FORM

LEAD HAZARD EVALUATION REPORT

Section 1-Date of Lead Hazard Evaluation 07/16/08

Section 2-Type of Lead Hazard Evaluation (Check one box only)

☐ Lead inspection ☐ Risk assessment ☐ Clearance inspection ☑ Other (specify) Pre-Demolition Testing

Section 3-Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	ZIP code
7th Standard Road (Yellow Road Striping)	Bakersfield Area	Kern County	

Construction date (year) of structure	Type of structure (check one box only)
	☐ Multi-unit building ☐ Child-occupied facility ☐ Single family dwelling ☑ Other (specify) Yellow Roadway Striping

Section 4-Owner of Structure (if business/agency, list contact person)

Name	Telephone number
Dept of Transportation/CalTrans District 8	(909) 383-6472

Address [number, street, apartment (if applicable)]	City	State	ZIP code
464 W Fourth Street 6th Floor	San Bernardino	CA	92401

Section 5-Results of Lead Hazard Evaluation (Check one box only)

☐ **No lead-based paint detected.**

A lead inspection was conducted following the procedures outlined in Title 17, California Code of Regulations, Division 1 Chapter 8. No lead-based paint was detected during this lead inspection. This structure is found to be lead-based paint free.

☐ **No lead hazards detected**

Lead hazard evaluation was conducted following the procedures outlined in Title 17, California Code of Regulations Division 1, Chapter 8. No lead hazards were detected.

☑ **Lead-based paint and/or lead hazards detected.**

Lead hazard evaluation was conducted following the procedures outlined in Title 17, California Code of Regulations Division 1, Chapter 8. Lead-based paint and/or lead hazards were detected.

Section 6-Individual Conducting Lead Hazard Evaluation

Name	Telephone Number
Ms.Tammy Lapp for Stantec Consulting with the assistance of Tech. Mr. Dion Monge	(909) 335-6116

Address [number, street, apartment (if applicable)]	City	State	ZIP code
25864-F Business Center Drive	Redlands	CA	92374

Brand name and serial number of any portable x-ray fluorescence (XRF) instrument used (if applicable)
N/A

DHS certification number	Signature	Date
01-12810	X	08/04/08

Section 7-Attachments

A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

DHS 8552 (12/97)

Third copy only (no attachments) mailed or faxed to:

Childhood Lead Poisoning Prevention Branch
Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

AERIALLY DEPOSITED LEAD (ADL) INVESTIGATION REPORT

AERIALLY DEPOSITED LEAD (ADL) INVESTIGATION REPORT
TASK ORDER NO. 21

Upgrade C.V. Kane Safety Roadside Rest Area (Southbound only)
Location: 08-SBD-15-R107.3
San Bernardino County, California
PN: 08-1400-0184-1 (EA 0G842)

Prepared for:
California Department of Transportation, District 8
464 W. 4th St., 6th Floor
San Bernardino, CA 92401-1400

Contract No. 08A2441

FINAL: May 2, 2016

EXECUTIVE SUMMARY

At the request of the California Department of Transportation (Caltrans) District 8, an aerially deposited lead (ADL) site investigation (SI) was conducted to evaluate aerially deposited lead (ADL), total petroleum hydrocarbons (TPH), and heavy metals in near surface soils within the project limits of the "out-of-service" C.V. Kane Safety Roadside Rest Area (SRRA) located adjacent to the southbound lanes of State Route 15 (SR15), at Post Mile (PM) 107.3, approximately 30 miles northeast of Barstow, San Bernardino County, California (hereinafter, the Site). The work was conducted pursuant to the provisions in Agreement 08A2441, the Task Order No. 21 Request, and with Stantec's proposal dated March 7, 2016.

A total of 10 soil borings were advanced using a hand auger, and samples were collected from the hand auger bucket at the target sample depths of surface (0.0-0.5), one (1.0-1.5) and two (2.0-2.5) feet bgs. A total of 30 soil samples were analyzed for Title 22 Metals and TPH. The data were validated pursuant to Caltrans requirements and found to be suitable for the purposes of this investigation.

In consideration of the data presented in this SI report, the following conclusions are developed.

Lead

- Total lead concentrations did not exceed 13 milligrams per kilogram (mg/kg) and are well below the California TTLC of 1,000 mg/kg and the unrestricted release criteria of 80 mg/kg (Table 1).
- Due to the fact that all samples reported total lead below 50 (mg/kg), no samples were analyzed for soluble lead or pH.
- The 95% UCL for total lead (4.4 mg/kg) is less than 10 times the STLC (50 mg/kg); therefore, the 95% UCL for the CalWET-citric and TCLP soluble lead concentrations are expected to be well below their respective hazardous waste thresholds.

Title 22 Metals

- Heavy metals were reported at concentrations below their respective regulatory screening levels for commercial/industrial exposure in soil samples, with the exception of arsenic. Arsenic concentrations ranged from 2.3 to 7.4 mg/kg (Table 2) which are above the California Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) commercial industrial screening level (DTSC, 2016b), but below the DTSC upper limit of background (12 mg/kg) for Southern California (DTSC, 2008).

TPH

- TPH-G was not reported above the laboratory Method Detection Limit (MDL) (Table 3).

- TPH-D and TPH-O were reported at low concentrations not exceeding regulatory screening levels (Table 3).

Based on the findings, results, and conclusions of the investigation, the following are recommended for reuse and disposal of excess soil:

- The reported analyte concentrations in soil samples did not exceed regulatory screening levels for commercial/industrial exposure or, in the case of arsenic, expected regional background concentrations.
- No specific recommendations are necessary for excavation, handling, management and disposal of lead-impacted soil due to the fact that the 95% UCL is below the 80 mg/kg DTSC unrestricted use screening level threshold.
- Excess soil may be used on Site or released to the contractor for disposal in accordance with all local, state and federal guidelines, laws and regulations. Excess soil should not be reused for residential purposes unless specifically approved through the Regional Water Quality Control Board-Santa Ana Region through a Waste Discharge Requirements permit.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

At the request of the California Department of Transportation (Caltrans) District 8, an aerially deposited lead (ADL) site investigation (SI) was conducted to evaluate ADL, total petroleum hydrocarbons (TPH), and heavy metals in near surface soils within the project limits of the "out-of-service" C.V. Kane Safety Roadside Rest Area (SRRA) located adjacent to the southbound lanes of State Route 15 (SR15), at Post Mile (PM) 107.3, approximately 30 miles northeast of Barstow, San Bernardino County, California (hereinafter, the Site). The work was conducted pursuant to the provisions in Agreement 08A2441, the Task Order No. 21 Request, and with Stantec's proposal dated March 7, 2016.

1.2 OBJECTIVES

The objective of this investigation was to evaluate lead, TPH, and heavy metal concentrations within the proposed construction zone and to make recommendations for any special handling or disposal of impacted soil during construction.

1.3 BACKGROUND

According to the Task Order No. 21 Request, Caltrans is proposing a construction project to upgrade the existing C.V. Kane Safety Roadside Rest Area facility. Caltrans requested sampling of the soil that may be disturbed during the proposed construction activities.

The remainder of this report describes the scope of work, methodology, findings, and results of the investigation to evaluate constituents of concern in the proposed construction area.

2.0 STUDY AREA SETTING

This section describes the project setting including a description of the physiographic setting, general geology and hydrogeology, and a general description of the area around the Site.

2.1 SITE DESCRIPTION

The Site consists of an "out-of-service" SSRA located adjacent to the southbound lanes of SR15, approximately 30 miles northeast of Barstow, in San Bernardino County (Figure 1).

Access to the Site is via SR15 off-ramp into the SRRA facility parking. The Site is largely undeveloped consisting of "out-of-service" public restroom facilities, gently sloping terrain, a few low hills north of the Site, natural rock outcrops and drainages, covered by sparse native desert vegetation.

Observed modern improvements in close proximity to the Site include the SRRA located adjacent to the northbound SR15 lanes. Other than SR15 itself, no other modern improvements were identified in the general vicinity of the Site.

2.2 PHYSIOGRAPHIC SETTING

The area within and surrounding the Site is predominantly native, desert terrain. The elevation ranges from approximately 1,745 to approximately 1,751 feet above mean sea level (amsl) with the highest elevations located at the southern end of the SRRA. The general topography of the Site and surrounding area is gently sloping terrain. Vegetation throughout the Site and surrounding area consisted of dry grasses and sporadic desert bushes.

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Site is located approximately 30 miles northeast of the City of Barstow, California, within the Mojave Desert Geomorphic Province (California Geological Survey (CGS, 2002). According to the California Geological Survey's Note 36 (2002), the Mojave Desert province is characterized by an interior region of isolated mountain ranges separated by expanses of desert plains. In general, the province has an interior enclosed drainage and many playas. Two important fault trends control the topography within the Mojave Desert province, one being a prominent northwest/southeast trend and the other a secondary east-west trend. According to the California Division of Mines and Geology (CDMG) Geologic Map of California, Trona Sheet, (CDMG, 1962), the area of the Site is underlain predominantly by recent age alluvium and Pleistocene nonmarine sedimentary deposits, respectively.

As is the case with most of southern California, the Site is located in a seismically active area. According to the USGS Interactive Fault Map, faults in the vicinity of the Site include the Manix-Afton Hills Fault, located approximately 2.5 miles south/southeast of

the Site, and the Calico-Hidalgo Fault, located approximately 12 miles southwest of the Site (USGS, 2014). Both of these faults are described as strike-slip faults with probable maximum magnitudes up to 7.0 (SCEDC, 2013).

According to California Department of Water Resources (DWR) Bulletin 118 online groundwater information center's map interface application (DWR, 2016a), the project area is located within the Caves Canyon Valley Groundwater Basin within the South Lahontan Hydrologic Region (DWR, 2003). Groundwater elevations, from a residential well located approximately 1.3 miles northeast of the Site, were reported at approximately 198 feet bgs (DWR, 2016b). Groundwater is expected to follow surface topography and flow in a general northeasterly direction from the Site.

2.4 STUDY AREA VICINITY

The area surrounding the Study Area along SR15 is comprised largely of undeveloped natural desert land. Another Rest Area is located on northbound side of SR15.

3.0 SCOPE OF WORK

This section describes the scope of work presented in the task order proposal. The task order served as the Work Plan for the investigation. The scope of the investigation consisted of the general elements described below. Deviations from this scope of work are described in Section 3.2.

3.1 PROPOSED SCOPE OF WORK

- Pre-field activities
  - Development of a site-specific health and safety plan;
  - Notification to Underground Service Alert (USA) for inquiry identification numbers; and
  - Coordination of equipment and subcontractors.

- Field Investigations
  - Advancement of 10 hand auger borings to a depth of two and a half feet below the ground surface (bgs) with samples collected at surface (0.0-0.5), one (1.0-1.5) and two (2.0-2.5) feet bgs;
    - Borings were advanced at the C.V. Kane SSRA at locations designated by Caltrans.
  - Collection and preservation of soil samples from each boring;
  - Collection of field quality control samples;
  - Boring location survey using global positioning system (GPS);
  - Borehole abandonment; and
  - Proper disposal of investigation derived wastes (IDW).

- Laboratory analysis of select soil samples
  - All samples analyzed for Title 22 Metals by United States Environmental Protection Agency (EPA) Test Method 6010B, Mercury by EPA Test Method 7471A, and Total Petroleum Hydrocarbons (Carbon Chains: C4-C12 (gasoline range), C13-C22 (diesel range), C23-C32 (motor oil range)) by EPA Test Method 8015B;
  - Analysis of all total lead samples with reported concentrations of 50 mg/kg or more for soluble lead by the California Waste Extraction Test using Citric acid as the extractant (Cal WET-Citric);
  - Analysis of all Cal WET-Citric samples reporting a soluble lead concentration greater or equal to 5.0 milligrams per liter (mg/L) for soluble lead by Department of Health Services Cal WET modified using deionized water (Cal WET-DI) as the extractant;
  - Analysis for soluble lead using the Toxicity Characteristic Leaching Procedures (TCLP), EPA Method 1311 *and* for pH using EPA Test Method 9045 according to the following criteria:
    - samples reporting CalWET-citric soluble lead at 5 mg/L or greater,

        - samples exhibiting total lead equal to/or exceeding 1,000 mg/kg total lead
        - If all CalWET-citric concentrations are reported below the 5 mg/L threshold, then 10% of the samples, selected from the samples reporting the highest total lead concentrations;
    - Analysis of field quality control samples for Title 22 Metals by EPA Test Method 6010B/7471A.

- Data validation and report preparation.

3.2 DEVIATIONS FROM THE PROPOSED SCOPE OF WORK

The following describes deviations from the original task order scope of work:

1. Placement of borings: The original Task Order Request figure illustrated the locations for nine borings. An additional boring was added to the scope of work. The spacing of borings was adjusted in the field to include the additional boring. Figure 2 and Figure 3 of this report illustrate the locations of ten borings advanced for this investigation.
2. Proposed boring location HA-09: Due to difficult augering conditions in the subsurface, this boring location required one step-out, approximately one foot west of the original location, in order to reach the proposed sampling depth. All samples were collected at this location.

4.0 SOIL INVESTIGATION METHODOLOGY

The soil investigation was conducted in general accordance with the methods and requirements of Contract 08A2441, and with Stantec's proposal dated March 7, 2016 and the Task Order No. 21 request. The following subsections summarize the methodology implemented in completing the required scope of work.

4.1 PRE-FIELD ACTIVITIES

Prior to beginning field work, the scope of work was reviewed and approved by Caltrans. Proposed sample locations designated on project plans were checked for accessibility via a desktop review and when the borings were marked for USA clearance.

As required by Task Order No. 21, a site-specific Health and Safety Plan (HASP) was prepared in accordance with California Occupational Safety and Health Administration (Cal OSHA) requirements to guide field sampling activities. The HASP describes health and safety procedures to be initiated during field activities. A pre-field tail gate health and safety meeting was conducted at the Study Area with field personnel prior to beginning work each day. During the tail gate meeting, daily work activities and health and safety issues were discussed, including the following:

- Field tasks to be conducted throughout the day,
- Project schedule,
- Hazard awareness,
- General health and safety practices, procedures and issues,
- Specific health and safety issues related to the day's work,
- Health and Safety procedures, controls, etc.,
- Engineering controls, personal protective equipment and monitoring,
- Traffic control and safety, and
- Emergency procedures and contacts.

Field documentation of health and safety meetings and monitoring were maintained throughout the duration of field activities. A copy of the completed field forms are provided in Appendix A.

Stantec contacted USA to obtain inquiry identification numbers for the boring locations prior to the start of work. The boring locations were all in close proximity to each other and were combined into one USA inquiry identification number. Locations were pre-marked in the field as required by USA. The USA inquiry identification number for the project is: A60900768-00A.

USA and local utility representatives marked the locations of subsurface features in the area of the proposed boring locations. The resulting USA markings showed no conflicts between our proposed boring locations and subsurface utilities.

4.2 FIELD INVESTIGATIONS

Field investigations were conducted on April 4, 2016. The weather was sunny and slightly windy throughout the day. There were no weather-related restrictions during the field investigation. The following subsections describe the methodology and procedures followed in conducting the field investigations.

4.2.1 *Traffic Control*

Soil borings were located no closer than six feet from the edge of pavement within existing Caltrans ROW within the proposed construction areas at the C.V. Kane SRRA. The SRRA was closed to the public at the time of the field investigation , however to improve worker safety, traffic warning signage, cones and truck flashers were used to alert drivers of workers at the SRRA. Traffic control consisted of the following elements:

- W21-5 "Shoulder Work" signs were placed near each boring location. The signs were moved as work progressed to assure that the signage followed the work.
- High visibility reflective cones were placed along the pavement edge near the work area.
- Work trucks were equipped with flashing amber strobe lights and were positioned as safety barriers between workers and any potentially oncoming traffic, without blocking traffic.

4.2.2 *Soil Borings and Sampling*

A total of ten soil borings were advanced using a hand auger and samples were collected from the hand auger bucket at the target sample depths. Where necessary, field personnel made up to three attempts at boring locations to reach the desired sampling depth. When step-out attempts were made, they were advanced within a two-foot area from the original boring location. Borings that were not advanced to their originally proposed depths due to refusal conditions are identified in the deviations Section 3.2.

Boring locations are shown on Figures 2 and 3. Boring GPS coordinates are provided in Appendix B and a photographic log is provided in Appendix C. The following paragraphs summarize field sample protocols.

4.2.3 *Sample Collection and Preservation*

Soil samples were collected from borings using a hand auger at the following approximate depth intervals: surface (0.0-0.5), one (1.0-1.5) and two (2.0-2.5) feet bgs. Borings that deviated from these sampling depths are described in Section 3.2. Samples collected from the hand auger bucket were discharged to a clean Ziploc® one (1) gallon bag, manually homogenized, and then discharged to eight-ounce laboratory certified clean glass jars.

Upon sampling at each depth interval, the soil samples were visually examined and logged in accordance with the latest edition of the Soil & Rock Logging Classification Manual (Field Guide), State of California, Department of Transportation, Engineering Service Center, Office of Structural Foundations. A summary of the soil classifications are presented on the field notes in Appendix A.

Each sample jar was labeled with a specific sample I.D., boring I.D., project I.D., EA number, sample date, and sample time, and then placed in an ice-filled cooler. Each sample was also recorded on a chain-of-custody (CoC) form and delivered to an environmental laboratory for analysis.

4.2.4 *Boring Locations*

All boring locations were identified and plotted on a field map with a unique boring identification (I.D.) number to represent each borehole. In addition, the spatial coordinates for each borehole were obtained using a handheld field GPS Trimble unit and recorded on field data sheets. The latitude and longitude for each boring are provided in Appendix B. Boring locations are shown on Figures 2 and 3.

4.2.5 *Decontamination*

All sampling equipment was decontaminated prior to advancing to the next sample depth within each borehole using a non-phosphate detergent solution and double-rinsed with distilled water.

4.2.6 *Borehole Abandonment*

Due to the shallow depths of the borings, excess soil cuttings were replaced and tamped in the borehole.

4.2.7 *Investigation Derived Wastes (IDW)*

All IDW were disposed in accordance with EPA publication OSWER Directive 9345.3-02 entitled "Management of Investigation-Derived Waste During Site Inspections" as specified in Contract 08A2441, Section EE.7.d of Attachment 1. Used and soiled personal protective equipment (PPE) and decontamination solid waste (i.e., used gloves, paper towels, etc.) were bagged and disposed to the municipal trash.

4.2.8 *Field Quality Assurance/Quality Control*

One equipment blank from the field team was collected to evaluate the adequacy of field decontamination efforts. The equipment blanks were collected after decontaminating sampling equipment by pouring deionized water over the sampling equipment and collecting the water in appropriate sample containers. The equipment blanks were analyzed for Title 22 metals.

5.0 LABORATORY ANALYSIS

A total of 30 soil samples were collected from borings advanced at the C.V. Kane SRRA located adjacent to the southbound lanes of SR15 and submitted under CoC to Advanced Technology Laboratories (ATL). ATL is certified through the California Environmental Laboratory Accreditation Program (ELAP) to conduct the analyses required in this task order. The lab was directed to perform the following analyses:

- *Title 22 Metals by EPA test method 6010B/7471A*—to be performed on all samples. The method used to evaluate metals concentrations against health screening limits, California hazardous waste Total Threshold Limit Concentration (TTLC), and the conditions in the draft Caltrans Lead Agreement with DTSC (DTSC, 2016).

- *Total Petroleum Hydrocarbons (TPH) by EPA Test Method 8015B*–to be performed on all samples to evaluate the soil for concentrations of gasoline range hydrocarbons (C4-C12), diesel range hydrocarbons (C13-C22), and motor-oil range hydrocarbons (C23-C32) and evaluate them against health screening levels.

- *Cal WET-Citric*—to be performed on all samples exhibiting total lead over 50 mg/kg. The method is used to assess soluble lead concentrations with respect to the California hazardous waste Soluble Threshold Limit Concentration (STLC).

- *Cal WET-DI*—to be performed on all samples exhibiting Cal WET-citric concentrations over 5 mg/L. The method is used to assess soluble lead concentrations with respect to reuse options within the project area in accordance with the criteria set forth in the draft Caltrans Lead Agreement with DTSC (DTSC, 2016).

- *TCLP (EPA test method 1311)*—to be performed on all samples reporting Cal-WET-citric concentrations equal to or greater than 5mg/L, total lead equal to and/or exceeding 1,000 mg/kg, or highest total lead samples when CalWET-citric concentrations are reported below 5mg/L. The method is used to evaluate waste characteristics and the requirements for disposal against Federal hazardous waste toxicity characteristic thresholds and the draft Caltrans Lead Agreement with DTSC (DTSC, 2016).

- *pH (EPA test method 9045C)*—to be performed on all samples reporting Cal-WET-citric concentrations equal to or greater than 5mg/L, total lead equal to and/or exceeding 1,000 mg/kg, or highest total lead samples when CalWET-citric concentrations are reported below 5mg/L. The method is used to evaluate the requirements for managing and disposing of excess soil in accordance with

State and Federal regulations, and the conditions of the draft Caltrans' Lead Agreement with DTSC (DTSC, 2016).

Copies of the laboratory CoCs and analytical reports are attached in Appendix D.

6.0 INVESTIGATIVE RESULTS

This section describes observations, findings and results of field investigations and laboratory analysis.

6.1 FIELD FINDINGS

The soils encountered during sampling were generally brown in color and consisted primarily of coarse grained sands with gravels. No chemical odors or evidence of staining were noted in any of the soil samples collected at the Site. Groundwater was not encountered in any of the boreholes and not expected to be present in shallow soils.

6.2 ANALYTICAL RESULTS

A summary of the analytical results is presented in Table 1 through 3. Copies of the laboratory reports and CoC forms are included in Appendix D.

6.2.1 *Total Lead*

A total of 30 soil samples were analyzed for total lead by EPA test method 6010B. Total lead concentrations ranged from 1.9 to 13 mg/kg (see Table 1 and Figure 2), with a mean concentration of 3.2 mg/Kg, a 90% UCL of 4.3 mg/kg, and a 95% UCL of 4.4 mg/kg (Table 1 and Appendix F). None of the samples reported total lead concentrations greater than 50 mg/kg. No samples exceeded the California Total Threshold Limit Concentration (TTLC) of 1,000 mg/kg.

6.2.2 *Title 22 Metals*

A total of 17 Title 22 metals were quantified in 30 soil samples. The results are summarized in Table 2. The following is a summary of detections.

- Antimony was detected in three of 30 samples at low concentrations ranging up to 0.50 NJ[1] mg/kg.
- Arsenic was detected in all samples at concentrations ranging from 2.3 to 7.4 mg/kg.
- Barium was detected in all samples at concentrations ranging from 25 to 110 mg/kg.
- Beryllium was detected in all samples at concentrations ranging from 0.11NJ to 0.24NJ mg/kg.
- Cadmium was detected in twenty of 30 samples at concentrations ranging up to 0.10NJ mg/kg.
- Chromium was detected in all samples at concentrations ranging from 3.8 to 24 mg/kg.

[1] NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

- Cobalt was detected in all samples at concentrations ranging from 1.8 to 3.5 mg/kg.
- Copper was detected in all samples at concentrations ranging from 3.2 to 25 mg/kg.
- Lead was detected in all samples at concentrations ranging from 1.9 to 13 mg/kg.
- Molybdenum was not detected above the MDL (<0.04 mg/kg).
- Nickel was detected in all samples at concentrations ranging from 2.3 to 12 mg/kg.
- Selenium was not detected above the MDL (<0.32 mg/kg).
- Silver was not detected above the MDL (<0.12 mg/kg).
- Thallium was not detected above the MDL (<0.36 mg/kg).
- Vanadium was detected in all samples at concentrations ranging from 16 to 44 mg/kg.
- Zinc was detected in all samples at concentrations ranging from 8.9 to 37 mg/kg.
- Mercury was detected in one of 30 samples at a concentration of 0.02NJ mg/kg.

6.2.3 *Total Petroleum Hydrocarbons*

TPH was quantified in 30 soil samples by carbon chain range as TPH-G, TPH-D, and TPH-O. The results are summarized in Table 3 and shown on Figure 3. The following is a summary of detections.

- TPH-G was not detected above the MDL (<0.20 mg/kg),
- TPH-D was reported in 26 of 30 soil samples at concentrations ranging up to 4.0 mg/kg, and
- TPH-O was reported in eighteen of 30 soil samples at concentrations ranging up to 12 mg/kg.

6.2.4 *Soluble Lead (Cal WET- Citric)*

None of the samples reported total lead concentrations equal to or greater than 50 mg/Kg, as a result, analysis by Cal WET-Citric was not necessary.

6.2.5 *Soluble Lead (Cal WET- DI)*

Soluble lead analyses by the Cal WET–DI extraction method was not performed because none of the samples required Cal WET-citric analysis.

6.2.6 *Soluble Lead (TCLP)*

Soluble lead analyses by the TCLP method was not performed because none of the samples required Cal WET-citric analysis.

6.2.7 *pH*

Analysis of pH levels was not performed because none of the samples required Cal WET-citric or TCLP analysis.

6.3 DATA VALIDATION

6.3.1 *Field QA/QC*

Quality assurance and quality control (QA/QC) procedures were performed in general accordance with the Task Order No. 21 request. QA/QC procedures included analyses of equipment blanks. The equipment blank QA/QC is addressed below in Section 6.3.2.

6.3.2 *Laboratory QA/QC*

Prior to submitting soil samples to the laboratory, the CoC documentation was reviewed for accuracy and completeness. The laboratory reports were cross-checked with the chain-of-custody forms to confirm accurate transposing of sample information.

Laboratory QA/QC data (method blanks, laboratory control samples and duplicates, matrix spike samples and duplicates) were also reviewed for compliance with QA/QC objectives. Stantec reviewed the laboratory QA/QC (duplicates, laboratory control, matrix spike and matrix spike duplicates). Other than minor issues related to natural heterogeneity of metals in soil duplicate sample analyses, QA/QC data are within expected control limits and considered valid for the intended use.

The data validation procedure is based on the principles of the *U.S. EPA National Functional Guidelines* and U.S. EPA Region 9 requirements and is designed to ensure completeness and adequacy of the data set. Laboratory data for TO21 was validated based on Regional EPA and *U.S. EPA National Functional Guidelines.* Data validation was performed in accordance with the TO21 Scope of Work. The following is a summary of the validation report attached as Appendix E.

The data were validated and reviewed for the following:

- Completeness of data deliverables (chain of custody records, laboratory data, laboratory quality assurance and quality control (QA/QC) data);
- Sample holding time;
- Sample preservation;
- Blank data (method, trip, and equipment);
- Laboratory control sample (LCS) recovery;
- Laboratory duplicate sample precision;
- Matrix spike/matrix spike duplicate (MS/MSD) recovery; and
- Overall data assessment.

The following summarizes the results of the validation:

1. Data Completeness: Data for 30 solid samples and 1 equipment blank were collected April 01, 2016 were validated. Samples specified for analysis on the chain of custodies were analyzed as specified. The project goal of 90 percent completeness was achieved.

2. Sample Hold Times: All samples were analyzed within method specific sample hold times.

3. Sample Preservation: All samples were preserved in appropriate containers and preservative.

4. Method Blanks: Several metals analytes (barium, chromium, copper, molybdenum, nickel, silver and zinc) were reported in the method blank at very low concentrations. Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration are flagged "JB". The detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action.

5. Equipment Blanks: Several metals were reported in equipment blanks at very low levels, and may be reflective of laboratory method blank detections, field artifact associated with dust, incomplete decontamination or artifact from contact with metal sampling equipment.

6. Laboratory Control Samples: LCS samples reported percent recoveries outside of method and/or laboratory limits;

    a. 8015B mod batch B6D0102 – Percent recovery (%R) below 60% for TPH-D (57%).

    b. Batch B6D0103 - %R below 60% limit for TPH-D (47%).
        Associated sample results flagged "J" if positive or "UJ" if non-detect.
        Reason Code – LCS

7. Laboratory Duplicate Samples: Laboratory duplicate samples were reported within the relative percent difference (RPD) control limit of 20 percent except for the following:

    a. 6010B B6D0107 – Laboratory duplicate RPD above limits (± 20%) for Arsenic (30%), Chromium (26%) and Lead (32%). Sample site specific. Associated results flagged "J" for HA-01-0.5 only.

b. Batch B6D0108 – Laboratory duplicate RPD above ±20% limit for Chromium (120%) and Nickel (112%). Sample site specific. Associated results flagged "J" for HA-07-2.5 only.

   The discrepancy appears to be related to natural sample heterogeneity and the data were qualified as indicated above.

8. Matrix Spike and Spike Duplicates: Matrix spike and duplicate samples were analyzed to assess accuracy and to evaluate matrix effects on data analysis. The percent recoveries and RPDs were found to within laboratory-determined control limits except:

   a. 8015B modified batch B6D0102 - %Rs below 60% limit for TPH-D (28%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-07-2.5 only.

   b. Batch B6D0103 - %Rs below 60% limit for TPH-D (43%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-10-2.5 only.

   c. Batch B6D0086 - %Rs below 60% limit for TPH-D (55%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-03-1.5 only.

   d. 7471A batches B6D0111, B6D0112 and B6D0113 – Post digestion spike %Rs above ±15% limit for Mercury. Associated sample results flagged "J" if positive.

9. Surrogate recoveries are within limits for all analyses for all samples.

Data were considered "useable" and marked as such in the tables provided and that it was validated according to the EPA and scope of work. No data was qualified as "rejected". The Data Validation Reports/Checklists summarize compounds that were qualified and are attached in Appendix E. Additionally, data qualifiers and the reason codes associated with the qualifier are found in the data tables and Appendix E, respectively.

7.0 CONCLUSIONS

At the request of the California Department of Transportation (Caltrans) District 8, an ADL SI was conducted to evaluate ADL, TPH, and heavy metals in near surface soils within the project limits of the "out-of-service" C.V. Kane SRRA located adjacent to the southbound lanes of SR15, at PM 107.3, approximately 30 miles northeast of Barstow, San Bernardino County, California (hereinafter, the Site). The work was conducted pursuant to the provisions in Agreement 08A2441, the Task Order No. 21 Request, and with Stantec's proposal dated March 7, 2016.

A total of 10 soil borings were advanced using a hand auger, and samples were collected from the hand auger bucket at the target sample depths of surface (0.0-0.5), one (1.0-1.5) and two (2.0-2.5) feet bgs. A total of 30 soil samples were analyzed for Title 22 Metals and TPH. The data were validated pursuant to Caltrans requirements and found to be suitable for the purposes of this investigation.

In consideration of the data presented in this SI report, the following conclusions are developed.

Lead

- Total lead concentrations did not exceed 13 milligrams per kilogram (mg/kg) and are well below the California TTLC of 1,000 mg/kg and the unrestricted release criteria of 80 mg/kg (Table 1).
- Due to the fact that all samples reported total lead below 50 (mg/kg), no samples were analyzed for soluble lead or pH.
- The 95% UCL for total lead (4.4 mg/kg) is less than 10 times the STLC (50 mg/kg); therefore, the 95% UCL for the CalWET-citric and TCLP soluble lead concentrations are expected to be well below their respective hazardous waste thresholds.

Title 22 Metals

- Heavy metals were reported at concentrations below their respective regulatory screening levels for commercial/industrial exposure in soil samples, with the exception of arsenic. Arsenic concentrations ranged from 2.3 to 7.4 mg/kg (Table 2) which are above the DTSC HERO commercial industrial screening level (DTSC, 2016b), but below the DTSC upper limit of background (12 mg/kg) for Southern California (DTSC, 2008).

TPH

- TPH-G was not reported above the laboratory MDL (Table 3).

- TPH-D and TPH-O were reported at low concentrations not exceeding regulatory screening levels (Table 3).

8.0 RECOMMENDATIONS

Based on the findings, results, and conclusions of the investigation, the following are recommended for reuse and disposal of excess soil:

- The reported analyte concentrations in soil samples did not exceed regulatory screening levels for commercial/industrial exposure or, in the case of arsenic, expected regional background concentrations.
- No specific recommendations are necessary for excavation, handling, management and disposal of lead-impacted soil due to the fact that the 95% UCL is below the 80 mg/kg DTSC unrestricted use screening level threshold.
- Excess soil may be used on Site or released to the contractor for disposal in accordance with all local, state and federal guidelines, laws and regulations. Excess soil should not be reused for residential purposes unless specifically approved through the Regional Water Quality Control Board-Santa Ana Region through a Waste Discharge Requirements permit.

9.0 LIST OF PREPARERS

This investigation report has been prepared under the direction of the following environmental professionals.

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If you have any questions or comments regarding the information enclosed herein, please contact the undersigned at your convenience.

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10.0 REFERENCES

California Geological Survey's (CGS), 2002, California Geomorphic Provinces: Note 36.

California Division of Mines and Geology (CDMG) Geologic Map of California, Trona Sheet, 1962.

California Department of Toxic Substances Control (DTSC), 2016a, Draft Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils, March.

DTSC, 2016b, Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA) Note 3, DTSC-modified Screening Levels (DTSC-SLs), January.

DTSC, 2008, Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA) Note 3, DTSC-modified Screening Levels (DTSC-SLs), January.

Website Resources

DWR, 2003: http://www.water.ca.gov/groundwater/bulletin118/southlahontan.cfm

DWR groundwater Information Center Interactive Map Application (DWR, 2016a):
http://www.water.ca.gov/groundwater/MAP_APP/index.cfm
https://gis.water.ca.gov/app/gicima/

DWR groundwater Levels (DWR, 2016b):
http://www.water.ca.gov/waterdatalibrary/groundwater/hydrographs/brr_hydro.cfm?CFGRIDKEY=30282

Southern California Earthquake Data Center:
http://scedc.caltech.edu/significant/fault-index.html#c

United State Geological Survey Interactive Fault Map:
http://earthquake.usgs.gov/hazards/qfaults/map/hazfault2014.html

TABLES

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS - LEAD
AERIALLY DEPOSITED LEAD SITE INVESTIGATION
LOCATION: 08-SBD-15-R107.3
PN: 08-1400-0184-1 (EA 0G842)
TASK ORDER NO. 21
CONTRACT 08A2441

CALTRANS UNIQUE ID	SAMPLE DEPTH (feet below the ground surface)	SAMPLE DATE	Total Lead [1] (mg/kg)
SOIL SAMPLE DATA (mg/kg)			
HA-01-0.5	0.5	4/1/2016	**4.2 J**
HA-01-1.5	1.5		**3.8**
HA-01-2.5	2.5		**3.9**
HA-02-0.5	0.5	4/1/2016	**4.1**
HA-02-1.5	1.5		**3.8**
HA-02-2.5	2.5		**3.4**
HA-03-0.5	0.5	4/1/2016	**4.2**
HA-03-1.5	1.5		**2.9**
HA-03-2.5	2.5		**3.1**
HA-04-0.5	0.5	4/1/2016	**13**
HA-04-1.5	1.5		**2.3**
HA-04-2.5	2.5		**1.9**
HA-05-0.5	0.5	4/1/2016	**2.5**
HA-05-1.5	1.5		**2.5**
HA-05-2.5	2.5		**3.1**
HA-06-0.5	0.5	4/1/2016	**2.8**
HA-06-1.5	1.5		**2.5**
HA-06-2.5	2.5		**2.7**
HA-07-0.5	0.5	4/1/2016	**3.1**
HA-07-1.5	1.5		**3.1**
HA-07-2.5	2.5		**3.3**
HA-08-0.5	0.5	4/1/2016	**3.6**
HA-08-1.5	1.5		**3.6**
HA-08-2.5	2.5		**3.2**
HA-09-0.5	0.5	4/1/2016	**5.8**
HA-09-1.5	1.5		**3.0**
HA-09-2.5	2.5		**4.3**
HA-10-0.5	0.5	4/1/2016	**7.5**
HA-10-1.5	1.5		**2.6**
HA-10-2.5	2.5		**3.0**
STATS			
Minimum Concentration			1.9
Maximum Concentration			13
Mean Concentration			3.2
UCL90 [2]			4.3
UCL95 [2]			4.4
THRESHOLD LIMITS			
California Hazardous Waste			1000
DTSC unrestricted use SL [3]			80
QA/QC SAMPLES (mg/L)			
EBQC-20160401		4/1/2016	< 0.0019

Notes:
(1) Total Lead by EPA method 6010B.
(2) ProUCL statistics for the TO21 data set is included as Appendix F of the report.
(3) California Department of Toxic Substances Control (DTSC) Draft Agreement with Caltrans for ADL impacted soil, March 21, 2016; Section 3.1.1.
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
Bold values are concentrations reported above the laboratory method detection limit.
SHADING indicates concentration exceeds threshold limit.
Data Qualifiers:
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS - TITLE 22 METALS
LOCATION: 08-SBD-15-R107.3
PN: 08-1400-0184-1 (EA 0G842)
TASK ORDER NO. 21
CONTRACT 08A2441

CALTRANS UNIQUE ID	SAMPLE DEPTH (feet below the ground surface)	SAMPLE DATE	TITLE 22 METALS by EPA Test Method 6010B/Mercury by EPA Test Method 7471A																
			ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER	LEAD	MOLYBDENUM	NICKEL	SELENIUM	SILVER	THALLIUM	VANADIUM	ZINC	MERCURY
HERO [1] / USEPA RSL [2] - Commercial/Industrial Use			*470 [2]*	*0.25 [1]*	*220,000 [2]*	*210 [1]*	*7.3 [1]*	*270,000 [1]*	*350 [2]*	*47,000 [2]*	*320 [1]*	*5,800 [2]*	*3,100 [1]*	*5,800 [2]*	*1,500 [1]*	*12 [2]*	*1,600 [1]*	*350,000 [2]*	*4.5 [1]*
California TTLC			*500*	*500*	*10,000*	*75*	*100*	*2,500*	*8,000*	*2,500*	*1,000*	*3,500*	*2,000*	*100*	*500*	*700*	*2,400*	*5,000*	
10 x California STLC			*150*	*50*	*1,000*	*7.5*	*10*	*50*	*800*	*250*	*50*	*3,500*	*200*	*10*	*50*	*70*	*240*	*2,500*	
20 x RCRA Toxicity Characteristic			*---*	*100*	*2,000*	*---*	*20*	*100*	*--*	*--*	*100*	*---*	*---*	*20*	*100*	*---*	*---*	*---*	
SOIL SAMPLES																			
HA-01-0.5	0.5	4/1/2016	< 0.21	**4.1** J	**50**	**0.21** NJ	**0.09** NJ	**8.7** J	**3.1**	**6.1**	**4.2** J	< 0.04 UJB	**5.2**	< 0.32	< 0.12	< 0.36	**23**	**18**	< 0.02
HA-01-1.5	1.5		**0.49** NJ	**6.5**	**42**	**0.19** NJ	**0.08** NJ	**8.4**	**2.7**	**5.8**	**3.8**	< 0.04	**5.0**	< 0.32	< 0.12	< 0.36	**25**	**14**	< 0.02
HA-01-2.5	2.5		< 0.21	**6.7**	**44**	**0.21** NJ	**0.10** NJ	**24**	**3.3**	**6.5**	**3.9**	< 0.04 UJB	**12**	< 0.32	< 0.12	< 0.36	**33**	**16**	< 0.02
HA-02-0.5	0.5	4/1/2016	< 0.21	**4.2**	**110**	**0.21** NJ	**0.09** NJ	**8.4**	**2.8**	**6.7**	**4.1**	< 0.04	**4.9**	< 0.32	< 0.12	< 0.36	**27**	**19**	< 0.02
HA-02-1.5	1.5		< 0.21	**4.3**	**51**	**0.19** NJ	**0.09** NJ	**21**	**3.0**	**6.7**	**3.8**	< 0.04	**11**	< 0.32	< 0.12	< 0.36	**29**	**19**	< 0.02
HA-02-2.5	2.5		< 0.21	**3.1**	**56**	**0.20** NJ	**0.08** NJ	**13**	**3.0**	**5.3**	**3.4**	< 0.04	**7.6**	< 0.32	< 0.12	< 0.36	**26**	**15**	< 0.02
HA-03-0.5	0.5	4/1/2016	< 0.21	**3.3**	**41**	**0.18** NJ	**0.08** NJ	**6.6**	**2.4**	**4.9**	**4.2**	< 0.04	**3.8**	< 0.32	< 0.12	< 0.36	**23**	**16**	< 0.02
HA-03-1.5	1.5		< 0.21	**4.6**	**56**	**0.16** NJ	**0.09** NJ	**7.2**	**2.9**	**25**	**2.9**	< 0.04	**5.0**	< 0.32	< 0.12	< 0.36	**22**	**13**	< 0.02
HA-03-2.5	2.5		< 0.21	**3.1**	**54**	**0.15** NJ	< 0.06	**13**	**2.6**	**5.2**	**3.1**	< 0.04	**6.7**	< 0.32	< 0.12	< 0.36	**24**	**13**	< 0.02
HA-04-0.5	0.5	4/1/2016	< 0.21	**3.1**	**50**	**0.17** NJ	**0.07** NJ	**5.8**	**2.7**	**6.0**	**13**	< 0.04	**3.6**	< 0.32	< 0.12	< 0.36	**23**	**21**	< 0.02
HA-04-1.5	1.5		< 0.21	**2.8**	**49**	**0.11** NJ	< 0.06	**5.2** J	**2.1**	**3.4**	**2.3**	< 0.04	**2.8** J	< 0.32	< 0.12	< 0.36	**22**	**9.6**	< 0.02
HA-04-2.5	2.5		**0.50** NJ	**3.1**	**40**	**0.12** NJ	< 0.06	**4.5**	**1.8**	**3.2**	**1.9**	< 0.04	**2.4**	< 0.32	< 0.12	< 0.36	**19**	**8.9**	< 0.02
HA-05-0.5	0.5	4/1/2016	< 0.21	**2.4**	**45**	**0.15** NJ	< 0.06	**4.0**	**2.0**	**3.9**	**2.5**	< 0.04	**2.7**	< 0.32	< 0.12	< 0.36	**16**	**12**	< 0.02
HA-05-1.5	1.5		< 0.21	**2.7**	**46**	**0.17** NJ	< 0.06	**6.0**	**2.4**	**4.1**	**2.5**	< 0.04	**3.7**	< 0.32	< 0.12	< 0.36	**18**	**12**	**0.02** NJ
HA-05-2.5	2.5		< 0.21	**3.0**	**45**	**0.20** NJ	**0.06** NJ	**7.3**	**2.9**	**5.3**	**3.1**	< 0.04	**4.5**	< 0.32	< 0.12	< 0.36	**23**	**15**	< 0.02
HA-06-0.5	0.5	4/1/2016	< 0.21	**2.8**	**41**	**0.14** NJ	**0.06** NJ	**3.8**	**1.8**	**3.7**	**2.8**	< 0.04	**2.3**	< 0.32	< 0.12	< 0.36	**19**	**13**	< 0.02
HA-06-1.5	1.5		< 0.21	**2.4**	**45**	**0.16** NJ	< 0.06	**4.3**	**2.3**	**3.9**	**2.5**	< 0.04	**2.8**	< 0.32	< 0.12	< 0.36	**18**	**11**	< 0.02
HA-06-2.5	2.5		< 0.21	**2.3**	**36**	**0.12** NJ	< 0.06	**4.5**	**2.1**	**3.5**	**2.7**	< 0.04	**2.8**	< 0.32	< 0.12	< 0.36	**19**	**11**	< 0.02
HA-07-0.5	0.5	4/1/2016	< 0.21	**3.1**	**39**	**0.17** NJ	< 0.06	**4.9**	**2.3**	**4.1**	**3.1**	< 0.04	**3.0**	< 0.32	< 0.12	< 0.36	**20**	**13**	< 0.02
HA-07-1.5	1.5		< 0.21	**2.8**	**61**	**0.20** NJ	< 0.06	**5.7**	**3.0**	**4.7**	**3.1**	< 0.04	**3.5**	< 0.32	< 0.12	< 0.36	**22**	**14**	< 0.02
HA-07-2.5	2.5		< 0.21	**3.7**	**60**	**0.19** NJ	**0.07** NJ	**6.1**	**2.8**	**5.0**	**3.3**	< 0.04	**3.8**	< 0.32	< 0.12	< 0.36	**23**	**15**	< 0.02
HA-08-0.5	0.5	4/1/2016	**0.29** NJ	**3.8**	**54**	**0.20** NJ	**0.08** NJ	**9.2**	**3.0**	**5.7**	**3.6**	< 0.04	**5.3**	< 0.32	< 0.12	< 0.36	**29**	**17**	< 0.02
HA-08-1.5	1.5		< 0.21	**3.8**	**53**	**0.20** NJ	**0.07** NJ	**7.5**	**3.1**	**5.7**	**3.6**	< 0.04	**4.4**	< 0.32	< 0.12	< 0.36	**28**	**14**	< 0.02
HA-08-2.5	2.5		< 0.21	**3.0**	**62**	**0.20** NJ	**0.07** NJ	**8.1**	**2.9**	**5.1**	**3.2**	< 0.04	**4.7**	< 0.32	< 0.12	< 0.36	**25**	**15**	< 0.02
HA-09-0.5	0.5	4/1/2016	< 0.21	**4.1**	**50**	**0.24** NJ	**0.10** NJ	**7.9**	**3.5**	**6.9**	**5.8**	< 0.04	**4.9**	< 0.32	< 0.12	< 0.36	**31**	**19**	< 0.02
HA-09-1.5	1.5		< 0.21	**5.0**	**53**	**0.19** NJ	**0.08** NJ	**9.1**	**3.0**	**5.4**	**3.0**	< 0.04	**5.2**	< 0.32	< 0.12	< 0.36	**33**	**13**	< 0.02
HA-09-2.5	2.5		< 0.21	**7.4**	**42**	**0.18** NJ	**0.09** NJ	**17**	**3.5**	**4.7**	**4.3**	< 0.04	**8.5**	< 0.32	< 0.12	< 0.36	**44**	**14**	< 0.02
HA-10-0.5	0.5	4/1/2016	< 0.21	**3.4**	**37**	**0.15** NJ	**0.09** NJ	**6.7**	**2.6**	**5.5**	**7.5**	< 0.04	**3.5**	< 0.32	< 0.12	< 0.36	**29**	**37**	< 0.02
HA-10-1.5	1.5		< 0.21	**2.4**	**25**	**0.16** NJ	< 0.06	**9.3**	**2.3**	**4.5**	**2.6**	< 0.04	**5.3**	< 0.32	< 0.12	< 0.36	**19**	**11**	< 0.02
HA-10-2.5	2.5		< 0.21	**3.9**	**28**	**0.16** NJ	**0.08** NJ	**7.2**	**2.8**	**4.5**	**3.0**	< 0.04	**3.5**	< 0.32	< 0.12	< 0.36	**38**	**11**	< 0.02
STATS																			
Minimum Concentration			< 0.21	2.3	25	0.11	< 0.06	3.8	1.8	3.2	1.9	< 0.04	2.3	< 0.32	< 0.12	< 0.36	16	8.9	< 0.02
Maximum Concentration			0.5	7.4	110	0.24	0.10	24	3.5	25	13	< 0.04	12	< 0.32	< 0.12	< 0.36	44	37	0.02
QA/QC SECTION																			
EBQC-20160401		4/1/2016	< 0.0073	< 0.0084	0.0004 NJ	< 0.0002	< 0.0004	0.0010 NJB	< 0.0004	< 0.0079 UJB	< 0.0019	< 0.0007 UJB	**0.0015 NJB**	< 0.0065	**0.0013 NJ**	< 0.0037	< 0.0017	**0.011 NJ**	< 0.13

NOTES:
[1] California Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO), Human Health Risk Assessment (HHRA) Note 3, DTSC-modified Screening Levels (DTSC-SLs), January 2015. HERO value is the lower of the cancer endpoint and the non-cancer endpoint screening levels.
[2] United States Environmental Protection Agency (Region 9) Regional Screening Levels (RSLs; in mg/Kg) for industrial soil (last updated November 2015) - - Traditional Table with a Target Cancer Risk Level of 1.0x10-6 and a Target Hazard Quotient of 1.0.
All units in milligrams per kilogram (mg/Kg) except for quality assurance/quality control (QA/QC) samples which are in milligrams per liter (mg/L).
<0.5 - Analyte not reported at or above stated method detection limit (MDL)
= Shaded cells indicate a concentration that exceeds either the HERO or RSL concentration for that particular metal.
BOLD values are concentrations detected above the MDL.
TTLC - Total Threshold Limit Concentration
STLC - Soluble Threshold Limit Concentration
Data Qualifiers:
U - The analyte was analyzed for, but not detected above the reported sample quantitation limit.
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
B - The analyte was detected in the method, field and/or trip blank.

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS - TOTAL PETROLEUM HYDROCARBONS
LOCATION: 08-SBD-15-R107.3
PN: 08-1400-0184-1 (EA 0G842)
TASK ORDER NO. 21
CONTRACT 08A2441

CALTRANS UNIQUE SAMPLE ID	SAMPLE DEPTH (feet below the ground surface)	SAMPLE DATE	TOTAL PETROLEUM HYDROCARBONS		
			GASOLINE RANGE ORGANICS (C4-C12) (mg/Kg)	DIESEL RANGE ORGANICS (C13-C22) (mg/Kg)	MOTOR OIL RANGE ORGANICS (C23-C32) (mg/Kg)
Maximum Soil Screening Levels (SSL) for TPH [1] (20-150ft above GW) in mg/Kg			***500***	***1,000***	***10,000***
USEPA RSL - Industrial Soils [2]			***2,200***	***440***	***3,500,000***
SOIL SAMPLES					
HA-01-0.5	0.5	4/1/2016	< 0.20	**1.3**	**3.9**
HA-01-1.5	1.5		< 0.20	**2.8**	**3.6**
HA-01-2.5	2.5		< 0.20	**1.3**	**4.6**
HA-02-0.5	0.5	4/1/2016	< 0.20	**3.4**	**8.9**
HA-02-1.5	1.5		< 0.20	< 1.0	**5.8**
HA-02-2.5	2.5		< 0.20	< 1.0	**2.3**
HA-03-0.5	0.5	4/1/2016	< 0.20	**1.4**	**5.8**
HA-03-1.5	1.5		< 0.20	< 1.0 UJ	**2.4** J
HA-03-2.5	2.5		< 0.20	< 1.0	**2.8**
HA-04-0.5	0.5	4/1/2016	< 0.20	**1.9**	**12**
HA-04-1.5	1.5		< 0.20	**3.2**	**1.5**
HA-04-2.5	2.5		< 0.20	**2.9**	< 1.0
HA-05-0.5	0.5	4/1/2016	< 0.20	**3.0**	**1.3**
HA-05-1.5	1.5		< 0.20	**1.5**	< 1.0
HA-05-2.5	2.5		< 0.20	**4.0**	**1.1**
HA-06-0.5	0.5	4/1/2016	< 0.20	**2.1**	**1.7**
HA-06-1.5	1.5		< 0.20	**2.3**	< 1.0
HA-06-2.5	2.5		< 0.20	**1.9**	< 1.0
HA-07-0.5	0.5	4/1/2016	< 0.20	**2.2**	**1.2**
HA-07-1.5	1.5		< 0.20	**1.6** J	< 1.0 UJ
HA-07-2.5	2.5		< 0.20	**1.1** J	< 1.0 UJ
HA-08-0.5	0.5	4/1/2016	< 0.20	**1.7** J	< 1.0 UJ
HA-08-1.5	1.5		< 0.20	**3.0** J	**1.9** J
HA-08-2.5	2.5		< 0.20	**2.4** J	< 1.0 UJ
HA-09-0.5	0.5	4/1/2016	< 0.20	**2.2** J	**1.5** J
HA-09-1.5	1.5		< 0.20	**1.7** J	< 1.0 UJ
HA-09-2.5	2.5		< 0.20	**2.8** J	< 1.0 UJ
HA-10-0.5	0.5	4/1/2016	< 0.20	**2.6** J	**4.4** J
HA-10-1.5	1.5		< 0.20	**2.2** J	< 1.0 UJ
HA-10-2.5	2.5		< 0.20	**2.8** J	< 1.0 UJ
STATS					
Minimum Concentration			< 0.20	< 1.0	< 1.0
Maximum Concentration			< 0.20	4.0	12

NOTES:

1 - Regional Water Quality Control Board (RWQCB) Maximum Soil Screening Levels (SSLs) for TPH above Drinking Water Aquifers, May 1996, in mg/Kg.

2 - United States Environmental Protection Agency (Region 9) Regional Screening Levels (RSLs; in mg/kg) for industrial soil (last updated November 2015) - Traditional Table with a Target Cancer Risk Level of 1.0x10-6 and a Target Hazard Quotient of 1.0.

All units in milligrams per kilogram (mg/Kg).

SSL = Soil Screening Level

RSL = Regional Screening Level

C4-C12: Total Petroleum Hydrocarbon Carbon Ranges

BOLD values are concentrations detected above the method detection limit (MDL)

<10 - analyte not reported at or above stated MDL

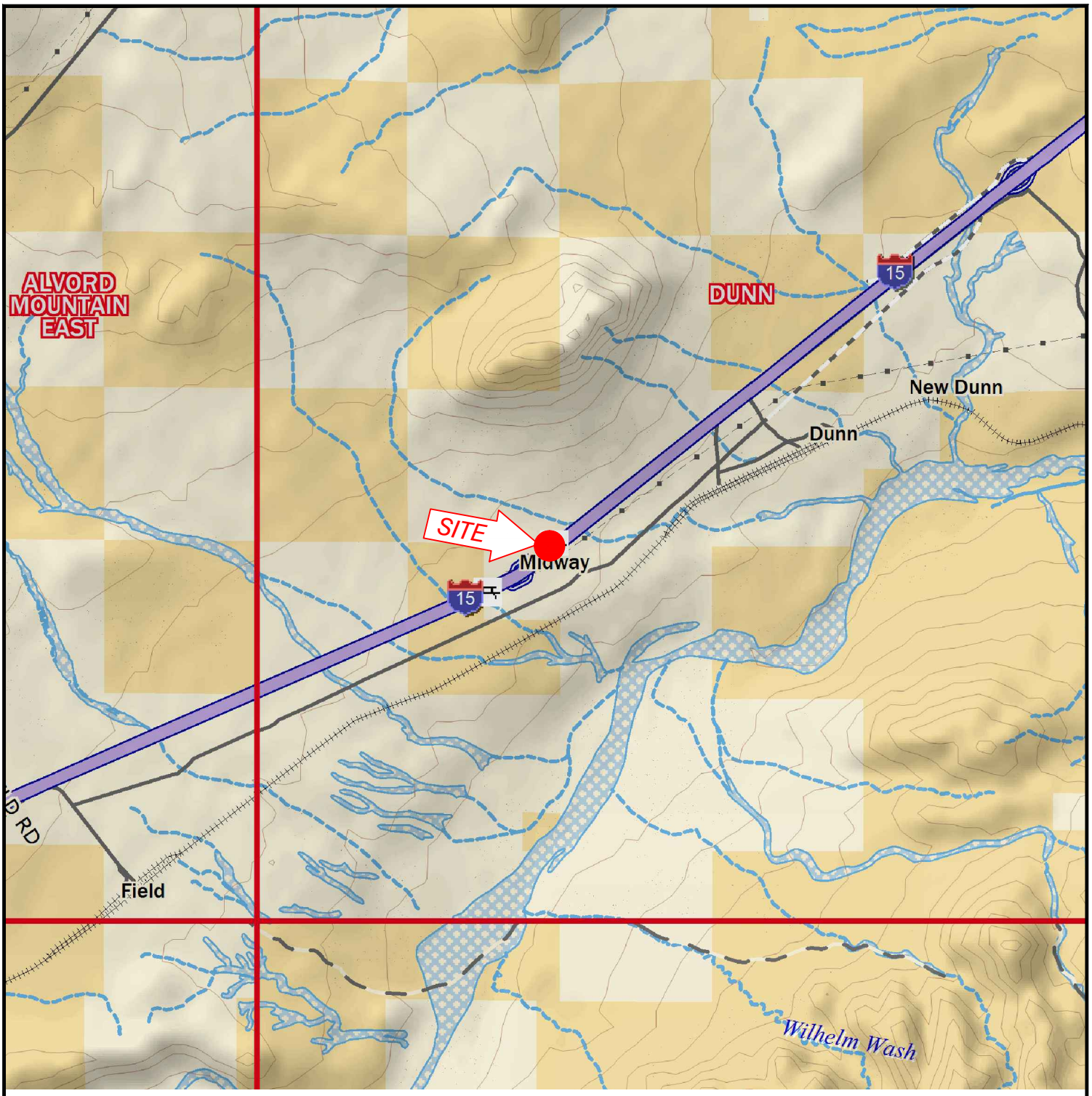
NA - not analyzed

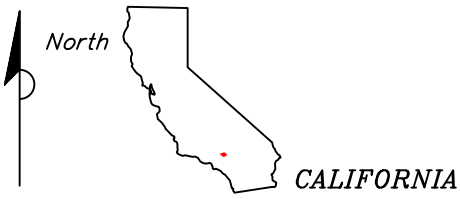
Data Qualifiers:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

FIGURES





0 1/2 1
SCALE (MILES)

2000 0 2000 4000 6000
SCALE (FEET)

REFERENCE: DELORME TOPO MAP, DUNN, CALIFORNIA

Stantec

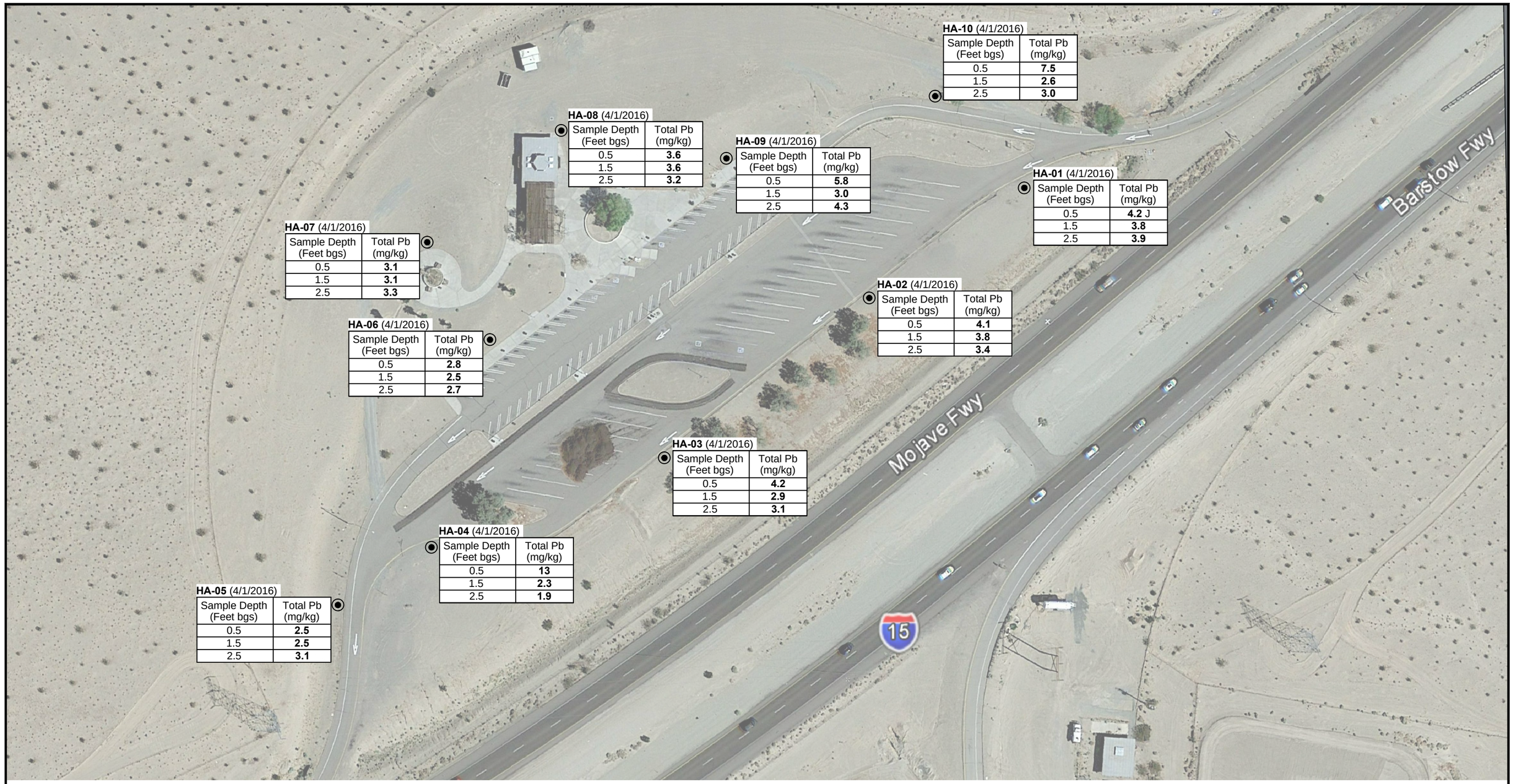
California Department of Transportation
AERIALLY DEPOSITED LEAD INVESTIGATION
Agreement No. 08A2441, Task Order No. 21
Location: 08-SBD-15-R107.3
San Bernardino County, CA
Project Number: 08-1400-0184-1, EA: 0G842

UPGRADE C.V. KANE SAFETY ROADSIDE REST AREA (SOUTHBOUND ONLY) SITE LOCATION MAP

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803641	STA	AP	KM	04/04/16

FILEPATH:M:_00 OTHER OFFICES\04-REDLANDS\CAL-TRANS\2016\TO-21\FIG 1_TO-21_SITE LOCATION MAP.dwg | Layout Tab: 8-5X11 | Drafter: saguinaldo | Apr 08, 2016 at 16:14



HA-10 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**7.5**
1.5	**2.6**
2.5	**3.0**

HA-08 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**3.6**
1.5	**3.6**
2.5	**3.2**

HA-09 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**5.8**
1.5	**3.0**
2.5	**4.3**

HA-01 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**4.2** J
1.5	**3.8**
2.5	**3.9**

HA-07 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**3.1**
1.5	**3.1**
2.5	**3.3**

HA-02 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**4.1**
1.5	**3.8**
2.5	**3.4**

HA-06 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**2.8**
1.5	**2.5**
2.5	**2.7**

HA-03 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**4.2**
1.5	**2.9**
2.5	**3.1**

HA-04 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**13**
1.5	**2.3**
2.5	**1.9**

HA-05 (4/1/2016)

Sample Depth (Feet bgs)	Total Pb (mg/kg)
0.5	**2.5**
1.5	**2.5**
2.5	**3.1**

LEGEND:

◉ BORING LOCATION

NOTES:

Total Lead by EPA method 6010B

mg/kg = milligrams per kilogram

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

N

0 100 200

APPROXIMATE SCALE IN FEET

REFERENCE: GOOGLE EARTH AERIAL IMAGE AND FIELD NOTES

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE:(909) 335-6116 FAX:(909) 335-6120

California Department of Transportation
AERIALLY DEPOSITED LEAD INVESTIGATION
Agreement No. 08A2441, Task Order No. 21
Location: 08-SBD-15-R107.3
San Bernardino County, CA
Project Number: 08-1400-0184-1, EA: 0G842

UPGRADE C.V. KANE SAFETY ROADSIDE REST AREA (SOUTHBOUND ONLY) ADL BORING LOCATIONS

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803641	STA	AP	KM	04/04/16

FILEPATH:M:_00 OTHER OFFICES\04-REDLANDS\CAL-TRANS\2016\TO-21\FIG 2_TO-21_ADL BORING_04-18-2016.dwg|saguinaldo|Apr 26, 2016 at 13:47|Layout: 11X17 LS

HA-09 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**2.2** J	**1.5** J
1.5	<0.20	**1.7** J	<1.0 UJ
2.5	<0.20	**2.8** J	<1.0 UJ

HA-08 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**1.7** J	<1.0 UJ
1.5	<0.20	**3.0** J	**1.9** J
2.5	<0.20	**2.4** J	<1.0 UJ

HA-07 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**2.2**	**1.2**
1.5	<0.20	**1.6** J	<1.0 UJ
2.5	<0.20	**1.1** J	<1.0 UJ

HA-06 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**2.1**	**1.7**
1.5	<0.20	**2.3**	<1.0
2.5	<0.20	**1.9**	<1.0

HA-05 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**3.0**	**1.3**
1.5	<0.20	**1.5**	<1.0
2.5	<0.20	**4.0**	**1.1**

HA-10 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**2.6** J	**4.4** J
1.5	<0.20	**2.2** J	<1.0 UJ
2.5	<0.20	**2.8** J	<1.0 UJ

HA-01 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**1.3**	**3.9**
1.5	<0.20	**2.8**	**3.6**
2.5	<0.20	**1.3**	**4.6**

HA-02 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**3.4**	**8.9**
1.5	<0.20	<1.0	**5.8**
2.5	<0.20	<1.0	**2.3**

HA-03 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**1.4**	**5.8**
1.5	<0.20	<1.0 UJ	**2.4** J
2.5	<0.20	<1.0	**2.8**

HA-04 (4/1/2016)

Sample Depth (Feet bgs)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-Mo (mg/kg)
0.5	<0.20	**1.9**	**12**
1.5	<0.20	**3.2**	**1.5**
2.5	<0.20	**2.9**	<1.0

HA-08
HA-09
HA-10
HA-01
HA-07
HA-02
HA-06
HA-03
HA-04
HA-05
Barstow Fwy
Mojave Fwy
15

LEGEND:

◉ BORING LOCATION

NOTES:

TPH-G = Total Petroleum Hydrocarbons as Gasoline Carbon Organics
TPH-D = Total Petroleum Hydrocarbons as Diesel Carbon Organics
TPH-Mo = Total Petroleum Hydrocarbons as Motor Oil Carbon Organics
mg/kg = milligrams per kilogram
BOLD values are concentrations detected above the Method Detection Limit (MDL)
<10 = Analyte not reported at or above stated MDL
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample

N

0 100 200

APPROXIMATE SCALE IN FEET

REFERENCE: GOOGLE EARTH AERIAL IMAGE AND FIELD NOTES

Stantec
25864-F BUSINESS CENTER DRIVE
REDLANDS, CALIFORNIA 92374
PHONE:(909) 335-6116 FAX:(909) 335-6120

California Department of Transportation
AERIALLY DEPOSITED LEAD INVESTIGATION
Agreement No. 08A2441, Task Order No. 21
Location: 08-SBD-15-R107.3
San Bernardino County, CA
Project Number: 08-1400-0184-1, EA: 0G842

UPGRADE C.V. KANE SAFETY ROADSIDE REST AREA (SOUTHBOUND ONLY) TPH BORING LOCATIONS

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185803641	STA	AP	KM	04/04/16

FILEPATH:M:_00 OTHER OFFICES\04-REDLANDS\CAL-TRANS\2016\TO-21\FIG 3_TO-21_TPH BORINGS_04-18-2016.dwg|saguinaldo|Apr 26, 2016 at 13:50|Layout: 11X17 LS

APPENDIX A
HASP/FIELD FORMS

SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP)
TASK ORDER NO. 21 – ADL INVESTIGATION – SR 15

0814 0001841
08-SBD-15-R107.3
near city of Barstow
Location: SR 15
San Bernardino County, California
Project ID: 0814 0001841
EA: 0G842

Prepared for:
The State of California, Department of Transportation
District 8
San Bernardino, California
Contract # 08A2441

Submitted by:
Stantec Consulting Services Inc.
25864-F Business Center Dr.
Redlands, CA 92374

March 30, 2016

Stantec

Purpose and Approval

Our work can be hazardous, and it is imperative that we never forget that! It is the purpose of this Health and Safety Plan (HASP) to proactively aid Stantec employees in:

- Identifying and understanding the potential risks/hazards they may encounter at the site.
- Mitigating those potential risks/hazards.

Stantec's policy is to complete our work on this site without any type of incident (injury, illness, impact to the environment, impact to property and equipment). In order to achieve this goal, the project team will work together to perform an effective hazard assessment. The team will then establish appropriate precautions and communicate these daily among project staff. Staff will be responsible for communicating changing field conditions to the project management so these conditions and appropriate precautions may be re-evaluated as needed. Staff will implement **STOP WORK AUTHORITY** at any time they believe that conditions may be inherently unsafe or might cause damage to property or harm to the environment. Staff may refuse to participate in work they believe will be unsafe. If it is believed that such conditions exist, staff will communicate immediately with the Project Manager to resolve the situation. We expect all subcontractors and project personnel to share this goal.

Client: The State of California, Department of Transportation – 08A2441

Site Name: Aerially Deposited Lead Survey, Location: 08-SBD-15-R107.3

Project Name: TASK ORDER NO. 21 – ADL INVESTIGATION

Project Number: 185803641

Start Date: March 30, 2016

End Date: April 8, 2016

Plan Review Date*: September 30, 2016

(*The Plan Review Date is the date the HASP would need to be re-reviewed to maintain current information is included should the Task Order be extended. The Plan Review date is *no longer than 6 months from the start of the Period of Performance – however, no reviews will be performed on the HASP outside of the Task Order Period of Performance.*).

Kevin Miskin Project Manager	Signature:	Date: 3/30/16
Dan Feldt, MPH, CIH Health and Safety Manager, Certified Industrial Hygienist (CIH) HASP review	Signature:	Date: 3-30-16
Anne Perez Office Safety Environmental Coordinator (OSEC)	Signature:	Date:
Mark Zellmer ADL Site Health and Safety Officer (SHSO)	Signature:	Date: 3/30/16
Mitchell Bohn Peer Reviewer	Signature:	Date: 3/30/16
Melissa Baernstein HASP Originator	Signature:	Date: 03/30/16

THE AMERICAN BOARD OF INDUSTRIAL HYGIENE INCORPORATED CERTIFICATION NUMBER 3-3101-06 EXPIRES 6-1-2020 PENNSYLVANIA 1989 DANIEL G. FELDT, CIH

The health and safety guidelines in this HASP were prepared exclusively for this site. This HASP will be amended (with changes recorded on the Health and Safety Plan Modification Log that follows) if site conditions, scope of work, training dates, personnel, or other critical items change before the scheduled HASP review date above. This HASP is intended to be available on site.

Contents of this binder are listed in Attachment 1. Elements of the HASP shall be reviewed during daily tailgate meetings conducted by the Site Health & Safety Officer.

Health and Safety Plan Modification Log

HASP Section	Description of Revision	Revision Date	Approved By

Stantec

Acknowledgement and Agreement Form

"Zero Tolerance for Incidents of ANY Kind.
Work Together to Ensure a SAFE and High Quality Project"

All parties conducting site activities are required to coordinate their activities and practices with the Stantec Site Health and Safety Officer (SHSO). Stantec has provided a copy of this HASP to site contractors in the interest of disclosure of potential risks/hazards of which Stantec may be aware. Similarly, contractors shall inform Stantec of any potential site risks/hazards of which they are aware including the contractor's work, equipment, procedures and chemicals.

This HASP has been developed for the purpose of proactively aiding Stantec employees in identifying, understanding, and mitigating the potential risks/hazards they are may encounter at the site. This HASP may also be used as a reference document by properly trained and experienced Stantec subcontractors and clients. However, sub-contractors and other contractors at the site must develop their own HASP to address the potential risks/hazards faced by their own employees.

This HASP should NOT be understood by contractors or anyone other than Stantec employees to provide information on all of the potential risks/hazards to which they may be exposed as a result of their work. Stantec claims no responsibility for use of this HASP by others.

Your signature below confirms the following: that you have read and understand the potential risks/hazards identified by Stantec and the associated mitigation measures discussed in this HASP; that there may be additional risks or hazards that are not identified in this HASP; that you have received training and medical surveillance according to this HASP and the OSHA Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120); and that you understand that you could be prohibited by the Stantec Site Health and Safety Officer or other authorized Stantec personnel from working on this project for not complying with any aspect of this or any other applicable HASP.

**NOTE: OSHA (federal) is used interchangeably and equally with California OSHA (CalOSHA) in this document.

(All Stantec and subcontractor personnel must sign.)

Name	Signature	Company	Date
Mark Zellner		Stantec	3/30/16
Melissa Baernstein		Stantec	03/30/16
Mitchell Eder		Stantec	4/1/16

Acknowledgement and Agreement Form, cont.

Name	Signature	Company	Date

TABLE OF CONTENTS

ATTACHMENTS

1.0 Emergency Response

PHONE NUMBERS

The nearest telephone is: Mark Zellmer (Stantec) for the ADL crew at (714)742-9131 (cell). There is no landline available for this project and cell phone and cell phone reception may be intermittent. Additional personnel, including the SHSO, who may be on-site are listed below:

1. Melissa Baernstein 909-362-3942 (cell phone) (ADL Crew)
2. Mark Zellmer 714-742-9131 (cell phone) (ADL Crew)
3. Mitchell Bohn 909-362-1346 (cell phone) (ADL Crew)

Emergency Response			
Name		**Telephone**	**Verification**
Hospital	Barstow Community Hospital 820 E Mountain View St Barstow, CA 92311	**911** or Non-emergency (760) 256-1761	03/30/16
Ambulance	911	**911**	03/30/16
Police/Sheriff	CHP	**911** or (760) 255-8750	03/30/16
Fire Department	Baker Fire Station 72734 Baker Blvd Baker, CA 92309	**911** or (760) 733-4026	03/30/16
Spill Response	Belshire Environmental	(800)-995-8220	03/24/16
Environmental Response	National Response Center (24-hour hotline)	(800) 424-8802	03/24/16
Environmental Protection	US Environmental Protection Agency (24-hour hotline)	(800) 424-9346	03/24/16
Emergency Services	Office of Emergency Services (24-hour hotline)	(800) 852-7550	03/24/16
Poison Control	California/U.S. National Poison Control Center (24-hour hotline)	(800) 222-1222	03/24/16
Agency / Line Locator			
National Line Locator	National 811 Call-Before-You-Dig Hotline (24-hour hotline)	811	03/24/16
Public Utility Locator	DIG ALERT	811	03/24/16

Local office and additional contacts in case of an emergency or field questions regarding the Site:

1. **Kevin Miskin (Contract Manager) at 909-224-3406**
2. **Anne Perez (TO Support) at 909-255-8202**
3. **Kristy Edblad at 661-754-0863**

Flow charts for contacting additional departments in Stantec and official reporting protocol can be found in ction 1.4 of Attachment C.

2.0 Project Team Information

Project Team Phone Numbers			
Project Role/Name		**Telephone**	**Verification**
Stantec Project/Contract Manager	Kevin Miskin	909-224-3406 (cell) 909-255-8210 (office)	03/24/16
Field Staff #1: Stantec ADL Site Health and Safety Officer (SHSO)	Melissa Baernstein	909-362-3942	03/24/16
Field Staff #2: Stantec project Staff (ADL)	Mark Zellmer	714-742-9131	03/24/16
Field Staff #3: Stantec project Staff (ADL)	Mitchell Bohn	909-362-1346	03/24/16
Field Staff #4: Stantec project Staff (ADL)			
Field Staff #5: Stantec project Staff (ADL)			
Field Staff #6: Stantec project Staff (ADL)			
Field Staff #7: Stantec project Staff (ADL)			
Stantec Business Unit Leader	Kyle Emerson	951-315-0534 (cell) 909-335-6116 (office)	03/24/16
Senior Certified Industrial Hygienist (CIH)	Dan Feldt	414-305-1984	03/24/16
Stantec West Region Health, Safety, Environment (HSE) Coordinator	Clint Reuter	818.395.8556 Cell 949.923.6258 Office	03/24/16
Stantec Human Resources Representative	Eunice Hernandez	661-885-3106	03/24/16
OSEC (Stantec Office Safety & Environmental Coordinator)	Anne Perez	909-255-8202	03/24/16

(Note: The Field Staff will be on-Site. All others are Stantec employees supporting all Stantec staff and not necessarily charging time to the Task Order.)

TRAINING

Site personnel will be trained and certified in hazardous waste operations and emergency response as follows:

- 40-Hour HAZWOPER Training;
- OSHA Respiratory Protection (29 CFR 1910.134)
- Annual 8-Hour Refresher [29 CFR 1910.120€(8)];
- First Aid/CPR Training;
- Physical examination consistent with 29 Code of Federal Regulations (CFR) 1910.120 (and 8 California Code of Regulations (CCR) 5192, if applicable);
- Supervisory 8-hour Training [29 CFR 1910.120€(4)] for the Site Manager/SHSO; and
- Additional training specific to the job being performed (e.g., Fall Protection, Lock Out/Tag Out, Hot Work, Confined Space, etc.).

In addition to the above-mentioned trainings, Stantec personnel are required to have training in a behavior-based safety program and defensive driving. Fit tests are also required for respirator use.

Client-Specific Safety Procedures:

Caltrans does not have any additional required safety programming or expectations, thus Stantec staff will comply with state, federal and local regulations, and Stantec policies, procedures and expectations.

Site specific staff safety training certification information is listed on the following page.

SITE SPECIFIC STAFF TRAINING
(Includes personnel that could potentially visit the Site)

Name	40Hr HAZWOPER	8Hr HAZWOPER Refresher	CPR / First Aid	Annual Physical	Defensive Driver Training	Respirator Fit Test
Mark Zellmer	04/10/07	05/21/15	10/30/15	02/23/15	03/10/13	06/15/15
Melissa Baernstein	08/25/05	05/15/15	10/30/15	10/08/15	12/20/10	02/05/16
Mitchell Bohn	08/26/00	04/30/15	10/30/15	08/07/15	05/03/12	08/06/15

Copies of the OSHA 8-Hour Refresher Certificates are included in Attachment A.

DIRECTIONS AND MAP TO THE HOSPITAL

The SHSO will verify and validate the route to the hospital by driving it before work begins.

Directions from Barstow Fwy to Barstow Community Hospital

Google

Barstow Fwy
California

- Head southwest toward I-15 S
  0.2 mi
- Merge onto I-15 S
  32.1 mi
- Take exit 184 for E Main St toward Needles/I-40
  0.2 mi
- Keep right at the fork, follow signs for Downtown/I-15 BUS and merge onto I-15BUS N/E Main St
  0.2 mi
- Turn left onto Mountain View St
  0.7 mi

Barstow Community Hospital
820 East Mountain View Street, Barstow, CA 92311

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

3.0 Scope of Work

The scope of this project is described in the ADL Investigation Work Plan, dated March 7, 2016 and the field activities are summarized below:

Task No. 3 - Field Investigations
To evaluate ADL, soil samples will be collected from CV Kane Safety Rest Area of SR15, from the westbound outside shoulders. A total of 10 borings advanced along the SR15 project area. Samples will be collected from all borings at surface (0.0-0.5), one (1.0-1.5) and two (2.0-2.5) feet bgs or to refusal, whichever comes first.

Approximately 30 samples will be collected and analyzed to develop a representative data set for statistical evaluation. No borings will be advanced outside of the existing right of way or in existing paved areas.

Soil samples will be collected directly from the hand auger bailer, discharged to a clean ziplock one gallon bag, manually homogenized, then discharged to 8-ounce laboratory certified clean glass jars. All soil sampling equipment will be decontaminated before advancing at each boring location. Each sample will be labeled with unique sample identification along with the borehole ID, sample depth, sample date, and sample time. All samples will be annotated on chain-of-custody forms and delivered to a laboratory certified by the California Department of Health Services Environmental Laboratory Accreditation Program for the analyses indicated herein.

GPS Data Collection
All sample locations (x and y coordinates) will be surveyed with a hand-held global positioning system unit (GPS) as outlined in Section BB.7.b. of Contract 08A2441.

GIS Database
A database file in Microsoft Access format will be generated for the project data and submitted with the FINAL ADL Investigation Report as outlined in Section Z Part 4 of Contract 08A2441.

Task No. 4 - Laboratory Analysis
To evaluate appropriate handling procedures for the excavated soil as a result of proposed roadway improvements, and as directed in Section Z Part 11 of the Contract 08A2441 Attachment 1, collected samples will be analyzed in a California certified laboratory as described below:

- All samples will be analyzed for Title 22 Metals and TPH.
- Where total lead concentrations are greater than or equal to 50 milligrams per kilogram (mg/kg), the sample will be analyzed for soluble lead using the California Waste Extraction Test (CalWET) method using citric acid as the extractant.
    - For purposes of preparing the cost proposal, it is assumed that fifty percent (50%) of the total lead samples will be analyzed for soluble lead by CalWET-citric.
- Samples reporting soluble lead concentrations equal to or greater than 5 milligrams per liter (mg/L) by the CalWET-citric method will be analyzed for soluble lead by CalWET using deionized water as the extractant (CalWET-DI).
    - For purposes of preparing the cost proposal, it is estimated that 50% of the CalWET-citric samples (at or greater than 5 mg/L) will be analyzed for soluble lead by CalWET-DI.

- Samples reporting soluble lead concentrations equal to or greater than 5 mg/L by the CalWET-citric method will be analyzed for soluble lead using Toxicity Characteristic Leaching Procedures (TCLP), EPA Method 1311 *and* for pH using EPA Test Method 9045. Notwithstanding this requirement, TCLP Method and pH shall be performed on ***all*** samples equal and/or exceeding 1,000 mg/kg total lead. If all CalWET-citric concentrations are reported below the 5 mg/L threshold, then 10% of the samples, selected from the samples reporting the highest total lead concentrations, will be analyzed by TCLP and for pH.

    - For purposes of preparing the cost proposal, it is estimated that 50% of the CalWET-citric samples (at or greater than 5 mg/L) will be analyzed for soluble lead by TCLP and pH.

To summarize, and for purposes of preparing the cost proposal, Stantec is estimating that out of 10 total borings, 30 samples will be collected and submitted to the laboratory for the following analysis:

- 30 samples for Title 22 Metals,
- 30 samples for TPH,
- 15 samples for soluble lead by Cal WET-citric,
- 8 samples for soluble lead by Cal WET-DI,
- 8 samples for soluble lead by TCLP; and
- 8 samples for pH.

The following field QA/QC samples will be collected and analyzed as part of this project:

- Equipment Blanks: equipment (decontamination) blank samples (hand auger), one for each chain-of-custody (approximately 1 total), will be analyzed for total lead.

the number of analyses exceeds these estimates, Caltrans will be informed prior to ordering additional analyses. A cost adjustment will be submitted for additional analyses approved by Caltrans.

Therefore, this HASP was prepared for the use of ***Stantec*** personnel while performing the following tasks:

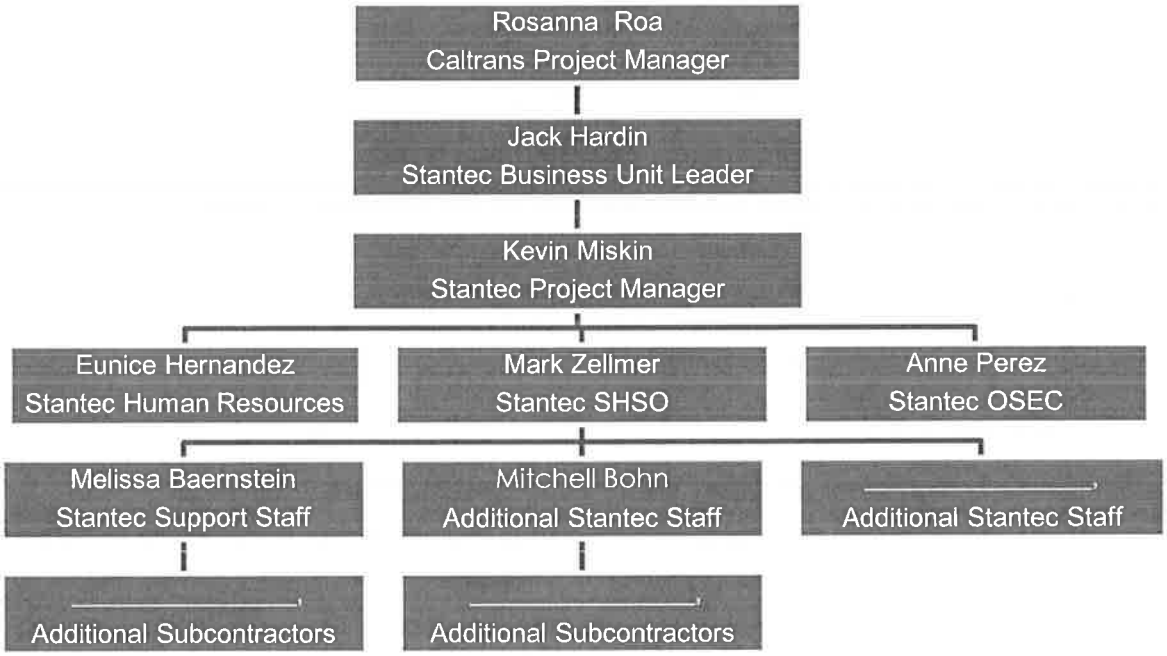
1. Driving To/From the Job Site (w/o trailer)
2. Soil sampling via hand auger
3. Borehole abandonment

The scope of work will be conducted in a manner consistent with the methods and assumptions outlined in **TASK ORDER NO. 06.**

All work plans referenced in this HASP will be available for Stantec personnel on site. The field staff may also call the Project Manager, Kevin Miskin (909-224-3406) or Task Manager, Anne Perez (909-255-8202), or Kristy Edblad (661-754-0863), should they have any questions that are not specifically addressed in the HASP or the work plan.

4.0 Organization and Responsibilities

An organization chart for site-specific project personnel is provided below.



A table summarizing responsibilities for project personnel is provided below.

Project Job Title	General Project Responsibilities
Stantec Project Manager	Overall financial and logistics. Contact client and subs to understand all hazards. Discuss with SHSO. Follow-up all incidents upon notice.
Stantec Site Health and Safety Officer	Conduct Site Safety Meeting (tailgate) and fieldwork in accordance with JSA and this HASP. Report all incidents and near misses immediately to Project Manager.
Stantec Support/Project Staff	Assist Stantec Site Health and Safety Officer in implementing site scope of work
Stantec Business Unit Leader	Provide immediate support at notice of all incidents
Stantec Sr. Certified Industrial Hygienist	Respond with corporate resources to all incidents as appropriate. Assist in HASP review. Assist in incident investigation.
Stantec Human Resources	Assist with incident review, recordkeeping.
Stantec Office Safety and Environment Coordinator	Manage Health and Safety responsibilities for personnel in Office. Assist employees with setting up training and attending/completing necessary courses.
Caltrans Project Manager	Provide all known analytical data gathered by others and notice of hazards. Provide access to site and available emergency response capabilities.

.0 Site Background, Potential Hazards and Mitigation Measures

PROJECT BACKGROUND INFORMATION

The Site background is described in the Task Order Request, execution date of March 3, 2016, and summarized below.

Project Background

According to the Task Order No. 21 Request, the Department is currently working to upgrade the existing C.V. Kane Safety Roadside Rest Area (SRRA) located about 30 miles East of Barstow, CA (see Attachment A).
The purpose of this task order is to conduct an aerially deposited lead (ADL) survey within the area of the SRRA. In addition to sampling for ADL the consultant shall also sample for hydrocarbons and CAM 17 metals. The sampling locations are depicted on Attachment B. There are a total of 10 boring locations. Samples shall be collected from surface to 0.5', 1 to 1.5', and 2 to 2.5' depths. This will generate 30 soil samples.

POTENTIAL HAZARDS

Chemical:
No historical reports were provided indicating that specific chemical hazards have been discovered at the Site during previous investigations. However, potential chemical hazards at this site may include:

- Aerially deposited lead (ADL) and other heavy metals in soil.

Physical:
The project area is located along State Route 15 through areas of San Bernardino County (within Caltrans Right-of-Way (SBD-15, R107.3). Other potential site specific hazards may include:

- Traffic
  - Set cones up in your immediate work area to provide visibility to the vehicles traveling in the area of the work zone. Don't turn your back to traffic.
  - Use the work vehicle as an added buffer for your work area (DO NOT BLOCK TRAFFIC), and consider a closure of the immediately adjacent lane with proper signage.
- Wind/debris
  - Should weather conditions change and become a hindrance to performing the task safely, stop work and contact the project manager.
- Heat
  - Be sure to drink plenty of liquids, be sure your co-worker is drinking enough liquids. Be sure to take breaks to cool down.
- Trips/falls

- To protect yourself, always look before you step. Work will be done around the highway and along the highway slopes. Take care walking and standing working in all areas of the site.

- Noise
  - The Site is adjacent to Highway lanes – wear the proper hearing protection if found to be necessary.

- PPE
  - Wear the proper PPE for the tasks involved – minimum: gloves, hard hat, safety glasses, steel toed boots, high-viz safety vest, and when appropriate, a dust mask (see below). Additional safety wear may need to be used if site conditions change.

HAZARD MITIGATION

Attachment A provides information for on avoiding, monitoring and mitigating chemical and physical hazards, including general hazards that can potentially be encountered on any project site (earthquakes, bees, etc). As described, proper hygiene and personal protective equipment (PPE) shall be required including,

- Washing hands before eating, smoking and always after sample collection is completed, and
- Donning hard hats, reflective high visibility vests, safety toed shoes, and disposable sampling gloves.

Project work will be near the lanes of a busy highway. Traffic control will be essential for safety. To improve worker safety, traffic warning signage, cones and truck flashers will be provided to alert drivers to workers along the shoulders. Traffic control will consist of the following elements:

- W21-5 "Shoulder Work" signs will be placed in the area ahead of each borehole. The signs will be moved as work progresses to assure that the signage follows the work. Signs will be placed appropriately to improve visibility to drivers.

- High visibility reflective cones will be placed along the pavement edge ahead of and next to the work area.

- Work trucks will have flashing yellow strobe lights and will be positioned, preferably at a slight diagonal to the pavement edge, as safety barriers between workers and oncoming traffic.

Protect yourself, always look before you step and wear proper PPE for the task being performed.

6.0 Potential Airborne Concerns and Air Monitoring Action Levels

An air purifying respirator or masking with high-efficiency particulate air (HEPA) filtering capability shall be used while sampling suspect ACM materials. Given that the proposed work will take place adjacent to SR 15, the following is a list of chemicals that may be present in the work area but are not planned to be monitored on a continual basis given that no soil disturbance is planned.

The list below includes lead.

Potential Airborne Concerns						
Chemical (Or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Warning Properties**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/Target Organs**
Lead	OSHA PEL: 8 hr. TWA 0.050 mg/m3 ACGIH TLV: 8 hr. TWA 0.050 mg/m3	NIOSH REL, 0.05 mg/m3 8 hr. TWA	A heavy, ductile, soft, gray solid	Inhalation, ingestion, skin and/or eye contact.	Effects of overexposure to lead - (1) Short term (acute) overexposure. Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can be fatal in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short term dose of lead can lead to acute encephalopathy. Short term occupational exposures of this magnitude are highly unusual, but not impossible.	Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead can potentially adversely affect numerous body systems, and can cause forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years. See note below table

Potential Airborne Concerns						
Chemical (Or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Warning Properties**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/Target Organs**
Carbon Monoxide	OSHA PEL 50 ppm 8 hr. TWA CalOSHA PEL 25 ppm 8 hr. TWA CalOSHA 200 ppm-ceiling ACGIH TLV 25 ppm 8 hr. TWA	NIOSH REL = 35 ppm 8 hr. TWA IDLH = 1200 ppm	Colorless, odorless gas	Inhalation	headache, drowsiness, lassitude (weakness, exhaustion), narcosis; dyspnea, heart palpitation, unconsciousness, death	None established

Abbreviation	Explanation
PEL	Permissible Exposure Limit set by OSHA (8 hour time-weighted average/TWA)
REL	Recommended Exposure Limit (set by National Institute of Occupational Safety & Health-NIOSH)
C	Ceiling Limit (airborne concentration not to be exceeded for any period of time)
STEL	15-minute Short Term Exposure Limit (unless other time period specifically identified)
IDLH	Immediately Dangerous to Life or Health
TWA	8 hour time-weighted average (PEL, TLV, REL)
TLV	Threshold Limit Value set by the American Conference of Governmental Industrial Hygienists (ACGIH) 8 hr. TWA
AIHA WEEL	Workplace Environmental Exposure Level (set by the AIHA-American Industrial Hygiene Association)
SKIN	Skin Absorption is significant contributor to total exposure
NIOSH	National Institute of Occupation Safety and Health
CNS	Central Nervous System
CVS	Cardiovascular System

7.0 Site-Specific Control and Safety Procedures

Procedures described in this section are site specific procedures intended to aid Stantec personnel in mitigating site risks/hazards.

HASP Inspections
The site-specific HASP should be inspected in the field by the SHSO or other Stantec personnel to determine the effectiveness of the plan. Any deficiencies should be corrected and changes will be recorded on the HASP Modification Log.

Job Safety Analysis
Job Safety Analyses (JSAs) will be prepared or revised prior to mobilizing to the field. Applicable JSAs will be reviewed in detail on a daily basis by all affected on-site workers and/or visitors. Any revisions to the JSAs will be hand written into the JSAs, forwarded to the project manager, and communicated to during Daily Production Health and Safety Briefings. JSAs are located in Attachment B.

Permits
The approved/signed Task Order for the project is the permit to work on Caltrans right-of-way and must be available onsite at all times. The signed approved task order will serve as the general permit to work for this site.

Public Questions and Press
Questions about the site posed by neighbors, the press, or other interested parties will be directed to the **Caltrans Project Manager Rosanna Roa at 909-383-5917**.

Work Hours
Work on this project will be conducted between the hours of 0700 to 1800.

Waste Management

A. Waste Generation (Type(s)/Quantities Expected): Unknown

Anticipated (YES/NO): ***NO***

Types: __ Liquid _Solid __ Sludge ____ Other (describe) _____

Quantity (Expected Volume): NA

B. Characteristics (Expected): ***NA FOR TO21 SCOPE***

Corrosive _____ Flammable/Combustible ____ Radioactive _____ Toxic ____

Reactive _____

Other (specify) _____

C. Packaging Requirements for Waste Material (Expected): ***NA FOR TO21 SCOPE***

- DOT-approved Drums _
- Baker Tanks (possibly tankers if trucked off-site) _____
- Lined Waste Bins ____
- Temporary Stockpile _____

D. Disposal and/or Treatment Methods Proposed (Expected): ***NA FOR TO21 SCOPE***

There are no waste materials expected to be generated during the ADL sampling work.

When/If applicable: All wastes will be labeled, sampled, and analyzed for all applicable chemicals of potential concern and physical properties (e.g., pH, vapor pressure, etc.) to ensure proper waste characterization. Results of analysis will determine how and where impacted materials may be disposed. Belshire Environmental will be responsible for the categorization and transportation of all solid waste generated on this Site, if any. All materials will be disposed of or treated in accordance with federal, state and local regulations as selected and arranged by Stantec.

Stantec

8.0 Journey Management Plan

PURPOSE

The purpose of this Journey Management Procedure (JMP) is to prevent losses associated with motor vehicle related incidents including: injuries to drivers, passengers and pedestrians, damage to motor vehicles and damage to third party property. By communicating potential safety risks before mobilizing to a site, a motor vehicle operator will be able to prepare for and avoid potential hazards.

These JMPs apply to all vehicles assigned for the support of site operations, including company owned and personal use vehicles. This JMP does not apply to vendors (such as UPS, FedEx. etc.) not under contract with Stantec or their supplier. This JMP does not address hazards that are external to the site access/egress and on the onsite project operations.

Site Specific JMP

General Vehicle Hazards

Highways approaching/near the project site are typically congested – allow extra time and space, slow down, and watch for vehicles.

Site Specific Potential Vehicle Hazards

?at, traffic, winds. Watch for debris along the roadway. Highway adjacent – watch for traffic. If parking along the shoulder, watch for traffic before exiting vehicle. Use the vehicle to provide a buffer between you and the traffic, where possible. Watch for dips, debris, bushes. **SHOULDER CLOSURE of immediately adjacent shoulder to work activity should be considered utilizing cones and signage**

Directions: Access to the Site

All sampling locations can be accessed from the highway shoulder. Access may be gained from alternate routes, rather than directly from the highway shoulder. Access may be gained from a commerical or residential street depending on sampling location. Cones should be carried to the work area.

Directions: Leaving the Site

Site Specific Restrictions and Controls

None noted

This Journey Management Plan is approved for use:

From: 03/30/2016	Time: 0800	To: 04/08/2016	Time: 1900

Journey Management Plan Maintained by

Field Manager : Anne Perez	Office: 909-255-8202
Contract Project Manager: Kevin Miskin	Cell: 909-224-3406

Should an incident occur, refer to Attachment C, Section 1.4 and Attachment 4 for Stantec's procedures of notifications and reporting.

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Directions from 25864 Business Center Dr to Barstow Fwy

Google

25864 Business Center Dr
Redlands, CA 92374

Get on I-10 W

0.8 mi

- Head west on Business Center Dr toward Corporate Dr
  0.2 mi
- Turn right onto Mountain View Ave
  0.1 mi
- Turn left to merge onto I-10 W toward Los Angeles
  0.4 mi

Follow I-215 N and I-15 N to Exit 217

116 mi

- Merge onto I-10 W

2.0 mi

Take exit 72 toward San Bernardino/Barstow

0.8 mi

Merge onto I-215 N

13.9 mi

Merge onto I-15 N

58.0 mi

Keep left at the fork to stay on I-15 N

37.2 mi

Take exit 221 for Afton Rd

0.3 mi

Turn left onto Afton Rd

0.2 mi

Turn left to merge onto I-15 S

3.9 mi

Take exit 217

0.3 mi

Barstow Fwy
California

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

CHANGES TO THE JOURNEY MANAGEMENT PLAN

Date	Name	Change/Comment (be specific)

Attachment A

Training Certificates

Certificate of Completion

Presented to

Melissa Baernstein

of

Stantec Consulting Services Inc.

for successful completion of

Stantec Hazwoper Refresher Course v3, PS4 eLesson

Dated: **05-15-2015**

Certificate of Completion

Presented to

Mitchell Bohn

of

Stantec Consulting Services Inc.

for successful completion of

Stantec Hazwoper Refresher Course v3, PS4 eLesson

Dated: **04-30-2015**

Certificate of Completion

Presented to

Mark Zellmer

of

Stantec Inc.

for successful completion of

Stantec Hazwoper Refresher Course v3, PS4 eLesson

Dated: **06-21-2015**

6/22/15

Attachment B

Job Safety Analyses

1. Driving to/from the job Site (with no trailer) Job Safety Analysis (JSA)

POC	Development Team	Position/Title	Date	Reviewed By	Position/Title
X	Michael Philipp	West Region Health and Safety Manager	10/04/2006		
			05/27/2008	Michael Philipp	West Region Health and Safety Manager
		Site specific edits to this JSA were made by	03/19/2015	Kristy Edblad	HASP Originator
If most recent review date is more than six months old, then this JSA must be updated and reviewed again to remain current					
POC is the JSA development 'Point Of Contact'					

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightening) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability. Use Stop Work Authority as needed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Perform LMRA procedures.	Wear reflective vest for traffic, steel toed shoes, long sleeve shirt, hardhat, safety glasses with side shields, and high visibility work gloves.	Slip/trip/falls, struck by traffic	• Assess the potential hazards. Analyze how to reduce the risk. – STANTEC_____. • Review JSA – STANTEC_____.
Verify Journey Management Plan is complete and current		Unexpected traffic detours	• Assure directions are available and understood prior to commencing travel – STANTEC_____. • Pull the vehicle into a safe location if additional directions must be confirmed – STANTEC_____. • Increase following distance to allow extra time to stop if you are in

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Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			unfamiliar territory - STANTEC_____.
Verify a Vehicle Collision Kit, a 3-lb type ABC fire extinguisher, and other as needed emergency equipment is in the vehicle.	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt	Struck by another vehicle, pinch points, falling equipment	• Verify prepared field kit is in the vehicle. Inventory of the kit should include first aid kit, blood borne pathogen kit, fire extinguisher, collision kit, flashlight, etc. – STANTEC_____. • For cold weather areas the inventory should also include a bag of sand, a bag of salt, gloves, wool socks, wool caps, wool blankets, tire chains, small shovel and matches – STANTEC_____.
Perform perimeter walk around of vehicle for damage or unusual conditions, and complete the SWP-124a - Vehicle Pre-Use Checklist.	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt	Getting hit by a car, pinch points, slip/trip/fall, chemical contacts (grease or oil from car), overheated engine or break-down due to lack of critical fluids.	• Complete the SWP-124a - Vehicle Pre-Use Checklist prior to travel – STANTEC_____ • Wear safety vest and watch for cars during walk around– STANTEC_____. • Address all questionable items prior to departure – STANTEC_____. • Assure tires are properly inflated – STANTEC_____. • Assure there are no cuts or bulges in the sidewalls – STANTEC_____. • Assure windshield and window glass is clean and not cracked or crazed – STANTEC_____. • Lift wiper arms and check wiper blades for damage or deterioration – STANTEC_____. • Check behind vehicle for obstructions – STANTEC_____. • Check under vehicle engine for evidence of fluid leaks – STANTEC_____. • Check fluid levels– STANTEC_____. • Wear Nitrile gloves when checking under hood – STANTEC_____. • Verify all traffic control equipment is removed/safely stowed away – STANTEC_____. • Look for and identify possible slip, trip, fall, and pinch point hazards –

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Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			STANTEC_____. • Do not touch metal with moist or wet skin – STANTEC_____. • Scrape windows, front and rear windshields – STANTEC_____.
Enter and prepare to start vehicle	**SEAT BELT**, sunglasses if needed	Back or body strain, slip/trip/fall, blind spots, inability to signal intentions, streaking windshield, impaired vision.	• Be aware of footing, handholds, and head room when entering vehicle – STANTEC_____. • Adjust seat so back is fully supported, upper arms close to body, and pedals within easy reach – STANTEC_____. • Lower steering wheel so hands are below shoulders and shoulders are relaxed – STANTEC_____. • Check mirror adjustments each time vehicle is re-started – STANTEC_____. • Locate and test operations of front and rear turn signals, headlamps, wipers, and washer fluid – STANTEC_____. • Verify proper operation of climate controls – STANTEC_____. • Fasten seat belt – STANTEC_____. • Lock doors – STANTEC_____. • Driver's cell phone shall be turned off – STANTEC_____. • Turn on headlights if vehicle is not equipped with day-time running lights – STANTEC_____.

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Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Start engine and let vehicle warm up.	**SEAT BELT**, sunglasses if needed	Unexpected movement.	• Assure that transmission is in Park, or in neutral if a manual transmission, and that parking brake is set – STANTEC_____. • Refer to Manufacturers vehicle manual for warm up times – STANTEC_____. • Assure there is sufficient gas, oil and other critical fluids – STANTEC_____. • Check for proper function of warning lights – STANTEC_____. • Make any other necessary adjustments prior to driving – STANTEC_____.
Pull out of parking space.	**SEAT BELT**, sunglasses if needed	Collision with other vehicles, pedestrians, or stationary objects.	• Check mirrors and over shoulder in all directions prior to pulling out of parking space – STANTEC_____. • Give two short blasts on the horn and while looking over your shoulder – STANTEC_____. • Slowly pull out of the parking space being prepared to apply the brakes if needed – STANTEC_____. • Signal if parallel parked along a street – STANTEC_____. • Avoid reversing when possible – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____.
Drive a motor vehicle	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Use the Stantec safe driving techniques – STANTEC_____. • **Scan** – Scan your horizon – STANTEC_____. • **Timing** – Do you have enough time to stop – STANTEC_____. • **Alert** – Don't drive when you are tired – STANTEC_____. • **Next** – Anticipate what could happen next – STANTEC_____. • **Team** – Passengers need to assist – STANTEC_____. • **Elevate** – Elevate your line of site – STANTEC_____.

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Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
			• **Courteous** – Don't be the driver others dislike – STANTEC_____. • Driver's cell phone shall be turned off – STANTEC_____. • Scan major and minor intersections before entry (left-right-left) – STANTEC_____. • Scan mirrors frequently, at least one mirror every 5-8 seconds – STANTEC_____. • Avoid staring while evaluating road conditions – STANTEC_____. • Maintain adequate spacing between your vehicle and the vehicle in front of you (Rule of thumb is 1 second for every 10 miles per hour – STANTEC_____. • After stopping, allow vehicle in front to move for 3 seconds before accelerating – STANTEC_____. • Evaluate approaching merge before you reach them – STANTEC_____. • Avoid being boxed in by other vehicles – STANTEC_____. • Seek eye contact with other drivers – STANTEC_____. • Before changing lanes, signal well in advance, check mirrors and over shoulder, and allow adequate space before changing lanes – STANTEC_____. • Avoid blind spots – STANTEC_____. • Increase the distance between your vehicle and the vehicle in front of you at night and in inclement weather. – STANTEC_____
Pauses in travel	Safety vest, high visibility work gloves, steel-toe/shank boots, safety glasses, long-sleeved shirt, cell phone.	Struck by another vehicle, insecure connections	• If there is a pause in travel (i.e. rest stop, gas station) do another walk around the vehicle prior to resuming travel – STANTEC_____. • Be aware of nefarious characters – STANTEC_____.

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Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Reversing the vehicle	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Make all backing maneuvers slowly and cautiously – STANTEC_____. • Check mirrors and over shoulders – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____.
Parking	**SEAT BELT**, sunglasses if needed	Collision, injury or death to occupants or other parties.	• Park away from other cars when possible and when safe. – STANTEC_____ • Look for pull-through parking to avoid reversing – STANTEC_____. • Back into parking spot when possible and safe and legal – STANTEC_____. • If reversing with 2 or more personnel in the vehicle, then at least 1 person must exit the vehicle and act as a spotter. If alone, before getting in the car, assess the area for approaching pedestrians and vehicles – STANTEC_____. • Maintain cushion of safety from fixed objects – STANTEC_____. • Set parking brake – STANTEC_____.
POST-TRIP		Conditions worsen leading to mechanical failure possibly resulting in accident, injury, or death.	• Report vehicle problems immediately to company representative or rental car agency – STANTEC_____. • Schedule a tune-up or repair if necessary – STANTEC_____

Task 2. The fo.. .ving table addresses the concerns with hand augering for the ollection of soil samples.

POC	Development Team	Position/Title	Date	Reviewed By	Position/Title
	Michael Allen Philipp	West Region Health and Safety Manager	09/23/05		
			02/02/06	Michael Allen Philipp	West Region Health and Safety Manager
		Site specific edits to this JSA were made on and by	03/19/2015	Kristy Edblad	HASP Originator
If most recent review date is more than six months old, then this JSA must be updated and reviewed again to remain current					
POC is the JSA development 'Point Of Contact'					

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Last-Minute Risk Assessment (LMRA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightning) must also be considered. Each employee is empowered, expected, and has the responsibility to stop the work performed by him/herself or another co-worker if the working conditions or behaviors are considered unsafe. All employees should act proactively to identify and mitigate hazards to the safest extent of their ability.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Clear hand augering locations.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience.	• Reference SWP-213a Pre-Ground Disturbance Worksheet and Approval Form and SWP-213b Ground Disturbance Form • Coordinate with Site Manger (or designee) to minimize potential conflicts. • Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. • Mark out the proposed borehole locations. • Call underground utility locating service for public line location clearance and get list of utilities being contacted. If necessary, coordinate private line locator for private property. • Develop a traffic guidance and control plan with the client and local agencies as applicable. Plan may include use of delineators, barrier tape, jersey barriers, construction fence, etc. *(Refer to* **Section 4.0***)*. • **It is the responsibility of the SHSO to annotate the Site Plan with the Traffic Guidance and Control configuration if a formally developed Traffic Guidance and Control Plan is not available.**
Mobilize with proper equipment/supplies for	Gather necessary PPE. Reflective vest for traffic, steel toed and shank	Vehicle accident. Lifting hazards. Delay or	• Start project with Production Safety Meeting (**RMS2 Fit for Duty**).

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❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
hand augering/soil sampling.	shoes, hard hat, safety glasses with side shields, ear plugs/muffs, leather gloves for the non-chemical aspects of work as necessary; Wear an air purifying respirator with combination organic vapor/P-100 cartridges, and other PPE as needed. *(Use a North 7700 series half-face respirator or its equivalent. Best brand nitrile gloves or their equivalent. Howard Leight Max foam earplugs with an NRR of 33 or their equivalent. Tyvek, poly-coated chemical resistant suit or its equivalent).*	improper performance of work due to improper equipment onsite.	• Follow safe driving procedures. • Employ safe lifting procedures. • Review permit conditions (if applicable).
Visually clear proposed hand augering/soil sampling locations.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Underground installations.	• Complete Pre-Mobilization section of SWP-213a Pre-Ground Disturbance Worksheet and Approval Form and SWP-213b Ground Disturbance Form and adjust hand augering locations as necessary.
Set up necessary traffic guidance and control equipment. See **Section 4.0** for detailed plan.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic guidance and control equipment placement.	• Use buddy system for placing traffic guidance and control equipment. • Implement traffic guidance and control plan such as setting out delineators, construction fence and caution tape defining safety area. • Adhere to approved Traffic Guidance and Control Plans when working in roadways. • **It is the responsibility of the SHSO to annotate the Site Plan with the Traffic Guidance and Control configuration if a formally developed Traffic Guidance and Control Plan is not available.**
Set up exclusion zone(s) and workstations (hand augering and logging/sample collection).	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Struck by vehicle during set up. Slip, trip and fall hazards.	• Implement exclusion zone set-up. • **It is the responsibility of the SHSO to annotate the Site Plan with the Exclusion Zone set up.** • Set up workstations with clear walking paths to and from hand augering location. • Use delineators, construction fence, and/or safety tape as required.

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❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
			• If utilizing Visqueen, (sheet plastic), for sampling area, completely secure Visqueen to the pavement, dirt, etc. with duct tape, delineators, etc. Do not use objects that are hard to notice or could become a trip hazard themselves.
Commence hand augering .	Don required PPE as appropriate for this step: steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary. Wear chemical resistant gloves during handling of soil. Wear a half-face air-purifying respirator/mask with HEPA/P-100 filtration capability if necessary or as directed. *(Use a North 7700 series half-face respirator or its equivalent. Best brand nitrile gloves or their equivalent. Howard Leight Max foam earplugs with an NRR of 33 or their equivalent. Tyvek poly-coated suit or its equivalent).*	Back strain, exposure to chemical hazards, hitting an underground utility, repetitive motion.	• Initiate air quality monitoring as outlined in **Section 2.0 if required.** • Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of work area, readily available. • Stand upwind to avoid exposure whenever possible. • Use the organic vapor monitor aggressively to track the airborne concentration of contaminants close to potential sources such as the core as it is being raised from the hole, the core is opened, etc. • Evaluate any soil samples inside a Ziploc bag at arm's length. DO NOT EVALUATE THE SAMPLE WITH THE BAG OPEN. THIS WILL AVOID UNNECESSARY EXPOSURE. • Use proper lifting techniques and tools. • Complete the Pre-Drilling section of the Borehole Clearance Review form. • Decontaminate sampling equipment after collecting a sample and decontaminate hand augering equipment after each borehole. • Avoid twisting back during the operation; Decontaminate equipment after use. Decontamination will be accomplished by an Alconox wash with tap water rinse followed by a de-ionized or distilled water rinse. Collect rinse water in 5 gallon buckets and transfer to 55-gallon drums and stage drums in a location agreed upon by the SHSO and the Property/Station Owner/Manager.
Collect samples in accordance with sampling plan.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary. Wear appropriate air purifying respirator with combination organic vapor/P-	Cross-contamination, improper labeling or storage, exposure to site contaminants.	• Evaluate any soil samples inside a Ziploc bag at arm's length. DO NOT EVALUATE THE SAMPLE WITH THE BAG OPEN. THIS WILL AVOID UNNECESSARY EXPOSURE. • Decontaminate sampling equipment between each sampling run. Label samples in accordance with sampling plan. • Keep samples stored in proper containers, at correct temperature, and away from work area.

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❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
	100 cartridges if needed.		• Conduct air monitoring as outlined in **Section 2.0**. • Have appropriate respirator with combination organic vapor/P-100 cartridges within 3-5 feet of work area, readily available.
Proper clean up and disposal of broken sample container.	Safety glasses Long sleeved shirts Leather Work Gloves Hand Broom and Dust Pan A receptacle for the broken glass (something to contain the broken glass (double garbage bag, a box, or bucket).	Exposure to broken glass and acid (from water preservation acids) Injury	• Isolate area where broken glass is located - STANTEC/Contractor. • Determine if the sample container was preserved (did it have acid in it?) - STANTEC. • Determine what to contain the broken glass in, and where to dispose of the broken glass before beginning to pick up the glass - STANTEC. • Collect equipment needed to clean up and contain the broken glass - STANTEC/Contractor. • Minimize "picking up" broken glass pieces with your gloved hands. Use a dust pan if possible/practical - STANTEC/Contractor. • If broken glass is located inside a container (i.e. box), to the extent practical, leave glass inside box and put entire box into a garbage bag. Double bag if warranted. Place into dumpster - STANTEC/Contractor. • If broken glass is inside a cooler, remove all other sample containers and place in a safe location, then use hand broom and dust pan to sweep up glass in cooler - STANTEC. • After cleanup is complete, contact your Project Manager to report this Loss/Incident - STANTEC.
Supervisor/SHSO must confirm all boreholes are closed, filled in and/or capped.		Possible injuries and damage to property due to stepping into or driving over the well.	• Visually inspect each and every borehole.
Perform personal decontamination procedures.	As worn in exclusion zone.	Slips/trips/falls. Splashes, chemical contamination. Contact with contaminated materials.	• Perform personal (dry) decontamination procedures – STANTEC/Contractor. ▪ Drop off tools and perform equipment decontamination procedures on the equipment - STANTEC/Contractor. ▪ Perform a "dry" decontamination on boots using a stiff bristle fiberglass long handled brush - STANTEC/Contractor.

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❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
			▪ Remove inner/outer gloves and dispose of properly - STANTEC/Contractor. ● Wash hands, face, arms and neck (any exposed skin) using sink or bottled water. If water isn't available, use baby wipes or a similar product - STANTEC/Contractor.
Clean site/demobilize.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary.	Traffic. Safety hazard left on site. Lifting hazards.	● Use buddy system as necessary to remove traffic guidance and control equipment. ● Leave site clean of refuse and debris. ● Clearly mark/barricade any borings that need later topping off or curing. ● Notify site personnel of departure, final well locations and any cuttings/purge water left onsite. ● Use proper lifting techniques
Package and deliver samples to lab.		Bottle breakage, back strain.	● Handle and pack bottle carefully (bubble wrap bags are helpful). Use proper lifting techniques.

Attachment C

General Safety Information for ALL SITES

0 General Safety Information

1.1 Emergency Response Procedures: Evacuation

In the event of an on-site or off-site emergency requiring site evacuation (e.g., fire, release, explosion, etc), the following procedures will be followed:

- Stop Work and notify the SHSO.
- Evacuate the site and go to the emergency meeting location if safe conditions exist. The evacuation point is shown in the sketch below or following this page. If safe conditions prevent evacuation to this location, move upwind, away from the source of the emergency. Maintain a safe distance from the source.
- Check in with the SHSO at the emergency meeting location. The SHSO will take attendance once all personnel have gathered.
- Dial the appropriate emergency response number(s). State the problem clearly and completely and remain on the line until dismissed by the operator.
- Only attempt extinguishing small fires with portable dry chemical (A-B-C) extinguishers on-hand. When in doubt, emergency response personnel shall be notified.
- Do not reenter the emergency site without specific approval from emergency response personnel.

Randomly scheduled evacuation drills may be conducted at any time during field activities.

2 Emergency Response Procedures: Injury or Illness

If an injury or illness occurs, take the following action:

- Stop Work, stabilize the situation, and secure the site.
- Administer First Aid for the person immediately using a first aid and blood-borne pathogens kit.
- Determine if emergency response (fire/ambulance) is necessary. If so, call appropriate emergency response numbers on closest available phone. Provide the location of the injured person and other details as requested. Drive the individual to the hospital only if it makes sense.
- If emergency decontamination is required:
    - Immediately remove any contaminated personal protective equipment (PPE) or clothing. (EXCEPTION: if the person has been burned, only emergency medical services (EMS) personnel should remove any clothing)
    - If possible, wash contaminated area with mild soap and water.
    - Use eyewash station if necessary.
    - Personnel assisting the contaminated individual will don the proper PPE to avoid exposure.
- For all injuries or illness, even minor cuts, scratches, and bruises, notify the SHSO immediately. The SHSO is responsible for initiating incident reporting procedures immediately after the victim(s)/site have been stabilized. The SHSO will assume responsibility during a medical emergency until more qualified EMS personnel arrive at the site as needed.
- As promptly as possible following an injury or illness, the Project Manager or designee shall ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

1.2.1 Injuries or Illnesses Requiring Hospital Service WITHOUT Ambulance Service

Injuries or illnesses requiring hospital service without ambulance services include minor lacerations, minor sprains, etc. The following procedures will be taken immediately:

- The SHSO will ensure prompt transportation of the injured person to a physician or hospital.
- A representative of Stantec will always drive the injured employee to the medical facility and remain at the facility until the employee is ready to be discharged.
- If the driver of the vehicle is not familiar with directions to the hospital, a second person shall accompany the driver and the injured employee and navigate the route to the hospital.
- If it is necessary for the SHSO to accompany the injured employee, provisions will be made to have another employee, properly trained and certified in First Aid, to act as the temporary SHSO.
- If the injured employee is able to return to the job site the same day, he/she will bring a statement from the doctor containing such information as:
  - Date
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, regular or light duty
  - Date he/she is to return to doctor for follow-up appointment, if necessary
  - Signature and address of doctor
- As promptly as possible following an injury or illness, ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

If the injured employee is unable to return to the job site the same day, the employee who transported him will bring this information back to the job site and report it to the Project Manager, office OSEC, Clint Reuter Stantec's Practice and Risk Management (PRM), and their regional Human Resources Specialist.

1.2.2 Injuries or Illnesses Requiring Hospital Service WITH Ambulance Service

Injuries or illnesses requiring transport by ambulance include life-threatening conditions such as severe head injuries, amputations, heart attacks, heat stroke, etc. The following procedures will be taken immediately:

- Call for ambulance service and notify the SHSO.
- Administer First Aid until ambulance service arrives or until relieved by EMS personnel.
- While the injured employee is being transported, the SHSO will contact the medical facility to be utilized.
- One designated representative will accompany the injured employee to the medical facility and remain at the facility until final diagnosis and other relevant information is obtained.
- As promptly as possible following an injury or illness, ensure appropriate notification has been made to the family of the individual involved.
- Please see Section 1.6 for incident reporting procedures.

1.2.3 Death of an Individual or Hospitalization of Three or More Employees

The emergency response procedures above will be followed. If the injured person dies, follow the incident reporting procedures. PRM will notify the Human Resources Department, local law enforcement officials immediately. Human Resources will notify the local OSHA office within 8 hours of a fatality or the hospitalization of three or more employees.

1.3 Emergency Response Procedures: Spills or Cut Lines

Prevent problems by documenting the location of underground lines (e.g., product, sewer, electrical, gas, telephone, fiber optic) before starting site work. If a line or tank is drilled through, or a leak occurs, document the event as soon as possible using the Incident Investigation Report.

the event of a spill/release, follow this plan:

- Stop Work, stabilize the situation, and secure the site.
- Stay upwind of the spill/release.
- Wear appropriate PPE.
- Turn off equipment and other sources of ignition, but only from a safe distance.
- Turn off pumps and shut valves to stop the flow/leak, but only from a safe distance.
- Plug the leak or collect drippings, when possible, if you can do this safely and within your level of training.
- Use sorbent pads to collect product and impede its flow, if possible and only if you can do it safety and within your level of training.
- Call Fire Department immediately if fire or explosion risk is involved (i.e. natural gas involved).
- Notify the SHSO to begin the incident reporting procedures. All spills/releases will be reported to the Client Project Manager within 24 hours.
- Determine if the client wants Stantec to repair the damage or if the client will use an emergency repair contractor of their choice.
- Based on agreements, contact emergency spill contractor for containment of free product. The contacts for this project will be the local fire department.
- Advise the client of spill discharge notification requirements and determine who will complete and submit forms. *(Do not submit or report to agencies without the client's consent.)* Document each interaction with the client and regulators and note, in writing; name, title, authorizations, refusals, decisions, and commitments to any action.
- Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soils/product may meet criteria for hazardous waste.
- Do not sign manifests as generator of wastes unless you have been given appropriate training and approval for signing on behalf of the generator; contact Project Manager or Waste Compliance Manager to discuss waste transportation.
- If the spill extends into waterways, the Coast Guard and the National Response Center shall be notified immediately by the client (or by the Stantec Project Manager with the client's permission).

The Project Manager will involve the client/generator in any Incident Investigation process. The client/generator is under obligation to report to the proper government agencies.

1.4 Incident Reporting Procedures

This section outlines the procedures that will be followed in the event of an incident. A flowchart and a table with necessary contact information (phone numbers, fax numbers, and email addresses) for incident reporting are also provided.

In the event of an incident:

1. Stop Work, stabilize the situation, and secure the site.

2. Report all incidents, injuries, spills, non-conformance events, permit exceedances and potential incidents (near losses) immediately to the SHSO, who will then notify the Stantec Project Manager. **If you are unsure whether or not something should be reported, Stop Work and proceed with notification anyway.**

3. The Stantec Project Manager will make internal notifications* to the following:
   - Office OSEC
   - At least one Stantec Senior HSE Team Member (Clint Reuter, Tony Wong);
   - The Account Manager (Jack Hardin)
   - **If a team member does not answer, leave a detailed message with a number at which you can be reached, and follow-up with another call later.**

*Internal notification is a Stantec requirement. Internal reporting requirements were established primarily to provide a pathway for employees to obtain the assistance of company health and safety experts during an incident or significant near loss. Secondary to obtaining expert assistance, internal notification is required to help Stantec track injuries and near losses that occur to our employees. The data captured during the reporting process is then used to identify trends that can be pro-actively addressed to improve overall health and safety within our company. This helps everyone go home safely.

4. The Stantec Project Manager will obtain concurrence from at least one of Stantec's HSE Team Members and the Account Manager regarding Caltrans' reporting requirements.

5. A: If the incident is determined to not be reportable to Caltrans, the SHSO, office OSEC, and Stantec Project Manager will submit an initial copy of the Stantec Incident Investigation/Near Loss Investigation (IINLI) report to Stantec's PRM group in Edmonton (via phone and fax), and Clint Reuter within 24 hours of the event. The final report is due within 5 business days.

   B: If the incident is determined to be reportable to Caltrans, the Stantec Project Manager and Account Manager will:
   - Notify Caltrans and also provide a written report of the incident on a Stantec IINLI form to Stantec's PRM group (via fax and phone), and Clint Reuter within 24 hours and a final report within 5 business days.

Stantec Energy & Resources Incident Reporting

Incident occurs:
Stop work, stabilize the situation, secure the site & provide immediate care. Stantec employee or contractor must immediately report the incident the Stantec Project Lead. Injured personnel requiring medical attention will transport the injured person to medical care and remain until released.

Site Lead or Contractor Supervisor notifies Project Manager & Stantec Area HS Lead Verbal notification and email an **INCIDENT QUICK REPORT** notification within **1 hour. Client Reporting Schedule Starts (next Page**

HSE TEAM:
Doug Schaefer (1-780-235-3557)
doug.schaefer@stantec.com
Tony Wong (1-805-234-6227)
tony.wong@stantec.com)
Terry Arseneau (1-403-702-6686)
terry.arseneau@stantec.com
Scott Purves (1-403-542-9751)
scott.purves@stantec.com
Adam Taylor (1-403-585-3238)
adam.taylor@stantec.com
Marty Ringen (1-780-862-3470)
marty.ringen@stantec.com
Don Johnson (1-778-385-5846)
don.johnson@stantec.com

HIGH POTENTIAL INCIDENT

Conference Call Review YES or NO

YES

Senior Management Team
4-Hour HPI Flash Alert Notice Team
(Email-description, classification & path forward)
Rocco Meraglia (1-403-619-9863)
rocco.meraglia@stantec.com
Bob Seager (1-403-540-0259)
bob.seager@stantec.com
Don Belliveau (1-506-471-3238)
don.belliveau@stantec.com
Kirk Morrison (1-403-650-3402
kirk.morrison@stantec.com
Nick Poushinsky (1-250-413-7404)
nick.poushinsky@stantec.com
Tino Di Manno (403-716-8202)
tino.dimanno@stantec.com
Peter Salusbury (1-778-837-0096)
peter.salusbury@stantec.com

NO

Stantec Site Lead, Project Manager or Contractor Supervisor issues RMS 3 Incident Report within 24- hours.

Finalized RMS 3 forwarded to Corporate HSE

Stantec Site Lead, Project Manager or Contractor Supervisor issues RMS 3 Incident Report within 24-hours.

Stantec Site Lead & Area HSE Lead conducts investigation following the corporate investigation process. A report is issued within 5 days to the Stantec Energy & Resources Sr. Mgt. Team identifying root causes and implementing barriers to prevent re-occurrence. Senior Management Team signs off on the Incident report.

Based on clients expectations a more formal Incident Cause and Analysis Method may <u>also</u> be used to support for the investigation.

HSE develops Lessons Learned Report for corporate-wide / client distribution

Client Reporting Schedule
"No client requirements"

Notifications

Stantec Account and HSE Support Contacts - notify within 1 hour
See Project Team Phone Numbers for
National Account Manager (NAM)
Alternate NAM
Health and Safety Coordinator

Client - notify within 24 hours unless high potential (notify within 1 hour) :
See Project Team Phone Numbers for
Client

Incident Investigation Report within 5 days
See Project Team Phone Numbers for
Client

Incident Type	Definition (Current Stantec Corporate Definitions)
Report Only	An employee needs to document a happening which may be relevant in the future. Examples include: witnessing an accident or a non-work-related injury, an incident on a worksite not involving Stantec personnel, physical signs and symptoms related to workstation ergonomics and/or materials handling
Incident	Any unplanned event that adversely affects our employees, our business, its physical assets, the clients we serve, or the environment.
Serious Incident	Any work-related incident where there is property damage greater than $5000, employee hospitalization, fatality, facility/site shutdown, or involves a third party (public). A near miss with the potential for any of the above consequences would also be considered a serious incident.
Near-Miss	Any event that could adversely affect our employees, our business, its physical assets, the customers we serve, or the environment, given any change in circumstances.
Hazard Identification	The identification of a condition or practice that has the potential for an incident or loss.
Property Damage (Vehicle)	Damage to any vehicle used for Stantec business, includes normal wear and tear (e.g. tire damage, minor scratches, stone chips to paint or windshield, mechanical wear), whether the vehicle is attended or not.
Property Damage (Other)	Damage to equipment, materials, etc., excluding vehicle damage.
Theft	Theft of any property under the care and control of Stantec.
Non-compliance	Where an employee or project is identified as operating outside the parameters of Stantec policy and/or legislative requirements.

Incident Type	Definition (Current Stantec Corporate Definitions)
***Near Miss - Injury**	An employee reports physical symptoms related to work activities which have not yet resulted in treatment of any type, nor have they impacted the employee's working ability.
First Aid	An injury or illness requires first aid treatment only
Medical Treatment	Medical treatment above and beyond first aid, without loss of work time beyond the day of injury or illness.
Restricted Work	Change in job duties and/or shortened work day resulting from a work-related injury or illness, affecting the employee's ability to engage in one or more routine work activities (i.e. an activity carried out at least once per week).
Lost Time	Health care professional recommends one or more days away from work due to a work-related injury or illness.
Fatality	Work related fatality.
Motor Vehicle Incident	An incident involving a vehicle driven by an employee, whether on or off the road, that has resulted in damage to assets, the environment or Stantec's reputation, irrespective of cost or responsibility for cause. This does not include damage as a result of normal wear and tear (see Property Damage – Vehicle).
Spill or Release	Discharge of material or substance which is reportable to a third party such as a regulatory agency or a client, or which may expose an employee to a health risk.
Contractor Recordable Injury	Definitions as above, including Medical Aid – No Lost Time, Restricted Work, Lost Time or Fatality) but applied to a Stantec subcontractor.
Fire / Explosion / Flood	A natural or man-made hazard including fire, explosion or flood that causes damage or injury.
Violence or Harassment	Any act in which a person is abused, threatened, intimidated or assaulted in the course of their employment.
3rd Party Incident	Incident involves someone who is not party to the work being completed, but may be impacted. Example: Member of the public.
Utility Strike	Compromising or disrupting of service to buried and/or overhead utility service lines, municipal or third party owned utility services, UST system components and other subsurface property service lines or systems
Work Refusal	An employee has enacted their legislated Right to Refuse dangerous work.
Stop Work Authority	An employee has enacted Stantec's Stop Work Authority provisions upon observing the presence of unsafe conditions associated with Stantec work activities. All employees have the right to stop or refuse work when they perceive an immediate danger to their health and safety or that of their colleagues.
	For Consideration
High Potential Incident	A Near Miss, First Aid injury, Medical Aid injury, Modified Work injury or Lost Time injury can often have the potential to be a fatality or a Significant Injury with disability if the circumstances would have been slightly different. For example, a Lost Time incident due to a back soft tissue injury would only be counted as a Lost Time with low potential for a serious injury, whereas a First Aid incident involving a remotely operated machine striking a worker and imparting a small cut would be counted as a First Aid incident with high potential for a Fatality or a Significant Injury. Any incident with energy exchange that had the potential to be a Fatality or a Significant Injury if the circumstances would have been slightly different should be counted as High Potential; all others should be counted as low potential and reported as normal incidents (see above). In terms of Risk Assessment language when the exposure, probability and consequence of the hazard(s) that created the injury calculate to a High or Extreme Risk Level, the incident should be counted as a High Potential; all others should be counted as low potential.

Incident Type	Definition (Current Stantec Corporate Definitions)
Critical Risk Control	**TBA** 1. Vehicles and Mobile Equipment 2. Hazardous Materials Management 3. Equipment Safeguarding 4. De-Energization, Isolation, Lock-Out, and Tagging 5. Working at Heights 6. Lifting Operations 7. Confined Space 8. Excavations and Trenching 9. Ergonomic & Manual Handling 10. Working on Ice or water 11. Wildlife Interactions

3.0 Other Potential Site Hazards

3.1 Physical Hazards

Physical hazards may include traffic, uneven terrain, sharp debris, fencing, holes, noise, etc. Thusly, a constant awareness of one's location is paramount to your personal safety. However, knowing where you are, the level of noise produced by associated machinery and hearing protection may hinder your ability to hear vocal warnings. "Keep your head on a swivel" as the order of the day.

Be aware of the location of all of the equipment activities in your work area.

To protect yourself, always look before you step and wear proper PPE for the task being performed.

3.2 Weather and Natural Disasters

Hazards associated with weather and natural disasters may include, but are not limited to, effects of extreme heat (heat exhaustion, heat stroke), effects of extreme cold (hypothermia, frostbite), high winds, heavy rain, lightning, heavy snow, ice, earthquakes, landslides, flooding, etc.

The most likely hazards at the site are effects of extreme heat (heat exhaustion, heat stroke) and earthquakes.

To protect yourself from heat, perform the heaviest work during the coolest part of the day; drink plenty of cool water; wear light, loose-fitting, breathable clothing; and take frequent, short breaks in the shade. Certain medications, having a previous heat-related illness, and wearing PPE such as a respirator or protective suit can increase risk.

Heat Exhaustion

What are the symptoms?

HEADACHES; DIZZINESS OR LIGHTHEADEDNESS; WEAKNESS; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; UPSET STOMACH; VOMITING; DECREASED OR DARK-COLORED URINE; FAINTING OR PASSING OUT; AND PALE, CLAMMY SKIN

What should you do?

- Act immediately. If not treated, heat exhaustion may advance to heat stroke or death.
- Move the victim to a cool, shaded area to rest. Don't leave the person alone. If symptoms include dizziness or lightheadedness, lay the victim on his or her back and raise the legs 6 to 8 inches. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or applying a wet cloth to the person's skin.
- Call 911 for emergency help if the person does not feel better in a few minutes.

Heat Stroke–A Medical Emergency

What are the symptoms?

DRY, PALE SKIN WITH NO SWEATING; HOT, RED SKIN THAT LOOKS SUNBURNED; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; SEIZURES OR FITS; AND UNCONCIOUSNESS WITH NO RESPONSE

What should you do?

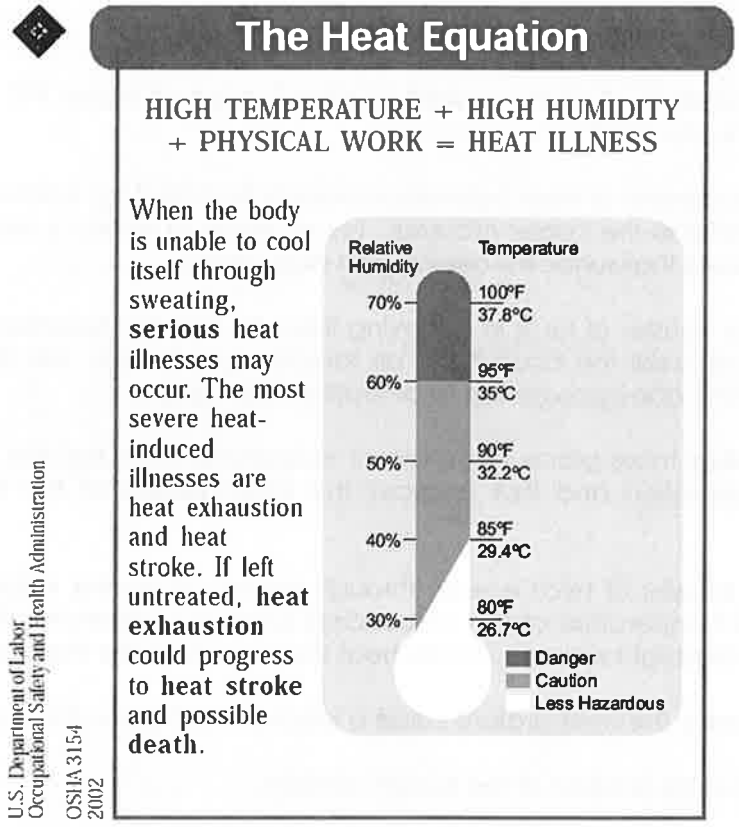
- Call 911 for emergency help immediately.
- Move the victim to a cool, shaded area. Don't leave the person alone. Lay the victim on his or her back. Move any nearby objects away from the person if symptoms include seizures or fits. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) if alert enough to drink something, unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or wiping the victim with a wet cloth or covering him or her with a wet sheet.
- Place ice packs under the armpits and groin area.

How can you protect yourself and your coworkers?

- Learn the signs and symptoms of heat-induced illnesses and how to respond.
- Train your workforce about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Build up tolerance to the heat and the work activity slowly. This usually takes about 2 weeks.
- Use the buddy system, with people working in pairs.
- Drink plenty of cool water, about a cup every 15 to 20 minutes.
- Wear light, loose-fitting, breathable clothing, such as cotton.
- Take frequent, short breaks in cool, shaded areas to allow the body to cool down.
- Avoid eating large meals before working in hot environments.
- Avoid alcohol or beverages with caffeine. These make the body lose water and increase the risk for heat illnesses.

What factors put you at increased risk?

- Taking certain medications. Check with your health-care provider or pharmacist to see if any medicines you are taking affect you when working in hot environments.
- Having a previous heat-induced illness.
- Wearing personal protective equipment such as a respirator or protective suit.



HEAT STRESS

INTRODUCTION

Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees engaged in such operations. Outdoor operations conducted in hot weather, such as construction, refining, asbestos removal, and hazardous waste site activities, especially those that require workers to wear semi-permeable or impermeable protective clothing, are also likely to cause heat stress among exposed workers.

CAUSAL FACTORS

Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension all affect a person's sensitivity to heat. However, even the type of clothing worn must be considered. Prior heat injury predisposes an individual to additional injury. It is difficult to predict just who will be affected and when, because individual susceptibility varies. In addition, environmental factors include more than the ambient air temperature. Radiant heat, air movement, conduction, and relative humidity all affect an individual's response to heat.

DEFINITIONS

The American Conference of Governmental Industrial Hygienists (2002) states that workers should not be permitted to work when their deep body temperature exceeds 100.4°F (38 °C).

Heat is a measure of energy in terms of quantity.

A **calorie** is the amount of heat required to raise 1 gram of water 1°C (based on a standard temperature of 16.5 to 17.5°).

Conduction is the transfer of heat between materials that contact each other. Heat passes from the warmer material to the cooler material. For example, a worker's skin can transfer heat to a contacting surface if that surface is cooler, and vice versa.

Convection is the transfer of heat in a moving fluid. Air can be described as a fluid. Air flowing past the body can cool the body if the air temperature is cool. On the other hand, air that exceeds 35°C (95°F) can increase the heat load on the body.

Evaporative cooling takes place when sweat evaporates from the skin. High humidity reduces the rate of evaporation and thus reduces the effectiveness of the body's primary cooling mechanism.

Radiation is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

Globe temperature is the temperature inside a blackened, hollow, thin copper globe.

Metabolic heat is a by-product of the body's activity.

Natural wet bulb (NWB) temperature is measured by exposing a wet sensor, such as a wet cotton wick fitted over the bulb of a thermometer, to the effects of evaporation and convection. The term natural refers to the movement of air around the sensor.

Dry bulb (DB) temperature is measured by a thermal sensor, such as an ordinary mercury-in-glass thermometer, that is shielded from direct radiant energy sources.

HEAT DISORDERS AND HEALTH EFFECTS

HEAT STROKE

Heat Stroke occurs when the body's system of temperature regulation fails and body temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. **Heat stroke is a medical emergency.** The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature, e.g., a rectal temperature of 41°C (105.8°F). If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict. If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased (as long as the temperature of the air is less than 95° F) to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible.

The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment. Regardless of the worker's protests, no employee

suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

HEAT EXHAUSTION

The signs and symptoms of heat exhaustion are headache, nausea, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment. Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a real potential medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment and given fluid replacement. They should also be encouraged to get adequate rest.

HEAT CRAMPS

Heat Cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (±0.3% sodium chloride), excess salt can build up in the body if the water lost through sweating is not replaced.

Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

HEAT COLLAPSE

Heat Collapse ("Fainting"). In heat collapse, the brain does not receive enough oxygen because blood pools in the extremities. As a result, the exposed individual may lose consciousness. This reaction is similar to that of heat exhaustion and does not affect the body's heat balance. However, the onset of heat collapse is rapid and unpredictable. To prevent heat collapse, the worker should gradually become acclimatized to the hot environment.

HEAT RASHES

Heat Rashes are the most common problem in hot work environments. "Prickly heat", as heat rashes are sometimes called, is manifested as red papules on the skin and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

HEAT FATIGUE

A factor that predisposes an individual to heat fatigue is lack of acclimatization. The use of a program of acclimatization and training for work in hot environments is advisable. Acclimatization can take several weeks depending on the individual involved and the difference in temperature between the location from which the person is coming and the temperature to which he/she is going. The signs and symptoms of heat fatigue include impaired performance of skilled sensorimotor, mental, or vigilance

jobs. There is no treatment for heat fatigue except to remove the heat stress before a more serious heat-related condition develops.

CONTROL MEASURES FOR HEAT STRESS

Ventilation, air-cooling, fans, shielding, and insulation are the five major types of engineering controls used to reduce heat stress in hot work environments. Heat reduction can also be achieved by using power assists and tools that reduce the physical demands placed on a worker.

However, for this approach to be successful, the metabolic effort required for the worker to use or operate these devices must be less than the effort required without them. Another method is to reduce the effort necessary to operate power assists. Workers should be allowed to take frequent rest breaks in a cooler environment.

ACCLIMATIZATION

The human body can adapt to heat exposure to some extent. This physiological adaptation is called acclimatization. After a period of acclimatization, the same activity will produce fewer cardiovascular demands. The worker will sweat more efficiently (causing better evaporative cooling), and thus will more easily be able to maintain normal body temperatures.

FLUID REPLACEMENT

Cool (50°-60°F) water or any cool liquid (except alcoholic beverages, tea and coffee) should be made available to workers to encourage them to drink small amounts frequently, e.g., one cup every 20 minutes. Ample supplies of liquids should be placed close to the work area. Although some commercial replacement drinks contain salt, this is not necessary for acclimatized individuals because most people add enough salt to their summer diets.

GENERAL VENTILATION

General ventilation is used to dilute hot air with cooler air (generally cooler air that is brought in from the outside). This technique clearly works better in cooler climates than in hot ones. A permanently installed ventilation system usually handles large areas or entire buildings. Portable or local exhaust systems may be more effective or practical in smaller areas.

AIR TREATMENT/AIR COOLING

Air treatment/air cooling differs from ventilation because it reduces the temperature of the air by removing heat (and sometimes humidity) from the air.

Air conditioning is a method of air-cooling, but it is expensive to install and operate. An alternative to air conditioning is the use of chillers to circulate cool water through heat exchangers over which air from the ventilation system is then passed; chillers are more efficient in cooler climates or in dry climates where evaporative cooling can be used.

Local air cooling can be effective in reducing air temperature in specific areas. Two methods have been used successfully in industrial settings. One type, cool rooms, can be used to enclose a specific workplace or to offer a recovery area near hot jobs. The second type is a portable blower with built-in air chiller. The main advantage of a blower, aside from portability, is minimal set-up time.

Another way to reduce heat stress is to increase the airflow or convection using fans, etc. in the work area (as long as the air temperature is less than the worker's skin temperature). Changes in air speed can help workers stay cooler by increasing both the convective heat exchange (the exchange between the skin surface and the surrounding air) and the rate of evaporation. Because this method does not actually cool the air, any increases in air speed must impact the worker directly to be effective.

If the outdoor air temperature (i.e. the dry bulb temperature) is higher than 95°F (35 °C) the hot air passing over the skin can actually make the worker hotter (i.e. add to the overall body heat load). When the temperature is >95°F and the air is dry, evaporative cooling may be improved by air movement, although this improvement will be offset by the convective heat. When the temperature exceeds 95°F and the relative humidity is 100%, air movement will make the worker hotter. Increases in air speed have no effect on the body temperature of workers wearing vapor-barrier clothing.

HEAT CONDUCTION

Heat conduction methods include insulating the hot surface that generates the heat and changing the surface itself.

Simple engineering controls, such as shields, can be used to reduce radiant heat i.e. heat coming from hot surfaces within the worker's line of sight. Surfaces that exceed 95°F, and this is very common on hot summer days, are sources of infrared radiation that can add to the worker's heat load. Flat black surfaces absorb heat more than smooth, polished ones. Having cooler surfaces surrounding the worker, assists in cooling because the worker's body radiates heat toward them.

With some sources of radiation, such as heating pipes, it is possible to use both insulation and surface modifications to achieve a substantial reduction in radiant heat. Instead of reducing radiation from the source, shielding can be used to interrupt the path between the source and the worker. Polished surfaces make the best barriers, although special glass or metal mesh surfaces can be used if visibility is a problem.

Shields should be located so that they do not interfere with airflow, unless they are also being used to reduce convective heating. The reflective surface of the shield should be kept clean to maintain its effectiveness.

ADMINISTRATIVE CONTROLS/SAFE WORK PRACTICES

Training is the key to good work practices. Unless all employees understand the reasons for using new, or changing old, work practices, the chances of such a program succeeding are greatly reduced. NIOSH (1986) states that a good heat stress training program should include least the following components:

- Knowledge of the hazards of heat stress;
- Recognition of predisposing factors, danger signs, and symptoms;
- Awareness of first-aid procedures for, and the potential health effects of, heat stroke and heat exhaustion;

- Employee responsibilities in avoiding heat stress;
- Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments;
- Use of protective clothing and equipment; and
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation programs.

Hot jobs should be scheduled for the cooler part of the day when possible, and routine maintenance and repair work in hot areas should be scheduled for the cooler seasons of the year.

Measurement is often required of those environmental factors that most nearly correlate with deep body temperature and other physiological responses to heat. At the present time, the Wet Bulb Globe Temperature Index (WBGT) is the most used technique to measure these environmental factors. WBGT values are calculated by the following equations:

WET BULB GLOBE TEMPERATURE INDEXES (WBGI)

Indoor or outdoors with no solar load

$$WBGT = 0.7NWB + 0.3GT$$

Outdoors with solar load

$$WBGT = 0.7NWB + 0.2GT + 0.1DB$$

Where: WBGT = Wet Bulb Globe Temperature Index
NWB = Natural Wet Bulb Temperature
DB = Dry Bulb (air) Temperature
GT = Globe Thermometer Temperature

The determination of WBGT requires the use of a black globe thermometer, a natural (static) wet-bulb thermometer, and a dry-bulb thermometer. The measurement of environmental factors shall be performed as follows:

1. The range of the dry and the natural wet-bulb thermometers should be -5°C to +50°C, with an accuracy of ±0.5°C. The dry bulb thermometer must be shielded from the sun and the other radiant surfaces of the environment without restricting the airflow around the bulb. The wick of the natural wet bulb thermometer should be kept wet with distilled water for at least one-half hour before the temperature reading is made. It is not enough to immerse the other end of the wick into a reservoir of distilled water and wait until the whole wick becomes wet by capillarity. The wick must be wetted by direct application of water from a syringe one-half hour before each reading. The wick must cover the bulb of the thermometer and an equal length of additional wick must cover the stem above the bulb. The wick should always be clean, and new wicks should be washed before using.

2. A globe thermometer, consisting of a 15 cm (6-inch) in diameter hollow copper sphere painted on the outside with a matte black finish, or equivalent, must be used. The bulb or sensor of a thermometer (range -5°C to +100°C with an accuracy of ±0.5°C) must be fixed in the center of the sphere. The globe thermometer should be exposed at least 25 minutes before it is read.

3. A stand should be used to suspend the three thermometers so that they do not restrict free airflow around the bulbs and the wet-bulb and globe thermometer are not shaded.

4. It is permissible to use any other type of temperature sensor that gives a reading similar to that of a mercury thermometer under the same conditions.

5. The thermometers must be placed so that the readings are representative of the employee's work or rest areas, as appropriate.

Once the WBGT has been estimated, employers can estimate workers' metabolic heat load and use the ACGIH method to determine the appropriate work/rest regimen, clothing, and equipment to use to control the heat exposures of workers in their facilities.

The California Occupational Safety and Health Standards Board confirmed that new major changes to the state's heat illness prevention regulations will take effect on **May 1, 2015**. In response to the new regulations, we must review and update our heat illness prevention program to comply with the new rule changes. Cal/OSHA has provided a summary chart entitled which can be found at the following link (Guidance Chart). In addition, Cal/OSHA has updated their Q&A webpage on Heat Illness Prevention Enforcement.

Outlined below are the current California requirements for outdoor projects (as of May 1, 2015):

REQUIREMENTS FOR OUTDOOR PLACES OF EMPLOYMENT

- **Water** – Must Be Fresh, Pure, Suitably Cool, Free And As Close As Practicable To Work Areas
    - PM's must ensure that employees have access to potable drinking water that is fresh, pure, suitably cool, and provided to employees free of charge.
    - A new requirement is that the water must be "located as close as practicable to the areas where the employees are working."
- **Shade** – Required If Above 80 Degrees; Still Required If 80 Degrees Or Below Upon Employee Request
    - Access to shade is required when the temperature exceeds 80 degrees Fahrenheit (previously, the standard was 85 degrees).
    - The area of shade now must be large enough to accommodate the number of employees on cool-down periods, rest breaks, and must accommodate the number of employees who remain onsite during meal periods.
    - **Please note** – Employers must provide shade upon an employee's request, regardless of the temperature.
- **Cool-Down Periods** – Employees Must Be Monitored, Asked About Heat Illness Symptoms, And Provided A Minimum Of Five Minutes Of Net Resting Time
    - Employees must be allowed and encouraged to take a cool-down period when they feel the need to do so to protect themselves from overheating.
    - However, an employee who takes a cool-down period:
        1. Must be monitored and asked if he or she is experiencing symptoms of heat illness;
        2. Must be encouraged to stay in the shade;
        3. Must not be ordered back to work before he/she has had at least five minutes of net resting time
        4. Must not be ordered back to work "until any signs or symptoms of heat illness have abated," even if this abatement period takes longer than five minutes.
    - When an employee, on cool-down period exhibits or reports symptoms of heat illness, the employer must provide appropriate first aid or implement emergency response procedures.

- **High-Heat Procedures** – Pre-Shift Meetings, Day-Long Monitoring, and Emergency Preparedness
    - Employers must have high-heat procedures, triggered at 95 degrees. There are several new additions to the high-heat requirements.
        1. When the temperature reaches or exceeds 95 degrees, the PM's must now conduct meetings with employees before commencing work.

        - During these "pre-shift" meetings, which are on paid time, the PM must review the high-heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take cool-down periods when necessary.
    2. During the workday, the PM must ensure effective monitoring/observation for signs of heat illness, such as through adopting a buddy system, tasking a supervisor with monitoring crews of 20 or fewer employees, or any other "effective means of observation."
    3. The PM must now designate at least one employee at each worksite as being a person who is authorized to call for emergency medical services if the need arises.

    For projects in agriculture, when the temperature reaches or exceeds 95 degrees, the PM must do more than make cool-down periods available. Instead, the PM must "ensure" that the employees take a 10-minute cool-down period every two hours.
        - These 10-minute cool-down periods for agricultural employees may be taken concurrently with any other meal period or rest breaks required by law so long as their timing coincides with the timing of meal period and/or rest breaks.

- **Emergency Response Procedures** – Ensuring That Employees Can Call For Help, Receive Immediate Onsite Attention From Supervisors, And Attention From Emergency Medical Responders:
    - The revised regulations now specifically require "effective" emergency response procedures in heat illness prevention programs. Such requirements include:
        1. All employees at the worksite must be able to contact (through "effective communication") a supervisor or summon emergency medical services.
        2. When an onsite supervisor observes or receives a report of heat illness symptoms, he or she must take immediate action, including offering the affected employee first aid or emergency medical services if the symptoms are severe.
        3. A PM must transport, if necessary, an affected employee to a location where he/she can be reached by an emergency medical provider.
        4. A PM must be able to provide emergency medical providers with clear and precise directions to the worksite.
            - Please note that using a cellular phone for calling or texting is considered "effective communication" only if reception in the work area is reliable.
- **Acclimatization Procedures** – Monitoring Employees Who Work During Heat Waves and in High-Heat Areas
    - During a "heat wave" a supervisor or designee is required to closely observe all employees at the worksite. A "heat wave" is any day in which the predicted high temperature for the day is at least 80 degrees and at least ten degrees higher than the "average high daily temperature in the preceding five days."
    - In addition, an employee who has been "newly assigned" to a high heat area must be closely observed by a supervisor or designee for the first 14 days of the employee's work.

REQUIREMENTS FOR WRITTEN HEAT ILLNESS PREVENTION PLANS

- **Heat Illness Prevention Plan** – Employers Must Revise, Translate, And Make Available
    - The new Cal/OSHA regulations require the establishment and maintenance of a heat illness prevention plan that includes the new procedures discussed above.
    - The plan must be written "in both English and the language understood by the majority of employees."
    - Finally, this written plan must be made available at the worksite for employees and Cal/OSHA representatives to inspect upon request.
        - Please reference SWP 113 for additional information.

- **Heat Illness Training** – Employers Must Cover The New Regulations
    - All California employers must update their training protocol to cover the substance of the new regulations. The new and/or revised training topics for employees and supervisors include:
        1. The employer's responsibility to provide water, shade, cool-down breaks, and access to first aid
        2. The employee's right to be free from retaliation for exercising his/her rights under the regulations
        3. The concept of acclimatization, the importance of acclimatization, and the acclimatization procedures in the employer's heat illness prevention plan
        4. The appropriate first aid and/or emergency responses to the different types of heat illness
        5. The fact that heat illness may progress quickly from mild symptoms and signs to a serious and life threatening illness.

Revision History

Date	Change	Acknowledgement
April 24, 2015	Document Created	Brandon Barnes
April 28, 2015	Document Review	Brandon Barnes Clint Reuter

CALIFORNIA OUTDOOR PROJECT HEAT ILLNESS PREVENTION PLAN

Scope

This plan is to ensure all employees working outdoors are properly protected from heat related illness risks and that projects are compliant with Cal/OSHA Heat Illness Prevention standards. This applies to all employees regardless of their duration at the project sites in California when temperatures are expected to be above 80 ºF.

This plan is to be reviewed and agreed upon with all onsite staff prior to the start of work, including any subcontractors not operating under their own plan.

Complete this 6 Step plan for all outdoor projects within California.

Project Info:

Jobsite Address:_____

Today's Task(s):_____ Expected Job Duration:_____

1. PROJECT MANAGEMENT RESPONSIBILITIES & STAFF MEMBERS

The following supervisors have authority and responsibility for implementing the provisions of this plan at this worksite.(List all staff and responsible supervisors).

Project Manager:_____ Phone:_____

Site Supervisor:_____ Phone:_____

Site Health & Safety Officer:_____Phone:_____

All crew members and subcontractors operating off of this plan (print and sign)	
Name (Print):	Signature:

Use more sheets if necessary.

Review Staff Expectations:

- All Onsite employees to be aware of this plan and its provisions.
- Any employees not in agreement with or not following this plan shall not be allowed to work at this jobsite.
- Discuss "Fit for Duty" aspects; are employees well-rested, hydrated, and acclimatized?

2. WATER PROVISION PLAN

Each employee must have available at least 1 quart of clean, cool water per hour before the start of each shift, maintained throughout the day.

Describe how adequate water supplies will be maintained throughout the day for all employees:

_____

Person(s) responsible for water:_____ How often checked?_____

Review Water Provisions Expectations:

- Reusable containers/bottles are to be uniquely marked or identified to avoid potential health exposure between coworkers.
    - Non-water (chemical/industrial) containers are to be clearly labeled to prevent inadvertent consumption.
- Water to be replenished before supplies drop below 1 quart/employee/hour.
- Water to be readily accessible (as close as practical) with multiple stations, if necessary.
- Electrolyte replacement fluids are also suitable. Water must also be maintained.
- Caffeinated/sugary drinks are discouraged. Water consumption is expected regardless.

3. ACCESS TO SHADE

Describe how shade will be provided and maintained throughout the day for all employees:

_____

Person(s) responsible for shade:_____

Review Shade Access Expectations:

- Shade is required at 80 °F.
- Shade is to be available at any time (or temperature) if requested by any employee or subcontractor.
- For crews of 4 or more, shade should be provided by pop up canopy, tent, or other appropriate shade structure.
    - Crews of 4 or fewer can utilize vehicle cabs with working A/C as effective means of shade and rest.
    - Multiple vehicles can accommodate up to 4 employees each, rotating if necessary).
- Work must be stopped and rescheduled if access to water or shade is insufficient.
- Employees who are not from the local area and acclimatized are to be closely monitored and given additional breaks. Every employee can take breaks as needed.

4. WEATHER MONITORING

Start of project temperature:_____Today's Forecasted High Temperate:_____

Describe how temperatures will be monitored throughout the day:

_____

Person(s) responsible for weather monitoring:_____

Review Weather Monitoring Expectations:

- **Check forecasts prior to the start of work.**
  - On or Offsite PM/Supervisor Monitoring and Communication expected.
- Shade is required at 80 °F.
- High Heat Procedures go into effect at 95 °F or during a Heat Wave (defined below).

5. HIGH HEAT AND HEAT WAVE PROCEDURES

These High Heat Procedures go into effect at 95 °F and above, or during a "Heat Wave".

- Heat Waves are defined as: Temperatures above 80 °F, and when temperatures are at least 10°F higher than average high daily temperature of the preceding 5 days.

Record time of High Heat or Heat Wave Plan Implementation.

_____: Stopped Work once temperatures reach 95 °F for a mandatory 10 minute cool-down, rest period and High Heat/Heat Wave procedure discussion.

1. Breaks to be:
   - At least 10 minutes, repeated at least every 2 hours,
   - encouraged to be taken individually by request,
   - Taken as often as employees need based on signs and symptoms.
2. Establish employee buddy system or monitoring plan with frequent communication to be on the lookout for signs and symptoms of heat illness.
   - Direct or electric means of communication will be maintained, so that employees can contact a supervisor when needed.
   - If the supervisor is unable to be near all workers to effectively communicate in person, electronic devices such as cell phone, text messaging, or satellite phone may be used if reception in the area is reliable.
3. Record Break times:_____/_____/_____/_____/_____/_____/_____/_____/_____/_____/_____/_____

Note - Any employees who are not acclimatized to the local environment must be closely monitored and directed to take additional rest breaks.

6. EMERGENCY RESPONSE PLANNING

For any heat related illness, dial 911 immediately.

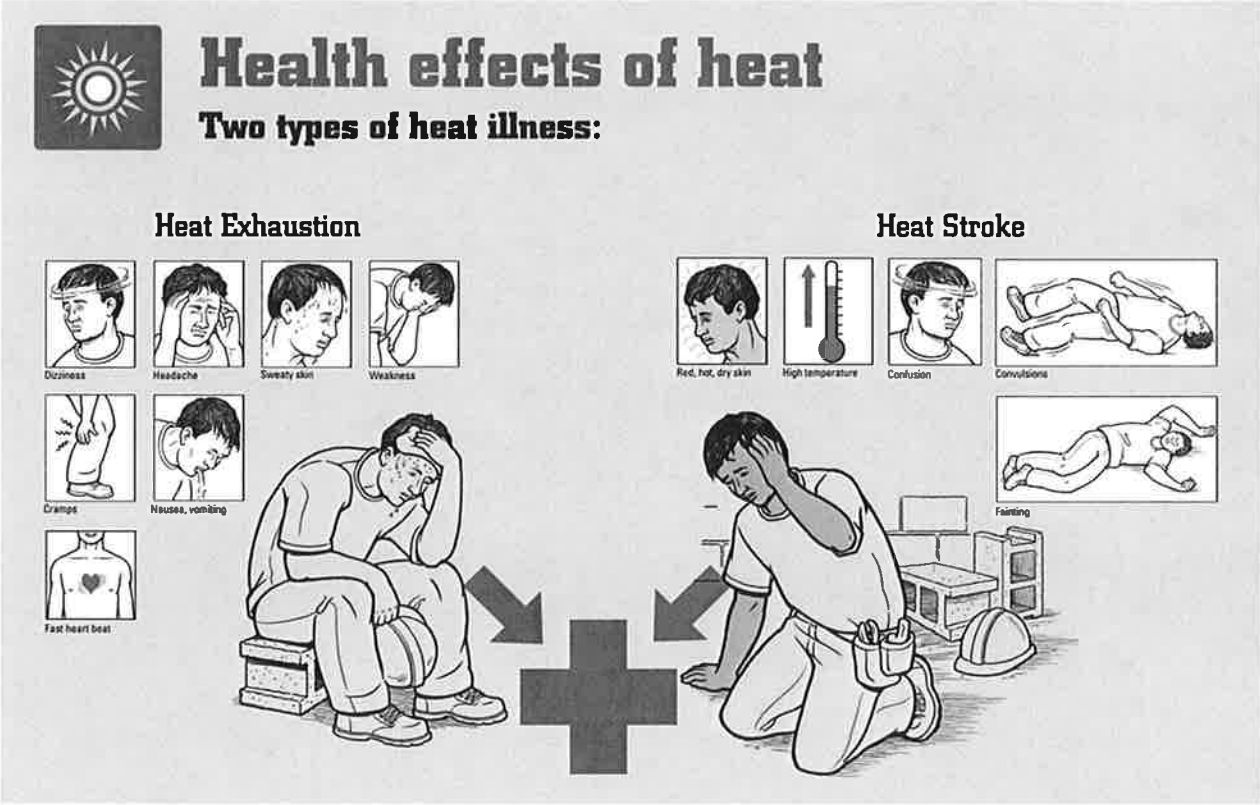
1. Call AllOne Health (800) 350-4511 for any work related injuries/questions/concerns.
2. Notify the project Supervisor/PM once the situation is stabilized and care has begun.
3. Follow Stantec's Injury Reporting protocol, report the incident to the RSEC within 1 hour, with a RMS3 (Incident Report) to be submitted to HSE@stantec.com within 24 hours.

Record time of Emergency Planning step.

_____Daily Tailgate/RMS2 Emergency planning discussion held.

Review Heat Illness Signs and Symptoms, and Emergency Response Plan expectations:

- Review site layout and emergency protocols as described in the HASP, or RMS1.
- Review each step of this plan with all site workers regardless of arrival time or duration onsite when temperatures are expected to be above 80 ºF.
- **Review Heat Illnesses Signs and Symptoms.**



1 REVISION HISTORY

Date	Change	Acknowledgments
20150617	Created	Clint Reuter/Brandon Barnes
	Reviewed	Pending
	Posted to StanNet	Pending

PERSONAL PROTECTIVE EQUIPMENT

REFLECTIVE CLOTHING

Reflective clothing, which can vary from aprons and jackets to suits that completely enclose the worker from neck to feet, can stop the skin from absorbing radiant heat. However, since most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary-cooling systems can be used under the reflective clothing.

AUXILIARY BODY COOLING

1. Commercially available **ice vests**, though heavy, may accommodate as many as 72 ice packets, which are usually filled with water. Carbon dioxide (dry ice) can also be used as a coolant. The cooling offered by ice packets lasts only 2 to 4 hours at moderate to heavy heat loads, and frequent replacement is necessary. However, ice vests do not encumber the worker and thus permit maximum mobility. Cooling with ice is also relatively inexpensive.

2. **Wetted clothing** is another simple and inexpensive personal cooling technique. It is effective when reflective or other impermeable protective clothing is worn. The clothing may be wetted terry cloth coveralls or wetted two-piece, whole-body cotton suits. This approach to auxiliary cooling can be quite effective under conditions of high temperature and low humidity, where evaporation from the wetted garment is not restricted.

3. **Water-cooled garments** range from a hood, which cools only the head, to vests and "long johns," which offer partial or complete body cooling. Use of this equipment requires a battery-driven circulating pump, liquid-ice coolant, and a container.

   Although this system has the advantage of allowing wearer mobility, the weight of the components limits the amount of ice that can be carried and thus reduces the effective use time. The heat transfer rate in liquid cooling systems may limit their use to low-activity jobs; even in such jobs, their service time is only about 20 minutes per pound of cooling ice. To keep outside heat from melting the ice, an outer insulating jacket should be an integral part of these systems.

4. **Circulating air** is the most highly effective, as well as the most complicated, personal cooling system. By directing compressed air around the body from a supplied air system, both evaporative and convective cooling is improved. The greatest advantage occurs when circulating air is used with impermeable garments or double cotton overalls.

   One type, used when respiratory protection is also necessary, forces exhaust air from a supplied-air hood ("bubble hood") around the neck and down inside an impermeable suit. The air then escapes through openings in the suit. Air can also be supplied directly to the suit without using a hood in three ways:

   - by a single inlet;
   - by a distribution tree; or
   - by a perforated vest.

   In addition, a vortex tube can be used to reduce the temperature of circulating air. The cooled air from this tube can be introduced either under the clothing or into a bubble hood. The use of a vortex tube separates the air stream into a hot and cold stream; these tubes also can be used to supply heat in cold climates. Circulating air, however, is noisy and requires a constant source of compressed air supplied through an attached air hose.

One problem with this system is the limited mobility of workers whose suits are attached to an air hose. Another is that of getting air to the work area itself. These systems should therefore be used in work areas where workers are not required to move around much or to climb. Another concern with these systems is that they can lead to dehydration. The cool, dry air feels comfortable and the worker may not realize that it is important to drink liquids frequently.

RESPIRATOR USAGE

The use of any kind of respiratory protection device increases stress on a worker, and this stress contributes to overall heat stress. Chemical protective clothing such as totally encapsulating chemical protection suits will also add to the heat stress problem.

SUMMARY

Heat stress offers significant challenges when work needs to be performed under hot ambient conditions. However, a well thought-out program can substantially reduce the chances of heat stress. A combination of engineering and administrative controls along with effective use of personal protective equipment can protect employees from suffering the effects of heat stress

EARTHQUAKES

Earthquakes can last just a few seconds or as long as several minutes. Safety precautions include (as amended from http://safety.lovetoknow.com/Earthquake_Safety_Precautions):

- Before an earthquake:
  - Store heavy items or glassware on low shelves so they do not become dangerous projectiles. Secure large equipment with straps, bolts, or other stabilizing methods.
  - Know the emergency meeting location at the site.

- During an earthquake:
  - Immediately seek a safe location such as in a doorway, beneath a table or desk, or along an interior wall away from windows or hazardous objects.
  - Cover the back of your head and your eyes to minimize injury from flying debris
  - Do not take elevators during an earthquake.
  - If outdoors, stay in open areas away from buildings, power lines, trees, and other potential hazards.
  - If driving, stop quickly but safely and stay in the vehicle. Do not stop near power lines, bridges, overpasses, or other potentially dangerous locations.
  - Stay calm and brace yourself to keep your balance. Sit if possible.

- After an earthquake:
  - Be prepared for aftershocks, which may be stronger than the initial jolt.
  - Administer First Aid and summon emergency assistance if necessary.
  - Wear PPE (boots, gloves) to avoid getting cut by broken glass.
  - Turn off gas, electricity, and water if damage is suspected or if advised to do so by authorities.
  - Be cautious opening cabinets, cupboards, and closets in case items are poised to fall.
  - Keep phone lines clear for emergency use.
  - Be patient: it may take hours or days to restore all services depending on the severity of the quake.

3.3 Biological Hazards

Biological hazards may include, but are not limited to, bees/wasps, spiders, snakes, stray dogs, rats and poisonous/allergenic plants.

Bee/Wasp Precautions

Purpose

Bees and similar organisms such as wasps, hornets and yellow jackets can cause significant injury, pain and/or discomfort during our work. This precaution has been developed to help avoid injury.

We can encounter these organisms during a number of our tasks such as:

- Opening well vault covers
- Opening core or sample boxes
- Performing O & M in system compounds
- Working in tall grass, weeds and brush
- Performing site assessments (indoors and outdoors)

Yellow Jackets

Yellow Jackets are found throughout the United States. Yellow Jackets feed on insects, spiders and a wide variety of other food items. They are medium-sized, stout-bodied, and black with bright yellow bands. Yellow-jackets construct globular paper nests, usually in underground cavities. Favorite nesting places include rodent burrows, compost piles and wall voids.

Yellow Jackets are scavengers and frequently are found foraging around compost piles and garbage receptacles. Their activity can be discouraged in the vicinity of patios, parks, picnic and other recreational areas by covering all food and disposing of waste in covered containers.

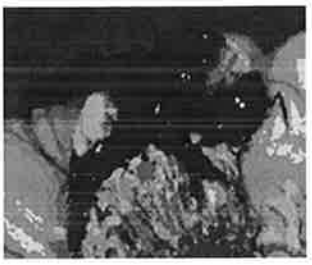
Paper Wasps

Paper wasps are about 1" in length, have a spindle-shaped body and are marked with a brown and yellow pattern. Paper wasps construct umbrella-shaped, single-layered nests with exposed cells. Nests may be built in trees and shrubs but frequently are found under building overhangs, in attics, barns, garages and sheds. These wasps are not considered overly aggressive and usually pose a threat only when their nests are disturbed. However, foraging wasps can cause considerable annoyance as they fly in and about entrances of buildings.

Honey Bees

Honey bees may become troublesome when they swarm or build colonies in or near residential areas. Honeybees occasionally invade homes and establish a colony, building combs of wax containing honey, pollen and brood in wall spaces. Once established, a colony is difficult to remove because it usually involves structural modification of the building. To be effective, the honey and wax should be removed along with the bees or the site will remain attractive to other swarms.

Bumble Bees



These bees most commonly become a problem when they establish nests close to a sidewalk or near building foundations. Bumble bees are large, robust bees covered with dense black and yellow hairs. They commonly reach one inch in length. Bumble bees usually are not overly aggressive, but will sting if molested. To avoid confrontations with bumble bees, stay clear of patches of flowers visited by adults. These bees can be controlled by spraying or dusting insecticides into their nests. Retreatment may be necessary.

What to do?

Naturally, there are many kinds of bees, and other insects for that matter, about which we should be concerned. The following are some good rules of thumb to keep in mind.

To mitigate hazards associated with bees/wasps:

- Avoid known locations of bees/wasps.
- Keep your eyes and ears open for swarms.
- Look for insects flying in and out of openings such as a crack in the wall, an open pipe end, or a well vault lid.
- Be cautious of tall grass as some bees build their hives at ground level.
- Be cautious of pointed structures, especially in barns, storage sheds, and outbuildings as bees often build hives in those structures.
- Avoid wearing citrus or floral aftershaves or perfumes as bees/wasps may be attracted to these odors.
- Wear light colored clothing as insects are generally attracted to dark colors.
- Fill in cracks or crevices and close open ends of pipes when bees/wasps are not around.
- Leave the area as quickly as possibly if a nest has been disturbed. Do not retrieve nearby belongings. Do not stand still. Do not try to fight them.

If stung by a bee or wasp, wash the area with soap and water. If you have been stung over 15 times or are having symptoms other than pain and swelling, seek emergency medical assistance immediately. Staff that are allergic will carry an EpiPen® as prescribed by a doctor. The SHSO, OSEC and Project Manager should be made aware of this prior to the start of the project.

Insect Sting Reactions

Insect sting reactions can be classified into three types - a normal reaction, a toxic reaction, and an allergic reaction. A normal reaction, lasts only a few hours, involves pain, redness, swelling, itching, and warmth at the site of the sting. A toxic reaction lasts for several days, results from multiple stings and causes muscle cramps, headache, fever, and drowsiness. An allergic reaction is similar to a toxic reaction but is triggered with only one sting.

An allergic reaction can involve one or more of the following: hives, itching, and swelling in areas other than the sting site; tightness in the chest and difficulty in breathing; a hoarse voice or swelling of the tongue; dizziness or a sharp drop in blood pressure; and unconsciousness or cardiac arrest.

4.0 Site Control and Safety Procedures

Procedures described in this section are intended to aid Stantec personnel in mitigating site risks/hazards.

Video Cameras

Prior to using a camera or other electronic recording devices on this site, all on-site personnel and/or visitors will obtain approval from the Project Manager.

Daily Production Health and Safety Briefings

A safety meeting will be conducted twice daily and as needed at the site to discuss the health and safety issues for the activities to be conducted that day. The topics of the meeting will include, at a minimum, general health and safety procedures, reviewing health and safety policies and reviewing the job hazard analyses for the tasks to be conducted. Additional safety meetings may be conducted if the scope of work changes during the day, or if other health and safety issues are identified. The meetings can be documented in using the RMS-2 Fit for Duty Forms included in Attachment 2.

Driving

- Review the Stantec Safe Driving Procedures provided on-site.
- Utilize the Journey Hazard Assessment Card to identify potential driving/journey/traffic hazards before each trip.
- The Daily Vehicle Checklists should be used at least once a day for each vehicle driven for Stantec business to identify potential vehicle issues/hazards. Copies of the Daily Vehicle Inspection Checklist are included in this HASP as Attachment 3.
- Have each team member who will travel to/from the site review the site-specific Journey Management Plan (JMP) before traveling to identify routes of travel and potential driving/journey/traffic hazards. JMP(s) will be kept with each traveling employee throughout the entire course of travel.
- A Stantec Vehicle Collision Kit will be kept in every vehicle used for Stantec project work. A Stantec Vehicle Collision Kit is included in this HASP as Attachment 4.

Drug and Alcohol Testing

Following an incident, Stantec will follow the incident reporting procedures. If appropriate, Stantec will include drug and alcohol testing, consistent with Stantec's Policies and Procedures, as well as the client's contractual requirements for testing.

Exclusion Zone and Decontamination (as applicable)

No eating, drinking, smoking or raw tobacco use is permitted in the exclusion zone. These activities will be conducted only in designated areas of the site. Use of PDAs, cell phones, pagers, or other electrical devices (with the exception of intrinsically safe devices) are prohibited in the exclusion zone. Personnel will properly decontaminate after leaving an exclusion zone. Decontamination procedures may involve disposing of Tyveks, latex gloves, etc. in a decontamination zone located immediately outside of the exclusion zone. At a minimum, personnel will wash any exposed skin before leaving a site using soap and water or pre-moistened cleansing towels. Stantec will evaluate the hazards and develop site-specific decontamination procedures to address the chemical hazards at each site. These procedures can be found in the job safety analyses.

Jewelry

Jewelry can be dangerous and shall not be worn during field activities. Large earrings, long necklaces, loose-fitting bracelets, rings, watches, etc. can become entangled in machinery and cause traumatic amputation of limbs, as well as be conductive of electricity.

Material Safety Data Sheets (a.k.a. Safety Data Sheets/GHS)

Material Safety Data Sheets (MSDSs) will be available in the Stantec HASP &/or in the sub-contractor's HASP for chemicals on site (including chemicals brought on site by on-site personnel and/or visitors).

Personal Protective Equipment

PPE is identified in JSAs. PPE listed in each JSA is specific to the task outlined in the JSA and is consistent with either OSHA 1910.132 or Appendix B of 29 CFR 1910.120. PPE is to be used in accordance with manufacturers' recommendations and employee training. Minimum PPE at the site includes steel toe/steel shank boots, high visibility work gloves, hi-viz safety vest, long sleeve shirt, pants, safety glasses with side shields, and a hard hat.

Pre-entry Briefing

All on-site workers and visitors will receive a pre-entry briefing prior to accessing work areas of the site. The briefing will include reviewing contents of the HASP, signing the Acknowledgement and Agreement Form. The briefing for visitors may be abbreviated to be fit-for-purpose based on the intent of the visit.

Shutoff Valves/Switches

(IF NEEDED) The SHSO will identify the location of shutoff valves and switches for utilities and products on the Site Plan and disseminate this information to all site personnel and visitors as appropriate.

Site Access and Layout

Before mobilizing to the site for an event, the property owner(s) will be notified.

Site Security

Security of our staff, subcontractors, equipment, and the public is of paramount importance to Stantec. Employees are trained in hazard recognition and will follow standard policies and procedures to report and mitigate site security issues/hazards if identified. Note that security consideration is different than traffic guidance and control, which also impacts security to some extent. Security refers to personal safety and freedom from theft or violence. The following items will be evaluated when considering security measures at the site:

- Recent criminal activity at the site and nearby areas (ask site owner/operator and the police);
- Work hours (security concerns may be different depending on the time of day); and
- Lighting at the site (thieves are generally dissuaded from stealing on well lighted sites).

Standard security measures will be implemented on site to minimize the potential for loss at the site. Standard security measures include properly maintained lighting, functioning locks for windows/doors/equipment storage areas, and maintaining control of tools and equipment when not in use. Security may be implemented in a variety of ways:

- Orange construction fence (minimal security);
- Chain link fencing;
- Extra lighting;

- Specialized locks; and/or
- Contract security.

Traffic Guidance and Control

Incidents on sites have shown the need for a site-specific Traffic Guidance and Control Plan. The SHSO and project staff will develop a Traffic Guidance and Control Plan and disseminate this information to all site personnel. This plan will consider the amount of traffic at a site and provide for the safety of all workers. Equipment and resources to be considered as part of traffic guidance and control include:

- Vehicle hazard lights (tail and headlights)
- Cones/Delineators
- Placement of vehicles as barriers between workers and traffic
- Rotating amber hazard lights that can be placed on top of vehicles
- Signage advising drivers of shoulder work.

Other considerations for the Traffic Guidance and Control Plan include:

- Lane closures with proper signing
- Requiring personal vehicles (that aren't being used as barriers) to park as far away from potential traffic as possible.
- Cordoning off as much space as is necessary to ensure our safety.
- Identifying traffic flow routes and parking areas for heavy equipment (e.g., vacuum trucks, drill rigs, etc.) and establishing site speed limits.
- Reviewing local regulations for: formally developed traffic guidance and control plans signed by licensed individuals, police details, flagmen, hours of activity, closure of streets, etc.

Attachment 1

Stantec Field Binder Checklist and Project Applicable Forms

Stantec

Stantec Field Binder Checklist

INCLUDED YES	INCLUDED NO	INCLUDED N/A	FORMS	Qty.	COMMENTS
			PROJECT DOCUMENTS		
			Kick-off Meeting Materials	1	
X			Site-Specific Workplan / Written Scope	1	
			Project Management Checklist	1	
			Field and Safety Supplies Checklist	5	
X			Sampling Procedures	1	
X			Permits	1	
			Traffic Control Plans	1	
			STANTEC ENVIRONMENTAL SERVICES SECTOR		
			Field Notes and Logs		
			Site Observation Report	20	
			Borehole/Well Construction Logs	10	
			Gauging Logs	5	
			Purge Groundwater Sampling Logs	10	
			Grab Groundwater Sample Log	10	
			Non-Aqueous Phase Liquid Bailing Sheets	5	
			O&M Field Data Log	20	
			Waste Management Form	10	
			Oil & Gas Subsector		
			HSE Monitoring		
			Equipment Calibration Sheet	5	
			Air Monitoring Logs	10	
			HSE Opportunity Card	5	
			SAFE Observation Remedial System	1	
			SAFE Observation Emergency Drill	1	
			SAFE Observation Groundwater	1	
			SAFE Observation Drilling	1	
			SAFE Observation Excavation	1	
			SAFE Observation Heavy Equipment	1	
			STANTEC CORPORATE HEALTH SAFETY AND ENVIRONMENT		
			Hazard Assessment		
X			RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 1 day	1	
X			RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 days	10	
			RMS 7 - Quantified Hazard Assessment		
			SWP 102a - Workplace Violence	1	

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Stantec Field Binder Checklist

INCLUDED			FORMS	Qty.	COMMENTS
YES	NO	N/A			
			Inspection Form		
			SWP 105a - Hazard Assessment for PPE Assessment Form	1	
HSE Monitoring and Incident Report					
			RMS 5 - Worksite Inspection - Field	1	
X			RMS 3 - Incident Report	1	To be used as needed
Driving Safety and JMP					
X			SWP 124a - Vehicle Pre-Use Checklist	1	
X			SWP 124b - Journey Management Plan	1	
Ground Disturbance					
			SWP 213a - Pre-Ground Disturbance Worksheet Approval	1	
			SWP 213b – Ground Disturbance Form	1	
			SWP 213d - Backfill Inspection Form	1	
Electrical Work					
			SWP 406a - Electrical Job Brief Hazard Assessment	1	
			SWP 406b - Energized Work Permit	1	
			SWP 408a - LTT Permit	1	
			SWP 408b - Emergency LTT Removal	1	
			SWP 408c - LTT Periodic Audit	1	
Confined Space					
			SWP 411a - Confined Space Entry Permit	1	
			SWP 411b - Alternate Entry Permit	1	
Lifting Operations					
			SWP 217a - Forklift Pre-Operational Checklist	1	
CLIENT-SPECIFIC DOCUMENTS					

Instructions: Review your Stantec Field Binder prior to starting work and ensure applicable contents are included. Sign and date the checklist. Your signature indicates your acknowledgement that you will maintain the field binder with forms required for your work.

Signature	Date:

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
PRE-GROUND DISTURBANCE WORKSHEET & APPROVAL FORM
SWP-213a

Stantec

** Form to be completed by Project Manager or Designate*

Section One: Project Information	
Project Number:	Project Name:
Project Manager:	
Client:	
Location:	
Planned Excavation Method: ☐ Mechanical ☐ Hand	Planned Excavation Depth: ☐ <30 cm / 1 ft and/or ☐ >30cm /1 ft
Work Description: (provide detail information as to what work is planned and how it will be executed):	
Information provided/completed by: ☐ Client ☐ Stantec	

Section Two: Utilities Location and Verification		
1. Review location description provided by client.	Yes ☐ *(circle all that apply)* Green Field / Brown Field / White Zone / Other No ☐ N/A ☐ Justification:	
2. Identify and confirm land use.	Yes ☐ *(circle all that apply)* Ag Land / Urban / Municipal Urban / Native Forest / Industrial No ☐ N/A ☐ Justification:	
3a. Full-sweep line locate required	Yes ☐ No ☐ N/A ☐ Justification:	
3b. Point-specific line locates	Yes ☐ No ☐ N/A ☐ Justification:	
3c. Quote required and authorized (prior to location activities started)	Yes ☐ Provided by: Client Name: Date: No ☐ N/A ☐ Justification:	
4. Utility locates have been performed by public utility company(s) within required timeframe. Locates are clear/visible. *for multiple utility companies, please note dates and contact information using questions 5-15	Yes ☐ Contact Date: Ticket Number: Contact Person: Alternate Contact: Proposed Meet Date: Meet Time: No ☐ N/A ☐ Justification: Ticket Expiration Date:	
5. Private locate company has been contacted and is an approved utility locating contractor. *Markings are clear and visible.*	Yes ☐ Contact Name: Contact Number: Meet Date: Meet Time: No ☐ N/A ☐ Justification:	

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
PRE-GROUND DISTURBANCE WORKSHEET & APPROVAL FORM
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6. Site access/permission has been secured. *Land owner/tenant has been contacted.*	Yes ☐	Land Owner Name: Contact Number: Permit/Authorization Number: Land Agent Name: Contact Number: ** Attach Access Agreement and Permit Authorization* No ☐ N/A ☐ Justification:
7. Work discussed with owner/tenant.	Yes ☐	Owner Name: Tenant Name: No ☐ N/A ☐ Justification:
8a. All crossing agreements for third party and owner facilities are in place and conditions have been met.	Yes ☐	Crossing or proximity agreements: 1. 2. 3. ** Attach crossing agreements with conditions* No ☐ N/A ☐ Justification:
8b. Have third party line owners been given 48 hours' notice to crossing or encroachment?	Yes ☐ No ☐	N/A ☐ Justification:
9. Is owner's representative required to be present when exposing or excavating near/across lines?	Yes ☐ No ☐	N/A ☐ Justification:
10a. Reviewed site information to identify subsurface structures relevant to planned site activities. *Review easements, right of ways, historical plot plans, previous site investigation, soil surveys, boring logs, etc.*	*Check all that apply:* ☐ 3rd party identified ☐ Recent low pressure plots reviewed? ☐ Land Standing Report reviewed? No ☐ N/A ☐ Justification:	☐ Recent high pressure plots reviewed? ☐ Land title search reviewed? ☐ Previous Site Investigations? ☐ Other
10b. Most recent as-built drawings and/or site plans surveys obtained. *Including UST, product and vent lines, building layout.*	Yes ☐ No ☐	N/A ☐ Justification:
10c. Municipal utilities drawings.	Yes ☐ No ☐	N/A ☐ Justification:
11. All applicable local, provincial and federal permits have been obtained.	Yes ☐	Local/City Permit Number: Provincial/State Permit Number: Other: Other: ** Copy attached and on site* No ☐ N/A ☐ Justification:

Approval to Proceed with Field Activities

Client Approval:

Print Name: Signature: Date:

Project Manager/Designate Approval:

Print Name: Signature: Date:

Stantec

Ground Disturbance Form

Field Activity				
1. Copy of current locates and drawings on site.	Yes ☐ No ☐ N/A ☐ Justification:			
2. All site personnel involved in ground disturbance activities have been briefed on clearance protocols, line locations and signed off on work plan	Yes ☐ No ☐ N/A ☐ Justification:			
3a. Work area is secured.	Yes ☐ No ☐ N/A ☐ Justification:			
3b. Site work permits have been obtained.	Yes ☐ No ☐ N/A ☐ Justification:			
3c. Emergency shut-off switch is located for all impacted equipment.	Yes ☐ No ☐ N/A ☐ Justification:			
3d. Fire extinguishers/warning sign/ barriers are present.	Yes ☐ No ☐ N/A ☐ Justification:			
3e. Signage in place for overhead power lines.	Yes ☐ No ☐ N/A ☐ Justification:			
3f. Specify other safety equipment as needed.	☐ ☐		☐ ☐	
4. Location of area lights/signs and associated subsurface lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
5a. Location of all telecommunication and associated subsurface lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
5b. Fiber optic lines identified. Ticket/Confirmation No:	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
6. Location of drains and associated Inter-connecting lines identified.	Yes ☐ No ☐	Located by: Company/Utility: N/A ☐ Justification:	Phone:	Date:
7. Location of all electrical junction boxes and associated interconnecting lines identified.	Yes ☐ No ☐	Located by: N/A ☐ Justification: Status: Live ☐ Shut-off and locked out ☐ Removed from service ☐ Confirmation of status: Name: * Maintain minimum safe distance of > 7 m/23 ft.	Phone:	Date: Date:

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Stantec

8. Location of natural gas meters or connections and all interconnecting lines identified.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification: Status: Live ☐ Shut-off and locked out ☐ Removed from service ☐ Confirmation of status: Name:	Phone:	Date: Date:
9. Location of Cable lines.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
10. Location of Water lines.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
11. Presence and tracing of process/storm sewers identified /understood. *If other concrete, fiberglass, untraced PVC lines are potentially in the ground disturbance area, identify means of identification in comments section.*	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification: Comments (need to comment on water sewer line):	Phone:	Date:
12. Presence of underground pipelines associated with pumps and pump galleries, manifolds, tank fields, compressors, production wells, loading racks and equipment identified.	Yes ☐ Located by: Company/Utility: No ☐ N/A ☐ Justification:	Phone:	Date:
13. Location of all aboveground indicators of subsurface utilities/services that may be leading to or from buildings within planned work area are Identified.	Yes ☐ No ☐ N/A ☐ Justification:		
14a. Orientation, arrangement, location, sizes of tanks, STP and extractor covers identified. .	Yes ☐ No ☐ N/A ☐ Justification:		
14b. Burial depth of tank determined if relevant	Yes ☐ Depth: No ☐ N/A ☐ Justification:		
14c. Presence of underground lines for instrumentation, process analyzer, and motor-operated valves are inspected/identified.	Yes ☐ No ☐ N/A ☐ Justification:		
15. Location of other pertinent features surface or sub-surface that may be of relevance to work scope has been identified.	Yes ☐ No ☐ N/A ☐ Justification:		
16. Are all buried lines and utilities that are identified on all drawing sources staked or marked in the ground disturbance zone plus a 30 m /100 ft. buffer?	Yes ☐ No ☐ N/A ☐ Justification:		

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Stantec

17. Critical zones have been identified. *5 m / 16.5 ft of pipeline crossing area, or the distance defined in the pipeline crossing agreement, 3 m / 10 ft, distance from edge of tank, pumps and pump galleries, manifolds, on/below grade transformers, compressors, production wells, flow lines, loading racks, other process equipment, operating dispenser islands and suspected hazardous/critical utilities, product lines, other subsurface structures, and entire area between tank field and dispensers at retail sites*	Yes ☐ Identify critical zones: No ☐ N/A ☐ Justification:
18. Has the owner/representative inspected the crossings or encroachment areas prior to beginning work?	Yes ☐ No ☐ N/A ☐ Justification:
19. Are all conditions of the Crossing Agreements being met?	Yes ☐ No ☐ N/A ☐ Justification:
20. Are all operators aware of the mechanical excavation zone as discussed in the tailgate meeting?	Yes ☐ No ☐ N/A ☐ Justification:
21. Location of surface features indicative of product lines or other subsurface structures identified.	*Check all that apply* ☐ Pipe marker signs present ☐ Surface scaring present ☐ Ground depressions present ☐ Water cc's identified ☐ Cut lines observed ☐ Vegetation distressed Other: No ☐ N/A ☐ Justification:
22. Road and pipeline crossing zones identified.	Yes ☐ No ☐ N/A ☐ Justification:
23. If subsurface structures exposed, extra precautions have been taken to ensure structural integrity.	Yes ☐ Describe: No ☐ N/A ☐ Justification:

Comments / Findings	Actions to Close Out Items	Person Completing	Date Completed

HEALTH, SAFETY AND ENVIRONMENT

SAFE WORK PRACTICE
GROUND DISTURBANCE FORM
SWP-213b

Stantec

Completed by: (print name)	Company:
Signature	Date:

Attachment 2

RMS-2 Fit for Duty

HEALTH, SAFETY, AND ENVIRONMENT

RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 1 day

Stantec

Project: _____ Project No: _____

Client: _____

Location: _____

Start Date: _____

Work Description Provide A General Description Of The Work To Be Conducted.

Documentation and Procedure Review

1. Risk Management Strategy (RMS1) form and/or Site Specific Health and Safety Plan signed and reviewed? ☐ Yes ☐ **No***
2. Emergency Response Plan reviewed? ☐ Yes ☐ **No*** ☐ N/A
3. Tested two-way communications (cell phone, satellite phone) and security measures? ☐ Yes ☐ **No***
4. Attended Client Site Health and Safety meeting? ☐ Yes ☐ **No*** ☐ N/A
5. Conducted Stantec site safety meeting with all workforces? ☐ Yes ☐ **No*** ☐ N/A
6. Are there any new or unexpected hazards not identified in the RMS1/HASP? ☐ Yes ☐ No
   If yes, include in the Job Safety Analysis (JSA).
7. Working alone or remote work? ☐ Yes ☐ No
   If yes, complete call in/out process – Safe Work form must be completed.

Notifications and Permits

8. Are work permits required for this site? ☐ Yes ☐ No
   If yes, have they been completed and submitted as required? ☐ Yes ☐ **No***
9. Are utility locates required for this site? ☐ Yes ☐ No
   If yes, have they been completed and reviewed? ☐ Yes ☐ **No***
10. Does the Client require any notification prior to starting the work? ☐ Yes ☐ No
    If yes, has the notification been provided? ☐ Yes ☐ **No***

***Contact your Project Manager immediately.**

Personal Protective Equipment List specific PPE as needed. Verify type and inspect condition.

☐ Head Protection Type: _____	☐ Hearing Protection: _____	☐ Gloves Type: _____
☐ Foot Protection Type: _____	☐ Respiratory Protection: _____	☐ Water Safety Gear: _____
☐ Eye Protection Type: _____	☐ Fire Retardant Coveralls: _____	☐ _____
☐ High Visibility Vest: _____	☐ Fall Protection: _____	☐ _____

Tools and Equipment List specific equipment to be used. Verify type and inspect condition.

☐	☐	☐
☐	☐	☐

RMS2– FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 1 day

Stantec

D[illegible] Tailgate Discussions/Subcontractor Input

Start	Time:	Weather:
Mid-Day	Time:	Weather:
Post-Day	Time:	Weather:

I know the hazards:

By signing here, you are stating the following:

1. I have been involved in the Job Safety Analysis and understand the hazards and risk control actions associated with each task I am about to perform.
2. I understand the permit to work requirements applicable to the work I am about to perform (if it includes permitted activities).
3. I am aware that no jobs or work (that is not risk-assessed) is to be performed.
4. I am aware of my obligation to "**Stop Work**" (*See Stop Work Section).*

I arrived and departed fit for duty:

5. I am physically and mentally fit for duty.
6. [illegible]am not under the influence of any type of medication, drugs or alcohol that could affect my ability to work safely.
7. [illegible] am aware of my responsibility to bring any illness, injury (regardless of where or when it occurred) or fatigue issue I may have to the attention of the Crew Lead.
8. I signed out uninjured unless I have otherwise informed the Crew Lead.

Insert fitness level under corresponding time column: Fit for Duty = F Alternate Plan = AP
Team Lead to contact Project Manager for any personnel identified as AP

Individual Name/Company Name/Signature	Time:	Time:	Time:

I will STOP the job any time anyone is concerned or uncertain about safety.

I will STOP the job if anyone identifies a hazard or additional mitigation not recorded.

I will be alert to any changes in personnel or their fitness level (AP), conditions at the w[illegible] site or hazards.

If [illegible] necessary to **STOP THE JOB**, I will reassess the task, hazards and mitigations; and then proceed only when safe to do so.

Are you ready to work safely?

Remember to
1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

Conclusion of day: I certify that the planned work activities are completed for the day and all injuries and first aids have been reported via RMS3.

Signature of Crew Lead: _____ **Date:** _____

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY)

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Job Safety Analysis (JSA) Must be completed for all field activities.

Basic Job Steps	Potential Hazards	Controls to Reduce or Eliminate Hazard	Person Responsible

Review the hazard categories below and check the mitigation measures applicable to the identified scope of work.

Environmental Hazards

1. Work area clean ☐
2. Material storage identified ☐
3. Dust/Mist/Fume ☐
4. Noise in area ☐
5. Extreme temperatures ☐
6. Spill potential ☐
7. Waste containers needed ☐
8. Waste properly disposed ☐
9. Waste plan identified ☐
10. Excavation permit required ☐
11. Other workers in area ☐
12. Weather conditions ☐
13. MSDS reviewed ☐

Ergonomic Hazards

14. Awkward body position ☐
15. Over extension ☐
16. Prolonged twisting/bending motion ☐
17. Working in a tight area ☐
18. Lift too heavy/awkward to lift ☐
19. Parts of body in line of fire ☐
20. Repetitive motion ☐
21. Hands not in line of sight ☐
22. Working above your head ☐

Access/Egress Hazards

23. Aerial life/Man basket (inspected & tagged) ☐
24. Scaffold (inspected & tagged) ☐
25. Ladders (tied off) ☐
26. Slips & trips ☐
27. Hoisting (tools, equipment) ☐
28. Evacuation (alarms, routes, ph. #) ☐
29. Confined space entry permit required ☐

Are you ready to work safely?

Remember to
1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

Overhead Hazards

30. Barricades & signs in place ☐
31. Hole coverings identified ☐
32. Harness/lanyard inspected ☐
33. 100% Tie-off with harness ☐
34. Tie off points identified ☐
35. Falling items ☐
36. Foreign bodies in eyes ☐
37. Hoisting or moving loads overhead ☐

Rigging & Hoisting Hazards

38. Lift study required ☐
39. Proper tools used ☐
40. Tools inspected ☐
41. Equipment inspected ☐
42. Slings inspected ☐
43. Others working overhead/below ☐
44. Critical lift permit ☐

Electrical Hazards

45. GFI test ☐
46. Lighting levels too low ☐
47. Working on/near energized equipment ☐
48. Electrical cords condition ☐
49. Electrical tools condition ☐
50. Fire extinguisher ☐
51. Hot work or electrical permit required ☐

Personal Limitations/Hazards

52. Procedure not available for task ☐
53. Confusing instructions ☐
54. No training for task or tools to be used ☐
55. First time performing the task ☐
56. Micro break (stretching/flexing) ☐
57. Report **all injuries** to your supervisor

It is important that all relevant hazards have plans in place to reduce risk.
Be sure that all associated permits are closed off at the end of the job.

Remember: Stop and Think

Reviewed by Name and Signature: _____

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

for Duty

Safety is influenced by many factors, but the most important is the health and well-being of Stantec's employees and partners. Physical and mental health are just as important as good tools, good practices, and good job planning.

This card is designed to help you do a quick self-assessment of your physical and mental health. Any concerns resulting from your assessment regarding your ability to carry out your job responsibilities safely and in good health need to be discussed with your supervisor before starting work.

- Am I feeling good today and ready to work at my typical level of physical activity and responsibility?
- Do I have any sprains/strains, areas of weakness or soreness?
- Am I managing multiple sources of stress?
- Am I well hydrated?
- Any physically-demanding activities recently (chores, sports, hobbies)?
- Am I well-rested with a good energy level? When did I eat last?
- Am I taking any medications that can make me drowsy or adversely affect my safe performance?
- Any cuts/scrapes are clean and bandaged?
- Did I remember to bring with me my health maintenance medications (blood pressure, diabetes, cholesterol, heart, etc.)?

If your answers to any of the questions above indicate that you may not be ready to work, contact your supervisor immediately to discuss a plan of action.

LAST-MINUTE RISK ASSESSMENT (LMRA)

1. STOP and Think

2. Look around

Is the work area safe?
Will my work endanger others?
Will other people pose risk?

3. Assess risk

Do I clearly understand the task?
Will lifting or manual handling be required?
Potential for slips, trips, or falls?
Are there driving or vehicle concerns?
Have I considered all underground services?
Moving or pressurized equipment?
What could go wrong?

4. Control risk

What can I do to control hazards?
Do I have the right tools?
Is the SWP (Safe Work Practice) appropriate?
Do I have the appropriate PPE?
Are emergency plans in place?

5. Begin/Resume work

If you're unsure, talk to your supervisor.

Are you ready to work safely?

Stantec

Project: Caltrans TO 20 Project No: 1454

Client: Caltrans

Location: Yermo, CA

Start Date: 3/30/16

Documentation and Procedure Review

11. Risk Management Strategy (RMS1) form and/or Site Specific Health and Safety Plan signed and reviewed? ☑ Yes ☐ No*
12. Emergency Response Plan reviewed? ☑ Yes ☐ No* ☐ N/A
13. Tested two-way communications (cell phone, satellite phone) and security measures? ☑ Yes ☐ No*
14. Attended Client Site Health and Safety meeting? ☐ Yes ☐ No* ☑ N/A
15. Conducted Stantec site safety meeting with all workforces? ☑ Yes ☐ No* ☐ N/A
16. Are there any new or unexpected hazards not identified in the RMS1/HASP? ☐ Yes ☑ No
    If yes, include in the Job Safety Analysis (JSA).
17. Working alone or remote work? ☑ Yes ☐ No
    If yes, complete call in/out process – Safe Work form must be completed.

Notifications and Permits

18. Are work permits required for this site? ☑ Yes ☐ No
    If yes, have they been completed and submitted as required? ☑ Yes ☐ No*
19. Are utility locates required for this site? ☑ Yes ☐ No
    If yes, have they been completed and reviewed? ☐ Yes ☑ No*
20. Does the Client require any notification prior to starting the work? ☑ Yes ☐ No
    If yes, has the notification been provided? ☑ Yes ☐ No*

***Contact your Project Manager immediately.**

Work Description **Provide a general description of the work to be conducted.**

Mark for USA
Soil boring w/ hand auger

Personal Protective Equipment — List specific PPE as needed. Verify type and inspect condition.

☑ Head Protection Type:	hard hat	☐ Hearing Protection:		☑ Gloves Type:	nitrile/work
☑ Foot Protection Type:	steel toe	☐ Respiratory Protection:		☐ Water Safety Gear:	
☑ Eye Protection Type:	safety	☐ Fire Retardant Coveralls:		☐	
☑ High Visibility Vest:	or shirt	☐ Fall Protection:		☐	

Tools and Equipment — List specific equipment to be used. Verify type and inspect condition.

☐	☐	☐
☒	☐	☐

HEALTH, SAFE AND ENVIRONMENT

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

DAILY TAILGATE DISCUSSIONS/SUBCONTRACTOR INPUT

Date: 3/30/16	**Time:** 1300	**Weather:** Pt. Cldy
Start	SWA, scope, access, STP, Snakes	
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		
Date:	**Time:**	**Weather:**
Start		
Mid-Day		
Post-Day		

HEALTH, SAFETY, AND ENVIRONMENT

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

Stantec

I know the hazards:

By signing here, you are stating the following:

9. I have been involved in the Job Safety Analysis (JSA) and understand the hazards and risk control actions associated with each task I am about to perform.
10. I understand the permit to work requirements applicable to the work I am about to perform (if it includes permitted activities).
11. I am aware that work that has not been risk–assessed must not be performed.
12. I am aware of my ability and obligation to **Stop Work** (*See below).*

I arrived and departed fit for duty (see Fit for Duty card for further information):

13. I am physically and mentally fit for duty.
14. I am not under the influence of any type of medication, drugs or alcohol that could affect my ability to work safely.
15. I am aware of my responsibility to bring any illness, injury (regardless of where or when it occurred), symptoms of soreness or discomfort, or fatigue issue I may have to the attention of the Crew Lead or Supervisor.
16. I sign out uninjured unless I have otherwise informed the Crew Lead or Supervisor.

Insert fitness level under corresponding time column: Fit for Duty = F Alternate Plan = AP
Team Lead to contact Project Manager for any personnel identified as AP

Individual Name/Company Name/Signature	Date: 3/30/16			Date: 04/01/16			Date:			Date:			Date:		
	Time: 1300	Time:	Time:	Time: 0545	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:
Mark Zellmer Stantec	F														
Melissa Baenstein/Stantec	F			F											
Mitchell Bolus/Stantec				F											

I will STOP WORK any time anyone is concerned or uncertain about safety. **I will STOP WORK** if anyone identifies a hazard or additional mitigation not recorded. **I will** be alert to any changes in personnel or their fitness level (AP), conditions at the work site or hazards. If it is necessary to **STOP WORK**, I will reassess the task, hazards and mitigations; and then proceed only when safe to do so.

Conclusion of day: I certify that the planned work activities are completed for the day and all injuries and first aids have been reported via RMS3.

Signature of Crew Lead: Mark Zellmer — **Date:** 3/30/16

Signature of Crew Lead: Melissa Baenstein — **Date:** 04/01/16

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Signature of Crew Lead: _____ **Date:** _____

Are you ready to work safely?

Remember to
1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

RMS2 – FIELD LEVEL Risk ASSESSMENT (FIT FOR DUTY), 5 day

Job Safety Analysis (JSA) Must be completed for all field activities.

Basic Job Steps	Potential Hazards	Controls to Reduce or Eliminate Hazard	Person Responsible

Review the hazard categories below and check the mitigation measures applicable to the identified scope of work.

Environmental Hazards
23. Work area clean
24. Material storage identified
25. Dust/Mist/Fume
26. Noise in area
27. Extreme temperatures
28. Spill potential
29. Waste containers needed
30. Waste properly disposed
31. Waste plan identified
32. Excavation permit required
33. Other workers in area
34. Weather conditions
35. MSDS reviewed

Ergonomic Hazards
36. Awkward body position
37. Over extension
38. Prolonged twisting/bending motion
39. Working in a tight area
40. Lift too heavy/awkward to lift
41. Parts of body in line of fire
42. Repetitive motion
43. Hands not in line of sight
44. Working above your head

Access/Egress Hazards
38. Aerial life/Man basket (inspected & tagged)
39. Scaffold (inspected & tagged)
40. Ladders (tied off)
41. Slips & trips
42. Hoisting (tools, equipment)
43. Evacuation (alarms, routes, ph. #)
44. Confined space entry permit required

Are you ready to work safely?

Remember to
1. Stop and think
2. Look around
3. Assess risk
4. Control risks
5. Begin/resume work

Overhead Hazards
45. Barricades & signs in place
46. Hole coverings identified
47. Harness/lanyard inspected
48. 100% Tie-off with harness
49. Tie off points identified
50. Falling items
51. Foreign bodies in eyes
52. Hoisting or moving loads overhead

Rigging & Hoisting Hazards
58. Lift study required
59. Proper tools used
60. Tools inspected
61. Equipment inspected
62. Slings inspected
63. Others working overhead/below
64. Critical lift permit

Electrical Hazards
65. GFI test
66. Lighting levels too low
67. Working on/near energized equipment
68. Electrical cords condition
69. Electrical tools condition
70. Fire extinguisher
71. Hot work or electrical permit required

Personal Limitations/Hazards
72. Procedure not available for task
73. Confusing instructions
74. No training for task or tools to be used
75. First time performing the task
76. Micro break (stretching/flexing)
77. Report **all injuries** to your supervisor

It is important that all relevant hazards have plans in place to reduce risk.
Be sure that all associated permits are closed off at the end of the job.

Remember: Stop and Think

Reviewed by Name and Signature: Melissa Baernstein

Required Pre-Entry Discussion Topics / Requirements for All Workers and Visitors

Stantec

Safety rules apply to anyone entering a Stantec workplace or worksite, including employees, supervisors, management and visitors.

COMPANY SAFETY RULES (REFERENCE: STANTEC'S *HSE MANUAL* SECTION 1.3)

- Take reasonable care to protect the health and safety of yourself and others, and the environments in which we all work.
- Consumption of alcohol is only approved during company-sponsored events. Consumption or possession of illegal drugs on company premises, or on any company jobsite, is prohibited.
- Horseplay, fighting or otherwise interfering with other employees is prohibited.
- Theft, vandalism or any other abuses or misuse of company property is prohibited.
- All unsafe acts and conditions, including "near miss" incidents, spills or releases of hazardous materials, property damage, and injuries are to be promptly reported to your supervisor in accordance with Section 12 of the HSE manual, and Section 1.8 of this health and safety plan (HASP).
- Clothing and personal protective equipment (PPE) shall be appropriate to tasks being performed, as determined by hazard assessment (refer to job safety analyses and/or standard operating procedures in Attachment B of this HASP).
- All work shall be conducted in accordance with applicable regulatory safety requirements, client safety requirements, and in accordance with Stantec's HSE manual.
- Only use tools, vehicles and equipment that are in good repair, with all guards and safety devices in place, and for which you have sufficient training and experience. Select tools, vehicles and equipment appropriate for the task intended, and use them in compliance with the manufacturer's written instructions.
- Every employee will keep the work area neat, clean and orderly. A floor or other surface used by any employee will be kept free of obstructions, hazards, and accumulations of refuse, snow or ice.
- As a Stantec employee, you are responsible and authorized to STOP work immediately if you become aware of an unsafe act or condition that could place anyone in danger, or if you are not confident in the work plan. Refer to the Stop Work Authority for guidance.

DISCUSSION IDEAS FOR THE DAILY PRODUCTION H&S MEETING

- Emergency response plan, emergency vehicle (full of fuel) and muster point
- Route to medical aid (hospital or other facility)
- Work hours, is night work planned?
- Hand signals around heavy equipment
- Traffic control
- Pertinent Legislation and Regulations
- Above and below ground utilities (energized or de-energized)
- Material Safety Data Sheets (MSDS)
- To who, what, why, and when to report an incident
- Fire extinguisher and First Aid kit locations
- Excavations, trenching sloping and shoring
- Personal protective equipment (PPE) and training
- Safety equipment and training

Required Pre-Entry Discussion Topics / Requirements for All Workers and Visitors

- Emergency telephone and telephone numbers (may not be 911)
- Eye wash stations and washroom locations
- Energy lock-out/tag-out procedures. Location of "kill Switches" etc.
- Weather restrictions
- Site security. Site hazards. Is special waste present?
- Traffic and people movements
- Working around machinery (both static and mobile)
- Sources of ignition, static electricity etc.
- Stings, bites, large animals and other naturally related injuries
- Working above grade
- Working at isolated sites
- Decontamination procedures (both personnel and equipment)
- Falls, trips, sprains and lifting injuries (how to prevent)
- Right to refuse unsafe work
- Adjacent property issues (residence, business, school, day care center)
- Hand & glove safety, pinch points, hand positioning

Attachment 3

Driver's Fatigue Checklist /Safe Driving Vehicle Pre-Use Checklist

Too tired to drive?

A road safety initiative of RACV, Rural Ambulance Victoria and Metropolitan Ambulance Service

Driver Fatigue Checklist

Before you drive, answer these questions to make sure you are not too tired to drive.

	Yes	No
Have you been getting full nights of restful sleep over the past week? *When you don't get enough sleep you acquire sleep debt. The only way to repay the debt is by sleeping.*	❑	❑
Are you setting off on a trip after a good night's sleep, rather than after a full day at work? *Being awake for 17 hours has the same effect on driving as having a BAC (Blood Alcohol Concentration) of .05, doubling your risk of crashing. After 24 hours the BAC equivalent is 0.1, equating to a 7 times greater risk of crashing than someone who is well rested.*	❑	❑
Are you planning to start your trip after 6am, rather than starting out earlier when you would normally be asleep? *Your body naturally wants to sleep between about 1am and 6am greatly increasing your risk of crashing, at those times.*	❑	❑
Have you allowed time in your trip to stop and rest if you feel tired? *Regular breaks every 2 hours will help maintain vigilance, however, the only way to combat fatigue is to sleep.*	❑	❑
Do you stop and have a Powernap if you feel tired while driving? *Stopping for a 15 to 30 minute sleep or Powernap when you are tired is effective in alleviating the short-term effects of fatigue, but ensure you allow time to recover from your sleep before commencing to drive.*	❑	❑
Are you sure that you do not suffer from a sleeping disorder, such as sleep apnoea? *2% of people suffer from the most common sleep disorder, sleep apnoea. Men over 50, particularly those overweight, are most at risk.*	❑	❑

If you have answered "no" to any of these questions you may be at risk of fatigue.

RACV

Too tired to drive?

What is fatigue?

Driver fatigue contributes to more than 25 per cent of all road crashes in Victoria.

Two main causes:

- lack of quality sleep
- driving at times when you would normally be asleep.

Protect yourself from having a fatigue-related crash by:

- making sure you regularly get enough sleep
- being aware of the fatigue high crash risk times when driving between 1am-6am
- not starting a long trip after a long day's work
- planning your trip so you can take regular breaks
- seeking medical advice if you often feel sleepy
- being aware of the effects of any medication taken.

Once you're on the road:

- regular rest breaks to help keep you alert, but if you feel tired, the only way to keep safe is to stop and sleep
- eat proper and well-balanced meals, preferably at your normal meal times.

If you feel tired when driving, take a Powernap (sleep for 15 to 30 minutes), but allow time to recover from your sleep before commencing to drive.

Don't be fooled by myths about fatigue! The following common beliefs about fatigue are untrue:

myth – Coffee is the best way to combat fatigue.
Coffee only provides short-term benefits; once its effects wear off, you suffer from sleep rebound, which is a major cause of crashes.

myth – Playing music will help keep me alert.
This is only a short-term benefit.

myth – Plenty of fresh air through the window will help keep me alert.
This is only a short-term benefit.

myth – Young people need less sleep.
In fact, drivers under 25 years of age are over-represented in fatigue crashes.

myth – I know when I am tired, or when I am having "sleep attacks".
The danger is that you only find out how tired you are when it's too late.

The only cure for fatigue is sleep

HEALTH, SAFETY AND ENVIRONMENT

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

Employee Name: **Region/Business Unit:**

Date: **Time:** **Vehicle Color:**

Vehicle Make/Model: **Vehicle License Plate Number:**

Job: **Job #:** **# of Km or Mi Driven**

Job: **Job #:** **# of Km or Mi Driven**

Odometer Start: **Odometer Stop:** **Total Km or Mi Driven:**

Stantec Vehicle ☐ **Rental** ☐ **Personal Vehicle** ☐

Perimeter Walk Around:	**Item is OK**	**Item is NOT OK**
Check for signs of vandalism, negligence, damage or unusual conditions		
Check all tires for excessive and unusual wear and proper inflation – include the spare tire if accessible		
Check under vehicle for signs of leaking fluids		
Check wiper blades (Do they work? Do they need replacement?)		
Check all light systems – brake, head, back-up, running, turn signals, emergency flashers		
Check to make sure doors, truck/toolbox lids, tailgates all open and close properly		
(Make sure you have keys to any toolboxes that you may need to access)		

Check Gauges on Dashboard:

Fuel Level		
Oil light		
Engine Coolant Temperature Gauge		
Service Indicator Lights		
Battery Charge Indicator		

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

Inside Vehicle:

Make sure seatbelts are present for all who will be riding in the vehicle		
Secure all cargo in the vehicle so that items will not become projectiles in the event of sudden stops or collisions		
Adjust the seat position, rearview and side mirrors		
Adjust temperature controls, vents, radio, etc.		

If Pulling a Trailer:

Is trailer properly hitched to the vehicle (including safety chains)		
All lights are working properly		
Proper trailer for the load (check weight specifications) and load is balanced. If you anticipate the load is near the trailer weight limit, weigh the trailer at a weigh station		
Are tires in good condition and properly inflated?		

Notify the vehicle manager or rental company if you feel that any deficiencies are unsafe and DO NOT drive the vehicle

Signature: _____

HEALTH, SAFETY AND ENVIRONMENT

SAFE DRIVING – VEHICLE PRE-USE CHECKLIST

SWP 124A

1 REVISION HISTORY

Date	Change	Acknowledgments
2010/02/23	Changed HSE to SWP; reformatted header and footer; added revision history	GD
20121015	Updated and reviewed by PS	KDR

Attachment 4
RMS-3 incident/Near Miss Investigation and Collision Kit

Stantec

INCIDENT REPORT – RMS 3

Incidents involving injury, potential injury, or report of pain, soreness, or discomfort must be reported immediately (within one hour) to a supervisor. Supervisors will then immediately contact ***their HSE representative to develop a plan for assessment and care***. This form must be completed and **submitted within 24 hours** of any incident. Do not delay submission waiting for signatures. **Email to hse@stantec.com or fax unsigned report to (780) 969-2030** and file locally in compliance with the corporate records retention policy and practices once all signatures have been obtained.

This document contains privileged and confidential information prepared at the request of Stantec's Legal Counsel. The contents of this report are restricted to HR personnel, Risk Management Representatives, Project Manager and PC Leader, and Stantec's Insurer, Adjuster and Legal Counsel. Information collected will be used solely for the purpose of meeting the requirements of Stantec's HSE and insurance programs, complying with applicable legislation, and will be used in accordance with any governing privacy legislation. The information collected will be maintained electronically and may be included in required reports.

SECTION 1: GENERAL INFORMATION			
Office location:		BC number:	
Location of incident:			
Incident date and time:		Date and time reported:	
Project name:		Project number:	
Client Name:			
Person in charge:		Person in Charge Phone:	

SECTION 2: STANTEC EMPLOYEE INFORMATION (if more than one identity extras in Incident details below)			
Name:		Phone:	
Job position:		Group name:	
Time employee began work:		Job Experience (in years)	
Type of employment:	Full Time ☐ ; Visitor ☐ ; Contract ☐ ; Volunteer ☐ ; Seasonal ☐		
Supervisor:		Supervisor Phone:	

SECTION 3: INCIDENT DETAILS

Type of Incident: *incident types marked with an asterisk, please complete pages 1 and 4 only

See StanNet for a list of Incident Type Definitions

☐ **Report Only*	☐ **Hazard Identification*	☐ **Near Miss*
☐ First Aid	☐ Motor Vehicle Incident	☐ 3rd Party Incident (i.e., Public)
☐ Medical Aid – No Lost Time	☐ Property Damage - Vehicle	☐ Spill or Release
☐ Restricted Work	☐ Property Damage - Other	☐ Utility Strike
☐ Lost Time	☐ Theft	☐ Fire/Explosion/Flood
☐ Fatality	☐ Contractor Recordable Incident	☐ Stop Work Authority
☐ Violence or Harassment	☐ Non-compliance	☐ Other (specify details below)

Describe incident in detail: (include any issues related to people, equipment, materials, environment, and processes)

Immediate corrective actions taken:

Canada East (Atlantic) – Neil Clements (506-639-2961); Canada East (ON/QC) – Jim Elkins (613-404-8508); Canada Prairie & Mountain – Yvonne Beattie (780-616-8909); International – Kev Metcalfe (780-231-2185); US Northeast & South) – Fred Miller (610-235-7315); US Midwest & Mid-Atlantic - Keith Kuhlmann (740-816-6170); US West – Clint Reuter (818-395-8556)

SECTION 4: MEDICAL INFORMATION																				
Name of first aid attendant:																				
Injury recorded in first aid log? Yes ☐ No ☐ N/A ☐																				
Description of first aid or medical treatment administered:																				
Clinic/hospital sent to:																				
Attending physician/paramedic (if known):																				
Area of Injury – Please check all that apply:																				
☐ Head	☐ Teeth	☐ Upper back	Left	Right	Left	Right	Left	Right	Left	Right										
☐ Face	☐ Neck	☐ Lower back	☐ Shoulder	☐	☐ Wrist	☐	☐ Hip	☐	☐ Ankle	☐										
☐ Eye(s)	☐ Chest	☐ Abdomen	☐ Arm	☐	☐ Hand	☐	☐ Thigh	☐	☐ Foot	☐										
☐ Ear(s)		☐ Pelvis	☐ Elbow	☐	☐ Finger(s)	☐	☐ Knee	☐	☐ Toe(s)	☐										
☐ Other	Specify		☐ Forearm	☐			☐ Lower Leg	☐												
Has the injured employee had a previous similar injury or disability?									Yes ☐		No ☐									

SECTION 5: PROPERTY OR VEHICLE DAMAGE: STANTEC																				
Ownership Details (choose one):	☐ Rented (attach rental agreement)					☐ Stantec Owned					☐ Personal (employee vehicle)									
Year, Make, and Model of Vehicle:											Vehicle ID # (VIN)									
Nature of damage:											Estimated cost of damage:									
Description of damaged property:																				
Attending police officer (if known):											Badge #:									
Copy of police report received	Yes ☐ No ☐ If yes, file number: (attach copy of police report)																			
PROPERTY OR VEHICLE DAMAGE: 3RD PARTY																				
Name of owner and contact number:																				
Year, Make, and Model of Vehicle:											License Plate Number:									
Insurer and Policy Number:																				
Injured parties? Yes ☐ No ☐	If yes, describe Injuries:																			
Diagram or photographs attached?	Yes ☐ No ☐																			

WITNESS INFORMATION - #1																				
Name:											Phone Number:									
Witness statement provided?	Yes (attached) ☐					No ☐														

WITNESS INFORMATION - #2																				
Name:											Phone Number:									
Witness statement provided?	Yes (attached) ☐					No ☐														

SECTION 6: SPILL OR RELEASE																				
Substance:																				
Quantity:						Employee(s) exposed via:					☐ Inhalation ☐ Contact ☐ Ingestion ☐ n/a									
Off-site impacts observed or anticipated?	Yes ☐ No ☐ If yes, describe:																			
Name of regulatory agencies contacted:																				
Contact name, number, date and time of call:																				

SECTION 7: ANALYSIS

IMMEDIATE/DIRECT CAUSES

A. **UNSAFE ACTIONS** (check off as many as necessary)

- ☐ Operating equipment without authority
- ☐ Failure to warn
- ☐ Failure to secure
- ☐ Operating at improper speed
- ☐ Making safety devices inoperative
- ☐ Removing safety devices
- ☐ Using defective/improper equipment
- ☐ Using equipment improperly
- ☐ Failing to use personal protective equipment property
- ☐ Improper loading
- ☐ Improper placement
- ☐ Improper lifting or handling
- ☐ Improper position for a task
- ☐ Servicing equipment in operation
- ☐ Horseplay
- ☐ Failure to follow procedure, policy or practice
- ☐ Failure to identify hazard or risk
- ☐ Inattention
- ☐ Failure to communicate
- ☐ Other: Specify

B. **UNSAFE CONDITIONS** (check off as many as necessary)

- ☐ Inadequate guards/barriers
- ☐ Improper/inadequate PPE
- ☐ Defective tools or equipment
- ☐ Congested work area
- ☐ Inadequate warning system
- ☐ Fire and explosion hazards
- ☐ Poor housekeeping; disorder
- ☐ Noise exposure
- ☐ Radiation exposure
- ☐ High or low temperature exposures
- ☐ Inadequate or excess illumination
- ☐ Inadequate ventilation
- ☐ Presence of harmful materials
- ☐ Inadequate instructions/procedures
- ☐ Hazardous environmental conditions; gases, dusts, smokes, fumes, vapours
- ☐ Inadequate information/data
- ☐ Inadequate preparation/planning
- ☐ Inadequate support/assistance
- ☐ Road conditions
- ☐ Weather conditions
- ☐ Other: Specify

BASIC/ROOT CAUSES

C. **PERSONAL FACTORS (check off as many as necessary)**

- ☐ Inadequate physical capability
- ☐ Physical stress
- ☐ Mental stress
- ☐ Lack of skill
- ☐ Lack of knowledge
- ☐ Other: Specify

D. **JOB FACTORS (check off as many as necessary)**

- ☐ Inadequate leadership or supervision
- ☐ Inadequate engineering
- ☐ Inadequate purchasing
- ☐ Abuse or misuse
- ☐ Inadequate maintenance (scheduled or preventative)
- ☐ Inadequate tools or equipment
- ☐ Inadequate work standards
- ☐ Other: Specify
- ☐ Excessive wear and tear
- ☐ Inadequate communications
- ☐ Improper motivation

SECTION 8: FOLLOW-UP

Short-term:	Corrective Action	Assigned To	Target Date	Completion Date

Long-term:	Corrective Action	Assigned To	Target Date	Completion Date

Canada East (Atlantic) – Neil Clements (506-639-2961); Canada East (ON/QC) – Jim Elkins (613-404-8508); Canada Prairie & Mountain – Yvonne Beattie (780-616-8909); International – Kev Metcalfe (780-231-2185); US Northeast & South) – Fred Miller (610-235-7315); US Midwest & Mid-Atlantic - Keith Kuhlmann (740-816-6170); US West – Clint Reuter (818-395-8556)

REVIEW COMMENTS		
Involved Employee Comments:		
Signature: Job Title:	Print Name:	Date:
Lead Investigator Comments:		
Signature: Job Title:	Print Name:	Date:
Supervisor/Project Manager:		
Signature: Job Title:	Print Name:	Date:
HSE Representative (OSEC/JH&S Committee/RSEC/HSE Manager):		
Signature: Job Title:	Print Name:	Date:
Management Review:		
Signature: Job Title:	Print Name:	Date:
Client Review (if required):		
Signature: Job Title:	Print Name:	Date:
Additional Comments:		

Contact information.
Immediately Call Corporate HSE, and Practice & Risk Management, and (if injuries) Human Resources.

Health, Safety & Environment: Call:
Clint Reuter Office (949) 923-6258 Cell (818) 395-8556

Practice & Risk Management: Fax unsigned report to (780) 969-2030

Human Resources: **For Injuries Only** contact the Human Resources Rep. for your region:

US East: Jennie Moore
Jennie Moore: Phone: (585) 413-5241, Cell: (585) 613-8022, Fax: (585) 272-7442,
E-Mail: jennie.moore@stantec.com.

US West: Eunice Hernandez
Eunice Hernandez: Phone: (661) 885-3106, Fax:,
E-Mail: eunice.hernandez@stantec.com

US Mtn Desert: (Arlington, Houston, Midland, Phoenix, Scottsdale, Ponca City SLC): Shannon Drake
Shannon Drake: Phone: (602) 707-4627, Fax (602) 532-7784,
E-Mail: Shannon.Drake@stantec.com

US Mtn Desert: (Dallas, Fort Worth, Denver, Fort Collins, Golden, Las Vegas, Reno, Oklahoma City, Tucson) Sheryl Appelt
Sheryl Appelt: Phone: (602) 707-9495, Fax (602) 926-2217,
E-Mail: Sheryl.Appelt@stantec.com

Fax and/or scan-email report to all three.

VEHICLE COLLISION KIT

Stantec Vehicle Collision Kit

The following items should be enclosed in an envelope in the glove box of all Stantec vehicles:

- Vehicle Registration Card
- Vehicle Insurance Card with name and phone number of agent
- Name of Preferred Body Shop or Maintenance Facility to take damaged vehicle (usually nearest Dealership)
- Owner's Manual
- Disposable Camera
- Note Pad and Pen

WHAT TO DO AFTER A COLLISION:

Auto collisions: Even the most careful drivers may be involved. Knowledge of what to do **after** the collision can make the experience a little less frightening and decrease the chance of unnecessary complications.

After a Collision

- Check for injuries. Life and health are more important than damage to vehicles.
- Make note of specific damages to all vehicles involved.
- Write down the names, addresses and license numbers of persons involved in the collision. Also, write a description of the other vehicles.
- Call the police, even if the collision is minor.
- Jot down names and addresses of anyone who may have witnessed the collision. This can prevent disagreement concerning how the collision actually happened.

Other Do's and Don'ts

- DO jot down details about the collision, the location, and circumstances such as weather conditions and visibility.
- DO notify your insurance agent about the collision immediately.
- DON'T sign any document unless it is for the police or your insurance agent.

Remember that a Stantec incident investigation form must also be completed following any collision. The collision must be reported to the Stantec Project Manager in addition to the following people:

Practice and Risk Management :
Fax: 780-969-2030

Clint Reuter Office (949) 923-6258 Cell (818) 395-8556

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 05/01/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: ANDREA OTTO	
AON REED STENHOUSE INC. AON RISK SERVICES CENTRAL, INC. 900 - 10025 - 102A AVENUE EDMONTON, AB T5J 0Y2	PHONE (A/C, No, Ext): 1-952-807-0679	FAX (A/C, No): 1-312-381-6608
	E-MAIL ADDRESS: ANDREA.OTTO@AON.COM	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A: ZURICH AMERICAN INSURANCE COMPANY	16535
INSURED	INSURER B: SENTRY INSURANCE A MUTUAL COMPANY	24988
STANTEC CONSULTING SERVICES INC. 25864-F BUSINESS CENTER DRIVE, REDLANDS, CA 92374	INSURER C: ZURICH INSURANCE COMPANY	
	INSURER D: SENTRY INSURANCE A MUTUAL COMPANY	24988
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 608 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	**GENERAL LIABILITY** X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X CONTRACTUAL/CROSS LIABILITY X OWNERS & CONTRACTORS ~~PROTECTIVE~~ GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC			GLO5415704 XCU COVER INCLUDED	05/01/14	05/01/15	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ $ $ $ $ $	2,000,000 300,000 10,000 2,000,000 4,000,000 2,000,000
B	**AUTOMOBILE LIABILITY** X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS			90-17043-03	11/01/13	11/01/14	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ $ $ $	1,000,000
C	X **UMBRELLA LIAB** X OCCUR X **EXCESS LIAB** CLAIMS-MADE DED X RETENTION $10,000			8831307 EXCESS GENERAL, AUTO AND EMPLOYERS LIABILITY (FOLLOW FORM)	05/01/14	05/01/15	EACH OCCURRENCE AGGREGATE	$ $	5,000,000 5,000,000
D	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		90-17043-01	11/01/13	11/01/14	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ $	1,000,000 1,000,000 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

REDLANDS, CA.

CERTIFICATE HOLDER	CANCELLATION
TO WHOM IT MAY CONCERN	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Andrea R. Otto

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 11/01/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER

AON REED STENHOUSE INC.
AON RISK SERVICES CENTRAL, INC.
900 - 10025 - 102A AVENUE
EDMONTON, AB T5J 0Y2

CONTACT NAME: ANDREA OTTO
PHONE (A/C, No, Ext): 1-952-807-0679 FAX (A/C, No): 1-312-381-6608
E-MAIL ADDRESS: ANDREA.OTTO@AON.COM

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: ZURICH AMERICAN INSURANCE COMPANY	16535
INSURER B: SENTRY INSURANCE A MUTUAL COMPANY	24988
INSURER C: ZURICH INSURANCE COMPANY	
INSURER D: SENTRY INSURANCE A MUTUAL COMPANY	24988
INSURER E:	
INSURER F:	

INSURED

STANTEC CONSULTING SERVICES INC.
25864-F BUSINESS CENTER DRIVE,
REDLANDS, CA 92374

COVERAGES **CERTIFICATE NUMBER:** 582 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	GENERAL LIABILITY			GLO5415704	05/01/14	05/01/15	EACH OCCURRENCE	$	2,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$	300,000
	CLAIMS-MADE X OCCUR			XCU COVER INCLUDED			MED EXP (Any one person)	$	10,000
	X CONTRACTUAL/CROSS LIABILITY						PERSONAL & ADV INJURY	$	2,000,000
	X OWNERS & CONTRACTORS PROTECTIVE						GENERAL AGGREGATE	$	4,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$	2,000,000
	POLICY X PRO-JECT X LOC							$	
B	AUTOMOBILE LIABILITY			90-17043-03	11/01/14	11/01/15	COMBINED SINGLE LIMIT (Ea accident)	$	1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$	
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$	
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$	
								$	
C	X UMBRELLA LIAB X OCCUR			8831307	05/01/14	05/01/15	EACH OCCURRENCE	$	5,000,000
	X EXCESS LIAB CLAIMS-MADE			EXCESS GENERAL, AUTO AND EMPLOYERS LIABILITY (FOLLOW FORM)			AGGREGATE	$	5,000,000
	DED X RETENTION $10,000							$	
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			90-17043-01	11/01/14	11/01/15	X WC STATU-TORY LIMITS / OTH-ER		
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$	1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$	1,000,000
							E.L. DISEASE - POLICY LIMIT	$	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

REDLANDS, CA.

CERTIFICATE HOLDER

TO WHOM IT MAY CONCERN

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Andrea R. Otto

Stantec Consulting Services Inc.
25864 Business Center Drive, Suite F
Redlands, CA 92374
Tel: (909)335-6116
Fax: (909) 335-6120

Field Report

Date: April 01, 2016
Job Number: 185803641 | Task No.
Project Name: Caltrans TO 1521
Work Description: Hand Auger 10 borings
Location: CV Kane Safety Rest Area SR15
Weather: Cool --> Warm | Temp. 60°-
Client: Caltrans
Contractor: NA

Page 1 of 2

0550 Arrive on site, Mitchell B. & Melissa B. Health & Safety meeting
0600 Collect equipment blank.
0609 Begin hand augering HA-01. 0-2.5' SP Silty Sand, fine to med. grain, trace coarse sand, little gravel, dry, dense, no odor. 7.5YR 5/4 Brown. Collect surface (0-0.5' bgs), 1.0-1.5', & 2.0-2.5' bgs samples. Move to next boring location.
0610 HA-02 0-2.5' SAA... little silt, few cobbles
HA-03 0-0.5' SW, Sand, few gravel, dry, dense, no odor 7.5YR 5/4 Brown. 0.5-2.5' SW, Sand, few gravel, dry, dense, no odor 7.5YR 5/6 Strong brown. Trace cobble 0-2.5'
HA-04 0-2.5' SW Sand, little gravel, little silt, dry, dense, no odor. 7.5YR 5/4 Brown.
HA-05 0-2.5' SA HA-04
HA-06 0-0.5' SA HA-04 0.5-2.5' SP Sand fine to med grain, trace coarse sand, moist, dense, no odor 7.5YR 5/6 Strong brown. 1.5-2.5' SW Sand, moist, dense, no odor.
HA-07 0-0.5 SA HA-04. 0.5-2.5' SP Sand fine to med. grain, trace coarse sand, moist, dense, no odor 7.5YR 5/6 Strong brown.
HA-08 SA HA-02 with cobbles.
0845 Collect GPS coordinates on HA-01 through HA-08

Equipment Used: Hand auger
Contractor Hours: Staff Hours: Mileage:
Project Manager: Anne Perez Prepared By: Melissa Baecostein

Stantec

Field Report

Page 2 of 2

Field Office: Redlands, CA
Date: April 1, 2016
Job Number: 185803641 | Task No.
Project Name: Caltrans TO21

0909 HA-09 0-0.5 SW Sand, trace gravel, trace silt, moist, dense no odor. 7.5YR 5/6 Strong brown.
HA-09-1.5 Step out ~1' W
0.5-2.5' SP Sand fine to med grain, trace coarse sand & gravel, moist, dense no odor. 10YR 5/3 Brown.

0955 HA-10 0-0.5 SAA ... (SA HA-09-0.5). 1.5-2.5 SA HA-09-0.5-2.5
Collected 0.5', 1.5', & 2.5' bgs soil samples @ each boring location, HA-01 through HA-10. Collected GPS coordinates @ each location. Photographed each location.
Weather is warming, clear sky. Traffic has increased from light (a.m.) to moderate, & speeds have visibly increased.

1020 Depart site.

APPENDIX B
BORING GPS COORDINATES

BORING GPS COORDINATES
AERIALLY DEPOSITED LEAD SITE INVESTIGATION
LOCATION: 08-SBD-15-R107.3
PN: 08-1400-0184-1 (EA 0G842)
TASK ORDER NO. 21
CONTRACT 08A2441

Boring ID	Latitude	Longitude
HA-01	35.03468767	-116.46889076
HA-02	35.03435859	-116.46946212
HA-03	35.03389911	-116.47020834
HA-04	35.03364318	-116.47107472
HA-05	35.03347530	-116.47141648
HA-06	35.03425987	-116.47083022
HA-07	35.03455299	-116.47110903
HA-08	35.03485816	-116.47054659
HA-09	35.03478783	-116.46996786
HA-10	35.03494559	-116.46920104

Notes:

[1] North American Datum 83 (WPS 84)
[2] Zone 11

APPENDIX C
PHOTOLOG

STANTEC CONSULTING SERVICES PHOTOGRAPHIC RECORD	
Client: CalTrans District 8	**Job Number:** 185803641
Site Name: TASK ORDER NO. 21	**Location:** 08-SBD-15-R107.3
Photographer: MAB	**Date:** April 01, 2016

Photograph No. 1

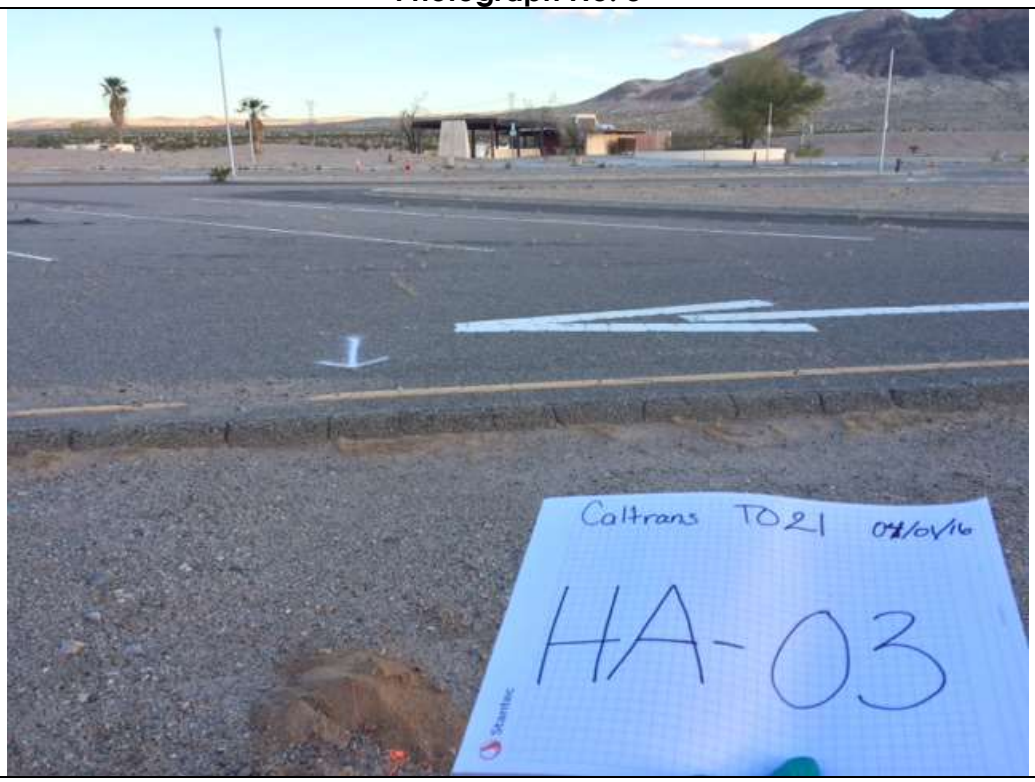
View of HA-01

Photograph No. 2

View of HA-02

STANTEC CONSULTING SERVICES PHOTOGRAPHIC RECORD	
Client: CalTrans District 8	**Job Number:** 185803641
Site Name: TASK ORDER NO. 21	**Location:** 08-SBD-15-R107.3
Photographer: MAB	**Date:** April 01, 2016

Photograph No. 3



View of HA-03

Photograph No. 4

View of HA-04

STANTEC CONSULTING SERVICES PHOTOGRAPHIC RECORD	
Client: CalTrans District 8	**Job Number:** 185803641
Site Name: TASK ORDER NO. 21	**Location:** 08-SBD-15-R107.3
Photographer: MAB	**Date:** April 01, 2016

Photograph No. 5

View of HA-05

Photograph No. 6

View of HA-06

STANTEC CONSULTING SERVICES PHOTOGRAPHIC RECORD	
Client: CalTrans District 8	**Job Number:** 185803641
Site Name: TASK ORDER NO. 21	**Location:** 08-SBD-15-R107.3
Photographer: MAB	**Date:** April 01, 2016

Photograph No. 7

View of HA-07

Photograph No. 8

View of HA-08

STANTEC CONSULTING SERVICES PHOTOGRAPHIC RECORD	
Client: CalTrans District 8	**Job Number:** 185803641
Site Name: TASK ORDER NO. 21	**Location:** 08-SBD-15-R107.3
Photographer: MAB	**Date:** April 01, 2016

Photograph No. 9

View of HA-09

Photograph No. 10

View of HA-10

APPENDIX D
ANALYTICAL LABORATORY REPORTS and CHAIN-OF-CUSTODY RECORDS

April 11, 2016

Anne Perez
Stantec
25864-F Business Center Drive
Redlands, CA 92374
Tel: (909) 255-8202
Fax:(909) 335-6120

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003
TCEQ No. : T104704502

Re: ATL Work Order Number : 1601202
Client Reference : 185803641, Caltrans TO21

Enclosed are the results for sample(s) received on April 01, 2016 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

Eddie Rodriguez
Laboratory Director

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EBQC-20160401	1601202-01	Water	4/01/16 6:00	4/01/16 16:00
HA-01-0.5	1601202-02	Soil	4/01/16 6:10	4/01/16 16:00
HA-01-1.5	1601202-03	Soil	4/01/16 6:14	4/01/16 16:00
HA-01-2.5	1601202-04	Soil	4/01/16 6:20	4/01/16 16:00
HA-02-0.5	1601202-05	Soil	4/01/16 6:39	4/01/16 16:00
HA-02-1.5	1601202-06	Soil	4/01/16 6:51	4/01/16 16:00
HA-02-2.5	1601202-07	Soil	4/01/16 6:56	4/01/16 16:00
HA-03-0.5	1601202-08	Soil	4/01/16 7:05	4/01/16 16:00
HA-03-1.5	1601202-09	Soil	4/01/16 7:08	4/01/16 16:00
HA-03-2.5	1601202-10	Soil	4/01/16 7:11	4/01/16 16:00
HA-04-0.5	1601202-11	Soil	4/01/16 7:30	4/01/16 16:00
HA-04-1.5	1601202-12	Soil	4/01/16 7:33	4/01/16 16:00
HA-04-2.5	1601202-13	Soil	4/01/16 7:35	4/01/16 16:00
HA-05-0.5	1601202-14	Soil	4/01/16 7:43	4/01/16 16:00
HA-05-1.5	1601202-15	Soil	4/01/16 7:47	4/01/16 16:00
HA-05-2.5	1601202-16	Soil	4/01/16 7:48	4/01/16 16:00
HA-06-0.5	1601202-17	Soil	4/01/16 7:55	4/01/16 16:00
HA-06-1.5	1601202-18	Soil	4/01/16 7:58	4/01/16 16:00
HA-06-2.5	1601202-19	Soil	4/01/16 7:59	4/01/16 16:00
HA-07-0.5	1601202-20	Soil	4/01/16 8:10	4/01/16 16:00
HA-07-1.5	1601202-21	Soil	4/01/16 8:13	4/01/16 16:00
HA-07-2.5	1601202-22	Soil	4/01/16 8:15	4/01/16 16:00
HA-08-0.5	1601202-23	Soil	4/01/16 8:27	4/01/16 16:00
HA-08-1.5	1601202-24	Soil	4/01/16 8:36	4/01/16 16:00
HA-08-2.5	1601202-25	Soil	4/01/16 8:45	4/01/16 16:00
HA-09-0.5	1601202-26	Soil	4/01/16 9:12	4/01/16 16:00
HA-09-1.5	1601202-27	Soil	4/01/16 9:30	4/01/16 16:00
HA-09-2.5	1601202-28	Soil	4/01/16 9:33	4/01/16 16:00
HA-10-0.5	1601202-29	Soil	4/01/16 9:45	4/01/16 16:00
HA-10-1.5	1601202-30	Soil	4/01/16 9:50	4/01/16 16:00
HA-10-2.5	1601202-31	Soil	4/01/16 9:55	4/01/16 16:00

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID EBQC-20160401
Lab ID: 1601202-01

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	0.010	0.0073	1	B6D0146	04/07/2016	04/11/16 09:37	
Arsenic	ND	0.010	0.0084	1	B6D0146	04/07/2016	04/11/16 09:37	
Barium	**0.0004**	0.0030	0.0003	1	B6D0146	04/07/2016	04/11/16 09:37	J
Beryllium	ND	0.0030	0.0002	1	B6D0146	04/07/2016	04/11/16 09:37	
Cadmium	ND	0.0030	0.0004	1	B6D0146	04/07/2016	04/11/16 09:37	
Chromium	**0.0010**	0.0030	0.0004	1	B6D0146	04/07/2016	04/11/16 09:37	J
Cobalt	ND	0.0030	0.0004	1	B6D0146	04/07/2016	04/11/16 09:37	
Copper	**0.0076**	0.0090	0.0014	1	B6D0146	04/07/2016	04/11/16 09:37	J
Lead	ND	0.0050	0.0019	1	B6D0146	04/07/2016	04/11/16 09:37	
Molybdenum	**0.0007**	0.0050	0.0006	1	B6D0146	04/07/2016	04/11/16 09:37	J
Nickel	**0.0015**	0.0050	0.0011	1	B6D0146	04/07/2016	04/11/16 09:37	J
Selenium	ND	0.010	0.0065	1	B6D0146	04/07/2016	04/11/16 09:37	
Silver	**0.0013**	0.0030	0.0012	1	B6D0146	04/07/2016	04/11/16 09:37	J
Thallium	ND	0.015	0.0037	1	B6D0146	04/07/2016	04/11/16 09:37	
Vanadium	ND	0.0030	0.0017	1	B6D0146	04/07/2016	04/11/16 09:37	
Zinc	**0.011**	0.025	0.0087	1	B6D0146	04/07/2016	04/11/16 09:37	J

Mercury by AA (Cold Vapor) EPA 7470A

Analyst: SB

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.20	0.13	1	B6D0147	04/07/2016	04/07/16 14:01	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-0.5
Lab ID: 1601202-02

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 14:28	
Arsenic	**4.1**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 14:28	
Barium	**50**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:28	
Beryllium	**0.21**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 14:28	J
Cadmium	**0.09**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 14:28	J
Chromium	**8.7**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 14:28	
Cobalt	**3.1**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 14:28	
Copper	**6.1**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:28	
Lead	**4.2**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 14:28	
Molybdenum	**0.04**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:28	J
Nickel	**5.2**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 14:28	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 14:28	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:28	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 14:28	
Vanadium	**23**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 14:28	
Zinc	**18**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 14:28	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 12:58	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 12:57	
Surrogate: 4-Bromofluorobenzene	*103 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 12:57*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.3**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:27	
C23-C32	**3.9**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:27	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-0.5

Lab ID: 1601202-02

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*92.0 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 21:27*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-1.5
Lab ID: 1601202-03

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	**0.49**	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 14:41	J
Arsenic	**6.5**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 14:41	
Barium	**42**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:41	
Beryllium	**0.19**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 14:41	J
Cadmium	**0.08**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 14:41	J
Chromium	**8.4**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 14:41	
Cobalt	**2.7**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 14:41	
Copper	**5.8**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:41	
Lead	**3.8**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 14:41	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:41	
Nickel	**5.0**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 14:41	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 14:41	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:41	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 14:41	
Vanadium	**25**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 14:41	
Zinc	**14**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 14:41	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:10	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 13:13	
Surrogate: 4-Bromofluorobenzene	*105 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 13:13*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.8**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 20:53	
C23-C32	**3.6**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 20:53	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
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Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-1.5

Lab ID: 1601202-03

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*86.4 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 20:53*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-2.5
Lab ID: 1601202-04

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 14:44	
Arsenic	**6.7**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 14:44	
Barium	**44**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:44	
Beryllium	**0.21**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 14:44	J
Cadmium	**0.10**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 14:44	J
Chromium	**24**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 14:44	
Cobalt	**3.3**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 14:44	
Copper	**6.5**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:44	
Lead	**3.9**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 14:44	
Molybdenum	**0.04**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:44	J
Nickel	**12**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 14:44	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 14:44	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:44	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 14:44	
Vanadium	**33**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 14:44	
Zinc	**16**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 14:44	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:12	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 13:29	
Surrogate: 4-Bromofluorobenzene	*105 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 13:29*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.3**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:10	
C23-C32	**4.6**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:10	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-01-2.5

Lab ID: 1601202-04

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*85.2 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 21:10*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-02-0.5
Lab ID: 1601202-05

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 14:47	
Arsenic	**4.2**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 14:47	
Barium	**110**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:47	
Beryllium	**0.21**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 14:47	J
Cadmium	**0.09**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 14:47	J
Chromium	**8.4**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 14:47	
Cobalt	**2.8**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 14:47	
Copper	**6.7**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:47	
Lead	**4.1**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 14:47	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:47	
Nickel	**4.9**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 14:47	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 14:47	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:47	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 14:47	
Vanadium	**27**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 14:47	
Zinc	**19**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 14:47	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:14	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 13:45	
Surrogate: 4-Bromofluorobenzene	*102 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 13:45*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**3.4**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:36	
C23-C32	**8.9**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:36	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-02-0.5

Lab ID: 1601202-05

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*81.7 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 22:36*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-02-1.5
Lab ID: 1601202-06

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 14:51	
Arsenic	**4.3**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 14:51	
Barium	**51**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:51	
Beryllium	**0.19**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 14:51	J
Cadmium	**0.09**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 14:51	J
Chromium	**21**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 14:51	
Cobalt	**3.0**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 14:51	
Copper	**6.7**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:51	
Lead	**3.8**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 14:51	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 14:51	
Nickel	**11**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 14:51	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 14:51	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 14:51	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 14:51	
Vanadium	**29**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 14:51	
Zinc	**19**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 14:51	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:20	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 14:00	
Surrogate: 4-Bromofluorobenzene	*99.9 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 14:00*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	ND	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:45	
C23-C32	**5.8**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 21:45	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
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Client Sample ID HA-02-1.5

Lab ID: 1601202-06

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*86.3 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 21:45*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-02-2.5
Lab ID: 1601202-07

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 15:01	
Arsenic	**3.1**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 15:01	
Barium	**56**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:01	
Beryllium	**0.20**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 15:01	J
Cadmium	**0.08**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 15:01	J
Chromium	**13**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 15:01	
Cobalt	**3.0**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 15:01	
Copper	**5.3**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:01	
Lead	**3.4**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 15:01	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:01	
Nickel	**7.6**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 15:01	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 15:01	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:01	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 15:01	
Vanadium	**26**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 15:01	
Zinc	**15**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 15:01	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:22	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 14:16	
Surrogate: 4-Bromofluorobenzene	*101 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 14:16*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	ND	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 19:28	
C23-C32	**2.3**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 19:28	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-02-2.5

Lab ID: 1601202-07

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*66.1 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 19:28*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-0.5
Lab ID: 1601202-08

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 15:04	
Arsenic	**3.3**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 15:04	
Barium	**41**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:04	
Beryllium	**0.18**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 15:04	J
Cadmium	**0.08**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 15:04	J
Chromium	**6.6**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 15:04	
Cobalt	**2.4**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 15:04	
Copper	**4.9**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:04	
Lead	**4.2**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 15:04	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:04	
Nickel	**3.8**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 15:04	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 15:04	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:04	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 15:04	
Vanadium	**23**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 15:04	
Zinc	**16**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 15:04	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:24	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 14:32	
Surrogate: 4-Bromofluorobenzene	*107 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 14:32*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.4**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:19	
C23-C32	**5.8**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:19	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-0.5

Lab ID: 1601202-08

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*78.3 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 22:19*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-1.5
Lab ID: 1601202-09

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 15:07	
Arsenic	**4.6**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 15:07	
Barium	**56**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:07	
Beryllium	**0.16**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 15:07	J
Cadmium	**0.09**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 15:07	J
Chromium	**7.2**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 15:07	
Cobalt	**2.9**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 15:07	
Copper	**25**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:07	
Lead	**2.9**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 15:07	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:07	
Nickel	**5.0**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 15:07	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 15:07	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:07	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 15:07	
Vanadium	**22**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 15:07	
Zinc	**13**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 15:07	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:27	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 12:25	
Surrogate: 4-Bromofluorobenzene	*113 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 12:25*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	ND	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 20:02	
C23-C32	**2.4**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 20:02	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-1.5

Lab ID: 1601202-09

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*86.3 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 20:02*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-2.5
Lab ID: 1601202-10

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 15:11	
Arsenic	**3.1**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 15:11	
Barium	**54**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:11	
Beryllium	**0.15**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 15:11	J
Cadmium	ND	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 15:11	
Chromium	**13**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 15:11	
Cobalt	**2.6**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 15:11	
Copper	**5.2**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:11	
Lead	**3.1**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 15:11	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:11	
Nickel	**6.7**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 15:11	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 15:11	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:11	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 15:11	
Vanadium	**24**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 15:11	
Zinc	**13**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 15:11	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:29	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 14:48	
Surrogate: 4-Bromofluorobenzene	*108 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 14:48*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	ND	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 19:11	
C23-C32	**2.8**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 19:11	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-03-2.5

Lab ID: 1601202-10

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*73.6 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 19:11*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-04-0.5
Lab ID: 1601202-11

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0107	04/06/2016	04/07/16 15:14	
Arsenic	**3.1**	1.0	0.55	1	B6D0107	04/06/2016	04/07/16 15:14	
Barium	**50**	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:14	
Beryllium	**0.17**	1.0	0.05	1	B6D0107	04/06/2016	04/07/16 15:14	J
Cadmium	**0.07**	1.0	0.06	1	B6D0107	04/06/2016	04/07/16 15:14	J
Chromium	**5.8**	1.0	0.19	1	B6D0107	04/06/2016	04/07/16 15:14	
Cobalt	**2.7**	1.0	0.11	1	B6D0107	04/06/2016	04/07/16 15:14	
Copper	**6.0**	2.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:14	
Lead	**13**	1.0	0.16	1	B6D0107	04/06/2016	04/07/16 15:14	
Molybdenum	ND	1.0	0.04	1	B6D0107	04/06/2016	04/07/16 15:14	
Nickel	**3.6**	1.0	0.10	1	B6D0107	04/06/2016	04/07/16 15:14	
Selenium	ND	1.0	0.32	1	B6D0107	04/06/2016	04/07/16 15:14	
Silver	ND	1.0	0.12	1	B6D0107	04/06/2016	04/07/16 15:14	
Thallium	ND	1.0	0.36	1	B6D0107	04/06/2016	04/07/16 15:14	
Vanadium	**23**	1.0	0.20	1	B6D0107	04/06/2016	04/07/16 15:14	
Zinc	**21**	1.0	0.49	1	B6D0107	04/06/2016	04/07/16 15:14	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0111	04/07/2016	04/07/16 13:31	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0138	04/07/2016	04/07/16 15:04	
Surrogate: 4-Bromofluorobenzene	*95.7 %*	*37 - 153*			B6D0138	04/07/2016	*04/07/16 15:04*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.9**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:53	
C23-C32	**12**	1.0	1.0	1	B6D0086	04/05/2016	04/05/16 22:53	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-04-0.5

Lab ID: 1601202-11

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*84.9 %*	*26 - 123*		B6D0086	04/05/2016	*04/05/16 22:53*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-04-1.5
Lab ID: 1601202-12

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:24	
Arsenic	**2.8**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:24	
Barium	**49**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:24	
Beryllium	**0.11**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:24	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:24	
Chromium	**5.2**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:24	
Cobalt	**2.1**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:24	
Copper	**3.4**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:24	
Lead	**2.3**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:24	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:24	
Nickel	**2.8**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:24	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:24	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:24	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:24	
Vanadium	**22**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:24	
Zinc	**9.6**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:24	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:37	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 11:28	
Surrogate: 4-Bromofluorobenzene	*102 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 11:28*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**3.2**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:34	
C23-C32	**1.5**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:34	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
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Client Sample ID HA-04-1.5

Lab ID: 1601202-12

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*95.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 12:34*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-04-2.5
Lab ID: 1601202-13

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	**0.50**	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:44	J
Arsenic	**3.1**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:44	
Barium	**40**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:44	
Beryllium	**0.12**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:44	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:44	
Chromium	**4.5**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:44	
Cobalt	**1.8**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:44	
Copper	**3.2**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:44	
Lead	**1.9**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:44	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:44	
Nickel	**2.4**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:44	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:44	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:44	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:44	
Vanadium	**19**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:44	
Zinc	**8.9**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:44	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:51	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 13:35	
Surrogate: 4-Bromofluorobenzene	*103 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 13:35*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.9**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:31	
C23-C32	ND	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:31	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-04-2.5

Lab ID: 1601202-13

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*89.4 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 11:31*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-0.5
Lab ID: 1601202-14

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:47	
Arsenic	**2.4**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:47	
Barium	**45**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:47	
Beryllium	**0.15**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:47	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:47	
Chromium	**4.0**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:47	
Cobalt	**2.0**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:47	
Copper	**3.9**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:47	
Lead	**2.5**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:47	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:47	
Nickel	**2.7**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:47	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:47	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:47	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:47	
Vanadium	**16**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:47	
Zinc	**12**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:47	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:53	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 12:00	
Surrogate: 4-Bromofluorobenzene	*115 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 12:00*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**3.0**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:42	
C23-C32	**1.3**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:42	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-0.5

Lab ID: 1601202-14

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*93.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 11:42*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-1.5
Lab ID: 1601202-15

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:50	
Arsenic	**2.7**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:50	
Barium	**46**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:50	
Beryllium	**0.17**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:50	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:50	
Chromium	**6.0**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:50	
Cobalt	**2.4**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:50	
Copper	**4.1**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:50	
Lead	**2.5**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:50	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:50	
Nickel	**3.7**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:50	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:50	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:50	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:50	
Vanadium	**18**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:50	
Zinc	**12**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:50	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.02**	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:55	J

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 13:50	
Surrogate: 4-Bromofluorobenzene	*111 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 13:50*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.5**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:52	
C23-C32	ND	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:52	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-1.5

Lab ID: 1601202-15

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*96.0 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 11:52*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-2.5
Lab ID: 1601202-16

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:53	
Arsenic	**3.0**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:53	
Barium	**45**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:53	
Beryllium	**0.20**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:53	J
Cadmium	**0.06**	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:53	J
Chromium	**7.3**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:53	
Cobalt	**2.9**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:53	
Copper	**5.3**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:53	
Lead	**3.1**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:53	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:53	
Nickel	**4.5**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:53	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:53	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:53	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:53	
Vanadium	**23**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:53	
Zinc	**15**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:53	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:57	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 14:06	
Surrogate: 4-Bromofluorobenzene	*102 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 14:06*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**4.0**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:02	
C23-C32	**1.1**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:02	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-05-2.5

Lab ID: 1601202-16

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*90.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 12:02*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-0.5
Lab ID: 1601202-17

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 15:56	
Arsenic	**2.8**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 15:56	
Barium	**41**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:56	
Beryllium	**0.14**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 15:56	J
Cadmium	**0.06**	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 15:56	J
Chromium	**3.8**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 15:56	
Cobalt	**1.8**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 15:56	
Copper	**3.7**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:56	
Lead	**2.8**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 15:56	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 15:56	
Nickel	**2.3**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 15:56	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 15:56	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 15:56	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 15:56	
Vanadium	**19**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 15:56	
Zinc	**13**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 15:56	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 13:59	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 14:21	
Surrogate: 4-Bromofluorobenzene	*107 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 14:21*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.1**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:55	
C23-C32	**1.7**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:55	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-0.5

Lab ID: 1601202-17

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*85.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 12:55*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-1.5
Lab ID: 1601202-18

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 16:00	
Arsenic	**2.4**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 16:00	
Barium	**45**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:00	
Beryllium	**0.16**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 16:00	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 16:00	
Chromium	**4.3**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 16:00	
Cobalt	**2.3**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 16:00	
Copper	**3.9**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:00	
Lead	**2.5**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 16:00	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:00	
Nickel	**2.8**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 16:00	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 16:00	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:00	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 16:00	
Vanadium	**18**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 16:00	
Zinc	**11**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 16:00	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 14:01	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 14:37	
Surrogate: 4-Bromofluorobenzene	*108 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 14:37*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.3**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:21	
C23-C32	ND	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 11:21	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-1.5

Lab ID: 1601202-18

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*91.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 11:21*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-2.5
Lab ID: 1601202-19

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 16:03	
Arsenic	**2.3**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 16:03	
Barium	**36**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:03	
Beryllium	**0.12**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 16:03	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 16:03	
Chromium	**4.5**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 16:03	
Cobalt	**2.1**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 16:03	
Copper	**3.5**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:03	
Lead	**2.7**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 16:03	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:03	
Nickel	**2.8**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 16:03	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 16:03	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:03	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 16:03	
Vanadium	**19**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 16:03	
Zinc	**11**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 16:03	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 14:03	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 14:53	
Surrogate: 4-Bromofluorobenzene	*113 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 14:53*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.9**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:13	
C23-C32	ND	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:13	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-06-2.5

Lab ID: 1601202-19

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*93.3 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 12:13*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-0.5
Lab ID: 1601202-20

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 16:06	
Arsenic	**3.1**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 16:06	
Barium	**39**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:06	
Beryllium	**0.17**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 16:06	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 16:06	
Chromium	**4.9**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 16:06	
Cobalt	**2.3**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 16:06	
Copper	**4.1**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:06	
Lead	**3.1**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 16:06	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:06	
Nickel	**3.0**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 16:06	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 16:06	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:06	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 16:06	
Vanadium	**20**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 16:06	
Zinc	**13**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 16:06	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 14:10	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 15:09	
Surrogate: 4-Bromofluorobenzene	*105 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 15:09*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.2**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:23	
C23-C32	**1.2**	1.0	1.0	1	B6D0091	04/05/2016	04/06/16 12:23	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-0.5

Lab ID: 1601202-20

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*84.5 %*	*26 - 123*		B6D0091	04/05/2016	*04/06/16 12:23*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-1.5
Lab ID: 1601202-21

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0108	04/06/2016	04/07/16 16:09	
Arsenic	**2.8**	1.0	0.55	1	B6D0108	04/06/2016	04/07/16 16:09	
Barium	**61**	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:09	
Beryllium	**0.20**	1.0	0.05	1	B6D0108	04/06/2016	04/07/16 16:09	J
Cadmium	ND	1.0	0.06	1	B6D0108	04/06/2016	04/07/16 16:09	
Chromium	**5.7**	1.0	0.19	1	B6D0108	04/06/2016	04/07/16 16:09	
Cobalt	**3.0**	1.0	0.11	1	B6D0108	04/06/2016	04/07/16 16:09	
Copper	**4.7**	2.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:09	
Lead	**3.1**	1.0	0.16	1	B6D0108	04/06/2016	04/07/16 16:09	
Molybdenum	ND	1.0	0.04	1	B6D0108	04/06/2016	04/07/16 16:09	
Nickel	**3.5**	1.0	0.10	1	B6D0108	04/06/2016	04/07/16 16:09	
Selenium	ND	1.0	0.32	1	B6D0108	04/06/2016	04/07/16 16:09	
Silver	ND	1.0	0.12	1	B6D0108	04/06/2016	04/07/16 16:09	
Thallium	ND	1.0	0.36	1	B6D0108	04/06/2016	04/07/16 16:09	
Vanadium	**22**	1.0	0.20	1	B6D0108	04/06/2016	04/07/16 16:09	
Zinc	**14**	1.0	0.49	1	B6D0108	04/06/2016	04/07/16 16:09	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0112	04/07/2016	04/07/16 14:12	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0104	04/06/2016	04/06/16 15:33	
Surrogate: 4-Bromofluorobenzene	*111 %*	*37 - 153*			B6D0104	04/06/2016	*04/06/16 15:33*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.6**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 17:48	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 17:48	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-1.5

Lab ID: 1601202-21

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*74.8 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 17:48*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-2.5
Lab ID: 1601202-22

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:27	
Arsenic	**3.7**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:27	
Barium	**60**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:27	
Beryllium	**0.19**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:27	J
Cadmium	**0.07**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:27	J
Chromium	**6.1**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:27	
Cobalt	**2.8**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:27	
Copper	**5.0**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:27	
Lead	**3.3**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:27	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:27	
Nickel	**3.8**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:27	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:27	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:27	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:27	
Vanadium	**23**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:27	
Zinc	**15**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:27	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:18	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 21:58	
Surrogate: 4-Bromofluorobenzene	*107 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 21:58*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.1**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 17:59	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 17:59	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-07-2.5

Lab ID: 1601202-22

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*82.7 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 17:59*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-0.5
Lab ID: 1601202-23

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	**0.29**	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:39	J
Arsenic	**3.8**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:39	
Barium	**54**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:39	
Beryllium	**0.20**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:39	J
Cadmium	**0.08**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:39	J
Chromium	**9.2**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:39	
Cobalt	**3.0**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:39	
Copper	**5.7**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:39	
Lead	**3.6**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:39	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:39	
Nickel	**5.3**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:39	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:39	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:39	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:39	
Vanadium	**29**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:39	
Zinc	**17**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:39	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:28	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 22:14	
Surrogate: 4-Bromofluorobenzene	*109 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 22:14*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.7**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:09	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:09	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
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Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-0.5

Lab ID: 1601202-23

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*72.8 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 18:09*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-1.5
Lab ID: 1601202-24

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:42	
Arsenic	**3.8**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:42	
Barium	**53**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:42	
Beryllium	**0.20**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:42	J
Cadmium	**0.07**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:42	J
Chromium	**7.5**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:42	
Cobalt	**3.1**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:42	
Copper	**5.7**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:42	
Lead	**3.6**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:42	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:42	
Nickel	**4.4**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:42	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:42	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:42	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:42	
Vanadium	**28**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:42	
Zinc	**14**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:42	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:34	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 22:29	
Surrogate: 4-Bromofluorobenzene	*109 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 22:29*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**3.0**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:19	
C23-C32	**1.9**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:19	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-1.5

Lab ID: 1601202-24

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*95.9 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 18:19*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-2.5
Lab ID: 1601202-25

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:45	
Arsenic	**3.0**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:45	
Barium	**62**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:45	
Beryllium	**0.20**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:45	J
Cadmium	**0.07**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:45	J
Chromium	**8.1**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:45	
Cobalt	**2.9**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:45	
Copper	**5.1**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:45	
Lead	**3.2**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:45	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:45	
Nickel	**4.7**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:45	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:45	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:45	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:45	
Vanadium	**25**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:45	
Zinc	**15**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:45	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:36	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 22:45	
Surrogate: 4-Bromofluorobenzene	*119 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 22:45*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.4**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:30	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:30	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-08-2.5

Lab ID: 1601202-25

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*97.7 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 18:30*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-0.5
Lab ID: 1601202-26

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:49	
Arsenic	**4.1**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:49	
Barium	**50**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:49	
Beryllium	**0.24**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:49	J
Cadmium	**0.10**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:49	J
Chromium	**7.9**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:49	
Cobalt	**3.5**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:49	
Copper	**6.9**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:49	
Lead	**5.8**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:49	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:49	
Nickel	**4.9**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:49	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:49	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:49	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:49	
Vanadium	**31**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:49	
Zinc	**19**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:49	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:38	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 23:00	
Surrogate: 4-Bromofluorobenzene	*99.1 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 23:00*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.2**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:12	
C23-C32	**1.5**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:12	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-0.5

Lab ID: 1601202-26

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*86.8 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 19:12*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-1.5
Lab ID: 1601202-27

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 16:59	
Arsenic	**5.0**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 16:59	
Barium	**53**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:59	
Beryllium	**0.19**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 16:59	J
Cadmium	**0.08**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 16:59	J
Chromium	**9.1**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 16:59	
Cobalt	**3.0**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 16:59	
Copper	**5.4**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:59	
Lead	**3.0**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 16:59	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 16:59	
Nickel	**5.2**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 16:59	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 16:59	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 16:59	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 16:59	
Vanadium	**33**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 16:59	
Zinc	**13**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 16:59	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:40	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 23:16	
Surrogate: 4-Bromofluorobenzene	*95.8 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 23:16*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**1.7**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:41	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:41	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-1.5

Lab ID: 1601202-27

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*81.5 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 18:41*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-2.5
Lab ID: 1601202-28

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 17:02	
Arsenic	**7.4**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 17:02	
Barium	**42**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:02	
Beryllium	**0.18**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 17:02	J
Cadmium	**0.09**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 17:02	J
Chromium	**17**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 17:02	
Cobalt	**3.5**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 17:02	
Copper	**4.7**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:02	
Lead	**4.3**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 17:02	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:02	
Nickel	**8.5**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 17:02	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 17:02	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:02	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 17:02	
Vanadium	**44**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 17:02	
Zinc	**14**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 17:02	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:42	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 23:32	
Surrogate: 4-Bromofluorobenzene	*93.3 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 23:32*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.8**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:51	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 18:51	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-09-2.5

Lab ID: 1601202-28

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*91.9 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 18:51*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-10-0.5
Lab ID: 1601202-29

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 17:05	
Arsenic	**3.4**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 17:05	
Barium	**37**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:05	
Beryllium	**0.15**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 17:05	J
Cadmium	**0.09**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 17:05	J
Chromium	**6.7**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 17:05	
Cobalt	**2.6**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 17:05	
Copper	**5.5**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:05	
Lead	**7.5**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 17:05	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:05	
Nickel	**3.5**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 17:05	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 17:05	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:05	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 17:05	
Vanadium	**29**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 17:05	
Zinc	**37**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 17:05	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:44	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/06/2016	04/06/16 23:48	
Surrogate: 4-Bromofluorobenzene	*96.0 %*	*37 - 153*			B6D0133	04/06/2016	*04/06/16 23:48*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.6**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:23	
C23-C32	**4.4**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:23	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-10-0.5

Lab ID: 1601202-29

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*78.4 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 19:23*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-10-1.5
Lab ID: 1601202-30

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 17:09	
Arsenic	**2.4**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 17:09	
Barium	**25**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:09	
Beryllium	**0.16**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 17:09	J
Cadmium	ND	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 17:09	
Chromium	**9.3**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 17:09	
Cobalt	**2.3**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 17:09	
Copper	**4.5**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:09	
Lead	**2.6**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 17:09	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:09	
Nickel	**5.3**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 17:09	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 17:09	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:09	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 17:09	
Vanadium	**19**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 17:09	
Zinc	**11**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 17:09	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:46	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/07/2016	04/07/16 00:04	
Surrogate: 4-Bromofluorobenzene	*102 %*	*37 - 153*			B6D0133	04/07/2016	*04/07/16 00:04*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.2**	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:02	
C23-C32	ND	1.0	1.0	1	B6D0102	04/06/2016	04/06/16 19:02	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-10-1.5

Lab ID: 1601202-30

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*90.3 %*	*26 - 123*		B6D0102	04/06/2016	*04/06/16 19:02*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Client Sample ID HA-10-2.5
Lab ID: 1601202-31

Title 22 Metals by ICP-AES EPA 6010B

Analyst: RR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.21	1	B6D0109	04/06/2016	04/07/16 17:12	
Arsenic	**3.9**	1.0	0.55	1	B6D0109	04/06/2016	04/07/16 17:12	
Barium	**28**	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:12	
Beryllium	**0.16**	1.0	0.05	1	B6D0109	04/06/2016	04/07/16 17:12	J
Cadmium	**0.08**	1.0	0.06	1	B6D0109	04/06/2016	04/07/16 17:12	J
Chromium	**7.2**	1.0	0.19	1	B6D0109	04/06/2016	04/07/16 17:12	
Cobalt	**2.8**	1.0	0.11	1	B6D0109	04/06/2016	04/07/16 17:12	
Copper	**4.5**	2.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:12	
Lead	**3.0**	1.0	0.16	1	B6D0109	04/06/2016	04/07/16 17:12	
Molybdenum	ND	1.0	0.04	1	B6D0109	04/06/2016	04/07/16 17:12	
Nickel	**3.5**	1.0	0.10	1	B6D0109	04/06/2016	04/07/16 17:12	
Selenium	ND	1.0	0.32	1	B6D0109	04/06/2016	04/07/16 17:12	
Silver	ND	1.0	0.12	1	B6D0109	04/06/2016	04/07/16 17:12	
Thallium	ND	1.0	0.36	1	B6D0109	04/06/2016	04/07/16 17:12	
Vanadium	**38**	1.0	0.20	1	B6D0109	04/06/2016	04/07/16 17:12	
Zinc	**11**	1.0	0.49	1	B6D0109	04/06/2016	04/07/16 17:12	

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: SB

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.10	0.02	1	B6D0113	04/07/2016	04/07/16 14:48	

Gasoline Range Organics by EPA 8015B (Modified)

Analyst: MFR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C4-C12	ND	1.0	0.20	1	B6D0133	04/07/2016	04/07/16 00:19	
Surrogate: 4-Bromofluorobenzene	*102 %*	*37 - 153*			B6D0133	04/07/2016	*04/07/16 00:19*	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: CR

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C13-C22	**2.8**	1.0	1.0	1	B6D0103	04/06/2016	04/06/16 16:46	
C23-C32	ND	1.0	1.0	1	B6D0103	04/06/2016	04/06/16 16:46	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
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Client Sample ID HA-10-2.5

Lab ID: 1601202-31

Hydrocarbon Chain Distribution by EPA 8015B (Modified) **Analyst: CR**

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: p-Terphenyl	*89.4 %*	*26 - 123*		B6D0103	04/06/2016	*04/06/16 16:46*	

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
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QUALITY CONTROL SECTION

Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0107 - EPA 3050B_S									
Blank (B6D0107-BLK1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0			NR				
Arsenic	ND	1.0			NR				
Barium	ND	1.0			NR				
Beryllium	ND	1.0			NR				
Cadmium	ND	1.0			NR				
Chromium	ND	1.0			NR				
Cobalt	ND	1.0			NR				
Copper	0.124172	2.0			NR				J
Lead	ND	1.0			NR				
Molybdenum	0.040935	1.0			NR				J
Nickel	ND	1.0			NR				
Selenium	ND	1.0			NR				
Silver	ND	1.0			NR				
Thallium	ND	1.0			NR				
Vanadium	ND	1.0			NR				
Zinc	ND	1.0			NR				
LCS (B6D0107-BS1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	45.8626	2.0	50.0000		91.7	80 - 120			
Arsenic	46.1480	1.0	50.0000		92.3	80 - 120			
Barium	48.7477	1.0	50.0000		97.5	80 - 120			
Beryllium	48.0549	1.0	50.0000		96.1	80 - 120			
Cadmium	45.9926	1.0	50.0000		92.0	80 - 120			
Chromium	45.0376	1.0	50.0000		90.1	80 - 120			
Cobalt	47.4442	1.0	50.0000		94.9	80 - 120			
Copper	47.5417	2.0	50.0000		95.1	80 - 120			
Lead	47.5655	1.0	50.0000		95.1	80 - 120			
Molybdenum	46.8561	1.0	50.0000		93.7	80 - 120			
Nickel	46.8057	1.0	50.0000		93.6	80 - 120			
Selenium	43.7183	1.0	50.0000		87.4	80 - 120			
Silver	48.0444	1.0	50.0000		96.1	80 - 120			
Thallium	47.4959	1.0	50.0000		95.0	80 - 120			
Vanadium	48.8510	1.0	50.0000		97.7	80 - 120			
Zinc	45.1333	1.0	50.0000		90.3	80 - 120			
Duplicate (B6D0107-DUP1)			**Source: 1601202-02**	Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0		ND	NR			20	
Arsenic	3.03002	1.0		4.10425	NR		30.1	20	R
Barium	41.6164	1.0		49.8390	NR		18.0	20	
Beryllium	0.177918	1.0		0.205464	NR		14.4	20	J

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0107 - EPA 3050B_S (continued)									
Duplicate (B6D0107-DUP1) - Continued		**Source: 1601202-02**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Cadmium	0.080842	1.0		0.088238	NR		8.75	20	J
Chromium	6.73632	1.0		8.70454	NR		25.5	20	R
Cobalt	2.84859	1.0		3.11924	NR		9.07	20	
Copper	7.34234	2.0		6.13663	NR		17.9	20	
Lead	3.05918	1.0		4.20834	NR		31.6	20	R
Molybdenum	0.857338	1.0		0.043118	NR		181	20	R, J
Nickel	4.51078	1.0		5.22400	NR		14.7	20	
Selenium	ND	1.0		ND	NR			20	
Silver	ND	1.0		ND	NR			20	
Thallium	ND	1.0		ND	NR			20	
Vanadium	21.9064	1.0		22.7534	NR		3.79	20	
Zinc	18.4602	1.0		17.7388	NR		3.99	20	
Matrix Spike (B6D0107-MS1)		**Source: 1601202-02**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	92.6597	2.0	125.000	ND	74.1	28 - 106			
Arsenic	110.210	1.0	125.000	4.10425	84.9	57 - 109			
Barium	156.752	1.0	125.000	49.8390	85.5	18 - 159			
Beryllium	106.555	1.0	125.000	0.205464	85.1	61 - 107			
Cadmium	98.4164	1.0	125.000	0.088238	78.7	53 - 104			
Chromium	105.116	1.0	125.000	8.70454	77.1	53 - 121			
Cobalt	103.711	1.0	125.000	3.11924	80.5	55 - 109			
Copper	117.444	2.0	125.000	6.13663	89.0	58 - 124			
Lead	104.621	1.0	125.000	4.20834	80.3	35 - 129			
Molybdenum	93.7608	1.0	125.000	0.043118	75.0	57 - 108			
Nickel	104.168	1.0	125.000	5.22400	79.2	44 - 122			
Selenium	97.8322	1.0	125.000	ND	78.3	54 - 104			
Silver	107.842	1.0	125.000	ND	86.3	60 - 112			
Thallium	99.9183	1.0	125.000	ND	79.9	50 - 103			
Vanadium	131.810	1.0	125.000	22.7534	87.2	54 - 123			
Zinc	115.301	1.0	125.000	17.7388	78.0	29 - 132			
Matrix Spike Dup (B6D0107-MSD1)		**Source: 1601202-02**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	91.0760	2.0	125.000	ND	72.9	28 - 106	1.72	20	
Arsenic	106.340	1.0	125.000	4.10425	81.8	57 - 109	3.57	20	
Barium	148.666	1.0	125.000	49.8390	79.1	18 - 159	5.29	20	
Beryllium	104.477	1.0	125.000	0.205464	83.4	61 - 107	1.97	20	
Cadmium	96.3472	1.0	125.000	0.088238	77.0	53 - 104	2.12	20	
Chromium	105.579	1.0	125.000	8.70454	77.5	53 - 121	0.440	20	
Cobalt	101.433	1.0	125.000	3.11924	78.7	55 - 109	2.22	20	
Copper	114.325	2.0	125.000	6.13663	86.6	58 - 124	2.69	20	
Lead	101.599	1.0	125.000	4.20834	77.9	35 - 129	2.93	20	
Molybdenum	92.7678	1.0	125.000	0.043118	74.2	57 - 108	1.06	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0107 - EPA 3050B_S (continued)									
Matrix Spike Dup (B6D0107-MSD1) - Continued		**Source: 1601202-02**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Nickel	102.890	1.0	125.000	5.22400	78.1	44 - 122	1.23	20	
Selenium	94.4766	1.0	125.000	ND	75.6	54 - 104	3.49	20	
Silver	105.248	1.0	125.000	ND	84.2	60 - 112	2.43	20	
Thallium	97.0844	1.0	125.000	ND	77.7	50 - 103	2.88	20	
Vanadium	128.477	1.0	125.000	22.7534	84.6	54 - 123	2.56	20	
Zinc	112.164	1.0	125.000	17.7388	75.5	29 - 132	2.76	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0108 - EPA 3050B_S									
Blank (B6D0108-BLK1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0			NR				
Arsenic	ND	1.0			NR				
Barium	ND	1.0			NR				
Beryllium	ND	1.0			NR				
Cadmium	ND	1.0			NR				
Chromium	ND	1.0			NR				
Cobalt	ND	1.0			NR				
Copper	ND	2.0			NR				
Lead	ND	1.0			NR				
Molybdenum	ND	1.0			NR				
Nickel	ND	1.0			NR				
Selenium	ND	1.0			NR				
Silver	ND	1.0			NR				
Thallium	ND	1.0			NR				
Vanadium	ND	1.0			NR				
Zinc	ND	1.0			NR				
LCS (B6D0108-BS1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	46.9742	2.0	50.0000		93.9	80 - 120			
Arsenic	47.9112	1.0	50.0000		95.8	80 - 120			
Barium	49.8678	1.0	50.0000		99.7	80 - 120			
Beryllium	48.5937	1.0	50.0000		97.2	80 - 120			
Cadmium	47.0296	1.0	50.0000		94.1	80 - 120			
Chromium	46.2528	1.0	50.0000		92.5	80 - 120			
Cobalt	48.4295	1.0	50.0000		96.9	80 - 120			
Copper	48.8257	2.0	50.0000		97.7	80 - 120			
Lead	49.1808	1.0	50.0000		98.4	80 - 120			
Molybdenum	48.0244	1.0	50.0000		96.0	80 - 120			
Nickel	47.9257	1.0	50.0000		95.9	80 - 120			
Selenium	44.8488	1.0	50.0000		89.7	80 - 120			
Silver	49.2073	1.0	50.0000		98.4	80 - 120			
Thallium	49.1295	1.0	50.0000		98.3	80 - 120			
Vanadium	51.5170	1.0	50.0000		103	80 - 120			
Zinc	46.0602	1.0	50.0000		92.1	80 - 120			
Duplicate (B6D0108-DUP1)			**Source: 1601202-12**	Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0		ND	NR			20	
Arsenic	2.85760	1.0		2.75331	NR		3.72	20	
Barium	47.5642	1.0		48.5636	NR		2.08	20	
Beryllium	0.125227	1.0		0.114820	NR		8.67	20	J
Cadmium	ND	1.0		ND	NR			20	
Chromium	20.6093	1.0		5.17882	NR		120	20	R

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0108 - EPA 3050B_S (continued)									
Duplicate (B6D0108-DUP1) - Continued		**Source: 1601202-12**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Cobalt	2.36058	1.0		2.08235	NR		12.5	20	
Copper	4.01524	2.0		3.38980	NR		16.9	20	
Lead	2.46764	1.0		2.25593	NR		8.96	20	
Molybdenum	0.045100	1.0		ND	NR			20	J
Nickel	10.0112	1.0		2.82155	NR		112	20	R
Selenium	ND	1.0		ND	NR			20	
Silver	ND	1.0		ND	NR			20	
Thallium	ND	1.0		ND	NR			20	
Vanadium	23.9358	1.0		21.7930	NR		9.37	20	
Zinc	9.90579	1.0		9.59326	NR		3.21	20	
Matrix Spike (B6D0108-MS1)		**Source: 1601202-12**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	97.3242	2.0	125.000	ND	77.9	28 - 106			
Arsenic	108.918	1.0	125.000	2.75331	84.9	57 - 109			
Barium	158.344	1.0	125.000	48.5636	87.8	18 - 159			
Beryllium	108.682	1.0	125.000	0.114820	86.9	61 - 107			
Cadmium	102.162	1.0	125.000	ND	81.7	53 - 104			
Chromium	105.956	1.0	125.000	5.17882	80.6	53 - 121			
Cobalt	107.162	1.0	125.000	2.08235	84.1	55 - 109			
Copper	116.059	2.0	125.000	3.38980	90.1	58 - 124			
Lead	108.420	1.0	125.000	2.25593	84.9	35 - 129			
Molybdenum	97.6523	1.0	125.000	ND	78.1	57 - 108			
Nickel	106.718	1.0	125.000	2.82155	83.1	44 - 122			
Selenium	97.6120	1.0	125.000	ND	78.1	54 - 104			
Silver	108.476	1.0	125.000	ND	86.8	60 - 112			
Thallium	105.024	1.0	125.000	ND	84.0	50 - 103			
Vanadium	136.523	1.0	125.000	21.7930	91.8	54 - 123			
Zinc	111.693	1.0	125.000	9.59326	81.7	29 - 132			
Matrix Spike Dup (B6D0108-MSD1)		**Source: 1601202-12**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	98.0805	2.0	125.000	ND	78.5	28 - 106	0.774	20	
Arsenic	108.703	1.0	125.000	2.75331	84.8	57 - 109	0.198	20	
Barium	159.083	1.0	125.000	48.5636	88.4	18 - 159	0.466	20	
Beryllium	109.459	1.0	125.000	0.114820	87.5	61 - 107	0.712	20	
Cadmium	105.022	1.0	125.000	ND	84.0	53 - 104	2.76	20	
Chromium	109.681	1.0	125.000	5.17882	83.6	53 - 121	3.45	20	
Cobalt	109.840	1.0	125.000	2.08235	86.2	55 - 109	2.47	20	
Copper	119.368	2.0	125.000	3.38980	92.8	58 - 124	2.81	20	
Lead	108.996	1.0	125.000	2.25593	85.4	35 - 129	0.529	20	
Molybdenum	97.8401	1.0	125.000	ND	78.3	57 - 108	0.192	20	
Nickel	110.036	1.0	125.000	2.82155	85.8	44 - 122	3.06	20	
Selenium	99.2821	1.0	125.000	ND	79.4	54 - 104	1.70	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0108 - EPA 3050B_S (continued)									
Matrix Spike Dup (B6D0108-MSD1) - Continued		**Source: 1601202-12**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Silver	110.982	1.0	125.000	ND	88.8	60 - 112	2.28	20	
Thallium	105.551	1.0	125.000	ND	84.4	50 - 103	0.500	20	
Vanadium	138.256	1.0	125.000	21.7930	93.2	54 - 123	1.26	20	
Zinc	114.425	1.0	125.000	9.59326	83.9	29 - 132	2.42	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0109 - EPA 3050B_S									
Blank (B6D0109-BLK1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0			NR				
Arsenic	ND	1.0			NR				
Barium	ND	1.0			NR				
Beryllium	ND	1.0			NR				
Cadmium	ND	1.0			NR				
Chromium	ND	1.0			NR				
Cobalt	ND	1.0			NR				
Copper	0.131793	2.0			NR				J
Lead	ND	1.0			NR				
Molybdenum	0.038056	1.0			NR				J
Nickel	ND	1.0			NR				
Selenium	ND	1.0			NR				
Silver	ND	1.0			NR				
Thallium	ND	1.0			NR				
Vanadium	ND	1.0			NR				
Zinc	ND	1.0			NR				
LCS (B6D0109-BS1)				Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	46.2175	2.0	50.0000		92.4	80 - 120			
Arsenic	46.7500	1.0	50.0000		93.5	80 - 120			
Barium	49.0914	1.0	50.0000		98.2	80 - 120			
Beryllium	48.5976	1.0	50.0000		97.2	80 - 120			
Cadmium	46.1362	1.0	50.0000		92.3	80 - 120			
Chromium	45.5880	1.0	50.0000		91.2	80 - 120			
Cobalt	47.7398	1.0	50.0000		95.5	80 - 120			
Copper	47.9606	2.0	50.0000		95.9	80 - 120			
Lead	48.5865	1.0	50.0000		97.2	80 - 120			
Molybdenum	48.0591	1.0	50.0000		96.1	80 - 120			
Nickel	47.2101	1.0	50.0000		94.4	80 - 120			
Selenium	43.6598	1.0	50.0000		87.3	80 - 120			
Silver	48.0587	1.0	50.0000		96.1	80 - 120			
Thallium	47.9592	1.0	50.0000		95.9	80 - 120			
Vanadium	50.3293	1.0	50.0000		101	80 - 120			
Zinc	45.0135	1.0	50.0000		90.0	80 - 120			
Duplicate (B6D0109-DUP1)			**Source: 1601202-22**	Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	ND	2.0		ND	NR			20	
Arsenic	3.17860	1.0		3.73996	NR		16.2	20	
Barium	63.0804	1.0		59.9285	NR		5.12	20	
Beryllium	0.200935	1.0		0.192803	NR		4.13	20	J
Cadmium	0.069537	1.0		0.066383	NR		4.64	20	J
Chromium	5.88760	1.0		6.07472	NR		3.13	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0109 - EPA 3050B_S (continued)									
Duplicate (B6D0109-DUP1) - Continued		**Source: 1601202-22**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Cobalt	3.13378	1.0		2.80573	NR		11.0	20	
Copper	5.60764	2.0		5.03454	NR		10.8	20	
Lead	3.14003	1.0		3.27059	NR		4.07	20	
Molybdenum	ND	1.0		ND	NR			20	
Nickel	3.94282	1.0		3.82515	NR		3.03	20	
Selenium	ND	1.0		ND	NR			20	
Silver	ND	1.0		ND	NR			20	
Thallium	ND	1.0		ND	NR			20	
Vanadium	23.8509	1.0		23.3818	NR		1.99	20	
Zinc	14.8828	1.0		15.0616	NR		1.19	20	
Matrix Spike (B6D0109-MS1)		**Source: 1601202-22**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	93.2057	2.0	125.000	ND	74.6	28 - 106			
Arsenic	106.221	1.0	125.000	3.73996	82.0	57 - 109			
Barium	175.886	1.0	125.000	59.9285	92.8	18 - 159			
Beryllium	108.915	1.0	125.000	0.192803	87.0	61 - 107			
Cadmium	103.221	1.0	125.000	0.066383	82.5	53 - 104			
Chromium	107.203	1.0	125.000	6.07472	80.9	53 - 121			
Cobalt	107.976	1.0	125.000	2.80573	84.1	55 - 109			
Copper	119.248	2.0	125.000	5.03454	91.4	58 - 124			
Lead	107.323	1.0	125.000	3.27059	83.2	35 - 129			
Molybdenum	95.1152	1.0	125.000	ND	76.1	57 - 108			
Nickel	108.069	1.0	125.000	3.82515	83.4	44 - 122			
Selenium	96.5962	1.0	125.000	ND	77.3	54 - 104			
Silver	109.528	1.0	125.000	ND	87.6	60 - 112			
Thallium	102.006	1.0	125.000	ND	81.6	50 - 103			
Vanadium	136.668	1.0	125.000	23.3818	90.6	54 - 123			
Zinc	117.362	1.0	125.000	15.0616	81.8	29 - 132			
Matrix Spike Dup (B6D0109-MSD1)		**Source: 1601202-22**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Antimony	96.2060	2.0	125.000	ND	77.0	28 - 106	3.17	20	
Arsenic	109.318	1.0	125.000	3.73996	84.5	57 - 109	2.87	20	
Barium	175.065	1.0	125.000	59.9285	92.1	18 - 159	0.468	20	
Beryllium	108.872	1.0	125.000	0.192803	86.9	61 - 107	0.0391	20	
Cadmium	102.259	1.0	125.000	0.066383	81.8	53 - 104	0.937	20	
Chromium	107.075	1.0	125.000	6.07472	80.8	53 - 121	0.119	20	
Cobalt	107.613	1.0	125.000	2.80573	83.8	55 - 109	0.337	20	
Copper	119.021	2.0	125.000	5.03454	91.2	58 - 124	0.191	20	
Lead	109.812	1.0	125.000	3.27059	85.2	35 - 129	2.29	20	
Molybdenum	96.8016	1.0	125.000	ND	77.4	57 - 108	1.76	20	
Nickel	107.522	1.0	125.000	3.82515	83.0	44 - 122	0.508	20	
Selenium	98.1027	1.0	125.000	ND	78.5	54 - 104	1.55	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0109 - EPA 3050B_S (continued)									
Matrix Spike Dup (B6D0109-MSD1) - Continued		**Source: 1601202-22**		Prepared: 4/6/2016 Analyzed: 4/7/2016					
Silver	109.101	1.0	125.000	ND	87.3	60 - 112	0.390	20	
Thallium	103.527	1.0	125.000	ND	82.8	50 - 103	1.48	20	
Vanadium	138.751	1.0	125.000	23.3818	92.3	54 - 123	1.51	20	
Zinc	117.196	1.0	125.000	15.0616	81.7	29 - 132	0.141	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0146 - EPA 3010A_W									
Blank (B6D0146-BLK1)				Prepared: 4/7/2016 Analyzed: 4/11/2016					
Antimony	ND	0.010			NR				
Arsenic	ND	0.010			NR				
Barium	ND	0.0030			NR				
Beryllium	ND	0.0030			NR				
Cadmium	ND	0.0030			NR				
Chromium	0.000682	0.0030			NR				J
Cobalt	ND	0.0030			NR				
Copper	0.007913	0.0090			NR				J
Lead	ND	0.0050			NR				
Molybdenum	0.000702	0.0050			NR				J
Nickel	0.001146	0.0050			NR				J
Selenium	ND	0.010			NR				
Silver	ND	0.0030			NR				
Thallium	ND	0.015			NR				
Vanadium	ND	0.0030			NR				
Zinc	ND	0.025			NR				
LCS (B6D0146-BS1)				Prepared: 4/7/2016 Analyzed: 4/11/2016					
Antimony	0.931929	0.010	1.00000		93.2	80 - 120			
Arsenic	0.920553	0.010	1.00000		92.1	80 - 120			
Barium	0.988172	0.0030	1.00000		98.8	80 - 120			
Beryllium	0.970783	0.0030	1.00000		97.1	80 - 120			
Cadmium	0.954551	0.0030	1.00000		95.5	80 - 120			
Chromium	0.977145	0.0030	1.00000		97.7	80 - 120			
Cobalt	0.959428	0.0030	1.00000		95.9	80 - 120			
Copper	0.982986	0.0090	1.00000		98.3	80 - 120			
Lead	0.973082	0.0050	1.00000		97.3	80 - 120			
Molybdenum	0.960440	0.0050	1.00000		96.0	80 - 120			
Nickel	0.959132	0.0050	1.00000		95.9	80 - 120			
Selenium	0.924815	0.010	1.00000		92.5	80 - 120			
Silver	0.980959	0.0030	1.00000		98.1	80 - 120			
Thallium	0.974362	0.015	1.00000		97.4	80 - 120			
Vanadium	0.959900	0.0030	1.00000		96.0	80 - 120			
Zinc	0.940334	0.025	1.00000		94.0	80 - 120			
LCS Dup (B6D0146-BSD1)				Prepared: 4/7/2016 Analyzed: 4/11/2016					
Antimony	0.943219	0.010	1.00000		94.3	80 - 120	1.20	20	
Arsenic	0.926307	0.010	1.00000		92.6	80 - 120	0.623	20	
Barium	0.992179	0.0030	1.00000		99.2	80 - 120	0.405	20	
Beryllium	0.972039	0.0030	1.00000		97.2	80 - 120	0.129	20	
Cadmium	0.955430	0.0030	1.00000		95.5	80 - 120	0.0921	20	
Chromium	0.979400	0.0030	1.00000		97.9	80 - 120	0.230	20	

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Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0146 - EPA 3010A_W (continued)									
LCS Dup (B6D0146-BSD1) - Continued				Prepared: 4/7/2016 Analyzed: 4/11/2016					
Cobalt	0.963012	0.0030	1.00000		96.3	80 - 120	0.373	20	
Copper	0.987731	0.0090	1.00000		98.8	80 - 120	0.482	20	
Lead	0.980123	0.0050	1.00000		98.0	80 - 120	0.721	20	
Molybdenum	0.965112	0.0050	1.00000		96.5	80 - 120	0.485	20	
Nickel	0.961515	0.0050	1.00000		96.2	80 - 120	0.248	20	
Selenium	0.932261	0.010	1.00000		93.2	80 - 120	0.802	20	
Silver	0.988572	0.0030	1.00000		98.9	80 - 120	0.773	20	
Thallium	0.983346	0.015	1.00000		98.3	80 - 120	0.918	20	
Vanadium	0.963086	0.0030	1.00000		96.3	80 - 120	0.331	20	
Zinc	0.943426	0.025	1.00000		94.3	80 - 120	0.328	20	
Duplicate (B6D0146-DUP1)		**Source: 1601202-01**		Prepared: 4/7/2016 Analyzed: 4/11/2016					
Antimony	ND	0.010		ND	NR			20	
Arsenic	ND	0.010		ND	NR			20	
Barium	0.000315	0.0030		3.805E-4	NR		18.8	20	J
Beryllium	ND	0.0030		ND	NR			20	
Cadmium	ND	0.0030		ND	NR			20	
Chromium	0.000933	0.0030		0.001036	NR		10.5	20	J
Cobalt	ND	0.0030		ND	NR			20	
Copper	0.006366	0.0090		0.007624	NR		18.0	20	J
Lead	ND	0.0050		ND	NR			20	
Molybdenum	0.000732	0.0050		0.000724	NR		0.999	20	J
Nickel	0.001904	0.0050		0.001520	NR		22.4	20	R, J
Selenium	ND	0.010		ND	NR			20	
Silver	0.001229	0.0030		0.001292	NR		5.04	20	J
Thallium	ND	0.015		ND	NR			20	
Vanadium	ND	0.0030		ND	NR			20	
Zinc	0.013642	0.025		0.011075	NR		20.8	20	R, J

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Mercury by AA (Cold Vapor) EPA 7470A - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0147 - EPA 245.1/7470_W									
Blank (B6D0147-BLK1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.20			NR				
LCS (B6D0147-BS1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	10.9221	0.20	10.0000		109	80 - 120			
LCS Dup (B6D0147-BSD1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	10.6687	0.20	10.0000		107	80 - 120	2.35	20	
Duplicate (B6D0147-DUP1)		**Source: 1601202-01**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.20		ND	NR			20	
Post Spike (B6D0147-PS1)		**Source: 1601202-01**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	5.35487		5.00000	ND	107	85 - 115			

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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0111 - EPA 7471_S									
Blank (B6D0111-BLK1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10			NR				
LCS (B6D0111-BS1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.874289	0.10	0.833333		105	80 - 120			
Duplicate (B6D0111-DUP1)		**Source: 1601202-02**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10		ND	NR			20	
Matrix Spike (B6D0111-MS1)		**Source: 1601202-02**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.911720	0.10	0.847458	ND	108	70 - 130			
Matrix Spike Dup (B6D0111-MSD1)		**Source: 1601202-02**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.907392	0.10	0.833333	ND	109	70 - 130	0.476	20	
Post Spike (B6D0111-PS1)		**Source: 1601202-02**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.006160		5.00000E-3	ND	122	85 - 115			M1

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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0112 - EPA 7471_S									
Blank (B6D0112-BLK1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10			NR				
LCS (B6D0112-BS1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.921851	0.10	0.833333		111	80 - 120			
Duplicate (B6D0112-DUP1)		**Source: 1601202-12**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10		ND	NR			20	
Matrix Spike (B6D0112-MS1)		**Source: 1601202-12**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.949848	0.10	0.833333	ND	114	70 - 130			
Matrix Spike Dup (B6D0112-MSD1)		**Source: 1601202-12**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.927719	0.10	0.833333	ND	111	70 - 130	2.36	20	
Post Spike (B6D0112-PS1)		**Source: 1601202-12**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.006288		5.00000E-3	ND	125	85 - 115			M1

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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0113 - EPA 7471_S									
Blank (B6D0113-BLK1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10			NR				
LCS (B6D0113-BS1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.811136	0.10	0.833333		97.3	80 - 120			
Duplicate (B6D0113-DUP1)		**Source: 1601202-22**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	ND	0.10		ND	NR			20	
Matrix Spike (B6D0113-MS1)		**Source: 1601202-22**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.870435	0.10	0.833333	ND	104	70 - 130			
Matrix Spike Dup (B6D0113-MSD1)		**Source: 1601202-22**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.883797	0.10	0.833333	ND	106	70 - 130	1.52	20	
Post Spike (B6D0113-PS1)		**Source: 1601202-22**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Mercury	0.006256		5.00000E-3	ND	124	85 - 115			M1

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Gasoline Range Organics by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0104 - GCVOA_S									
Blank (B6D0104-BLK1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
C4-C12	ND	1.0			NR				
Surrogate: 4-Bromofluorobenzene	*0.2122*		*0.199892*		*106*	*37 - 153*			
LCS (B6D0104-BS1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
Gasoline Range Organics	4.16300	1.0	5.00000		83.3	70 - 130			
Surrogate: 4-Bromofluorobenzene	*0.2352*		*0.199892*		*118*	*37 - 153*			
Duplicate (B6D0104-DUP1)		**Source: 1601202-12**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
Gasoline Range Organics	ND	1.0		ND	NR			20	
Surrogate: 4-Bromofluorobenzene	*0.2171*		*0.199892*		*109*	*37 - 153*			
Matrix Spike (B6D0104-MS1)		**Source: 1601202-14**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
Gasoline Range Organics	3.51100	1.0	5.00000	ND	70.2	20 - 130			
Surrogate: 4-Bromofluorobenzene	*0.2086*		*0.199892*		*104*	*37 - 153*			
Matrix Spike Dup (B6D0104-MSD1)		**Source: 1601202-14**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
Gasoline Range Organics	3.90000	1.0	5.00000	ND	78.0	20 - 130	10.5	20	
Surrogate: 4-Bromofluorobenzene	*0.2244*		*0.199892*		*112*	*37 - 153*			

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Gasoline Range Organics by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0133 - GCVOA_S									
Blank (B6D0133-BLK1)				Prepared: 4/6/2016 Analyzed: 4/6/2016					
C4-C12	ND	1.0			NR				
Surrogate: 4-Bromofluorobenzene	*0.2339*		*0.199892*		*117*	*37 - 153*			
LCS (B6D0133-BS1)				Prepared: 4/6/2016 Analyzed: 4/6/2016					
Gasoline Range Organics	4.03700	1.0	5.00000		80.7	70 - 130			
Surrogate: 4-Bromofluorobenzene	*0.2368*		*0.199892*		*118*	*37 - 153*			
Duplicate (B6D0133-DUP1)		**Source: 1601202-22**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Gasoline Range Organics	ND	1.0		ND	NR			20	
Surrogate: 4-Bromofluorobenzene	*0.2090*		*0.199892*		*105*	*37 - 153*			
Matrix Spike (B6D0133-MS1)		**Source: 1601205-14**		Prepared: 4/6/2016 Analyzed: 4/6/2016					
Gasoline Range Organics	3.28600	1.0	5.00000	ND	65.7	20 - 130			
Surrogate: 4-Bromofluorobenzene	*0.1776*		*0.199892*		*88.9*	*37 - 153*			
Matrix Spike Dup (B6D0133-MSD1)		**Source: 1601205-14**		Prepared: 4/6/2016 Analyzed: 4/6/2016					
Gasoline Range Organics	3.40000	1.0	5.00000	ND	68.0	20 - 130	3.41	20	
Surrogate: 4-Bromofluorobenzene	*0.1862*		*0.199892*		*93.2*	*37 - 153*			

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Gasoline Range Organics by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0138 - GCVOA_S									
Blank (B6D0138-BLK1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
C4-C12	ND	1.0			NR				
Surrogate: 4-Bromofluorobenzene	*0.2284*		*0.199892*		*114*	*37 - 153*			
LCS (B6D0138-BS1)				Prepared: 4/7/2016 Analyzed: 4/7/2016					
Gasoline Range Organics	4.84900	1.0	5.00000		97.0	70 - 130			
Surrogate: 4-Bromofluorobenzene	*0.2178*		*0.199892*		*109*	*37 - 153*			
Duplicate (B6D0138-DUP1)		**Source: 1601202-09**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Gasoline Range Organics	ND	1.0		ND	NR			20	
Surrogate: 4-Bromofluorobenzene	*0.2218*		*0.199892*		*111*	*37 - 153*			
Matrix Spike (B6D0138-MS1)		**Source: 1601248-01**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Gasoline Range Organics	3.05600	1.0	5.00000	ND	61.1	20 - 130			
Surrogate: 4-Bromofluorobenzene	*0.1817*		*0.199892*		*90.9*	*37 - 153*			
Matrix Spike Dup (B6D0138-MSD1)		**Source: 1601248-01**		Prepared: 4/7/2016 Analyzed: 4/7/2016					
Gasoline Range Organics	3.34900	1.0	5.00000	ND	67.0	20 - 130	9.15	20	
Surrogate: 4-Bromofluorobenzene	*0.2095*		*0.199892*		*105*	*37 - 153*			

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Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0086 - GCSEMI_DRO_LL_S									
Blank (B6D0086-BLK1)					Prepared: 4/5/2016 Analyzed: 4/6/2016				
C13-C22	ND	1.0			NR				
C23-C32	ND	1.0			NR				
Surrogate: p-Terphenyl	*2.403*		*2.66667*		*90.1*	*26 - 123*			
LCS (B6D0086-BS1)					Prepared: 4/5/2016 Analyzed: 4/5/2016				
DRO	29.3300	1.0	33.3333		88.0	47 - 127			
Surrogate: p-Terphenyl	*1.943*		*2.66667*		*72.9*	*26 - 123*			
Duplicate (B6D0086-DUP1)		**Source: 1601202-07**			Prepared: 4/5/2016 Analyzed: 4/5/2016				
DRO	3.23933	1.0		2.90733	NR		10.8	20	
Surrogate: p-Terphenyl	*1.815*		*2.66667*		*68.0*	*26 - 123*			
Matrix Spike (B6D0086-MS1)		**Source: 1601202-09**			Prepared: 4/5/2016 Analyzed: 4/5/2016				
DRO	24.4957	1.0	33.3333	3.82300	62.0	16 - 123			
Surrogate: p-Terphenyl	*1.912*		*2.66667*		*71.7*	*26 - 123*			
Matrix Spike Dup (B6D0086-MSD1)		**Source: 1601202-09**			Prepared: 4/5/2016 Analyzed: 4/5/2016				
DRO	22.2710	1.0	33.3333	3.82300	55.3	16 - 123	9.51	20	
Surrogate: p-Terphenyl	*1.958*		*2.66667*		*73.4*	*26 - 123*			

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Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0091 - GCSEMI_DRO_LL_S									
Blank (B6D0091-BLK1)					Prepared: 4/5/2016 Analyzed: 4/6/2016				
C13-C22	ND	1.0			NR				
C23-C32	ND	1.0			NR				
Surrogate: p-Terphenyl	*2.459*		*2.66667*		*92.2*	*26 - 123*			
LCS (B6D0091-BS1)					Prepared: 4/5/2016 Analyzed: 4/6/2016				
DRO	25.7620	1.0	33.3333		77.3	47 - 127			
Surrogate: p-Terphenyl	*2.019*		*2.66667*		*75.7*	*26 - 123*			
Duplicate (B6D0091-DUP1)		**Source: 1601202-13**			Prepared: 4/5/2016 Analyzed: 4/6/2016				
DRO	3.54800	1.0		3.54633	NR		0.0470	20	
Surrogate: p-Terphenyl	*2.188*		*2.66667*		*82.0*	*26 - 123*			
Matrix Spike (B6D0091-MS1)		**Source: 1601223-03**			Prepared: 4/5/2016 Analyzed: 4/6/2016				
DRO	57.2653	1.0	33.3333	29.8010	82.4	16 - 123			
Surrogate: p-Terphenyl	*2.183*		*2.66667*		*81.9*	*26 - 123*			
Matrix Spike Dup (B6D0091-MSD1)		**Source: 1601223-03**			Prepared: 4/5/2016 Analyzed: 4/6/2016				
DRO	36.9860	1.0	33.3333	29.8010	21.6	16 - 123	43.0	20	R2
Surrogate: p-Terphenyl	*2.370*		*2.66667*		*88.9*	*26 - 123*			

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0102 - GCSEMI_DRO_LL_S									
Blank (B6D0102-BLK1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
C13-C22	ND	1.0			NR				
C23-C32	ND	1.0			NR				
Surrogate: p-Terphenyl	*2.006*		*2.66667*		*75.2*	*26 - 123*			
LCS (B6D0102-BS1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	18.9737	1.0	33.3333		56.9	47 - 127			
Surrogate: p-Terphenyl	*2.313*		*2.66667*		*86.7*	*26 - 123*			
Duplicate (B6D0102-DUP1)		**Source: 1601202-21**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	2.31233	1.0		1.92900	NR		18.1	20	
Surrogate: p-Terphenyl	*2.033*		*2.66667*		*76.2*	*26 - 123*			
Matrix Spike (B6D0102-MS1)		**Source: 1601202-22**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	13.1937	1.0	33.3333	1.46000	35.2	16 - 123			
Surrogate: p-Terphenyl	*2.046*		*2.66667*		*76.7*	*26 - 123*			
Matrix Spike Dup (B6D0102-MSD1)		**Source: 1601202-22**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	10.8230	1.0	33.3333	1.46000	28.1	16 - 123	19.7	20	
Surrogate: p-Terphenyl	*1.756*		*2.66667*		*65.9*	*26 - 123*			

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B6D0103 - GCSEMI_DRO_LL_S									
Blank (B6D0103-BLK1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
C13-C22	ND	1.0			NR				
C23-C32	ND	1.0			NR				
Surrogate: p-Terphenyl	*2.246*		*2.66667*		*84.2*	*26 - 123*			
LCS (B6D0103-BS1)					Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	15.7250	1.0	33.3333		47.2	47 - 127			
Surrogate: p-Terphenyl	*2.359*		*2.66667*		*88.5*	*26 - 123*			
Duplicate (B6D0103-DUP1)		**Source: 1601202-31**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	3.10300	1.0		3.44433	NR		10.4	20	
Surrogate: p-Terphenyl	*2.210*		*2.66667*		*82.9*	*26 - 123*			
Matrix Spike (B6D0103-MS1)		**Source: 1601202-31**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	17.9103	1.0	33.3333	3.44433	43.4	16 - 123			
Surrogate: p-Terphenyl	*2.323*		*2.66667*		*87.1*	*26 - 123*			
Matrix Spike Dup (B6D0103-MSD1)		**Source: 1601202-31**			Prepared: 4/6/2016 Analyzed: 4/6/2016				
DRO	17.6970	1.0	33.3333	3.44433	42.8	16 - 123	1.20	20	
Surrogate: p-Terphenyl	*2.387*		*2.66667*		*89.5*	*26 - 123*			

Certificate of Analysis

Stantec	Project Number : 185803641, Caltrans TO21
25864-F Business Center Drive	Report To : Anne Perez
Redlands , CA 92374	Reported : 04/11/2016

Notes and Definitions

R2	RPD value outside acceptance criteria due to possible matrix interference.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)
TX1	TX-NELAP (TCEQ)

Notes:
(1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
(2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
(3) Results are wet unless otherwise specified.

Stantec

CHAIN OF CUSTODY

Laboratory Project Number: _____

Client Name/Address: Stantec Consulting Services 25864-F Business Center Drive Redlands, CA 92374	Project Manager: Anne Perez E-Mail Address: Anne.Perez@stantec.com Sampler Name: M. Bohn Stantec Project Number: 185803641 Project: Caltrans TO21
Laboratory (circle): Cal Science - 714-895-5494 ATL - 800-499-4388 TAL - 949-261-1022 Jones Environmental - 714-449-9937	

Analysis Required

Turn Around Time:
- Normal TAT: (X)
- 72 Hour:
- 48 Hour
- 24 Hour
- Same Day:
- Other:

Sample Temp °C: 5.3

Special Instructions

	Sample Description/Identification /60/202	Sample Matrix	Preservative (see below)	# of Cont.	Sample Date	Sample Time	Filtered Sample	Title 22 Metals	TPH (C4 - C32)	Special Instructions
1	EBQC-20160401	water	1	1	04/01/16	0600		X	X	lab filter + preserve
2	HA-01-0.5	soil	1	1		0610		X	X	
3	HA-01-1.5					0614		X	X	
4	HA-01-2.5					0620		X	X	
5	HA-02-0.5					0639		X	X	
6	HA-02-1.5					0651		X	X	
7	HA-02-2.5					0656		X	X	
8	HA-03-0.5					0705		X	X	
9	HA-03-1.5					0708		X	X	
10	HA-03-2.5					0711		X	X	
11	HA-04-0.5					0730		X	X	
12	HA-04-1.5					0733		X	X	
13	HA-04-2.5					0735		X	X	
14	HA-05-0.5					0743		X	X	
15	HA-05-1.5	↓	↓	↓	↓	0747		X	X	

Sample Preservative: 1=ICE - 2=HCl - 3=H_2SO_4 - 4=HNO_3 - 5=NaOH - 6=Other: _____

Special Instructions: Contact Anne Perez for additional analysis

	Date	Time	Received By + Company Name:	Date	Time
Relinquished By:	4/1/16	1315	ABNER MANGANAG	4/1/16	1600
Relinquished By + Company Name: ABNER MANGANAG	4/1/16	1807	FEDEX	4/1/16	1807
Relinquished By + Company Name:	Date	Time	Received By + Company Name:	Date	Time

Stantec CHAIN OF CUSTODY

Laboratory Project Number:

Client Name/Address:	Project Manager:
Stantec Consulting Services 25864-F Business Center Drive Redlands, CA 92374	Anne Perez
	E-Mail Address: Anne.Perez@stantec.com
	Sampler Name: **M. Bohn**
Laboratory (circle): **Cal Science - 714-895-5494** **ATL - 800-499-4388** **TAL - 949-261-1022** **Jones Environmental - 714-449-9937**	Stantec Project Number: 185803641 Project: Caltrans TO21

Sample Description/Identification / GO/202	Sample Matrix	Preservative (see below)	# of Cont.	Sample Date	Sample Time	Filtered Sample	Title 22 Metals	TPH (C4 - C32)								Special Instructions
16 HA-05-2.5	soil	1	1	04/01/16	0748		X	X								
17 HA-06-0.5					0755		X	X								
18 HA-06-1.5					0758		X	X								
19 HA-06-2.5					0759		X	X								
20 HA-07-0.5					0810		X	X								
21 HA-07-1.5					0813		X	X								
22 HA-07-2.5					0815		X	X								
23 HA-08-0.5					0827		X	X								
24 HA-08-1.5					0836		X	X								
25 HA-08-2.5					0845		X	X								
26 HA-09-0.5					0912		X	X								
27 HA-09-1.5					0930		X	X								
28 HA-09-2.5					0933		X	X								
29 HA-10-0.5					0945		X	X								
30 HA-10-1.5	↓	↓	↓	↓	0950		X	X								

Analysis Required

Turn Around Time:
- Normal TAT: (X)
- 72 Hour:
- 48 Hour
- 24 Hour
- Same Day:
- Other:

Sample Temp °C: 5.0

Sample Preservative: **1**=ICE - **2**=HCl - **3**=H_2SO_4 - **4**=HNO_3 - **5**=NaOH - **6**=Other:

Special Instructions:

Relinquished By:	Date	Time	Received By + Company Name:	Date	Time
	4/1/16	1315	ARIUN MANGALAM	4/1/16	16:40
Relinquished By + Company Name: ARIUN MANGALAM	4/1/16	1807	Received By + Company Name: STL	4/1/16	1807
Relinquished By + Company Name:	Date	Time	Received By + Company Name:	Date	Time

Stantec

CHAIN OF CUSTODY

Laboratory Project Number: _____

Page 3 of 3

Client Name/Address:	Project Manager:
Stantec Consulting Services 25864-F Business Center Drive Redlands, CA 92374	Anne Perez
	E-Mail Address: Anne.Perez@stantec.com
	Sampler Name: M. Bohn
Laboratory (circle): Cal Science - 714-895-5494 ATL - 800-499-4388 TAL - 949-261-1022 Jones Environmental - 714-449-9937	Stantec Project Number: 185803641
	Project: Caltrans TO21

Sample Description/Identification	Sample Matrix	Preservative (see below)	# of Cont.	Sample Date	Sample Time	Filtered Sample	Analysis Required: Title 22 Metals	Analysis Required: TPH (C4-C32)	Analysis Required	Analysis Required	Analysis Required	Analysis Required	Analysis Required	Analysis Required	Analysis Required	Special Instructions
HA-1D-2.5	soil	1	1	3/31/16	0955		X	X								

Turn Around Time:
- Normal TAT: X
- 72 Hour:
- 48 Hour
- 24 Hour
- Same Day:
- Other:

Sample Temp °C: 5.3

Sample Preservative: **1**=ICE - **2**=HCl - **3**=H_2SO_4 - **4**=HNO_3 - **5**=NaOH - **6**=Other: _____

Special Instructions:

Relinquished By:	Date	Time	Received By + Company Name:	Date	Time
[signature]	4/1/16	1315	ARWA MAWGANI	4/1/16	16:00
Relinquished By + Company Name: ARWA MAWGANI	4/1/16	1807	Received By + Company Name: FEDEX ATL	4/1/16	1807
Relinquished By + Company Name:	Date	Time	Received By + Company Name:	Date	Time

ADVANCED TECHNOLOGY LABORATORIES

Sample Receipt Acknowledgement

Work Order # 1601202

Client:	**Stantec - Redlands**	**Project Manager:**	**Rachelle Arada**
Project:	**185803641**	**Project Number:**	**185803641, Caltrans TO21**

Report To:
Stantec
Anne Perez
25864-F Business Center Drive
Redlands, CA 92374
Phone: (909) 255-8202
Fax: (909) 335-6120

Invoice To:
Stantec
Anne Perez
25864-F Business Center Drive
Redlands, CA 92374
Phone :(909) 255-8202
Fax: (909) 335-6120

Date Due:	04/11/16 17:00 (5 day TAT)	Date Received:	04/01/16 16:00
Received By:	Ron Diwa	Date Logged In:	04/02/16 09:37
Logged In By:	Ron Diwa	Shipped by:	ATL

Please review the checklist below. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues. If you have any questions or further instructions, please contact your Project Manager at (562) 989-4045.

Sample(s) received on ice?	Yes	☑	No	☐
Sample(s) received on blue ice?	Yes	☐	No	☑
Cooler temperature within acceptance limit?	Yes	☑	No	☐
Shipping container received in good condition?	Not Applicable			
Custody seals present on shipping container?	Yes	☐	No	☑
Custody seals intact on shipping container?	Not Applicable			
Custody seals present on sample bottles?	Yes	☐	No	☑
Custody seals intact on sample bottles?	Not Applicable			
Chain of Custody (COC) present?	Yes	☑	No	☐
Sampler name present in COC?	Yes	☑	No	☐
COC signed when relinquished and received?	Yes	☑	No	☐
COC agrees with sample labels?	Yes	☑	No	☐
Samples in proper container/bottle?	Yes	☑	No	☐
Sample containers intact?	Yes	☑	No	☐
Sufficient sample amount for indicated tests?	Yes	☐	No	☑
All samples received within holding time?	Yes	☑	No	☐
Water for VOC -- Were VOA vials submitted?	Yes	☐	No	☑
Water samples submitted?	Yes	☑	No	☐
VOA vials for VOC meet headspace criteria?	Not Applicable			
Water samples meet preservation criteria?	Yes	☑	No	☐

Default Cooler Temp: 5.0 °C

Sample Receipt Comments:
Received only 1-poly for sample EBQC-20160401. Water sample for metals filtered and preserevd per client's instruction.

APPENDIX E
DATA VALIDATION RECORDS

APPENDIX E

DATA VALIDATION REPORT
AERIALLY DEPOSITED LEAD (ADL) INVESTIGATION REPORT
TASK ORDER NO. 21
Upgrade C.V. Kane Safety Roadside Rest Area (Southbound only)
Location: 08-SBD-15-R107.3
San Bernardino County, California
PN: 08-1400-0184-1 (EA 0G842)

The data validation procedure is based on the principles of the *U.S. EPA National Functional Guidelines* and U.S. EPA Region 9 requirements and is designed to ensure completeness and adequacy of the data set. Samples were collected and submitted for analysis to Advanced Technology Laboratories (ATL) in Signal Hill, California. Samples were analyzed for Total Title 22 Metals by SW 846 6010B, Mercury by 7471A/7470A, Gasoline Range Organics by 8015B and Hydrocarbon Chain Distribution (TPH-D and TPH-O) by 8015B modified.

The Data Validation Reports/Checklists summarize compounds that were qualified and are attached to this summary. Data was validated based on Regional EPA and *U.S. EPA National Functional Guidelines.* Data validation was performed in accordance with the Scope of Work. Data validation was performed to ensure the quality of project data. The following analytical reports and associated addenda were validated:

- 1601202.

The data were validated and reviewed for the following:

- Completeness of data deliverables (chain of custody records, laboratory data, laboratory quality assurance and quality control (QA/QC) data);
- Sample holding time;
- Sample preservation;
- Blank data (method, trip, and equipment);
- Laboratory control sample (LCS) recovery;
- Laboratory duplicate sample precision;
- Matrix spike/matrix spike duplicate (MS/MSD) recovery;
- Surrogate recovery; and

- Overall data assessment.

The following summarizes the results of the validation:

1. Data Completeness: Data for 30 solid samples and 1 equipment blank were collected April 01, 2016 were validated. Samples specified for analysis on the chain of custodies were analyzed as specified. The project goal of 90 percent completeness was achieved.

2. Sample Hold Times: All samples were analyzed within method specific sample hold times.

3. Sample Preservation: All samples were preserved in appropriate containers and preservative.

4. Method Blanks: Several metals analytes (barium, chromium, copper, molybdenum, nickel, silver and zinc) were reported in the method blank at very low concentrations. Associated sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration are flagged "JB". The detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action.

5. Equipment Blanks: Several metals were reported in equipment blanks at very low levels, and may be reflective of laboratory method blank detections, field artifact associated with dust, incomplete decontamination or artifact from contact with metal sampling equipment.

6. Laboratory Control Samples: LCS samples reported percent recoveries outside of method and/or laboratory limits;

    a. 8015B mod batch B6D0102 - %R below 60% for TPH-D (57%).

    b. Batch B6D0103 - %R below 60% limit for TPH-D (47%).
    Associated sample results flagged "J" if positive or "UJ" if non-detect.
    Reason Code – LCS

7. Laboratory Duplicate Samples: Laboratory duplicate samples were reported within the relative percent difference (RPD) control limit of 20 percent except for the following:

    a. 6010B B6D0107 – Laboratory duplicate RPD above limits (± 20%) for Arsenic (30%), Chromium (26%) and Lead (32%). Sample site specific. Associated results flagged "J" for HA-01-0.5 only.

    b. Batch B6D0108 – Laboratory duplicate RPD above ±20% limit for Chromium (120%) and Nickel (112%). Sample site specific. Associated results flagged "J" for HA-07-2.5 only.

    The discrepancy appears to be related to natural sample heterogeneity and the data were qualified as indicated above. Reason Code - LDUP

8. Matrix Spike and Spike Duplicates: Matrix spike and duplicate samples were analyzed to assess accuracy and to evaluate matrix effects on data analysis. The percent recoveries and RPDs were found to within laboratory-determined control limits except:

    a. 8015B modified batch B6D0102 - %Rs below 60% limit for TPH-D (28%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-07-2.5 only.

b. Batch B6D0103 - %Rs below 60% limit for TPH-D (43%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-10-2.5 only.

c. Batch B6D0086 - %Rs below 60% limit for TPH-D (55%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-03-1.5 only.
   Reason Code – MS

d. 7471A batches B6D0111, B6D0112 and B6D0113 – Post digestion spike %Rs above ±15% limit for Mercury. Associated sample results flagged "J" if positive.
   Reason Code – PDS

9. Surrogate recoveries are within limits for all analyses for all samples

10. Data were considered "useable" and marked as such in the tables provided and that it was validated according to the EPA and scope of work. No data was qualified as "rejected". The Data Validation Reports/Checklists summarize compounds that were qualified and are attached to this summary. Additionally, data qualifiers and the reason codes associated with the qualifier are in Table 1.

Stantec Analytical Validation Report/Checklist — Report No. 041916-EC-01

Project Name: Caltrans 08A TO-21	Project Number: 185803641
Stantec Validator: Elizabeth Crowley	Laboratory: ATL, Signal Hill, CA
Date Validated: 04/19/16	Laboratory Project Number: 1601202
Sample Start-End Date: 04/01/16	Laboratory Report Date: 04/11/16

Parameters Validated: Total Metals by EPA SW-846 6010B, Mercury by 7470A/7471A, Hydrocarbon Chain Distribution (TPH-D and TPH-O) by 8015B modified and Gasoline (TPH-G) by 8015B

Samples Validated: 30 solid field samples and 1 Equipment Blank

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively or presumptively identified" and the associated numerical value represents its approximate concentration.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

B The analyte was detected in the method, field and/or trip blank.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?		X
Comments: The COC requests TPH-D and TPH-G analysis for EBQC-20160401. Only one bottle of sample submitted. No qualifying action required.		
2. Did the laboratory identify any non-conformances related to the analytical result?		X
Comments:		
3. Were sample Chain-of-Custody forms complete?	X	
Comments: All signatures and required items present.		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments:		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?	X	

Comments: 6010B batch B6D0107 – Copper = 0.12 mg/kg and Molybdenum = 0.04 mg/kg. Batch B6D0109 –Copper = 0.13 mg/kg and Molybdenum = 0.04 mg/Kg. Batch B6D0146 – Chromium = 0.0007 mg/L, Copper = 0.0079 mg/L, Molybdenum = 0.0007 mg/L and Nickel = 0.0011 mg/L. Sample results below the blank concentration are validated to non-detect and flagged "UJB". Sample results greater than the blank concentration are flagged "JB". The detection limit changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action. Reason Code – MB		
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?	Yes X	No
Comments: EBQC-20160401 – Barium = 0.0004 mg/L, Chromium = 0.0010 mg/L, Nickel = 0.0015 mg/L, Silver = 0.0013 mg/L and Zinc = 0.011 mg/L. Associated sample results greater than 10 times the blank concentration no qualifying action required.		
9. Were instrument calibrations within method criteria?	Yes NA	No
Comments: Level II data package and validation, no data provided.		
10. Were surrogate recoveries within control limits?	Yes X	No
Comments:		
11. Were laboratory control (LC/LD) sample recoveries within control limits?	Yes	No X
Comments: 8015B mod batch B6D0102 - %R below 60% for TPH-D (57%). Batch B6D0103 - %R below 60% limit for TPH-D (47%). Associated sample results flagged "J" if positive or "UJ" if non-detect. Reason Code – LCS		
12. Were site specific matrix spike (MS/MD) recoveries within control limits?	Yes	No X
Comments: 8015B modified batch B6D0102 - %Rs below 60% limit for TPH-D (28%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-07-2.5 only. Batch B6D0103 - %Rs below 60% limit for TPH-D (43%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-10-2.5 only. Batch B6D0086 - %Rs below 60% limit for TPH-D (55%). Associated result flagged "J" if positive or "UJ" if non-detect for HA-03-1.5 only. Reason Code – MS 7471A batches B6D0111, B6D0112 and B6D0113 – Post digestion spike %Rs above ±15% limit for Mercury. Associated sample results flagged "J" if positive. Reason Code – PDS		

13. Were RPDs within control limits?		Yes	No X
Comments: 6010B B6D0107 – Laboratory duplicate RPD above limits (± 20%) for Arsenic (30%), Chromium (26%) and Lead (32%). Sample site specific. Associated results flagged "J" for HA-01-0.5 only. Batch B6D0108 – Laboratory duplicate RPD above ±20% limit for Chromium (120%) and Nickel (112%). Sample site specific. Associated results flagged "J" for HA-07-2.5 only. Reason Code – LDUP			
14. Were dilutions required on any samples?		Yes	No X
Comments: No qualifying action required.			
15. Were Tentatively Identified Compounds (TIC) present?		Yes X	No
Comments: Sample results below the reporting limit do not possess the degree of qualitative or quantitative confidence required. The value may be a false positive and is an estimated value and is flagged "NJ". Reason Code – SQL			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: Level II data package, no data provided.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
18. Were inorganic system performance criteria met?		Yes X	No
Comments:			
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. Duplicate Sample Nos.		Yes	No X
Comments:			
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No	Initials EAC
Comments:			
21. Other:		Yes	No X
Comments:			

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT			
Precision:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as qualified.			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments: Samples analyzed at lowest levels possible to achieve required screening limits.			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments: Data usable as qualified.			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments: No data are rejected.			

APPENDIX F
PROUCL WORKSHEETS

	A	B	C	D	E	F	G	H	I	J	K	L
1	**UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation			4/21/2016 10:19:55 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	mber of Bootstrap Operations			2000								
9												
10												
11	**to21**											
12												
13	**General Statistics**											
14	Total Number of Observations					30	Number of Distinct Observations					21
15							Number of Missing Observations					0
16	Minimum					1.9	Mean					3.76
17	Maximum					13	Median					3.15
18	SD					2.055	Std. Error of Mean					0.375
19	Coefficient of Variation					0.546	Skewness					3.526
20												
21	**Normal GOF Test**											
22	Shapiro Wilk Test Statistic					0.607	**Shapiro Wilk GOF Test**					
23	5% Shapiro Wilk Critical Value					0.927	Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.296	**Lilliefors GOF Test**					
25	5% Lilliefors Critical Value					0.162	Data Not Normal at 5% Significance Level					
26	**Data Not Normal at 5% Significance Level**											
27												
28	**Assuming Normal Distribution**											
29	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
30	95% Student's-t UCL					4.397	95% Adjusted-CLT UCL (Chen-1995)					4.635
31							95% Modified-t UCL (Johnson-1978)					4.438
32												
33	**Gamma GOF Test**											
34	A-D Test Statistic					1.977	**Anderson-Darling Gamma GOF Test**					
35	5% A-D Critical Value					0.746	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.218	**Kolmogrov-Smirnoff Gamma GOF Test**					
37	5% K-S Critical Value					0.16	Data Not Gamma Distributed at 5% Significance Level					
38	**Data Not Gamma Distributed at 5% Significance Level**											
39												
40	**Gamma Statistics**											
41	k hat (MLE)					6.182	k star (bias corrected MLE)					5.586
42	Theta hat (MLE)					0.608	Theta star (bias corrected MLE)					0.673
43	nu hat (MLE)					370.9	nu star (bias corrected)					335.1
44	MLE Mean (bias corrected)					3.76	MLE Sd (bias corrected)					1.591
45							Approximate Chi Square Value (0.05)					293.7
46	Adjusted Level of Significance					0.041	Adjusted Chi Square Value					291.5
47												

	A	B	C	D	E	F	G	H	I	J	K	L
48	**Assuming Gamma Distribution**											
49	95% Approximate Gamma UCL (use when n>=50))					4.29	95% Adjusted Gamma UCL (use when n<50)					4.323
50												
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic					0.855	**Shapiro Wilk Lognormal GOF Test**					
53	5% Shapiro Wilk Critical Value					0.927	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.178	**Lilliefors Lognormal GOF Test**					
55	5% Lilliefors Critical Value					0.162	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					0.642	Mean of logged Data					1.241
60	Maximum of Logged Data					2.565	SD of logged Data					0.37
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					4.208	90% Chebyshev (MVUE) UCL					4.463
64	95% Chebyshev (MVUE) UCL					4.81	97.5% Chebyshev (MVUE) UCL					5.293
65	99% Chebyshev (MVUE) UCL					6.24						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					4.377	95% Jackknife UCL					4.397
72	95% Standard Bootstrap UCL					4.365	95% Bootstrap-t UCL					5.154
73	95% Hall's Bootstrap UCL					7.099	95% Percentile Bootstrap UCL					4.413
74	95% BCA Bootstrap UCL					4.617						
75	90% Chebyshev(Mean, Sd) UCL					4.885	95% Chebyshev(Mean, Sd) UCL					5.395
76	97.5% Chebyshev(Mean, Sd) UCL					6.103	99% Chebyshev(Mean, Sd) UCL					7.493
77												
78	**Suggested UCL to Use**											
79	95% Student's-t UCL					4.397	or 95% Modified-t UCL					4.438
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											

1	**UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation	4/21/2016 3:42:39 PM										
5	From File	WorkSheet.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	90%										
8	mber of Bootstrap Operations	2000										
9												
10												
11	**C0**											
12												
13	**General Statistics**											
14	Total Number of Observations			30		Number of Distinct Observations					21	
15						Number of Missing Observations					0	
16	Minimum			1.9		Mean					3.76	
17	Maximum			13		Median					3.15	
18	SD			2.055		Std. Error of Mean					0.375	
19	Coefficient of Variation			0.546		Skewness					3.526	
20												
21	**Normal GOF Test**											
22	Shapiro Wilk Test Statistic			0.607		**Shapiro Wilk GOF Test**						
23	5% Shapiro Wilk Critical Value			0.927		Data Not Normal at 5% Significance Level						
24	Lilliefors Test Statistic			0.296		**Lilliefors GOF Test**						
25	5% Lilliefors Critical Value			0.162		Data Not Normal at 5% Significance Level						
26	**Data Not Normal at 5% Significance Level**											
27												
28	**Assuming Normal Distribution**											
29	**90% Normal UCL**					**90% UCLs (Adjusted for Skewness)**						
30	90% Student's-t UCL			4.252		90% Adjusted-CLT UCL (Chen-1995)					4.413	
31						90% Modified-t UCL (Johnson-1978)					4.292	
32												
33	**Gamma GOF Test**											
34	A-D Test Statistic			1.977		**Anderson-Darling Gamma GOF Test**						
35	5% A-D Critical Value			0.746		Data Not Gamma Distributed at 5% Significance Level						
36	K-S Test Statistic			0.218		**Kolmogrov-Smirnoff Gamma GOF Test**						
37	5% K-S Critical Value			0.16		Data Not Gamma Distributed at 5% Significance Level						
38	**Data Not Gamma Distributed at 5% Significance Level**											
39												
40	**Gamma Statistics**											
41	k hat (MLE)			6.182		k star (bias corrected MLE)					5.586	
42	Theta hat (MLE)			0.608		Theta star (bias corrected MLE)					0.673	
43	nu hat (MLE)			370.9		nu star (bias corrected)					335.1	
44	MLE Mean (bias corrected)			3.76		MLE Sd (bias corrected)					1.591	
45						Approximate Chi Square Value (0.1)					302.4	
46	Adjusted Level of Significance			0.09		Adjusted Chi Square Value					301	
47												
48	**Assuming Gamma Distribution**											
49	90% Approximate Gamma UCL (use when n>=50))			4.167		90% Adjusted Gamma UCL (use when n<50)					4.187	
50												
51	**Lognormal GOF Test**											
52	Shapiro Wilk Test Statistic			0.855		**Shapiro Wilk Lognormal GOF Test**						
53	5% Shapiro Wilk Critical Value			0.927		Data Not Lognormal at 5% Significance Level						

	A	B	C	D	E	F	G	H	I	J	K	L
54					Lilliefors Test Statistic	0.178	**Lilliefors Lognormal GOF Test**					
55					5% Lilliefors Critical Value	0.162	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59					Minimum of Logged Data	0.642			Mean of logged Data			1.241
60					Maximum of Logged Data	2.565			SD of logged Data			0.37
61												
62	**Assuming Lognormal Distribution**											
63					90% H-UCL	4.081			90% Chebyshev (MVUE) UCL			4.463
64					95% Chebyshev (MVUE) UCL	4.81			97.5% Chebyshev (MVUE) UCL			5.293
65					99% Chebyshev (MVUE) UCL	6.24						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71					90% CLT UCL	4.241			90% Jackknife UCL			4.252
72					90% Standard Bootstrap UCL	4.244			90% Bootstrap-t UCL			4.785
73					90% Hall's Bootstrap UCL	6.511			90% Percentile Bootstrap UCL			4.257
74					90% BCA Bootstrap UCL	4.487						
75					90% Chebyshev(Mean, Sd) UCL	4.885			95% Chebyshev(Mean, Sd) UCL			5.395
76					97.5% Chebyshev(Mean, Sd) UCL	6.103			99% Chebyshev(Mean, Sd) UCL			7.493
77												
78	**Suggested UCL to Use**											
79	**Recommendation Provided only for 95% Confidence Coeficient**											
80												

HISTORICAL SCADA SCREEN PAGES

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	15	R107.3		

Jaswinder S Sandhu 11-20-15
REGISTERED ELECTRICAL ENGINEER DATE

06-13-16
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER JASWINDER SANDHU No. E 11803 Exp. 09-30-16 ELEC STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

SB CS A (Raw)

AVERAGE YEARLY FLOW		AVERAGE MONTHLY FLOW	
		Year: 2010	
Year: 2010	Gallons: 0000	Month: May	Gallons: 0000
AVERAGE DAILY FLOW		HOURLY FLOW	
Month: May / Year: 2010		Date-Day: 01/01/10-Mon	
Day/Date: Mon/05	Gallons: 0000	Time: 3.00p.m.	Gallons: 0000

PEAK FLOW QUERY

Year	Month	Date	Gallons
2010	00	00	00,000

SB CS A (Potable)

AVERAGE YEARLY FLOW		AVERAGE MONTHLY FLOW	
		Year: 2010	
Year: 2010	Gallons: 0000	Month: May	Gallons: 0000
AVERAGE DAILY FLOW		HOURLY FLOW	
Month: May / Year: 2010		Date-Day: 01/01/10-Mon	
Day/Date: Mon/05	Gallons: 0000	Time: 3.00p.m.	Gallons: 0000

PEAK FLOW QUERY

Year	Month	Date	Gallons
2010	00	00	00,000

SB PEOPLE COUNTERS

CS A (Men)	CS B (Men)
Month: May / Year: 2010	Month: May / Year: 2010
Day/Date: Mon/05 0000	Day/Date: Mon/05 0000
CS A (Women)	**CS B (Women)**
Month: May / Year: 2010	Month: May / Year: 2010
Day/Date: Mon/05 0000	Day/Date: Mon/05 0000
CS A (Family)	**CS B (Family)**
Month: May / Year: 2010	Month: May / Year: 2010
Day/Date: Mon/05 0000	Day/Date: Mon/05 0000

SB CS B (Raw)

AVERAGE YEARLY FLOW		AVERAGE MONTHLY FLOW	
		Year: 2010	
Year: 2010	Gallons: 0000	Month: May	Gallons: 0000
AVERAGE DAILY FLOW		HOURLY FLOW	
Month: May / Year: 2010		Date-Day: 01/01/10-Mon	
Day/Date: Mon/05	Gallons: 0000	Time: 3.00p.m.	Gallons: 0000

PEAK FLOW QUERY

Year	Month	Date	Gallons
2010	00	00	00,000

SB CS B (Potable)

AVERAGE YEARLY FLOW		AVERAGE MONTHLY FLOW	
		Year: 2010	
Year: 2010	Gallons: 0000	Month: May	Gallons: 0000
AVERAGE DAILY FLOW		HOURLY FLOW	
Month: May / Year: 2010		Date-Day: 01/01/10-Mon	
Day/Date: Mon/05	Gallons: 0000	Time: 3.00p.m.	Gallons: 0000

PEAK FLOW QUERY

Year	Month	Date	Gallons
2010	00	00	00,000

SB VEHICLE COUNTERS

S/B CAR COUNTER
Month: May / Year: 2010
Day/Date: Mon/05 0000
S/B TRUCK COUNTER
Month: May / Year: 2010
Day/Date: Mon/05 0000

FOR INFORMATION ONLY

DESIGN	BY J. S. Sandhu	CHECKED Jaswinder Gill	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN	BRIDGE No. 54R0004L	C.V. KANE SAFETY ROADSIDE REST AREA REHABILITATION	SHEET
DETAILS	BY J. S. Sandhu	CHECKED Jaswinder Gill			POST MILE R107.3	HISTORICAL DATA SCREEN SOUTHBOUND SRRA	
QUANTITIES	BY J. S. Sandhu	CHECKED Jaswinder Gill		UNIT: 3597 CONTRACT No.: 08-0G8421 PROJECT NUMBER & PHASE: 08140001841	DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES (PRELIMINARY STAGE ONLY) 06-13-16	SHEET OF

TAEMWW Imperial - CCSC Rev. 02/13

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

14-JUN-2016 15:16

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