

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT



**State Route 217
San Jose Creek Bridge Replacement Project
Santa Barbara County, California**

PREPARED FOR:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL PLANNING
HAZARDOUS WASTE BRANCH / UNIT 403
50 HIGUERA STREET
SAN LUIS OBISPO, CALIFORNIA 93401**



PREPARED BY:

**GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742**



**GEOCON PROJECT NO. S1200-01-78
TASK ORDER NO. 78, EA 05-1C360**

AUGUST 2018



Project No. S1200-01-78
August 30, 2018

Mr. Isaac Leyva
California Department of Transportation
Environmental Planning Hazardous Waste
Branch / Unit 1403
50 Higuera Street
San Luis Obispo, California 93401

Subject: AERIALY DEPOSITED LEAD SITE INVESTIGATION REPORT
STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
SANTA BARBARA COUNTY, CALIFORNIA
CONTRACT NO. 06A2184, TASK ORDER NO. 78, EA 05-1C360

Dear Mr. Leyva:

In accordance with California Department of Transportation (Caltrans) Contract No. 06A2184, Task Order (TO) No. 78, and Expenditure Authorization (EA) No. 05-1C360, we performed environmental engineering services at the project site. The project is located along State Route 217 at the San Jose Creek Bridge in Santa Barbara County, California. The accompanying report summarizes the services performed including the advancement of 16 hand-auger borings for the collection of soil samples for metals (including aerially deposited lead) analysis.

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Please contact us if you have any questions concerning this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Gemma G. Reblando
Project Geologist

(5 + 2 CD) Addressee

John E. Juhrend, PE, CEG
Senior Engineer



TABLE OF CONTENTS

AERIALY DEPOSITED LEAD SITE INVESTIGATION REPORT		PAGE
1.0	INTRODUCTION	3
1.1	Project Description and Proposed Improvements	3
1.2	General Objectives	3
2.0	BACKGROUND	3
2.1	Hazardous Waste Determination Criteria	3
2.2	California Human Health Screening Levels	4
2.3	Environmental Screening Levels	5
2.4	Soil Management Agreement for ADL-Contaminated Soils	5
3.0	SCOPE OF SERVICES	6
3.1	Pre-field Activities	6
3.2	Field Activities	6
4.0	INVESTIGATIVE METHODS	6
4.1	Soil Sampling Procedures	6
4.2	Quality Assurance/Quality (QA/QC) Control Procedures	7
4.3	Laboratory Analyses	7
5.0	FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS	7
5.1	Soil Description.....	7
5.2	Soil Analytical Results.....	8
5.2.1	Title 22 Metals	8
5.2.2	ADL	8
5.3	Laboratory QA/QC	9
5.4	Statistical Evaluation for Lead Detected in Soil Samples.....	9
5.4.1	Calculating the UCLs for the Arithmetic Mean	9
5.4.2	Correlation of Total and Soluble Lead.....	10
6.0	CONCLUSIONS AND RECOMMENDATIONS.....	11
6.1	Title 22 Metals	11
6.2	ADL	11
6.2.1	SB Shoulder	11
6.2.2	NB Shoulder.....	12
6.3	Worker Protection	13
7.0	REPORT LIMITATIONS.....	14

FIGURES

1. Vicinity Map
2. Site Plan

PHOTO NO. 1

TABLES

1. Summary of DTSC and Caltrans Agreement Conditions for Soil Reuse and Management
2. Summary of Soil Boring Coordinates
3. Summary of Soil Analytical Results – Title 22 Metals
4. Summary of Soil Analytical Results – Lead

TABLE OF CONTENTS (continued)

APPENDICES

- A. Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils
- B. Laboratory Reports and Chain-of-custody Documentation
- C. Lead Statistics and Regression Analysis Results

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Aerially Deposited Lead (ADL) Site Investigation Report for the State Route 217 (SR-217) San Jose Creek Bridge Replacement Project was prepared under California Department of Transportation (Caltrans) Contract No. 06A2184, Task Order (TO) No. 78, and Expenditure Authorization (EA) No. 05-1C360.

1.1 Project Description and Proposed Improvements

The project site consists of Caltrans right-of-way (ROW) along the unpaved shoulder areas of northbound (NB) and southbound (SB) SR-217 in the vicinity of the San Jose Creek Bridge (Bridge No. 51-0217) (the Site), in Goleta, Santa Barbara County, California. Caltrans proposes to replace the bridge due to deterioration of the existing concrete structure. The approximate bridge location is depicted on the attached Vicinity Map, Figure 1, and Site Plan, Figure 2.

1.2 General Objectives

The proposed bridge replacement project will require the disturbance of soil at the Site and will generate excess soil. The purpose of the scope of services outlined in TO No. 78 was to evaluate whether impacts due to heavy metals (including ADL from motor vehicle exhaust) exist in the surface and near-surface soil. The investigative results will be used by Caltrans to inform the construction contractor if metals-impacted soil is present within the project boundaries for construction worker health and safety, and material management and disposal purposes.

Additionally, we performed asbestos-containing material (ACM) and lead-containing paint (LCP) bridge surveys at the Site. The results of the ACM and LCP surveys are presented in a separate report.

2.0 BACKGROUND

Caltrans requested this site investigation to provide data regarding the potential presence of metals including lead, within the proposed bridge improvement area.

2.1 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as “California hazardous” for handling and disposal purposes are contained in the California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 3, § 66261.24. Criteria to classify a waste as “Resource, Conservation, and Recovery Act (RCRA) hazardous” are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), § 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the representative total metal content equals or exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the representative soluble metal content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test (WET). A waste may have the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value, since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the representative soluble metal content equals or exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP). The TTLC, STLC and TCLP for metals are on Tables 3 and 4.

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., representative lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or corrosivity. Waste that is classified as either California-hazardous or RCRA-hazardous requires management as a hazardous waste.

2.2 California Human Health Screening Levels

The California Environmental Protection Agency (Cal/EPA) has prepared technical reports entitled *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties* (Cal/EPA, January 2005) and *Revised California Human Health Screening Levels for Beryllium* (Cal/EPA, March 2009) and *Lead* (Cal/EPA, September 2009), which present CHHSLs for soil, shallow soil gas, and indoor air to assist in evaluating sites impacted by releases of hazardous chemicals.

The CHHSLs are concentrations of 54 hazardous chemicals including Title 22 metals that Cal/EPA considers to be below thresholds of concern for risks to human health. The CHHSLs were developed by the Office of Environmental Health Hazard Assessment (OEHHA) on behalf of Cal/EPA. The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one in a million and a hazard quotient or 1.0 for noncancer effects. Under most circumstances, the presence of a chemical at a concentration less than its respective CHHSL can be assumed to not pose a significant risk. The presence of a chemical at a concentration greater than a CHHSL does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation is warranted (Cal/EPA, January 2005). The CHHSLs for residential and industrial/commercial land use are on Tables 3 and 4.

2.3 Environmental Screening Levels

The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has prepared a technical report entitled *User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final 2016* (updated February 2016, Rev. 3), which presents Environmental Screening Levels (ESLs) for over 100 commonly found contaminants in soil, groundwater, soil gas, and surface water, to assist in evaluating sites impacted by releases of hazardous chemicals. "If used correctly, ESLs are considered to be protective for typical bay area sites. Under most circumstances, the presence of a chemical in soil, soil gas, or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant threat to human health, water resources, or the environment" (SFRWQCB, February 2016, Rev. 3).

ESLs are commonly used by contractors, soil trucking companies, and private and commercial land owners as default acceptance criteria to evaluate suitability of import soil material. ESL Table S-1, Summary of Soil ESLs, Direct Exposure to Human Health, was used for this characterization. The respective ESLs are listed at the end of Tables 3 and 4.

2.4 Soil Management Agreement for ADL-Contaminated Soils

On June 29, 2016, the Department of Toxic Substances Control (DTSC) and Caltrans entered into the *Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils* (DTSC Agreement) for the management of ADL-contaminated soils generated by Caltrans in the course of State highway projects, in all Caltrans districts, statewide.

"Clean soil" is defined as soil, based on a 95 percent upper confidence limit (95% UCL), containing total lead less than or equal to 80 mg/kg and soluble WET lead less than 5 mg/l, and not containing other constituents at concentrations that pose an unacceptable threat to human health or the environment.

"ADL-contaminated soil" is defined in the DTSC Agreement as excavated soil, based on a 95% UCL, that contains total lead greater than 80 mg/kg and/or soluble WET lead greater than or equal to 5 mg/l. ADL-contaminated soil reused under the DTSC Agreement must always be at least five feet above the highest groundwater elevation and, depending on lead concentrations, may need to be covered with at least one foot of clean soil or a pavement structure. ADL-contaminated soil may not be placed in areas where it might contact groundwater or surface water (such as streams and rivers), and must be buried in locations that are protected from erosion that may result from storm water run-on and run-off. Additionally, ADL-contaminated soil shall not be placed in or covered by soil with a pH less than 5.0. ADL-contaminated soil having a pH less than or equal to 5.0 may not be reused and must be properly disposed of.

The DTSC Agreement conditions regarding the reuse and management of soil for construction and maintenance operations are summarized in Table 1. A copy of the DTSC Agreement is in Appendix A.

3.0 SCOPE OF SERVICES

The scope of services requested by Caltrans in TO No. 78 included the collection of soil samples for laboratory analysis to determine metals (including lead) content and the preparation of this report.

3.1 Pre-field Activities

- Prepared a *Health and Safety Plan* dated July 24, 2017, to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Retained the services of Advanced Technology Laboratories (ATL), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analyses of soil samples.

3.2 Field Activities

On August 1, 2018, 48 soil samples were collected from 16 hand-auger borings (B1 through B16) advanced at the Site (Figure 2). The soil borings were advanced to the maximum sampling depth of 3 feet. Typical sampling location is depicted on Photo No. 1. Soil samples were collected at depth intervals of 0 to 0.5 foot, 1.5 to 2 feet, and 2.5 to 3 feet.

The sample locations were selected by the Caltrans TO Manager prior to the field sampling activities. Following sample collection, the borings were backfilled with the excess soil cuttings. Details of the field activities are presented in the following sections.

4.0 INVESTIGATIVE METHODS

4.1 Soil Sampling Procedures

The following borings were advanced along the unpaved shoulder areas at the Site. The approximate boring locations are depicted on Figure 2.

- Borings B1, B2, and B11 through B16 were advanced along the shoulders of SB SR-217
- Borings B3 through B10 were advanced along the shoulders of NB SR-217

Soil samples were collected using a hand-auger and transferred directly to Ziploc[®] re-sealable plastic bags. Soil samples to be analyzed for metals were contained in stainless steel tubes and sealed with Teflon sheets and plastic end caps. The bagged soil samples for lead analysis were field homogenized within the sample bags. The sample bags and tubes were subsequently labeled, placed in a chilled ice chest, and delivered to ATL for analytical testing under chain-of-custody (COC) documentation. General soil types were noted on the daily field log.

The coordinates of the boring locations were determined using a differential global positioning system (GPS). The GPS was utilized during the field activities to locate the horizontal position of the boring locations with an error of no more than 3.3 feet. The latitude and longitude of the boring locations are summarized on Table 2.

4.2 Quality Assurance/Quality (QA/QC) Control Procedures

QA/QC procedures were performed during the field exploration activities. These procedures included the decontamination of sampling equipment prior to each boring and providing COC documentation for each sample submitted to the laboratory. The soil sampling equipment was cleansed between borings by washing the equipment with a non-phosphate detergent (e.g. Alconox[®]) solution followed by a double rinse with purified water. The decontamination water was discharged to the ground surface within the Caltrans ROW, away from the roadway and storm drain inlets.

4.3 Laboratory Analyses

The soil samples collected within the project boundaries were submitted to ATL for the following analyses under standard turnaround-time (TAT). The laboratory was instructed to homogenize the soil samples prior to metals analysis in accordance with Contract 06A2184 requirements.

- Eight soil samples were analyzed for Title 22 metals including lead following Environmental Protection Agency (EPA) Test Methods 6010B and 7471 (mercury).
- Forty soil samples were analyzed for total lead following EPA Test Method 6010B.
- Sixteen soil samples were analyzed for WET soluble lead following EPA Test Method 6010B.
- Ten soil samples were analyzed for TCLP soluble lead following EPA Test Method 6010B.
- Four soil samples were analyzed for pH following EPA Test Method 9045C.\

QA/QC procedures were performed by ATL as applicable for the method of analysis with specificity for each analyte listed in the test method's QA/QC. QA/QC measures for the lead analysis included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix, whichever was more frequent, with the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the samples to the laboratory, the COC documentation was reviewed for accuracy and completeness.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Soil Description

Soil encountered in the borings during the field sampling activities generally consisted of road base gravel and sandy to the maximum sampling depth of approximately 3 feet. Groundwater was not encountered in the borings.

5.2 Soil Analytical Results

A summary of the soil analytical results is in Tables 3 and 4. The soil analytical results are discussed in the following sections. Copies of the laboratory reports and COC documentation are in Appendix B.

5.2.1 Title 22 Metals

The metals analytical results for the 8 soil samples analyzed are listed below and summarized on Table 3:

Antimony	<2.0 milligrams per kilogram (mg/kg);
Arsenic	1.8 to 5.9 mg/kg;
Barium	40 to 170 mg/kg;
Beryllium	<1.0 mg/kg;
Cadmium	<1.0 mg/kg;
Chromium	12 to 24 mg/kg;
Cobalt	2.6 to 6.1 mg/kg;
Copper	5.0 to 15 mg/kg;
Lead	2.5 to 80 mg/kg;
Molybdenum	<1.0, 1.1 and 3.1 mg/kg;
Nickel	9.4 to 26 mg/kg;
Selenium	<1.0 mg/kg;
Silver	<1.0 mg/kg;
Thallium	<1.0 mg/kg;
Vanadium	12 to 23 mg/kg;
Zinc	18 to 58 mg/kg; and
Mercury	<0.10 mg/kg.

With the exception of lead, the reported metals concentrations are less than their respective TTLCs and less than ten times their respective STLCs, and generally fall within the range of naturally occurring background levels.

5.2.2 ADL

Total lead was detected in 47 of the 48 soil samples collected at concentrations ranging from 2.5 to 330 mg/kg. Sixteen of the 48 soil samples had total lead concentrations equal to or greater than 50 mg/kg (i.e., ten times the lead STLC of 5.0 mg/l) and were further analyzed for WET soluble lead.

WET soluble lead was detected in the 16 soil samples analyzed at concentrations ranging from 2.0 to 24 milligrams per liter (mg/l). Eight of the samples had WET soluble lead concentrations greater than the lead STLC of 5.0 mg/l. TCLP soluble lead was not detected in the 10 soil samples analyzed. Soil pH for the 4 soil samples analyzed ranged from 7.2 to 7.7.

5.3 Laboratory QA/QC

We reviewed the analytical laboratory QA/QC data provided with the laboratory reports. The relative percent differences (RPD) for some sample duplicates were outside acceptance criteria. Calculation is based on raw values as noted in the laboratory report. Matrix spike recovery is outside of acceptance limit. The analytical batch was validated by the laboratory control sample. The data show acceptable non-detect results for the method blanks and acceptable recoveries and RPDs for the rest of the matrix spikes and duplicates. Based on the laboratory QA/QC data, no additional qualification of the data presented herein is necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and WET lead concentrations exists that would allow the prediction of WET lead concentrations based on the calculated UCLs. The total lead data were separated into two sample populations for statistical evaluation as described below.

- **SB Shoulder:** Borings B1, B2 and B11 through B16
- **NB Shoulder:** Borings B3 through B10

5.4.1 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 95% UCL of the arithmetic mean is defined as the value that, when calculated repeatedly for randomly drawn subsets of site data, equals or exceeds the true mean 95% of the time. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

EPA's ProUCL-recommended UCLs were used for statistical analysis (Appendix C). The statistical results for the data populations are summarized in the following tables:

SB Shoulder

SAMPLE INTERVAL (feet)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0 to 0.5	135.4	103.9	42	160
1.5 to 2	8.0	5.2	0.5	14
2.5 to 3	4.4	3.8	2.5	5.5
0 to 3*	86.1	37.7	0.5	160

*UCL was calculated using lead data for the entire sampling interval.

NB Shoulder

SAMPLE INTERVAL (feet)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0 to 0.5	250.7	174.6	37	330
1.5 to 2	42.3	26.8	5.6	67
2.5 to 3	8.1	6.3	4.9	11
0 to 3*	158.0	69.2	4.9	330

*UCL was calculated using lead data for the entire sampling interval.

5.4.2 Correlation of Total and Soluble Lead

Total and corresponding WET soluble lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of WET soluble lead concentrations based on the UCLs calculated above in Section 5.4.1.

To estimate the degree of interrelation between total and corresponding WET soluble lead values (x and y , respectively), the *correlation coefficient* [r] is used. The correlation coefficient is a ratio that ranges from +1 to -1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of -1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all.

The *correlation coefficient* calculated for the 16 (x , y) data points (i.e., soil samples analyzed for both total lead [x] and WET soluble lead [y]) was 0.9321. A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists. Consequently, an acceptable correlation between total and soluble lead concentrations was established for the data points since the *correlation coefficient* is greater than 0.8.

For the *correlation coefficient* that indicates a linear relationship between total and WET soluble lead concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line). The equation of the regression line was determined to be $y = 0.0622(x) - 0.8043$, where x represents total lead concentrations and y represents predicted WET soluble lead concentrations. This equation was used to estimate the expected WET soluble lead concentrations for the UCLs calculated in Section 5.4.1. Regression analysis results and a scatter plot depicting the (x , y) data points along with the regression line are in Appendix C. The 95% UCL-predicted WET soluble lead concentrations are presented in Section 6.0.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Hazardous waste classification based on the 90% UCL is considered sufficient to satisfy a good faith effort as discussed in SW-846. Risk assessment characterization is typically based on the 95% UCL in accordance with the *Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment*. Per the DTSC Agreement, 95% UCLs are to be used to evaluate reuse and disposal of ADL-contaminated soils (Section 6.2).

Based on the TCLP soluble lead results of less than 5.0 mg/l, soil generated at the Site would not be classified as a Federal RCRA hazardous waste.

6.1 Title 22 Metals

The Title 22 metals concentrations reported for the soil samples were compared with the CHHSLs, ESLs, and the published background levels typically present in California soils as presented in *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996).

Arsenic was detected in the soil samples analyzed at concentrations ranging from 1.8 to 5.9 mg/kg, greater than the CHHSL and ESL for residential land use of 0.07 and 0.067 mg/kg, respectively, and commercial/industrial land use of 0.24 and 0.31 mg/kg, respectively, and the ESL for construction worker exposure of 0.98 mg/kg (Table 3). Arsenic concentrations detected in the soil samples are generally within the range of naturally occurring background levels.

Antimony, beryllium, cadmium, selenium, silver, thallium, and mercury were not detected in the soil samples analyzed. With the exception of lead, the remaining Title 22 metals concentrations detected in the soil samples generally fall within the range of naturally occurring background levels (Table 3).

Waste classification of soil with respect to lead content is discussed in Section 6.2.

6.2 ADL

6.2.1 SB Shoulder

Total lead concentrations ranged from less than the laboratory reporting limit of 1.0 mg/kg to 160 mg/kg with a 95% UCL (of the mean) of 86.1 mg/kg (Appendix C). The table below summarizes the excavation scenarios, the weighted average based on the calculated total lead UCLs, and the waste classification for excavated soil in the vicinity of borings B1, B2 and B11 through B16.

Excavation Depth	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Offsite Disposal Waste Classification
0 to 0.5 foot	135.4	7.6	Hazardous
Underlying Soil (0.5 to 3 feet)	58.2	2.8	Non-hazardous
0 to 1 foot	135.4	7.6	Hazardous
Underlying Soil (1 to 3 feet)	39.0	1.6	Non-hazardous
0 to 2 feet	103.6	5.6	Hazardous
Underlying Soil (2 to 3 feet)	6.2	<1.0	Non-hazardous
0 to 3 feet	71.1	3.6	Non-hazardous

Predicted WET lead concentrations were calculated using the equation of the regression line: $y = 0.0622x - 0.8043$.

Soil excavated from the surface to a depth of 2 feet or shallower would be classified as California-hazardous soil based on lead content because the calculated 95% UCL-predicted WET soluble lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the DTSC Agreement, soil excavated from the surface to a depth of 2 feet or shallower should be either (1) managed and disposed of as a California hazardous waste (Caltrans Type: Z-2) at a Class I disposal facility, or (2) stockpiled and resampled to confirm waste classification in accordance with specific disposal facility acceptance criteria, if applicable (Table 1).

Soil excavated from the surface to a depth of 3 feet would qualify as non-regulated material for unrestricted use (Table 1).

The total lead UCLs for soil excavated from the surface to a depth of 2 feet or shallower are greater than the residential land use CHHSL and ESL, but less than the commercial land use CHHSL and ESL. The total lead UCL for soil excavated from the surface to a depth of 3 feet are less than the residential and commercial land use CHHSLs and ESLs (Table 4).

6.2.2 NB Shoulder

Total lead concentrations ranged from 4.9 to 330 mg/kg with a 95% UCL (of the mean) of 158 mg/kg (Appendix C). The table below summarizes the excavation scenarios, the weighted average based on the calculated total lead UCLs, and the waste classification for excavated soil in the vicinity of borings B3 through B10.

Excavation Depth	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Offsite Disposal Waste Classification
0 to 0.5 foot	250.7	14.8	Hazardous
Underlying Soil (0.5 to 3 feet)	118.8	6.6	Hazardous
0 to 1 foot	250.7	14.8	Hazardous
Underlying Soil (1 to 3 feet)	85.9	4.5	Non-hazardous
0 to 2 feet	198.6	11.5	Hazardous
Underlying Soil (2 to 3 feet)	25.2	0.8	Non-hazardous
0 to 3 feet	140.8	8.0	Hazardous

Predicted WET lead concentrations were calculated using the equation of the regression line: $y = 0.0622x - 0.8043$.

Soil excavated from the surface to a depth of 3 feet or shallower would be classified as California-hazardous soil based on lead content because the calculated 95% UCL-predicted WET soluble lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the DTSC Agreement, soil excavated from the surface to a depth of 3 feet or shallower should be either (1) managed and disposed of as a California hazardous waste (Caltrans Type: Z-2) at a Class I disposal facility, or (2) stockpiled and resampled to confirm waste classification in accordance with specific disposal facility acceptance criteria, if applicable (Table 1).

If soil excavated from the top 1 foot is managed separately, then the underlying soil from 1 to 3 feet would qualify for reuse within Caltrans right-of-way (Caltrans Type Com) without cover requirement or be disposed of at a Class II or Class III disposal facility.

If soil excavated from the top 2 feet is managed separately, then the underlying soil from 2 to 3 feet would qualify as non-regulated material for unrestricted use (Table 1).

The total lead UCLs for soil excavated from the surface to a depth of 3 feet or shallower are greater than the residential land use CHHSL and ESL, but less than the commercial land use CHHSL and ESL (Table 4).

6.3 Worker Protection

Per Caltrans' requirements, the contractor(s) should prepare a project-specific Lead Compliance Plan (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to minimize worker exposure to lead-containing soil. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-containing soil.

7.0 REPORT LIMITATIONS

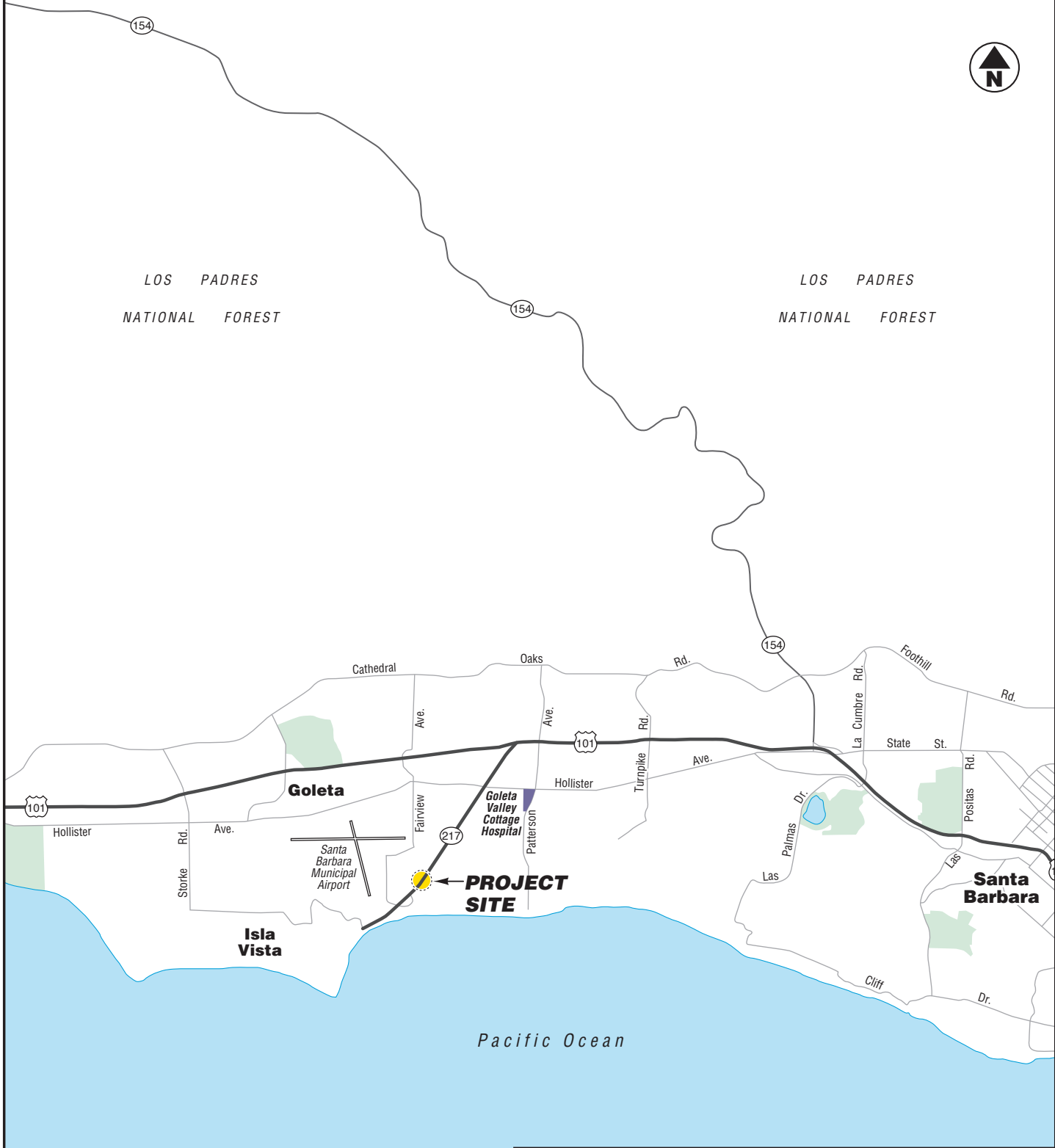
This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. We strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.



LOS PADRES
NATIONAL FOREST

LOS PADRES
NATIONAL FOREST



 GEOCON CONSULTANTS, INC. <small>3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742 PHONE 916.852.9118 - FAX 916.852.9132</small>		VICINITY MAP	
Santa Barbara County, California		GEOCON Proj. No. S1200-01-78 Task Order No. 78	
August 2018			



LEGEND:

B1 ⊗ Approximate Boring Location



0 120
Scale in Feet



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 - FAX 916.852.9132

State Route 217 San Jose Creek Bridge Replacements

Santa Barbara County,
California

SITE PLAN

GEOCON Proj. No. S1200-01-78

Task Order No. 78

August 2018

Figure 2



Photo No. 1 Typical sampling location along the unpaved shoulder of southbound SR-217 near boring B2



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 - FAX 916.852.9132

PHOTO NO. 1

State Route 217 San Jose Creek Bridge Replacements

GEOCON Proj. No. S1200-01-78 Santa Barbara County, California

Task Order No. 78

August 2018

TABLE 1
Summary of DTSC and Caltrans Agreement Conditions for Soil Reuse and Management

Material Type	WET Lead (mg/l)		Total Lead (mg/kg)		TCLP Lead (mg/l)		DI-WET Lead (mg/l)	Description
	<5.0	and	≤80	and	<5.0			Non-regulated material for unrestricted use.
Com	<5.0	and	>80 and ≤320	and	<5.0			Regulated material that may be used within Caltrans ROW with no cover requirement. May also be disposed 1) at an appropriately permitted California Class II or California Class III disposal facility, or 2) on a commercial/industrial property by submitting to DTSC a completed agreement between a contractor and a real property owner for disposing of construction-related material on property owner's property.
R-1	≥5.0	or	>320 and ≤1,600	and	<5.0	and	≤1.5	Regulated material that may be used within Caltrans ROW if placed at least 5 feet above maximum historical water table elevation, covered with at least 1 foot of Type Com or non-regulated material or pavement, and in compliance with the ADL Agreement.
R-2	≥5.0	or	>1,600 and ≤3,200	and	<5.0	and	≤150	Regulated material that may be used within Caltrans ROW if placed at least 5 feet above maximum historical water table elevation, covered with pavement, and in compliance with the ADL Agreement.
Z-0	<5.0	and	>320 and <1,000	and	<5.0			Regulated surplus material that must be transported to and disposed of at an appropriately permitted California Class II or California Class III disposal facility.
Z-2	≥5.0	or	≥1,000	and	<5.0			Caltrans-generated California hazardous waste that must be transported to and disposed of at a California Class I disposal facility.
Z-2			>3,200	and	<5.0	or	>150	Caltrans-generated California hazardous waste that must be transported to and disposed of at a California Class I disposal facility.
Z-3					≥5.0			Caltrans-generated Federal hazardous waste that must be transported to and disposed of at a California Class I disposal facility.

Notes: ADL-contaminated soil shall not be placed in or covered by soil with pH less than 5.0.
 ADL-contaminated soil having a pH less than or equal to 5.0 may not be reused and must be properly disposed of.
 Total lead and WET lead are based on a 95% upper confidence limit

TABLE 2
SUMMARY OF SOIL BORING COORDINATES
EA 05-1C360
STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
SANTA BARBARA COUNTY, CALIFORNIA

BORING ID	SAMPLE DATE	LATITUDE	LONGITUDE
SOUTHBOUND SHOULDER			
B1	08/01/18	34.420617471	-119.830248165
B2	08/01/18	34.420397526	-119.830537006
B11	08/01/18	34.423313127	-119.827806594
B12	08/01/18	34.422971694	-119.828077266
B13	08/01/18	34.422628967	-119.828349215
B14	08/01/18	34.422244784	-119.828661614
B15	08/01/18	34.421774096	-119.829037244
B16	08/01/18	34.421367377	-119.829429949
NORTHBOUND SHOULDER			
B3	08/01/18	34.419974865	-119.830465139
B4	08/01/18	34.420373146	-119.830003476
B5	08/01/18	34.421258331	-119.829109423
B6	08/01/18	34.421682511	-119.828753740
B7	08/01/18	34.422103725	-119.828392459
B8	08/01/18	34.422437653	-119.828125911
B9	08/01/18	34.422662233	-119.827941962
B10	08/01/18	34.423137889	-119.827556360

TABLE 3
 SUMMARY OF SOIL ANALYTICAL RESULTS - TITLE 22 METALS
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

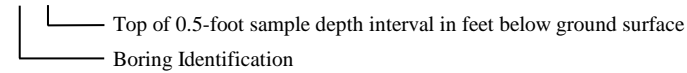
Sample ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
SOUTHBOUND SHOULDER																	
B1-1.5	<2.0	1.9	40	<1.0	<1.0	12	2.6	5.0	14	<1.0	9.4	<1.0	<1.0	<1.0	12	18	<0.10
B2-0	<2.0	1.8	78	<1.0	<1.0	12	3.0	12	80	<1.0	12	<1.0	<1.0	<1.0	15	58	<0.10
B11-0	<2.0	3.1	78	<1.0	<1.0	13	3.4	11	51	1.1	13	<1.0	<1.0	<1.0	17	38	<0.10
B13-1.5	<2.0	3.7	80	<1.0	<1.0	17	5.6	9.2	4.3	<1.0	22	<1.0	<1.0	<1.0	21	29	<0.10
B15-2.5	<2.0	5.0	170	<1.0	<1.0	24	6.1	15	2.5	3.1	26	<1.0	<1.0	<1.0	23	36	<0.10
NORTHBOUND SHOULDER																	
B3-2.5	<2.0	1.9	64	<1.0	<1.0	13	4.4	7.7	5.1	<1.0	16	<1.0	<1.0	<1.0	16	24	<0.10
B4-0	<2.0	2.3	72	<1.0	<1.0	17	4.4	11	50	<1.0	20	<1.0	<1.0	<1.0	19	57	<0.10
B6-1.5	<2.0	5.9	79	<1.0	<1.0	18	3.9	8.4	50	<1.0	19	<1.0	<1.0	<1.0	16	28	<0.10
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	20
10 x STLC	150	50	1,000	7.5	10	50	800	250	50	3,500	200	10	50	70	240	2,500	2.0
<u>CHHSLs</u>																	
Residential	30	0.07	5,200	16	1.7	100,000	660	3,000	80	380	1,600	380	380	5	530	23,000	18
Industrial	380	0.24	63,000	190	7.5	100,000	3,200	38,000	320	4,800	16,000	4,800	4,800	63	6,700	100,000	180
<u>ESLs</u>																	
Residential	31	0.067	15,000	150	39	120,000	23	3,100	80	390	820	390	390	0.78	390	23,000	13
Industrial	470	0.31	220,000	2,200	580	1,800,000	350	47,000	320	5,800	11,000	5,800	5,800	12	5,800	350,000	190
Construction Worker Exposure	140	0.98	3,000	42	43	530,000	28	14,000	160	1,800	86	1,700	1,800	3.5	470	110,000	44

TABLE 3
 SUMMARY OF SOIL ANALYTICAL RESULTS - TITLE 22 METALS
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

Sample ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
Background Concentrations ⁽¹⁾																	
Minimum	0.15	0.6	133	0.25	0.05	23	2.7	9.1	12.4	0.1	9.0	0.015	0.10	0.17	39	88	0.10
Maximum	1.95	11	1,400	2.70	1.70	1,579	46.9	96.4	97.1	9.6	509	0.430	8.30	1.10	288	236	0.90
Mean	0.60	3.5	509	1.28	0.36	122	14.9	28.7	23.9	1.3	57	0.058	0.80	0.56	112	149	0.26

Notes:

B1-0



Concentrations are shown in milligrams per kilogram

< = Less than laboratory reporting limit

TTLC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

TTLC, STLC, CHHSLs and ESLs shown for chromium are for chromium III

CHHSLs = California Environmental Protection Agency, California Human Health Screening Levels for industrial and residential land use

ESLs = Environmental Screening Levels, Table S-1, Direct Exposure Human Health Risk Levels, San Francisco Bay Regional Water Quality Control Board, February 2016 (Rev. 3)

⁽¹⁾ Background Concentrations of Trace and Major Elements in California Soils (Kearney Foundation of Soil Science, Division of Agricultural and Natural Resources, University of California, March 1996)

TABLE 4
 SUMMARY OF SOIL ANALYTICAL RESULTS - LEAD
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE INTERVAL (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)	pH
SOUTHBOUND SHOULDER					
B1-0	0-0.5	42	---	---	---
B1-1.5	1.5-2	14	---	---	---
B1-2.5	2.5-3	4.1	---	---	---
B2-0	0-0.5	80	4.0	---	---
B2-1.5	1.5-2	3.1	---	---	---
B2-2.5	2.5-3	3.8	---	---	---
B11-0	0-0.5	51	3.8	---	---
B11-1.5	1.5-2	3.9	---	---	---
B11-2.5	2.5-3	3.1	---	---	---
B12-0	0-0.5	130	8.7	<0.25	---
B12-1.5	1.5-2	3.7	---	---	---
B12-2.5	2.5-3	5.5	---	---	---
B13-0	0-0.5	130	4.3	<0.25	---
B13-1.5	1.5-2	4.3	---	---	---
B13-2.5	2.5-3	4.2	---	---	---
B14-0	0-0.5	160	10	<0.25	---
B14-1.5	1.5-2	4.7	---	---	---
B14-2.5	2.5-3	3.8	---	---	---
B15-0	0-0.5	160	11	<0.25	7.2
B15-1.5	1.5-2	<0.99	---	---	---
B15-2.5	2.5-3	2.5	---	---	---
B16-0	0-0.5	78	4.4	---	---
B16-1.5	1.5-2	7.7	---	---	---
B16-2.5	2.5-3	3.7	---	---	---
NORTHBOUND SHOULDER					
B3-0	0-0.5	37	---	---	---
B3-1.5	1.5-2	29	---	---	---
B3-2.5	2.5-3	5.1	---	---	---
B4-0	0-0.5	50	2.7	---	---
B4-1.5	1.5-2	7.4	---	---	---
B4-2.5	2.5-3	6.0	---	---	---

TABLE 4
 SUMMARY OF SOIL ANALYTICAL RESULTS - LEAD
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

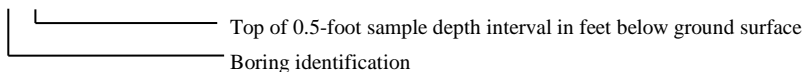
SAMPLE ID	SAMPLE INTERVAL (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)	pH
B5-0	0-0.5	120	6.3	<0.25	---
B5-1.5	1.5-2	37	---	---	---
B5-2.5	2.5-3	11	---	---	---
B6-0	0-0.5	330	24	<0.25	7.5
B6-1.5	1.5-2	50	2.0	---	---
B6-2.5	2.5-3	5.4	---	---	---
B7-0	0-0.5	110	4.4	<0.25	---
B7-1.5	1.5-2	12	---	---	---
B7-2.5	2.5-3	4.9	---	---	---
B8-0	0-0.5	220	12	<0.25	7.3
B8-1.5	1.5-2	67	2.4	---	---
B8-2.5	2.5-3	5.8	---	---	---
B9-0	0-0.5	210	14	<0.25	---
B9-1.5	1.5-2	6.5	---	---	---
B9-2.5	2.5-3	6.6	---	---	---
B10-0	0-0.5	320	14	<0.25	7.7
B10-1.5	1.5-2	5.6	---	---	---
B10-2.5	2.5-3	5.5	---	---	---
<u>Hazardous Waste Criteria</u>					
	TTLIC (mg/kg)	1,000			
	10 x STLC (mg/kg)	50			
	STLC (mg/l)		5.0		
	TCLP (mg/l)			5.0	
<u>CHHSLs/ESLs</u>					
	Residential Land Use	80			
	Commercial/Industrial Land Use	320			
<u>Background Concentrations ⁽¹⁾</u>					
	Minimum	12.4			
	Mean	23.9			
	Maximum	97.1			

TABLE 4
 SUMMARY OF SOIL ANALYTICAL RESULTS - LEAD
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE INTERVAL (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)	pH
-----------	---------------------------	-----------------------	--------------------	---------------------	----

Notes:

B1-0



WET = Waste Extraction Test

TCLP = Toxicity Characteristic Leaching Procedure

TTLC = Total Threshold Limit Concentration

STLC = Soluble Threshold Limit Concentration

mg/kg = Milligrams per kilogram

mg/l = Milligrams per liter

--- = Not analyzed

< = Less than the laboratory reporting limit

CHHSLs = California Environmental Protection Agency, California Human Health Screening Levels

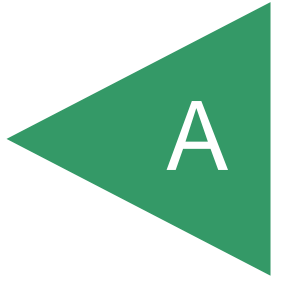
ESLs = Environmental Screening Levels, Table S-1, Direct Exposure Human Health Risk Levels, San Francisco Bay Regional Water Quality

Control Board, Feb. 2016 (Rev. 3)

⁽¹⁾ = Background Concentrations of Trace and Major Elements in California Soils (Kearney Foundation of Soil Science, Division of Agricultural and Natural Resources, University of California, March 1996)

APPENDIX

A



STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

In the Matter of:)	Docket No. ESPO-SMA 15/16-001
Aerially Deposited Lead Contaminated Soils in State Highway Rights-of-Way)	Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils
Project Proponent:)	
California Department of Transportation)	Health and Safety Code
Division of Environmental Analysis)	Section 25187(b)(5)
P.O. Box 94284, MS-27)	
Sacramento, California 94723-0001)	

I. INTRODUCTION

1.1 Parties. The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) enters into this Soil Management for Aerially Deposited Lead-Contaminated Soils Agreement (Agreement) with the California Department of Transportation (Caltrans).

1.2 Jurisdiction. This Agreement is entered into by DTSC and Caltrans pursuant to Health and Safety Code (H&SC) section 25187(b)(5), as Caltrans may generate ADL-contaminated soil in the course of future activities for State highway projects.

1.3 Purpose. This Agreement applies to the future management of aerially deposited lead (ADL)-contaminated soil generated by Caltrans in the course of State highway projects, in all Caltrans districts, statewide. The future management activities to which this Agreement generally applies are the stockpiling, disposal, tracking, transportation and final placement of ADL-contaminated soil. Subject to Section 3.23, this Agreement is not a corrective action order based on Caltrans' past ADL-contaminated soil management practices.

///

///

II.BACKGROUND

2.1 History. Refiners in the United States started adding lead compounds to gasoline in the 1920s in order to boost octane levels and improve engine performance by reducing engine 'knock' and allowing higher engine compression. Tailpipe emissions from automobiles using leaded gasoline contained lead and resulted in ADL being deposited in and along roadways throughout the State. The phasedown of lead in gasoline began in 1974 when, under the authority of the Clean Air Act Amendments of 1970, the U.S. Environmental Protection Agency (EPA) introduced rules requiring the use of unleaded gasoline in new cars equipped with catalytic converters. The introduction of catalytic converters for control of hydrocarbon (HC), nitrous oxide (NOx) and carbon monoxide (CO) emissions required that motorists use unleaded gasoline because lead destroys the emissions control capacity of catalytic converters. By the early 1980s gasoline lead levels had declined about 80% as a result of both the regulations and fleet turnover. Beginning in 1992, lead was banned as a fuel additive in California.

ADL-contaminated soil still exists along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. The highest lead concentrations are usually found within 10 feet of the edge of the pavement and within the top six inches of the soil. In some cases, lead is as deep as two to three feet below the surface and can extend 20 feet or more from the edge of pavement. Transportation of such soil to hazardous waste landfills challenges the State's limited hazardous waste landfill capacity and increases air pollution due to trucking. The alternative of transporting the soil out of state for disposal is State-resource-intensive, and contrary to Caltrans policy. Caltrans, by managing the soil in accordance with this Agreement, would be reducing hazards, preserving landfill capacity, and reducing the air quality impacts inherent in transporting the soil many miles to landfills, while still protecting human health and the environment.

///

Various lines of evidence indicate the potential for lead leaching into groundwater is low. Most important are soil data collected from actual sites in California where Caltrans has conducted construction operations. Measurements of Partitioning Coefficients (K_d) from 595 ADL-contaminated soil samples indicate that lead, while prevalent, is so tightly bound to the soil that it does not pose a serious threat of leaching into the groundwater. The calculated mean K_d of 333 liters per kilogram (L/kg) from northern California soils was the lowest of the groups in the dataset but is still far above the recognized threshold of $K_d = 20$ for chemicals that are considered immobile and not a threat of leaching to groundwater. However, for soil having pH less than 5; the solubility of lead increases greatly.

Surface water is protected through implementation of Caltrans Stormwater Management Plan (SWMP) which addresses stormwater pollution control related to Caltrans activities, including planning, design, construction, maintenance, and operation of roadways and facilities as required in the Caltrans Statewide Storm Water Permit (State Water Resources Control Board Order 2012-0011-DWQ, as amended by Orders WQ 2014-0006-EXEC, WQ 2014-0077-DWQ & WQ 2015-0036-EXEC). Caltrans submitted a proposed SWMP on November 23, 2015, which must be approved by the State Water Resources Control Board, and as specified in the Permit approved terms of the SWMP are fully enforceable by the State Water Board and nine Regional Water Boards. Surface water is afforded additional protections if there are potential impacts from projects that fall under the jurisdiction of the Coastal Commission (or designees) and/or the California Department of Fish and Wildlife (DFW). Caltrans has partnering agreements with these agencies and they are engaged early in the transportation project development process. The Coastal Commission is a Certified Regulatory Program under CEQA and DFW is a trustee agency under CEQA. As regulatory agencies, both are required under CEQA to review projects within their jurisdiction. Whenever a transportation project is proposed within the California Coastal Zone, the California Coastal Act (Section 30600) states that any activity meeting the definition of

development requires a coastal development permit or verification of an exemption or waiver. Sections 30230 - 30232 of the act specifically address water quality and water quality protection requirements may be added to permits. Whenever a project is proposed within the jurisdiction of the DFW, Caltrans coordinates with DFW on project development pursuant to Sections 1600, 2050, and 2081 of the Fish and Game Code. Section 1600 of the Fish and Game Code regulates impacts to lakes and streambeds. Sections 2050 and 2081 (California Endangered Species Act) regulate impacts to endangered species. Caltrans coordinates with DFW throughout the project delivery process to identify impacts to areas within their jurisdiction and address those impacts. Caltrans standard practice on all projects is to protect water quality by incorporating permanent stormwater pollution prevention Best Management Practices (BMPs) in highway drainage design. These site specific permanent BMPs, which are appropriate for the flow rates, prevent erosion and any associated discharge of pollutants.

2.2 Previous Actions Taken.

In 1995, pursuant to Health and Safety Code 25143, DTSC granted certain Caltrans' districts a Variance from the hazardous waste management requirements to obtain a permit for a disposal facility and any other generator requirements that concern the transportation, manifesting, storage and land disposal of hazardous waste for aerially deposited lead-contaminated soils, as defined in the Variance (Variance). The Variance substituted alternative management standards which allowed Caltrans road construction projects to reuse ADL-contaminated soils with hazardous waste levels of lead on project sites while maintaining protection of human health and the environment. Although the level of lead found in some areas is higher than that which is considered to be hazardous waste, it was determined that Caltrans could reuse the soil along the freeways and roads under construction without posing an unacceptable risk to human health or the environment. Keeping these soils in defined areas in which people spend little, if any, time prevents contact with the lead.

///

In addition, Caltrans incorporated specifications in its contracts with construction contractors that require contractors to handle hazardous waste level ADL-contaminated soils consistent with the requirements of the Variance. For example, soil found to contain hazardous waste levels of lead is to be kept separate from non-hazardous soil and the contractor takes dust control and security measures to keep people from coming into contact with the soil until it is reused. The hazardous waste level ADL-contaminated soil would stay in place (beneath the road, highway, freeways, or a layer of clean soil, etc.) for the life of the highway. Additional upgrades and widening are much more likely than abandoning old highways. Therefore, the hazardous waste level ADL-contaminated soil would remain secure, and human health and the environment would remain protected long term.

DTSC has issued new variances incorporating additional and more protective provisions approximately every five years since the first Variance in 1995. Additional Caltrans' districts were also added over time. The current Variance includes all Caltrans' districts and has been in effect since 2009. In June 2015, DTSC made the decision to transition from a Variance to this Agreement. This Agreement is intended to control Caltrans future activities to manage ADL contaminated soil. Subject to 3.23, this Agreement is not a corrective action order based on any specific incidents of Caltrans past ADL-contaminated soil management. Existing projects that have implemented the Variance and have completed the Project Approval and Environmental Document milestone prior to July 1, 2016 shall continue to meet all requirements of the Variance set forth in the Transition Plan.

III. AGREEMENT

3.0 IT IS HEREBY AGREED THAT DTSC shall provide oversight of the activities conducted by Caltrans related to soils containing elevated concentrations of aurally deposited lead from car exhaust in State owned highway rights-of-way. Caltrans shall conduct the activities in the manner specified herein. All work, as appropriate, shall be performed consistent with Health and Safety Code, section 25100

et seq., as amended; the National Contingency Plan (40 Code of Federal Regulations (CFR)) Part 300, as amended; DTSC and U.S. EPA RCRA and Superfund guidance documents regarding site investigation and soil management.

3.1 Definitions

3.1.1 **ADL-Contaminated Soil.** For purposes of this Agreement, ADL-contaminated soil is defined as excavated soil whose only constituent of concern that poses an unacceptable risk to human health or the environment is lead, primarily from exhaust emissions from the operation of motor vehicles, in concentrations greater than considered appropriate for unrestricted use by DTSC (currently 80 milligrams per kilogram [mg/kg] total lead based on a 95 percent upper confidence limit [UCL]) and/or 5 mg/l extractable lead based on a 95 percent UCL, as determined by the CA Waste Extraction Test (CA-WET).

3.1.2 **Clean Soil.** For purposes of this agreement, clean soil is defined as soil not containing total lead over 80 mg/kg based on a 95 percent UCL or soluble lead over 5 mg/l based on a 95 percent UCL as determined by the CA-WET and not containing other constituents at levels that would pose an unacceptable risk to human health or the environment or be unacceptable to the Regional Water Quality Control Board with jurisdiction.

3.1.3 **Project Defined Construction Corridor.** For purposes of this agreement, project defined construction corridor is defined as a specified route restricted to the State highway system that connects a Caltrans project where ADL-contaminated soil is excavated to another Caltrans project that accepts the ADL-contaminated soil for reuse. Project defined construction corridors shall be identified in the Project Notification, if determined at the time of submittal, or in the Start of Construction Notification. A project defined construction corridor shall not exceed 150 miles unless DTSC provides prior approval. DTSC shall respond to a corridor evaluation request within 5 days of submittal.

///

3.1.4 **Shelved.** For purposes of this agreement, a project is considered shelved when funding is not available for the project to proceed and the project has to be put on hold.

3.2 Scope of Work and DTSC Oversight. This Agreement applies to the management of ADL-contaminated soil excavated from or imported to the State highway system in the course of highway projects, in all Caltrans districts statewide. The management activities to which this Agreement applies are the stockpiling, disposal, tracking, transportation and final placement of ADL-contaminated soil. The ADL-contaminated soil management procedures defined in this Agreement may also be used by Caltrans on joint projects between Caltrans and local government entities, provided it is only used within State-owned highway rights-of-way and Caltrans performs quality assurance and oversight of all phases of the project including environmental assessment, design, contracting, and construction, as well as operation, and maintenance of the project segments within Caltrans' right-of-way. For such joint projects, Caltrans and the local government entity shall each retain joint and severable liability for any noncompliance with the provisions of this Agreement. DTSC shall provide oversight of response activities related to ADL-contaminated soil.

3.3 Additional Activities. Additional activities may be conducted and DTSC oversight provided by amendment to this Agreement or Exhibits hereto in accordance with Paragraph 3.15.

3.4 Agreement Managers. Daniel Ward, P.E., Chief, Engineering and Special Projects Office, is designated by DTSC as its Manager for this Agreement. Shailla Chowdhury, P.E., Chief, Hazardous Waste, Air, Noise and Paleontology Office, is assigned by Caltrans as Manager for this Agreement. Each Party to this Agreement shall provide at least ten (10) days advance written notice to the other of any change in its designated manager.

3.5 Notices and Submittals. All notices, documents and communications required to be given under this Agreement, unless otherwise specified herein, shall be

sent to the respective parties at the following addresses in a manner that produces a record of the sending of the notice, document or communication such as certified mail, overnight delivery service, facsimile transmission, electronic mail, or courier hand delivery service:

3.5.1 To DTSC:
Perry Myers, P.E., Project Manager
Department of Toxic Substances Control
Engineering and Special Projects Office
8800 Cal Center Drive
Sacramento, California 95826
ADL@dtsc.ca.gov

3.5.2 To Caltrans:
Kim Christmann, Senior Engineering Geologist (Agreement
Coordinator)
California Department of Transportation
Division of Environmental Analysis
PO Box 942874, MS27
Sacramento, California 94271-0001
ADL@dot.ca.gov

3.6 Communications. All of DTSC's approvals and decisions, when required, made regarding submittals and notifications shall be communicated to Caltrans in writing by DTSC's Agreement Manager or his/her designee. No informal advice, guidance, plans, specifications, schedules or any other writings by DTSC shall be constructed to relieve Caltrans of the obligation to obtain such written approvals.

3.7 Endangerment During Implementation. In the event DTSC determines that any activity within their jurisdiction (whether or not pursued in compliance with this Agreement) may pose an imminent or substantial endangerment to public health or to the environment, DTSC may order Caltrans to stop further implementation for such period of time as may be needed to abate the endangerment.

3.8 Payment. Reimbursement for DTSC's costs related to this agreement, not to exceed \$150,000 annually (comprised of no more than 1760 hours plus contract support costs) shall be made through the existing interagency agreement (identified as Caltrans 43A0310 and DTSC 12-T0106) and its successors.

3.9 Coordinators. Caltrans shall designate an Agreement Coordinator, with expertise in hazardous waste and hazardous substance handling/management to establish policies and procedures consistent with this Agreement. Additionally, Caltrans shall designate at least one District Coordinator for each Caltrans district in the State. These District Coordinators shall be the primary point of contact for information flowing to or received from DTSC, regarding any matter or submission under this Agreement. Caltrans shall submit the names and addresses of the Coordinators to DTSC. Caltrans shall promptly notify DTSC of any change in the identity of the Coordinators.

3.10 Access. After scheduling access with the Caltrans project Resident Engineer, Caltrans shall provide DTSC's employees, and its authorized representatives, access to individual project areas to which access is necessary to implement this Agreement. Such access shall be subject to the Caltrans project Resident Engineer's safety requirements. Nothing in this paragraph is intended or shall be construed to limit in any way the right of entry or inspections that DTSC or any other agency may otherwise have by operation of any law. After scheduling access with the Caltrans project Resident Engineer 24 hours prior to arrival, DTSC's employees and its authorized representatives shall have the authority to enter, and move freely about all property associated with a project area in accordance with the Caltrans project Resident Engineer's safety requirements at all reasonable times for purposes including, but not limited to: inspecting records, operations logs, sampling and analytic data, and contracts relating to activities under this Agreement; reviewing the progress of Caltrans in carrying out the terms of this Agreement; conducting such tests as DTSC may deem necessary; and verifying the data submitted to DTSC by Caltrans.

3.11 Sampling and Analysis. Caltrans shall submit to DTSC a sampling and analysis summary that describes sampling activities and analytical methods typically used to characterize potential contamination at highway projects within 60 days of the Effective Date of the Agreement.

///

3.12 Sampling, Data and Document Availability. When requested by DTSC, Caltrans shall make available to DTSC and shall provide copies of, all data and information concerning ADL contamination on a project job site, including technical records, ADL sampling and monitoring information and photographs and maps, whether or not such data and information was developed pursuant to this Agreement.

3.13 Notification of Environmental Conditions. Caltrans shall notify DTSC's Agreement Manager immediately upon learning of any condition posing a significant threat to human health or the environment pertaining to ADL-contaminated soil. Within seven (7) days of the onset of such a condition, Caltrans shall furnish a report to DTSC, signed by the Caltrans' Agreement Manager, setting forth the events which occurred and the measures taken in the response thereto.

3.14 Preservation of Documentation. Caltrans shall maintain a repository of the data, reports, and other documents prepared pursuant to Section 4 of this Agreement. All such data, reports and other documents shall be preserved by Caltrans for a minimum of six (6) years after the conclusion of all activities carried out under this Agreement. If DTSC requests that some or all these documents be preserved for a longer period to time, Caltrans shall either comply with that request, deliver the documents to DTSC, or permit DTSC to copy the documents prior to destruction. Caltrans shall notify DTSC in writing at least ninety (90) days prior to the expiration of the six-year minimum retention period before destroying any documents prepared pursuant to this Agreement. If any litigation, claim, negotiation, audit or other actions involving the records have been started before the expiration of the six-year period, the related records shall be retained until the completion and resolution of all issues arising therefrom or until the end of the six-year period, whichever is later.

3.15 Amendments. This Agreement may be amended or modified solely upon written consent of all parties. Such amendments or modifications may be proposed by either party and shall be effective the third business day following the day

///

the last party signing the amendment or modification sends its notification of signing to the other party. The parties may agree to a different effective date. The Parties shall review the Agreement every five (5) years for the purpose of determining whether amendments are warranted.

3.16 Integration. This Agreement constitutes the entire Agreement between the parties and may not be amended, supplemented, or modified, except as provided in this Agreement.

3.17 California Environmental Quality Act (CEQA). Consistent with the California Environmental Quality Act, DTSC shall prepare any necessary CEQA documents related to this Agreement. If required, Caltrans shall submit the information necessary for DTSC to prepare these documents. As required by law, Caltrans will ensure that each individual highway project will comply with CEQA, on a project specific basis. Caltrans will consider the reuse of ADL-contaminated soil during the project-specific CEQA process.

3.18 Dispute Resolution. The Parties agree that the procedures contained in this Section are the required informal administrative procedures for resolving disputes arising under this Agreement. If Caltrans fails to follow the procedures contained in this section, it shall have waived its right to further contest the disputed issue. Parties shall follow sections 3.18.1 through and including 3.18.2 to resolve disputes other than billing and cost recovery issues.

3.18.1 The Parties agree in the first instance to attempt to resolve informally, among the DTSC Project Manager and Caltrans Agreement Coordinator, any disagreement as to Caltrans' compliance with the requirements of this Agreement. The DTSC Project Manager shall memorialize the decision and rationale resulting from these discussions (Initial Informal Administrative Decision) and provide it to Caltrans.

3.18.2 If Caltrans disagrees with the Initial Informal Administrative Decision, it may seek a second level of review. The second level reviewers shall be a DTSC Cleanup Program Division Chief and the Caltrans Environmental Analysis Division

Chief, or their designee(s). Within thirty (30) days of the Initial Informal Administrative Decision Caltrans shall provide to these second level reviewers a written notice stating the reasons why the Initial Informal Administrative Decision is not acceptable and the remedy sought. The notice shall include (a) Caltrans original statement of dispute, (b) supporting documents, including the Initial Informal Administrative Decision, and (c) copies of any responses prepared by the DTSC Project Manager. These reviewers shall consider the issues raised in Caltrans' notice, and DTSC shall render a written decision to Caltrans within thirty (30) days of receipt of Caltrans written dispute notice. The Parties may meet and confer prior to the written decision and may mutually agree to extend the days for resolution of the dispute. The decision shall constitute DTSC's Final Informal Administrative Decision on the issues in dispute. Caltrans reserves its legal rights to contest or defend against any final informal administrative decision rendered by DTSC under this section. DTSC reserves its rights as set forth throughout this Agreement. If either party contests the Final Informal Administrative Decision they may elevate the dispute to their respective agency.

3.19 Additional Enforcement Actions. By agreeing to this Agreement, DTSC does not waive the right to take further enforcement actions, except to the extent provided in this Agreement.

3.20 Penalties for Noncompliance. Failure to comply with the terms of this Agreement may subject Caltrans, its local governmental entity partners and its contractors to civil penalties and/or punitive damages for any costs incurred by DTSC or other government agencies as a result of such failure, as provided by applicable provisions of law.

3.21 Exhibits. All exhibits attached to this Agreement are incorporated herein by this reference.

3.22 Time-Periods. Unless otherwise specified, time periods begin from the date this Agreement is fully executed, and "days" means calendar days. "Business days" means all calendar days that are not weekends or official State Holidays.

3.23 Caltrans Liabilities. Nothing in this Agreement shall constitute or be considered a satisfaction or release from liability for any condition or claim arising as a result of Caltrans' past, current, or future operations. Nothing in this Agreement is intended or shall be construed to limit the rights of any of the parties with respect to claims arising out of or relating to the deposit or disposal at any other location of substances removed from the rights-of-way, except to the extent provided in this Agreement as related to ADL-contaminated soil.

3.24 DTSC Liabilities. DTSC shall not be liable for any injuries or damages to persons or property resulting from acts or omissions by Caltrans or by related parties in carrying out activities pursuant to this Agreement, nor shall DTSC be held as a party to any contract entered into by Caltrans or its agents in carrying out the activities pursuant to this Agreement.

3.25 Third Party Actions. In the event that Caltrans is a party to any suit or claim for damages or contribution relating to work done under this Agreement to which DTSC is not a party, Caltrans shall notify DTSC in writing within ten (10) days after service of the complaint in the third-party. Caltrans shall pay all costs incurred by DTSC relating to such third-party actions, including but not limited to responding to subpoenas.

3.26 Reservation of Rights. Nothing in this Agreement is intended or shall be construed to limit or preclude DTSC from taking any action authorized by law or equity to protect human health or the environment and recovering the cost thereof.

3.26.1 By entering into this Agreement, Caltrans does not admit to any fact, fault, or liability under any statute or regulation.

3.27 Compliance with Applicable Laws. Nothing in this Agreement shall relieve Caltrans from complying with all other applicable laws and regulations, and Caltrans shall conform all actions required by this Agreement with all applicable federal, state and local laws and regulations.

3.28 California Law. This Agreement shall be governed, performed and interpreted under the laws under the State of California.

3.29 Severability. If any portion of this Agreement is ultimately determined not to be enforceable, that portion shall be severed from the Agreement and the severability shall not affect the enforceability of the remaining terms of the Agreement.

3.30 Parties Bound. This Agreement applies to and is binding upon Caltrans and any successor agency of the State of California, and upon DTSC and any successor agency of the State of California that may have responsibility for and jurisdiction over the subject matter of this Agreement.

3.31 Effective Date. The effective date of this Agreement is the date when this Agreement is fully executed.

3.32 Representative Authority. Each undersigned representative of the parties to this Agreement certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and to execute and legally bind the parties to this Agreement.

3.33 Counterparts. This Agreement may be executed and delivered in any number of counterparts, each of which when executed and delivered shall be deemed to be an original, but such counterparts shall together constitute one and the same document.

IV. REQUIREMENTS FOR MANAGING ADL-CONTAMINATED SOILS

4.0 All ADL-contaminated soil excavated or imported during construction activities shall be managed consistent with this Agreement to ensure there is not an unacceptable risk to human health or the environment. ADL-contaminated soil shall be managed by Caltrans, its local government entity partners and its contractors according to this section. Decisions regarding the handling of ADL-contaminated soil will be based on a 95 percent UCL in cases where this information is available. If this type of data analysis has not been performed it will be based on the maximum lead value detected.

4.1 General Requirements. General requirements for all highway projects operating under this Agreement:

///

4.1.1 For all ADL-contaminated soil handling activities conducted under this Agreement, Caltrans and its contractors shall comply with all applicable federal, State and local laws, including but not limited to requirements of the State Water Resources Control Board (SWRCB) and California Regional Water Quality Control Boards (RWQCBs), water quality control plans and waste discharge requirements (including storm water permits), requirements for ADL-contaminated soil in Coastal Zone Permits issued by the Coastal Commission or its designees, requirements for ADL-contaminated soil in DFW permits, and requirements of the appropriate Air Quality Management District (AQMD) and/or Air Pollution Control District (APCD). If non-compliance with the requirements of any of these agencies related to the management of ADL-contaminated soil results in non-compliance with this Agreement, it may result in an enforcement action by DTSC. Any ADL-contaminated soil exceeding hazardous waste concentrations that, for any reason, is moved outside of the original project limits or the project defined construction corridor (in the case of ADL-contaminated soil moved from one Caltrans project to another) is not covered by this Agreement and is fully subject to the hazardous waste management standards of Health and Safety Code, chapter 6.5 (section 25100, et seq) and regulations adopted thereunder.

4.1.2 Any highway project operating under this Agreement shall comply with all provisions of any California Environmental Quality Act (CEQA) documents prepared by DTSC for this Agreement, and with any additional requirements imposed by any project-specific CEQA study prepared by another government or private entity. Reuse of ADL-contaminated soil will be evaluated during the project-specific CEQA process.

4.1.3 For each project that has the potential to excavate ADL-contaminated soil, Caltrans shall conduct sampling and analysis to adequately characterize the soils containing aurally deposited lead in the areas of planned excavation along the project route.

4.1.4 Caltrans shall, pursuant to California Code of Regulations, title 22, section 66262.11, perform hazardous waste characterization of any soil to be disposed

of at a landfill under this Agreement. All sampling and analysis must be conducted in accordance with the appropriate methods specified in U.S. EPA SW-846.

4.1.5 ADL-contaminated soils with any of the following characteristics may not be managed under this Agreement and must be properly disposed of:

4.1.5.1 Soils that are RCRA hazardous waste, including but not limited to soils exceeding the RCRA hazardous waste threshold for lead according to the Toxicity Characteristic Leaching Procedure (TCLP), USEPA Method 1311.

4.1.5.2 Soils that are non-RCRA hazardous waste, except soils whose sole hazardous constituent posing an unacceptable risk to human health or the environment is lead in concentrations not exceeding 3,200 mg/kg of total lead and not exceeding 150 mg/l of extractable lead based on a modified waste extraction test using deionized water as the extractant (DI WET).

4.1.5.3 Soil having a pH less than or equal to 5.0.

4.1.6 Caltrans shall ensure that no hazardous waste, for constituents other than lead, is placed in areas where ADL-contaminated soil is stockpiled or buried in accordance with this Agreement.

4.1.7 ADL-contaminated soil excavated under the authority of this Agreement shall not be stockpiled or buried outside of the project-defined construction corridor from where the soil was excavated, except as provided in section 4.1.7.1. Caltrans may move ADL-contaminated soil from one Caltrans project to another Caltrans project for purposes of stockpiling, placement, or burial only if the soil remains within the project-defined construction corridor except that ADL-contaminated soil shall not be moved from one project to another project and placed on a roadway within the State right-of-way whose original road construction occurred after January 1, 1996, when lead was banned from gasoline nationwide.

4.1.7.1 Soils with concentrations of total lead greater than 80 mg/kg (but not exceeding 320 mg/kg) and extractable lead less than 5 mg/l, as determined by the CA-WET, may be removed from the State highway right of way without disposal in a landfill if they are managed in accordance with section 4.6.

4.1.8 Caltrans shall implement appropriate health and safety procedures to protect its employees and the public, and to prevent or minimize exposure to lead. A project-specific lead compliance plan shall be prepared and implemented. The monitoring and exposure standards for workers shall be based on construction standards for exposure to lead in California Code of Regulations, title 8, section 1532.1.

4.1.9 During all handling of ADL-contaminated soil, including its initial excavation from roadsides, subsequent loading and unloading onto and from vehicles, and all handling related to stockpiling or burial, Caltrans shall implement fugitive dust control measures using water or other palliatives. Caltrans must comply with any additional dust control requirements imposed by the local AQMD or Air Pollution Control District (APCD).

4.1.10 If visible dust migration beyond the project limits occurs during any activity authorized by this Agreement, whether initial excavation, truck loading/unloading, transportation, stockpiling or burying of the soil, the activity must be stopped until remedial actions are taken, or other conditions change, which enable resumption of the activity without dust migration.

4.1.11 ADL-contaminated soil shall not be placed in or covered by soils with a pH less than 5.0.

4.2 Transportation of ADL-Contaminated Soils. In transporting ADL-contaminated soil on a highway open to the public within the project-defined construction corridor and to other locations pursuant to this Agreement, the following sections of California Code of Regulations, title 22, division 4.5, chapter 13 shall be followed:

4.2.1 Section 66263.16, which requires each vehicle and container used to transport hazardous waste to be designed and constructed, and its contents so limited, as to prevent release of hazardous waste to the environment, and to be free from leaks and all discharge openings securely closed during transportation;

///

4.2.2 Section 66263.23, which requires transporters of hazardous waste to use a covered container to transport hazardous wastes that are subject to dispersal by wind;

4.2.3 Sections 66263.30 and 66263.31 which require the transporter, in the case of release of hazardous waste during transportation, to take immediate action to protect human health and the environment including notifying local authorities.

4.3 Stockpiling of ADL-Contaminated Soil Within the State Right-of-Way.

4.3.1 Excavated ADL-contaminated soil designated for burial not placed into the designated burial area by the end of the working day shall be stockpiled on sheets of polyethylene or geomembrane and covered with either sheets of polyethylene or at least one foot of clean soil. The excavated ADL-contaminated soil shall be protected from contacting surface water and from being dislodged or transported by wind or storm water in such a manner that no ADL-contaminated soil is transported beyond the limits of the stockpile while the ADL-contaminated soils are stockpiled. The covers shall be inspected at least once a week and within 24 hours after rainstorms. If the ADL-contaminated soil is stockpiled for more than 4 days from the time of excavation, Caltrans shall restrict public access to the stockpile by using barriers that meet the safety requirements of the construction zone.

4.3.2 Caltrans shall stockpile ADL-contaminated soil only on high ground (i.e. no sump areas or low points) so that stockpiled soil shall not come in contact with surface water run-on or run-off.

4.3.3 Caltrans shall not stockpile ADL-contaminated soil in environmentally or ecologically sensitive areas.

4.4 Placement of Surface Soils Within the State Right-of-Way. ADL-contaminated soil with a concentration of extractable lead not exceeding 5 mg/l, as determined by the CA-WET, and total lead not exceeding 320 mg/kg may be placed without cover. The 320 mg/kg limit is protective of adult workers, including pregnant

women. These soils shall not be placed in areas routinely used by the public (e.g. rest stops). Placement of these soils shall also comply with any requirements specified by the California Regional Water Quality Control Board and other agencies, such as the California Coastal Commission and the DFW, with responsibility for and jurisdiction over the area where the project is located.

4.5 Burial Within State Right-of-Way. ADL-contaminated soil containing lead exceeding 5 mg/L, as determined by the CA-WET, or 320 mg/kg total lead may be reused but shall be buried within the State right-of-way consistent with the following provisions. Placement of these soils shall also comply with any requirements specified by the California Regional Water Quality Control Board with responsibility for the area where the project is located.

4.5.1 ADL-contaminated soil shall be buried at least five (5) feet above the maximum historical water table elevation.

4.5.2 ADL-contaminated soil shall not be buried in locations that may require maintenance activities resulting in soil disturbance. ADL-contaminated soil shall not be buried within ten (10) feet of inlets and outlets of drainage unit/systems, such as culverts, in areas to be used for earthen-based stormwater structural treatment facilities, or in Ecologically Sensitive Habitat Areas (ESHA) as defined by the California Coastal Commission, unless it is demonstrated that doing so will not create unacceptable impacts to water quality.

4.5.3 Buried ADL-contaminated soil shall be adequately covered to prevent erosion and reduce water infiltration, in compliance with the following standards, which are also depicted in Table 1:

1. Soil exceeding 5 mg/L, as determined by the CA-WET, or exceeding 320 mg/kg total lead shall be covered by a minimum of one (1) foot of clean soil or a pavement structure, as long as the DI WET concentration does not exceed 1.5 mg/l and total lead does not exceed 1600 mg/kg. In vegetated areas the soil cover must be thick enough to preclude disturbance by planned plant establishment and irrigation system installation and maintenance.
2. Soil with a concentration of extractable lead by DI-WET exceeding 1.5 mg/l or a concentration of total lead exceeding 1600 mg/kg shall be

- covered by a pavement structure, as long as the DI-WET concentration does not exceed 150 mg/l and total lead does not exceed 3200 mg/kg.
3. Soil with a concentration of extractable lead by DI-WET exceeding 150 mg/l or a concentration of total lead exceeding 3200 mg/kg total lead is not eligible for management under this Agreement and is subject to full regulation as hazardous waste.

Table 1. Minimum Cover Requirements for ADL-contaminated Soil Based on Extractable and Total Lead Concentrations (95% UCL)*			
Extractable Lead Concentration		Total Lead Concentration	Minimum Cover Requirement
Less than 5 mg/l CA-WET	and	Less than 320 mg/kg	No cover requirement
Greater than 5 mg/l CA-WET and equal to or below 1.5 mg/l DI-WET	or	Greater than 320 mg/kg but equal to or below 1600 mg/kg	One foot of clean soil**
Greater than 1.5 mg/l DI-WET but equal to or below 150 mg/l DI-WET	or	Greater than 1600 mg/kg but equal to or below 3200 mg/kg	Pavement structure
Greater than 150 mg/l DI-WET	or	Greater than 3200 mg/kg	Subject to full regulation as hazardous waste

* ***ADL-contaminated soil having a pH less than or equal to 5.0 may not be managed under this Agreement and must be properly disposed of.***

** *This is the minimum requirement. Such soil may alternatively be covered by a pavement structure.*

4.5.4 ADL-contaminated soil shall be buried and covered in a manner that shall prevent accidental breach of the covering soil or pavement. ADL-contaminated soil shall only be placed in locations that are protected from possible erosion by storm water run-on or run-off.

4.5.5 Caltrans shall conduct regular inspections, consistent with Caltrans' Maintenance Division's current Pavement Inspection and Slope Inspection programs, of the locations where ADL-contaminated soils have been buried and covered pursuant to this Agreement. If site inspections reveal deterioration of the cover such that conditions

in the Agreement are not met, Caltrans shall notify DTSC and repair or replace the cover within 30 days.

4.6 ADL-Contaminated Soil Reused Or Temporarily Stockpiled Outside The State Right-of-Way.

ADL-contaminated soil removed from the State right-of-way for reuse elsewhere shall be managed appropriately to ensure it does not pose an unacceptable risk to human health or the environment. Soils with a concentration of extractable lead not exceeding 5 mg/l, as determined by the CA-WET, and total lead not exceeding 320 mg/kg is only appropriate for use at commercial/industrial properties. If ADL-contaminated soil is used at a real property located outside the State right-of-way, Caltrans shall submit to DTSC a completed "Agreement between a contractor working on State facilities and a real property owner for disposing construction-related material on property owner's property" as part of the Completion Report described in section 4.12. ADL-contaminated soils with a concentration of extractable lead not exceeding 5 mg/l, as determined by the CA-WET, and total lead not exceeding 320 mg/kg may be temporarily stockpiled outside the project-defined construction corridor at a commercial facility of a contractor working on the project for Caltrans if the requirements of sections 4.2 and 4.3 are adhered to. All such stockpiles shall be removed from said commercial facility prior to completion of the highway project unless that location is to be the final resting place of the ADL-contaminated soil, in which case the soils will be managed according to all requirements of this section.

4.7 Field Changes.

4.7.1 Changes in location of ADL-contaminated soil placement, quantities or protection measures from the original design (field changes) shall be noted in the Resident Engineer's Diary within five (5) days of the field change.

4.7.2 Caltrans shall ensure that any field changes are in compliance with the requirements of this Agreement.

///

4.8 **Land Use Restrictions.** For every property where ADL-contaminated soil is buried within State owned highway rights-of-way pursuant to this Agreement, Caltrans shall, pursuant to California Code of Regulations, title 22, section 67391.1, execute a land use covenant imposing appropriate limitations on land use of the property, which shall be binding in perpetuity upon Caltrans or any future owners of the property. The land use covenant, except as provided in section 4.8.1, shall be recorded within the county (or counties) wherein ADL-contaminated soil has been buried.

4.8.1 Properties within State owned highway rights-of-way typically do not have assessor parcel numbers (used to assess taxes) which prevents land use covenants from being properly recorded within the county (or counties) wherein they are located. For any property for which it is not feasible to establish a land use covenant, Caltrans shall meet all the following requirements.

4.8.1.1 Caltrans shall maintain a list, at its statewide office, of all locations where ADL-contaminated soil is placed or buried as part of this Agreement. Prior to any land use change for properties within State highway rights-of-way, the list shall be consulted and steps taken, if necessary, to ensure the land use change does not create an unacceptable risk to human health or the environment related to ADL-contaminated soil.

4.8.1.2 Caltrans shall revise its policy for the relinquishment of property within State highway rights-of-way to ensure that properties with ADL-contaminated soil are properly managed after relinquishment. The revised policy shall require properties relinquished to other government entities to be tracked and managed in a manner equivalent to that required of Caltrans. Properties relinquished to non-governmental entities shall, pursuant to California Code of Regulations, title 22, section 67391.1, execute a land use covenant imposing appropriate limitations on land use of the property, which shall be binding in perpetuity upon the non-governmental entity or any future owners of the property, as part of the relinquishment process. The land use covenant shall be recorded within the county (or counties) wherein ADL-contaminated soil has been buried. DTSC shall provide Caltrans sample land use covenant language upon request.

4.9 Information Available to Public.

4.9.1 Within 30 days of the effective date of this Agreement Caltrans shall post on its public website the URLs of Portable Document Format (PDF) versions of the following documents:

1. this Agreement;
2. the DTSC-prepared fact sheet concerning this Agreement;
3. a list of active projects for which the Agreement is being used to manage ADL-contaminated soil. The list shall be updated with new projects when notification for a specific project is made to DTSC.

4.9.2 Within 30 days of the effective date of this Agreement, DTSC shall post on its public website information regarding the reuse of excavated soils and appropriate land use specific to lead.

4.9.3 Within 30 days of the effective date of this Agreement DTSC and Caltrans will schedule meetings they will both participate in with (1) Caltrans transportation partners (such as cities, counties, and transportation agencies) and (2) the construction industry. The purpose of the meetings will be to explain DTSC's expectations regarding the management of soil containing lead and to explain the need for and implementation of this agreement between DTSC and Caltrans.

4.10 Project Notification. For any highway project for which this Agreement applies or is to be used, Caltrans shall provide written notification to DTSC, within 10 days of when that determination is made, and shall send copies of the notification to the RWQCB, AQMD (or APCD, as applicable), local Certified Uniform Program Agency (CUPA), and the Caltrans Agreement Coordinator. For projects that overlie multiple local agency jurisdictions, all appropriate agencies shall receive a copy of the notification.

4.10.1 The written notification shall include the following information:

1. A statement that the project shall entail excavation, stockpiling and/or burial of ADL-contaminated soil pursuant to this Agreement;
2. Project number;
3. Project description;

4. Project Limits (Route; District - County - Route - Begin Mile Post /End Mile Post);
5. URLs for or Portable Document Format (PDF) versions of the following documents:
 - a) the environmental document prepared for the project;
 - b) this Agreement; and
 - c) the DTSC-prepared fact sheet about this Agreement.
6. Results of laboratory analysis collected during design for the ADL-contaminated soil to be placed within the highway right of way, and the name of the laboratory performing the analyses;
7. Results of laboratory analysis collected during design for the ADL-contaminated soils to be placed at a final destination property other than a landfill and name of the laboratory performing the analyses;
8. Copy of the construction contract specifications which define the management of ADL-contaminated soil; and
9. Definition of the project defined construction corridor if it has already been determined that soil will be moved from one Caltrans project to another and complete project information listed above for both the sending and receiving projects.

4.10.2 The Caltrans-authorized Lead Compliance Plan, authorized Excavation and Transportation Plan, and the contact information for the project resident engineer shall be submitted to DTSC within ten (10) days of document approval or staff identification, respectively.

4.10.3 For purposes of sending a copy of the notification to a local agency that is notified of the project pursuant to separate requirements of that local agency, that separate notification fulfills the requirement of this section only if such notification includes all information listed in 4.10.1 and is sent in advance as required by this subsection.

4.11 Start of Construction Notification. At least five (5) days in advance of initiation of construction on any project for which this Agreement applies or is used, Caltrans shall provide written notification to DTSC containing the following information concerning the project:

1. Project number;
2. Project description;
3. Project Limits (District - County - Route - Begin Postmile /End Postmile);

4. Anticipated start and end dates of the construction phase of the project;
5. Contact information for the project resident engineer;
6. A list of Caltrans contractors to be involved in the construction phase of the project;
7. Definition of the project defined construction corridor if soil will be moved from one Caltrans project to another. Include complete project information listed above for both the sending and receiving projects; and
8. The address and property owner information for the location where the contractor will stockpile or dispose nonhazardous ADL-contaminated soil with a total lead concentration between 80 and 320 mg/kg.

4.12 Completion Report. Within 180 days of completion of the construction phase of any project for which this Agreement applies or is used, provide to DTSC, in writing, the following:

4.12.1

1. Project number;
2. Project description;
3. Project limits (District - County - Route - Begin Postmile /End Postmile);
4. Actual start and end dates of construction; and
5. A list of all USEPA ID numbers (including temporary ID numbers) assigned by DTSC for use on the project.

4.12.2 If ADL-contaminated soil was buried in accordance with section 4.5 of this Agreement within the State right-of-way as part of the project, the following information:

1. All survey data for the placement location, including precise latitude and longitude, elevation (top and bottom in North American Vertical Datum of 1988[NAVD 88]), postmiles and highway number;
2. The approximate volume, in cubic yards, of ADL-contaminated soil buried;
3. The historical maximum elevation of the water table underlying the burial location NAVD 88;
4. The results of laboratory analysis collected during construction, if any, for the ADL-contaminated soil placed, and name of the laboratory performing the analyses;
5. Type of cover (soil or pavement);
6. Thickness of cover used; and
7. Copies of any and all bills of lading used for transporting ADL-contaminated soil to the active construction zone of the project.

4.12.3 For any ADL-contaminated soils that were permanently removed from the highway right of way, the following information:

1. The final destination of the soils (landfill, private property, other);
2. Copies of any and all bills of lading and hazardous waste manifests used to transport the ADL-contaminated soils;
3. The name and contact information for the landfill or property owner of the final destination property;
4. If not a landfill, the zoning for the final destination property;
5. The volume of ADL-contaminated soil moved to a landfill and/or final destination property;
6. If not a landfill, whether the ADL-contaminated soils were stockpiled or used as fill; and
7. For ADL-contaminated soils placed at a final destination property other than a landfill, the results of laboratory analysis collected during construction, if any, and the name of the laboratory performing the analyses.

4.13 Project Documentation Availability. Following construction contract acceptance, Caltrans shall maintain, at its statewide office or appropriate District or Regional office, individual project records containing information regarding all projects for which this Agreement applies or is used, and shall ensure that the information is readily accessible to the public. The project records for each project shall include:

1. A copy of the Agreement and all attachments thereto;
2. Copies of the project-specific information submitted to DTSC pursuant to this Agreement; and
3. A map showing the mappable survey data for each burial location.

4.14 Transition Plan. Transition of existing highway projects to the requirements of this Agreement shall be done according to Exhibit A. All projects that continue to follow the requirements of 2009 Variance No. V09HQSCD006, as described in the transition plan, after the date of this Agreement must be advertised for construction by July 1, 2020.

///

///

4.15 Public Health. DTSC retains the right to require Caltrans or any future owner to remove, and properly dispose of ADL-contaminated soil in the event DTSC determines it is necessary for protection of human health or the environment.

Kome Ajise
Chief Deputy Director, Caltrans



Caltrans

6/28/16
DATE

Raymond Leclerc, P.E.
Assistant Deputy Director
Brownfields and Environmental Restoration Program



DTSC

6/29/16
DATE

Exhibit A
Transition Plan for existing projects

Exhibit B
2009 Variance

Exhibit C
Transition Plan project list

EXHIBIT A

TRANSITION PLAN

July 2016

Introduction

This plan details how projects will transition from operating under Department of Toxic Substances Control (DTSC) Variance No. V09HQSCD006 (Variance) to operating under the 2016 Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils (Agreement) for specified existing Caltrans projects. For purposes of this transition plan, aerially deposited lead (ADL)-contaminated soil is defined as in section 3.1.1 of the Agreement. Determinations regarding ADL-contaminated soil will be based on the upper 95% UCL in cases where this information is available. If this type of data analysis has not been performed it will be based on the maximum lead value detected. Lead-contaminated soil is defined as in section 6. of the Variance (Exhibit B of the Agreement).

Background – Caltrans Project Development Process

The development of transportation projects is controlled by State and federal laws, regulations, and policies. Projects are first considered and planning begun years in advance of design and construction. Per the Federal Highway Administration, transportation planning is based on a 20 year cycle.

Project development is composed of four major steps:

1. Programming and Project Initiation Document (PID, also identified as the K phase);
2. Project Acceptance & Environmental Document (PA&ED, also identified as the 0 phase);
3. Plans, Specifications and Estimates (PS&E, also identified as the 1 phase); and
4. Construction (also identified as the 3 and 4 phases).

PID

During the PID phase project candidates are identified and project initiation documents prepared. These documents outline the purpose and need of the potential project and a preliminary rough cost scope and schedule is sketched out. Preliminary environmental screening is done. At the end of the PID phase potential projects are programmed, which means that support costs are allocated based on a preliminary budget so that detailed studies may be performed.

PA&ED

During the PA&ED phase detailed studies are performed to meet California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements as well as to support preparation of a Project Report (a preliminary design document). Aerially deposited lead studies are normally performed during this phase.

The budget for these studies is set in the PID phase based on knowledge of the project area.

At the end of PA&ED the project alternative is selected, the cost and schedule is officially identified, and continuing projects are given Project Approval. For most projects the California Transportation Commission (CTC) votes so that the project may proceed. If a project requires additional funding after this point is reached, the budget overrun must be explained and successfully justified to the CTC in order for the project to continue. Budget overruns can result in project termination.

PS&E

PS&E is the design phase of the project. Besides preparation of the plans and specifications, needed right of way is purchased, and necessary permits, licenses, agreements, and certifications are obtained. ADL data is evaluated and shared with design staff at the beginning of PS&E so that appropriate and efficient soil management can be incorporated into the project design. At the end of PS&E the project is advertised and the construction contract is awarded. Depending on the size and complexity of a project PS&E can take as little as a few months or as long as 30 months. A typical length of time for PS&E is 18 months.

Construction

Construction is performed by contractors reporting either directly to Caltrans staff or to a Caltrans partner in the case of some partnered projects. Depending on the size and complexity of the project, construction can take as little as a few months to as long as 10 years. The contingency allowed on Caltrans construction projects is only 5% so budget maintenance is critical.

Transition of existing Caltrans Projects

The requirements of the Agreement, described in sections 3 and 4 of the Agreement, shall be fully applied to all projects that have not completed the Project Approval and Environmental Document (PA&ED) milestone prior to July 1, 2016. PA&ED is defined in Caltrans' "Workplan Standards Guide" which is accessible at:

http://www.dot.ca.gov/hq/projmgmt/documents/wsg/WSG_v11.1_2015.pdf.

This transition plan applies to existing projects that have completed the PA&ED milestone prior to July 1, 2016. Those projects for which the transition plan applies or is used shall comply with the requirements listed below in sections 1 through 6. These requirements are the requirements originally set forth in DTSC Variance No. V09HQSCD006 with added reporting requirements for Caltrans.

1. Provided Caltrans meets the terms and conditions described below in section 2, DTSC waives the hazardous waste management requirements of Health and Safety Code, Chapter 6.5 and California Code of Regulations, title 22 for the lead-contaminated soil that Caltrans reuses in projects that would require Caltrans to obtain a permit for a disposal facility and any other generator requirements that

concern the transportation, manifesting, storage and land disposal of hazardous waste.

2. In order for the provisions discussed in section 1 to be waived, lead-contaminated soil must not exceed the contaminant concentrations discussed below and Caltrans management practices must meet all the following conditions:

a) Caltrans implementation of the transition plan shall comply with all applicable state laws and regulations for water quality control, water quality control plans, waste discharge requirements (including storm water permits), and others issued by the State Water Resources Control Board (SWRCB) and/or a California Regional Water Quality Control Board (RWQCB). Caltrans shall provide written notification to the appropriate RWQCB at least 30 days prior to advertisement for bids of projects for which this transition plan applies or is used, or as otherwise negotiated with the SWRCB or appropriate RWQCB, and as specified in section 2u).

b) The provisions waived in section 1 shall only be applied to lead-contaminated soil that is not a RCRA hazardous waste and is hazardous primarily because of aurally-deposited lead contamination associated with exhaust emissions from the operation of motor vehicles. The transition plan is not applicable to any other hazardous waste.

c) Soil containing 1.5 mg/l extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 1411 mg/kg or less total lead may be used as fill provided that the lead-contaminated soil is placed a minimum of five (5) feet above the maximum historical water table elevation and covered with at least one (1) foot of nonhazardous soil that will be maintained by Caltrans to prevent future erosion.

d) Soil containing 150 mg/L extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 3397 mg/kg or less total lead may be used as fill provided that the lead-contaminated soils are placed a minimum of five (5) feet above the maximum historical water table elevation and protected from infiltration by a pavement structure which will be maintained by Caltrans.

e) Lead-contaminated soil with a pH less than 5.5 but greater than 5.0 shall only be used as fill material under the paved portion of the roadway. Lead-contaminated soil with a pH at or less than 5.0 shall be managed as a hazardous waste.

f) For each project that has the potential to generate waste by disturbing lead-contaminated soil, Caltrans shall conduct sampling and analysis to adequately characterize the soils containing aurally deposited lead in the areas of planned excavation along the project route. Such sampling and analysis shall include the Toxicity Characteristic Leaching Procedure (TCLP) as prescribed by the United

States Environmental Protection Agency to determine whether concentrations of contaminants in soil exceed federal criteria for classification as a hazardous waste.

g) Lead-contaminated soil managed pursuant to this transition plan shall not be moved outside the designated corridor boundaries (see section 2t below). All lead-contaminated soil not buried and covered within the same Caltrans corridor where it originated is not eligible for management under this transition plan and shall be managed as a hazardous waste.

h) Lead-contaminated soil managed pursuant to this transition plan shall not be placed in areas where it would come in contact with groundwater or surface water (such as streams and rivers).

i) Lead-contaminated soil managed pursuant to this transition plan shall be buried and covered only in locations that are protected from erosion that may result from storm water run-on and run-off.

j) The lead-contaminated soil shall be buried and covered in a manner that will prevent accidental or deliberate breach of the asphalt, concrete, and/or cover soil.

k) The presence of lead-contaminated soil shall be incorporated into the projects' as-built drawings. The as-built drawings shall be annotated with the location, representative analytical data, and volume of lead-contaminated soil. The as-built drawings shall also state the depth of the cover. These as-built drawings shall be retained by Caltrans.

l) Caltrans shall ensure that no other hazardous wastes, other than the lead-contaminated hazardous waste soil, are placed in the burial areas.

m) Lead-contaminated soil shall not be buried within ten (10) feet of culverts or locations subject to frequent worker exposure.

n) Excavated lead-contaminated soil not placed into the designated area (fill area, roadbed area) by the end of the working day shall be stockpiled and covered with sheets of polyethylene or at least one foot of non-hazardous soil. The lead-contaminated soil, while stockpiled or under transport, shall be protected from contacting surface water and from being dislodged or transported by wind or storm water. The stockpile covers shall be inspected at least once a week and within 24 hours after rainstorms. If the lead-contaminated soil is stockpiled for more than 4 days from the time of excavation, Caltrans shall restrict public access to the stockpile by using barriers that meet the safety requirements of the construction zone. The lead-contaminated soil shall be stockpiled for no more than 90 days from the time the soil is first excavated. If the contaminated soil is stockpiled beyond the 90 day limit Caltrans shall:

i. Notify DTSC in writing of the 90 day exceedance and expected date of removal;

- ii. Perform weekly inspections of the stockpiled material to ensure that there is adequate protection from run-on, runoff, public access, and wind dispersion; and
- iii. Notify DTSC on weekly basis of the stockpile status until the stockpile is removed.

The lead-contaminated soil shall be stockpiled for no more than 180 days from the time the soil is first excavated.

- o) Caltrans shall ensure that all stockpiling of lead-contaminated soil remains within the project area of the specified corridor. Stockpiling of lead-contaminated soil within the specified corridor, but outside the project area, is prohibited.
- p) Caltrans shall conduct confirmatory sampling of any stockpile area in areas not known or expected to contain lead-contaminated soil after removal of the lead-contaminated soil to ensure that contamination has not been left behind or has not migrated from the stockpiled material to the surrounding soils.
- q) Caltrans shall stockpile lead-contaminated soil only on high ground (i.e. no sump areas or low points) so that stockpiled soil will not come in contact with surface water run-on or run-off.
- r) Caltrans shall not stockpile lead-contaminated soil in environmentally and ecologically sensitive areas.
- s) Caltrans shall ensure that storm/rain run-off that has come into contact with stockpiled lead-contaminated soil will not flow to storm drains, inlets, or waters of the State.
- t) Caltrans may dispose of the lead-contaminated soil only within the operating right-of-way of an existing highway, as defined in Streets and Highways Code, section 23. Caltrans may move lead-contaminated soil from one Caltrans project to another Caltrans project only if the lead-contaminated soil remains within the same designated corridor.

Caltrans shall record any movement of lead-contaminated soil by using a bill of lading. The bill of lading must contain: 1) the US DOT description including shipping name, hazard class and ID number; 2) handling codes; 3) quantity of material; 4) volume of material; 5) date of shipment; 6) origin and destination of shipment; and 7) any specific handling instructions. The bill of lading shall be referenced in and kept on file with the project's as-built drawings. The lead-contaminated soil must be kept covered during transportation.

- u) For each specific project where this transition plan applies or is to be used for the management of lead-contaminated soils all of the following information shall be submitted in writing to DTSC (and others as specified). If the submission date for a particular notification occurred prior to July 1, 2016 then Caltrans shall submit any

required information not included in the original notification with the Completion Report:

- i. Project Notification. For any highway project for which this transition plan applies or is to be used to manage lead-contaminated soil, Caltrans shall provide written notification to DTSC within 10 days of when that determination is made, and shall send copies of the notification to the RWQCB, Air Quality Management District (AQMD) (or Air Pollution Control District, as applicable), local Certified Uniform Program Agency (CUPA), and the Caltrans Agreement Coordinator. For projects that overlie multiple local agency jurisdictions, all appropriate agencies shall receive a copy of the notification. The written notification shall include the following information:
 1. A statement that the project shall entail excavation, stockpiling and/or burial of lead-contaminated soil pursuant to this Agreement;
 2. Project number;
 3. Project description;
 4. Project Limits (Route; District - County - Route - Begin Post Mile /End Mile Post);
 5. URLs for or Portable Document Format (PDF) versions of the following documents:
 - a. The environmental document prepared for the project;
 - b. This Agreement; and
 - c. The DTSC-prepared fact sheet about this Agreement.
 6. Results of laboratory analysis collected during design for the lead-contaminated soil to be placed within the highway right of way, and the name of the laboratory performing the analyses;
 7. Copy of the construction contract specifications which define the management of lead-contaminated soil; and
 8. Definition of the project defined construction corridor if it has already been determined that soil will be moved from one Caltrans project to another. Include complete project information listed above for both the sending and receiving projects.
- ii. The Caltrans-authorized Lead Compliance Plan, authorized Excavation and Transportation Plan, and the contact information for the project resident engineer shall be submitted to DTSC within ten (10) days of document approval or staff identification, respectively.
- iii. For purposes of sending a copy of the project notification to a local agency that is notified of the project pursuant to separate requirements of that local

agency, that separate notification fulfills this requirement only if such notification includes all information listed above and is sent in advance as required by this section.

iv. Start of Construction Notification. At least five (5) days in advance of initiation of construction on any project for which this transition plan applies or is used, Caltrans shall provide written notification to DTSC containing the following information concerning the project:

1. Project number;
2. Project description;
3. Project Limits (District - County - Route - Begin Post Mile /End Post Mile);
4. Anticipated start and end dates of the construction phase of the project;
5. Contact information for the project resident engineer;
6. A list of Caltrans contractors to be involved in the construction phase of the project; and
7. Definition of the project defined construction corridor if soil will be moved from one Caltrans project to another. Include complete project information listed above for both the sending and receiving projects.

v. Completion Report. Caltrans will provide in writing to DTSC the following information within 180 days of completion of the construction phase for any highway project for which Caltrans managed lead-contaminated soil under this transition plan:

1. Project number;
2. Project description;
3. Project Limits (District - County - Route - Begin Post Mile /End Post Mile);
4. Actual start and end dates of construction; and
5. A list of all USEPA ID numbers (including temporary ID numbers) assigned by DTSC for use on the project.

If lead-contaminated soil was buried within the State right-of-way as part of the project, the following information:

6. All survey data for the placement location, including precise latitude and longitude, elevation (top and bottom in North American Vertical Datum of 1988[NAVD 88]), Post Miles and highway number;

7. The approximate volume, in cubic yards, of lead-contaminated soil buried;
 8. The historical maximum elevation of the water table underlying the burial location NAVD 88;
 9. the results of laboratory analysis collected during construction, if any, for the lead-contaminated soil placed, and name of the laboratory performing the analyses;
 10. type of cover (soil or pavement);
 11. thickness of cover used; and
 12. copies of any and all bills of lading used for transporting lead-contaminated soil to the active construction zone of the project.
- vi. Project Documentation Availability. Following construction contract acceptance, Caltrans shall maintain, at its statewide office or appropriate District or Regional office, individual project records containing information regarding all projects for which this transition plan applies or is used, and shall ensure that the information is readily accessible to the public. The project records for each project shall include:
1. A copy of the Agreement and all attachments thereto;
 2. Copies of the project-specific information submitted to DTSC pursuant to this transition plan, and
 3. The “as-built” plans for each burial location.
- v) Changes in location of lead-contaminated soil placement, quantities or protection measures (field changes) shall be noted in the resident engineer's project log within five (5) days of the field change.
- w) Caltrans shall ensure that field changes are in compliance with the requirements of this transition plan.
- x) Operational procedures described in the CEQA Initial Study shall be followed by Caltrans for activities conducted under this transition plan.
- y) Caltrans shall implement appropriate health and safety procedures to protect its employees and the public, and to prevent or minimize exposure to potentially hazardous wastes. A project-specific health and safety plan must be prepared and implemented. The monitoring and exposure standards shall be based on construction standards for exposure to lead in California Code of Regulations, title 8, section 1532.1.
- z) The Coordinators identified in section 3.9 of the Agreement will also be the Coordinators for the transition plan. These Coordinators will be the primary points

of contact for information flowing to, or received from, DTSC regarding any matter or submission under this transition plan.

aa) Caltrans shall conduct regular inspections, consistent with Caltrans' Maintenance Division's current Pavement Inspection and Slope Inspection programs, of the locations where lead-contaminated soil has been buried and/or covered pursuant to this transition plan. If site inspection reveals deterioration of cover so that conditions in the transition plan are not met, Caltrans shall repair or replace the cover.

bb) Caltrans shall develop and implement record keeping mechanisms to record and retain permanent records of all locations where lead-contaminated soil has been buried per this transition plan. The records shall be made available to DTSC.

cc) If areas within the State owned highway rights-of-way subject to the terms of this transition plan are sold, relinquished or abandoned (including roadways), all future property owners shall be notified in writing in advance by Caltrans of the requirements of section 4.8 of the Agreement, and Caltrans shall provide the owner with a copy of the Agreement. A copy of such a notice shall be sent to DTSC and contain the corridor location and project identification information. Caltrans shall also disclose to DTSC and the new owner the location of areas where lead-contaminated soil has been buried. Future property owners shall be subject to the same requirements set forth in the Agreement as Caltrans.

dd) For the purposes of informing the public about instances where the transition plan is implemented, Caltrans shall:

i. Maintain current fact sheets at all Caltrans resident engineer offices and the Caltrans District office. Caltrans shall make the fact sheets available to anyone expressing an interest in work related to soils contaminated with lead.

ii. Maintain copies of all reports submitted to DTSC at the District office. Caltrans shall ensure that the reports are readily accessible to the public.

ee) Lead-contaminated soil may be buried only within the right-of-way in areas where access is limited or where lead-contaminated soil is covered or contained by a pavement structure.

ff) Dust containing lead-contaminated soil must be controlled. Water or dust palliative may be applied to control dust. If visible dust migration occurs, all excavation, stockpiling and truck loading and burying must be stopped. Operating under this transition plan confers no relief on Caltrans from compliance with the laws, regulations and requirements enforced by any local air district or the California Air Resources Board.

gg) Sampling and analysis is required to show the lead-contaminated soil meets the transition plan criteria. All sampling and analysis must be

conducted in accordance with the appropriate methods specified in U.S. EPA SW-846.

hh) DTSC retains the right to require Caltrans or any future owner to remove, and properly dispose of, ADL-contaminated soil in the event DTSC determines it is necessary for protection of public health, safety or the environment.

ii) DTSC finds that some projects involving lead-contaminated soil are joint projects between Caltrans and other government entities. In these joint projects, Caltrans may not be the lead agency implementing the project although Caltrans is still involved if the project occurs on its right-of-way.

Caltrans may use this transition plan for existing joint projects where Caltrans and local government entities are involved provided that 1) the project is within the Caltrans' Right-of-Way and the plan is only implemented on State-owned highway rights-of-way; 2) Caltrans reviews/ oversees all phases of the project including design, contracting, environmental assessment, and construction, as well as operation and maintenance of the project segments within Caltrans' Right-of-Way; and 3) Caltrans oversees the project to verify all transition plan conditions/requirements are complied with. Caltrans will be fully responsible for lead-contaminated soil related notification and implementation in these joint projects.

3. A list of projects involving lead-contaminated soil for which the transition plan applies or is used is attached. Projects involving lead-contaminated soil not on the list must fully comply with the requirements of the Agreement regardless of whether they have been given Project Approval prior to July 1, 2016. If it is discovered after June 30, 2016 that one or more projects that were eligible to use the transition plan have been inadvertently omitted from the list provided to DTSC, Caltrans will request an exception to add those projects. DTSC will respond to Caltrans request within 10 business days. Caltrans may remove projects from the list at their discretion and shall provide DTSC an updated project list within 30 days of such an action.
4. If a shelved highway project that includes management of lead-contaminated soil under the Transition Plan has to be redesigned and Caltrans has to submit a request to the California Transportation Commission for additional capital outlay funding, then the Transition Plan no longer applies and the requirements of the Agreement shall be fully applied.
5. The requirements of the Agreement shall be fully applied to all projects advertised for construction after July 1, 2020.
6. For any ADL-contaminated soils that were permanently removed from the highway right of way after June 30, 2016 as part of a highway project, Caltrans shall provide

the following information in writing to DTSC within 180 days of completion of the construction phase:

- a) Project number;
- b) Project description;
- c) Project limits (District - County - Route - Begin Post Mile /End Post Mile);
- d) Actual start and end dates of construction;
- e) The destination of the soils (landfill, private property, other);
- f) Copies of any and all bills of lading and hazardous waste manifests used to transport the ADL-contaminated soils;
- g) The name and contact information for the landfill or property owner/operator of the destination property;
- h) If not a landfill, the zoning for the destination property;
- i) The volume of ADL-contaminated soil moved to a landfill and/or the destination property;
- j) If not a landfill, whether the ADL-contaminated soils were stockpiled or used as fill; and
- k) If not a landfill, the results of laboratory analysis for the ADL-contaminated soils collected during construction, if any, and the name of the laboratory performing the analyses.



*California Environmental Protection Agency
Department of Toxic Substances Control*

VARIANCE

Applicant Names:

Variance No. V09HQSCD006

State of California
Department of Transportation
(Caltrans)
1120 N Street
Sacramento, California 95814

Effective Date: July 1, 2009

Expiration Date: July 1, 2014

Modification History:

Pursuant to California Health and Safety Code, Section 25143, the Department of Toxic Substances Control hereby issues the attached Variance consisting of 9 pages to the Department of Transportation.

Beverly Rikala
Team Leader, Operating Facilities Team
Department of Toxic Substances Control

Date:

VARIANCE

1. INTRODUCTION.

a) Pursuant to Health and Safety Code, section 25143, the California Department of Toxic Substances Control (DTSC) grants this variance to the applicant below for waste considered to be hazardous solely because of its lead concentrations and as further specified herein.

b) DTSC hereby grants this variance only from the requirements specified herein and only in accordance with all terms and conditions specified herein.

2. IDENTIFYING INFORMATION.

APPLICANT/OWNER/OPERATOR

State of California
Department of Transportation, (Caltrans)
All Districts

3. TYPE OF VARIANCE.

Generation, Manifest, Transportation, Storage and Disposal.

4. ISSUANCE AND EXPIRATION DATES.

DATE ISSUED: July 1, 2009 EXPIRATION DATE: July 1, 2014

5. APPLICABLE STATUTES AND REGULATIONS. The hazardous waste that is the subject of this variance is fully regulated under Health and Safety Code, section 25100, et seq. and California Code of Regulations, title 22, division 4.5 except as specifically identified in Section 8 of this variance.

6. DEFINITION. For purposes of this variance, "lead-contaminated soil(s)" shall mean soil that meets the criteria for hazardous waste but contains less than 3397 mg/kg total lead and is hazardous primarily because of aeriially-deposited lead contamination associated with exhaust emissions from the operation of motor vehicles.

7. FINDINGS/DETERMINATIONS. DTSC has determined that the variance applicant meets the requirements set forth in Health and Safety Code, section 25143 for a variance from specific regulatory requirements as outlined in Section 8 of this variance. The specific determinations and findings made by DTSC are as follows:

a) Caltrans intends to excavate, stockpile, transport, bury and cover large volumes of soil associated with highway construction projects. In the more urbanized highway corridors around the State this soil is contaminated with lead, primarily due to historic emissions from automobile exhausts. In situ sampling and laboratory testing has shown that some of the soil contains concentrations of lead in excess of State regulatory thresholds, and thus any generated waste from disturbance of the soil

would be regulated as hazardous waste. Such soil contains a Total Threshold Limit Concentration (TTLIC) of 1000 milligrams per kilogram (mg/kg) or more lead and/or it meets or exceeds the Soluble Threshold Limit Concentration (STLC) for lead of 5 milligrams per liter (mg/l). A Human Health Risk Assessment prepared for this variance concludes that soil contaminated with elevated concentrations of lead can be managed in a way that presents no significant risk to human health.

b) The lead-contaminated soil will be placed only in Caltrans' right-of-way. Depending on concentration levels, the wastes will be covered with a minimum thickness of one (1) foot of non-hazardous soil or asphalt/concrete cover and will always be at least five (5) feet above the highest groundwater elevation. Caltrans will assure that proper health and safety procedures will be followed for workers, including any persons engaged in maintenance work in areas where the waste has been buried and covered.

c) DTSC finds and requires that the lead-contaminated soil excavated, stockpiled, transported, buried and covered pursuant to this variance is a non-RCRA hazardous waste, and that the waste management activity is insignificant as a potential hazard to human health and safety and the environment, when managed in accordance with the conditions, limitations and other requirements specified in this variance.

8. PROVISIONS WAIVED.

Provided Caltrans meets the terms and conditions of this variance, DTSC waives the hazardous waste management requirements of Health and Safety Code, Chapter 6.5 and California Code of Regulations, title 22 for the lead-contaminated soil that Caltrans reuses in projects that would require Caltrans to obtain a permit for a disposal facility and any other generator requirements that concern the transportation, manifesting, storage and land disposal of hazardous waste.

9. SPECIFIC CONDITIONS, LIMITATIONS AND OTHER REQUIREMENTS.

In order for the provisions discussed in section 8 to be waived, lead-contaminated soil must not exceed the contaminant concentrations discussed below and Caltrans management practices must meet all the following conditions:

a) Caltrans implementation of this variance shall comply with all applicable state laws and regulations for water quality control, water quality control plans, waste discharge requirements (including storm water permits), and others issued by the State Water Resources Control Board (SWRCB) and/or a California Regional Water Quality Control Board (RWQCB). Caltrans shall provide written notification to the appropriate RWQCB at least 30 days prior to advertisement for bids of projects that involve invocation of this variance, or as otherwise negotiated with the SWRCB or appropriate RWQCB.

b) The waivers in this variance shall only be applied to lead-contaminated soil that is not a RCRA hazardous waste and is hazardous primarily because of aeri-

deposited lead contamination associated with exhaust emissions from the operation of motor vehicles. The variance is not applicable to any other hazardous waste.

c) Soil containing 1.5 mg/l extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 1411 mg/kg or less total lead may be used as fill provided that the lead-contaminated soil is placed a minimum of five (5) feet above the maximum historic water table elevation and covered with at least one (1) foot of nonhazardous soil that will be maintained by Caltrans to prevent future erosion.

d) Soil containing 150 mg/L extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 3397 mg/kg or less total lead may be used as fill provided that the lead-contaminated soils are placed a minimum of five (5) feet above the maximum historic water table elevation and protected from infiltration by a pavement structure which will be maintained by Caltrans.

e) Lead-contaminated soil with a pH less than 5.5 but greater than 5.0 shall only be used as fill material under the paved portion of the roadway. Lead-contaminated soil with a pH at or less than 5.0 shall be managed as a hazardous waste.

f) For each project that has the potential to generate waste by disturbing lead-contaminated soil (as defined in 6), Caltrans shall conduct sampling and analysis to adequately characterize the soils containing aerielly deposited lead in the areas of planned excavation along the project route. Such sampling and analysis shall include the Toxicity Characteristic Leaching Procedure (TCLP) as prescribed by the United States Environmental Protection Agency to determine whether concentrations of contaminants in soil exceed federal criteria for classification as a hazardous waste.

g) Lead-contaminated soil managed pursuant to this variance shall not be moved outside the designated corridor boundaries (see paragraph t) below. All lead-contaminated soil not buried and covered within the same Caltrans corridor where it originated is not eligible for management under this variance and shall be managed as a hazardous waste.

h) Lead-contaminated soil managed pursuant to this variance shall not be placed in areas where it would become in contact with groundwater or surface water (such as streams and rivers).

i) Lead-contaminated soil managed pursuant to this variance shall be buried and covered only in locations that are protected from erosion that may result from storm water run-on and run-off.

j) The lead-contaminated soil shall be buried and covered in a manner that will prevent accidental or deliberate breach of the asphalt, concrete, and/or cover soil.

k) The presence of lead-contaminated soil shall be incorporated into the projects' as-built drawings. The as-built drawings shall be annotated with the location, representative analytical data, and volume of lead-contaminated soil. The as-built drawings shall also state the depth of the cover. These as-built drawings shall be retained by Caltrans.

l) Caltrans shall ensure that no other hazardous wastes, other than the lead-contaminated hazardous waste soil, are placed in the burial areas.

m) Lead-contaminated soil shall not be buried within ten (10) feet of culverts or locations subject to frequent worker exposure.

n) Excavated lead-contaminated soil not placed into the designated area (fill area, roadbed area) by the end of the working day shall be stockpiled and covered with sheets of polyethylene or at least one foot of non-hazardous soil. The lead-contaminated soil, while stockpiled or under transport, shall be protected from contacting surface water and from being dislodged or transported by wind or storm water. The stockpile covers shall be inspected at least once a week and within 24 hours after rainstorms. If the lead-contaminated soil is stockpiled for more than 4 days from the time of excavation, Caltrans shall restrict public access to the stockpile by using barriers that meet the safety requirements of the construction zone. The lead-contaminated soil shall be stockpiled for no more than 90 days from the time the soil is first excavated. If the contaminated soil is stockpiled beyond the 90 day limit Caltrans shall:

1. notify DTSC in writing of the 90 day exceedance and expected date of removal;
2. perform weekly inspections of the stockpiled material to ensure that there is adequate protection from run-on, runoff, public access, and wind dispersion; and
3. notify DTSC on weekly basis of the stockpile status until the stockpile is removed.

The lead-contaminated soil shall be stockpiled for no more than 180 days from the time the soil is first excavated.

o) Caltrans shall ensure that all stockpiling of lead-contaminated soil remains within the project area of the specified corridor. Stockpiling of lead-contaminated soil within the specified corridor, but outside the project area, is prohibited.

p) Caltrans shall conduct confirmatory sampling of any stockpile area in areas not known or expected to contain lead-contaminated soil after removal of the lead-contaminated soil to ensure that contamination has not been left behind or has not migrated from the stockpiled material to the surrounding soils.

q) Caltrans shall stockpile lead-contaminated soil only on high ground (i.e. no sump areas or low points) so that stockpiled soil will not come in contact with surface

water run-on or run-off.

r) Caltrans shall not stockpile lead-contaminated soil in environmentally and ecologically sensitive areas.

s) Caltrans shall ensure that storm/rain run-off that has come into contact with stockpiled lead-contaminated soil will not flow to storm drains, inlets, or waters of the State.

t) Caltrans may dispose of the lead-contaminated soil only within the operating right-of-way of an existing highway, as defined in Streets and Highways Code, section 23. Caltrans may move lead-contaminated soil from one Caltrans project to another Caltrans project only if the lead-contaminated soil remains within the same designated corridor.

Caltrans shall record any movement of lead-contaminated soil by using a bill of lading. The bill of lading must contain: 1) the US DOT description including shipping name, hazard class and ID number; 2) handling codes; 3) quantity of material; 4) volume of material; 5) date of shipment; 6) origin and destination of shipment; and 7) any specific handling instructions. The bill of lading shall be referenced in and kept on file with the project's as-built drawings. The lead-contaminated soil must be kept covered during transportation.

u) For each specific corridor where this variance is to be implemented, all of the following information shall be submitted in writing to DTSC at least five (5) days before construction of any project begins:

1. plan drawing designating the boundaries of the corridor where lead-contaminated soils will be excavated, stockpiled, buried and covered;
2. a list of the Caltrans projects that the corridor encompasses;
3. a list of Caltrans contractors that will be conducting any phase of work on any project affected by this variance;
4. duration of corridor construction;
5. location where sampling and analytical data used to make lead concentration level determinations are kept (e.g. a particular Caltrans project file);
6. name and phone number (including area code) of project resident engineer and project manager;
7. location where Caltrans and contractor health and safety plan and records are kept;

8. location of project special provisions (including page or section number) for soil excavation, transportation, stockpile, burial and placement of cover material;

9. location of project drawings (including drawing page number) for soil excavation, burial and placement of cover in plan and cross section (for example, "The project plans are located at the resident engineer's office located at 5th and Main Streets, City of Fresno, See pages xxxxx of contract xxxx");

10. updated information if a Caltrans project within the corridor is added, changed or deleted; and

11. type of environmental document prepared for each project, date of adoption, document title, Clearing House number and where the document is available for review. A copy of the Caltrans Categorical Exemption, Categorical Exclusion Form, or if filed, the Notice of Exemption for any project shall be submitted to the DTSC Headquarters Project Manager.

v) Changes in location of lead-contaminated soil placement, quantities or protection measures (field changes) shall be noted in the resident engineer's project log within five (5) days of the field change.

w) Caltrans shall ensure that field changes are in compliance with the requirements of this variance.

x) Operational procedures described in the California Environmental Quality Act (CEQA) Special Initial Study shall be followed by Caltrans for activities conducted under this variance.

y) Caltrans shall implement appropriate health and safety procedures to protect its employees and the public, and to prevent or minimize exposure to potentially hazardous wastes. A project-specific health and safety plan must be prepared and implemented. The monitoring and exposure standards shall be based on construction standards for exposure to lead in California Code of Regulations, title 8, section 1532.1.

z) Caltrans shall provide a district Coordinator for this variance. This Coordinator will be the primary point of contact for information flowing to, or received from, DTSC regarding any matter or submission under this variance. Caltrans shall promptly notify DTSC of the name of Coordinator and any change in the Coordinator.

aa) Caltrans shall conduct regular inspections, consistent with Caltrans' Maintenance Division's current Pavement Inspection and Slope Inspection programs, of the locations where lead-contaminated soil has been buried and/or covered pursuant to this variance. If site inspection reveals deterioration of cover so that conditions in the variance are not met, Caltrans shall repair or replace the cover.

bb) Caltrans shall develop and implement a record keeping mechanisms to record and retain permanent records of all locations where lead-contaminated soil has been buried per this variance. The records shall be made available to DTSC.

cc) If areas subject to the terms of this variance are sold, relinquished or abandoned (including roadways), all future property owners shall be notified in writing in advance by Caltrans of the requirements of this variance, and Caltrans shall provide the owner with a copy of the variance. A copy of such a notice shall be sent to DTSC and contain the corridor location and project. Caltrans shall also disclose to DTSC and the new owner the location of areas where lead-contaminated soil has been buried. Future property owners shall be subject to the same requirements as Caltrans.

dd) For the purposes of informing the public about instances where the variance is implemented, Caltrans shall:

1. maintain current fact sheets at all Caltrans resident engineer offices and the Caltrans District office. Caltrans shall make the fact sheets available to anyone expressing an interest in variance-related work.
2. maintain a binder(s) containing copies of all reports submitted to DTSC at the District office. Caltrans shall ensure that the binders are readily accessible to the public.
3. carry out the following actions when it identifies additional projects:
 - (A) notify the public via a display advertisement in a newspaper of general circulation in that area.
 - (B) update and distribute the fact sheet to the mailing list and repository locations.

ee) Lead-contaminated soil may be buried only in areas where access is limited or where lead-contaminated soil is covered and contained by a pavement structure.

ff) Dust containing lead-contaminated soil must be controlled. Water or dust palliative may be applied to control dust. If visible dust migration occurs, all excavation, stockpiling and truck loading and burying must be stopped. The granting of this variance confers no relief on Caltrans from compliance with the laws, regulations and requirements enforced by any local air district or the California Air Resources Board.

gg) Sampling and analysis is required to show the lead-contaminated soil meets the variance criteria. All sampling and analysis must be conducted in accordance with the appropriate methods specified in U.S. EPA SW-846.

hh) DTSC retains the right to require Caltrans or any future owner to remove, and properly dispose of, lead-contaminated soil in the event DTSC determines it is necessary for protection of public health, safety or the environment.

ii) DTSC finds that some projects involving lead-contaminated soil are joint projects between Caltrans and other government entities. In these joint projects, Caltrans may not be the lead agency implementing the project although Caltrans is still involved if the project occurs on its right-of-way.

Caltrans may invoke this variance for joint projects where Caltrans and local government entity are involved provided that 1) the project is within the Caltrans Right-of-Way; 2) Caltrans reviews/ oversees all phases of the project including design, contracting, environmental assessment, construction, operation, and maintenance; and 3) Caltrans oversees the project to verify all variance conditions are complied with. Caltrans will be fully responsible for the variance notification and implementation in these joint projects.

jj) All correspondence shall be directed to the following office:

Hazardous Waste Permitting
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

Attn: Caltrans Lead Variance Notification Unit

10. DISCLAIMER.

a) The issuance of this variance does not relieve Caltrans of the responsibility for compliance with Health and Safety Code, chapter 6.5, or the regulations adopted thereunder, and any other laws and regulations other than those specifically identified in Section 8 of this variance. Caltrans is subject to all terms and conditions herein. The granting of this variance confers no relief from compliance with any federal, State or local requirements other than those specifically provided herein.

b) The issuance of this variance does not release Caltrans from any liability associated with the handling of hazardous waste, except as specifically provided herein and subject to all terms and conditions of this variance.

11. VARIANCE MODIFICATION OR REVOCATION. This variance is subject to review at the discretion of DTSC and may be modified or revoked by DTSC upon change of ownership and at any other time pursuant to Health and Safety Code, section 25143.
12. CEQA DETERMINATION. DTSC adopted a Negative Declaration on June 30, 2009.

Approved:

Date

Beverly Rikala
Operating Facilities Team
Department of Toxic Substances Control

EXHIBIT C

CALTRANS PROJECT LIST

District	EA	County	Route(s)	Post Mile Start	Post Mile End	Current Phase (PA&ED, Design, or Construction) as of January 2016	Local Partner Involved in Project (Yes or No)	Performing AAA (Caltrans, LAMTA, OCTA, SANDAG, etc)
District 01								
	None							
District 02								
02	4E650	SIS	96	Bridge Rail Improvement - multiple locations		Design	No	CALTRANS
02	4G380	TRI	299	0	8.3	Design	No	CALTRANS
District 03								
03	3F170	SAC	5/50/51/99	City of Sacramento		Construction	No	CALTRANS
03	3F930	SAC	50	5.3	23.1	Design	No	CALTRANS
District 04								
04	15272	CC	242	0	3.4	Construction	No	CALTRANS
			4	8	25			
04	15330	SCL	101	0	26.7	Construction	No	CALTRANS
04	22911	CC	680/4	Interchange		Design	YES	CCCTA
04	23552	SM	82/92	Interchange		Design	Yes: city S. Mateo	CALTRANS
04	23565	SM	101	1.7	2.1	Design	No	CALTRANS
04	23584	SM	101	16.3	16.9	Construction	Yes: SMCoTA	CALTRANS
04	26409	MRN/SON	101	0	0	Bid Open	Yes: SonCoTA	CALTRANS
04	0A185	SON	101	7.1	8	Construction	YES: Petaluma	CALTRANS
04	0A534	SOL	80	2.1	2.8	Construction	Yes: Solano Trans Auth	CALTRANS
04	0A537	SOL	80/680	Interchange		Design	Yes: SolCoTA	CALTRANS
04	1G621	SM	101	8.8	8.6	Design	Yes: San Carlos	CALTRANS
04	1G940	CC	4	27.5	29	Construction	Yes: Contra Costa Trans	CALTRANS
04	2285E	CC	4	26.6	27.5	Construction	Yes: Contra Costa Trans	CALTRANS
04	2640K	SON	101	3.4	4.1	Construction	Yes: SonCoTA	CALTRANS
04	2908V	ALA	580	7.8	13.6	Construction	Yes: Alameda Trans Auth	CALTRANS
04	2908V	ALA	580	7.8	13.6	Construction	Yes: Ala CoTC	CALTRANS
04	2G850	ALA	580	3.9	4.2	Construction	No	CALTRANS
04	3G160	CC	24	5.3	5.5	Construction	No	CALTRANS
04	4G050	Ala&SCL	680	7.5	9.9	Design	Yes: AlaCoTC	CALTRANS
04	4G080	SOL	80	11.2	29.3	Design	Yes: SolCoTA	CALTRANS
04	4G320	SOL	80	7.3	7.3	Design	YES	CITY OF FAIRFIELD
04	4G510	Sol	80	31	32.6	Design	No	CALTRANS
04	4G680	SCL	280	11.2	11.5	Design	Yes: SCCoTA	CALTRANS
04	4H900	SF	280	0.14	1.46	Construction	No	CALTRANS
District 05								
05	31580	MON	101	0	0	Construction	NO	CALTRANS
05	36150	SLO	101	55.7	57.9	Construction	yes	City of El Paso de Robles
05	44782	SB	101	11.4	11.4	Design	YES	SBCAG
05	44800	MON	068	3.8	4.3	Design	yes	Monterey, City of
05	46580	SCR	001	17.5	17.7	Design	YES	CITY OF SANTA CRUZ
05	47450	SLO	101	5	5	Construction	yes	San Luis Obispo County
05	1E050	MON	101	52.4	60.8	Design	NO	CALTRANS
05	0A050	SB	001	15.6	15.6	Design	NO	CALTRANS

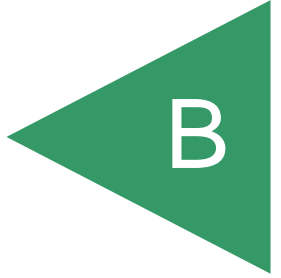
05	0C730	SCR	001	7.6	16.1	Design	YES	SCCRTC
05	0F970	MON	101	62.1	63.2	Design	NO	CALTRANS
05	0G070	SB	101	22.3	23	Construction	yes	CALTRANS
05	0H730	SLO	101	25.5	26.3	Construction	yes	San Luis Obispo, City of
05	0H823	MON	068	12.8	13.2	Design	YES	MONTEREY COUNTY
05	0L570	MON	001	72.3	72.9	Design	yes	Monterey County
05	0N700	SB	101	2	12.3	Design	NO	CALTRANS
05	0Q600	SCR	017	0.7	1.4	Design	NO	CALTRANS
05	1A870	SCR	001	17	17.2	Construction	NO	CALTRANS
05	1C080	SLO	101	44.6	59.7	Design	NO	CALTRANS
05	1C100	SCR	001	Multiple locations - safety pull outs		Design	NO	CALTRANS
05	1C120	SB	101	0	12.7	Design	NO	CALTRANS
05	1C820	SB	101	2.6	11.9	Design	NO	CALTRANS
05	1C890	MON	101	87.3	91.6	Design	NO	CALTRANS
05	1C970	SB	101	17.2	45.9	Design	NO	CALTRANS
05	1G380	MON	101	53.9	57.1	Design	NO	CALTRANS
05	4611U	SB	217	1.1	2.2	Design	yes	Goleta, City of
District 06								
06	42471	KER	119	10	13.3	Construction	NO	CALTRANS
06	43401	TUL	65	15.1	18	Design	NO	CALTRANS
06	47150	TUL	99	39.6	41.3	Design	NO	CALTRANS
06	48450	KER	99/204	Interchange		Design	YES	Bakersfield, City of
06	48460	KER	58	31.7	55.6	PA&ED January 2016	YES	Bakersfield, City of
06	49390	KER	178	0	0.4	Design	YES	Bakersfield, City of
06	0F360	KER	58	46.1	51.7	Construction	YES	CALTRANS
06	0H360	FRE	99	28.1	30.9	Design	YES	Fresno, City of
06	0K290	FRE	99	22.7	28.1	PA&ED April 1, 2016	No	CALTRANS
06	0K810	KER	99/178	Interchange		Design	NO	CALTRANS
06	0Q431	TUL	190	13.1	17.3	PA&ED March 2016	YES	Porterville, City of
06	0R050	TUL	193	4.2	8.3	Design	No	CALTRANS
06	0S480	TUL	65	9.4	14	Design	No	CALTRANS
06	0U520	MAD	99	13.1	19.6	PA&ED April 2016	No	CALTRANS
06	2HT00	FRE	099	23.5	26.6	PA&ED Pending	YES	California High Speed Rail Authority
06	2HT10	FRE	99	23.7	26.2	Design	YES - CHSRA	CALTRANS
06	3HT01	FRE/KIN/TUL	43/137/198/	High Speed Rail Interaction with State Highway System		Design	YES	California High Speed Rail Authority
District 07								
07	11707	LA	10	31.2	33.4	Construction	No	CALTRANS
07	12184	LA	5	26.7	36.4	Construction	No	CALTRANS
07	20211	LA	710	17.2	26.4	Construction	No	CALTRANS
07	20212	LA	710	21.9	23.1	Design	No	CALTRANS
07	21593	LA	5	2.7	4	Construction	No	CALTRANS
07	21594	LA	5	4	5.8	Construction	No	CALTRANS
07	21595	LA	5	5.8	6.8	Construction	No	CALTRANS
07	24540	LA	10	31.1	32.3	Construction	No	CALTRANS
07	25902	LA	5/10/91/110/134	Storm Water Improvements at numerous locations		Construction	No	CALTRANS

District 10								
10	47210	STA	99	21	22.4	Construction	YES	CALTRANS
10	0E613	SJ	99	6.9	15	Construction	YES	CALTRANS
10	0G440	MER	99	19.3	20.9	Construction	YES	CALTRANS
10	0G470	SJ	005	28.5	35.6	Construction	YES - Stockton	CALTRANS
10	0H890	SJ	120	2.2	2.2	Design	YES	CALTRANS
10	0H910	SJ	205	2.6	5.1	Design	YES	CALTRANS
10	0P740	MER	59	21.5	22.5	Design	YES	CALTRANS
10	0Q880	AMA	49	17	17.5	Construction	YES	CALTRANS
10	0S110	SJ	99	14.4	14.8	Construction	YES	CALTRANS
10	0T910	STA	99	4.3	5	Design	YES	CALTRANS
10	0V070	MER	099	0	18.6	Design	YES - HSRA	California High Speed Rail Authority
10	0Y550	SJ	012	14.9	18.1	Design	No	CALTRANS
10	0Y620	STA	099	13.6	15.1	PA&ED 12/2015 overdue	No	CALTRANS
10	1C421	SJ	099	14	23	Design	No	CALTRANS
10	3A130	MER	140	38.1	38.6	Design	YES	CALTRANS
District 11								
11	00270	SD	5	19.9	21.2	Construction	No	CALTRANS
11	08023	IMP	98	31.6	32.1	Design	No	CALTRANS
11	08027	IMP	98	32.2	32.6	Design	No	CALTRANS
11	08578	SD	163	4.1	4.9	Design	YES - City of San Diego	CALTRANS
11	14665	SD	94/125	10	11.8	Design	No	CALTRANS
11	17790	SD	5	32.9	33.4	PA&ED 4/29/16	No	CALTRANS
11	23580	SD	5	28.4	55.4	Design	YES	CALTRANS
11	23796	SD	8	6.1	10.5	Design	No	CALTRANS
11	24151	SD	163	8.2	9.4	Construction	YES - City of San Diego	City of San Diego
11	24400	SD	5	3.9	9.2	Design	No	CALTRANS
11	26220	SD	75	20.2	22.2	Design	No	CALTRANS
11	26331	IMP	8	38.8	39.2	Design	No	CALTRANS
11	26501	SD	163	0.5	3.2	Construction	No	CALTRANS
11	29200	SD	125	9.8	12.4	PA&ED Jan 2016	No	CALTRANS
11	29520	SD	94	59.7	60.2	Design	No	CALTRANS
11	29910	SD	76	22.2	47.1	PA&ED Jan 2016	No	CALTRANS
11	40570	SD	76	32.6	33.2	Design	No	CALTRANS
11	40640	SD	Various	Bridge Rail modifications at multiple locations		Construction	No	CALTRANS
11	40860	SD	8	0.5	0.7	Design	No	CALTRANS
11	40960	SD	54	0	13	Design	No	CALTRANS
11	40970	SD	8	Roadside Safety Improvements at multiple locations		Design	No	CALTRANS
11	41040	IMP	8	36.5	37.5	Design	No	CALTRANS
11	41080	SD	805	15.7	17.5	Design	No	CALTRANS
11	41090	SD	5	0.3	5.4	Design	No	CALTRANS
11	41120	SD	805	0.3	4	PA&ED May 2016	No	CALTRANS
11	41350	SD	8	15.3	21.6	Construction	No	CALTRANS
11	41430	SD	79	31.3	49.9	PA&ED Jan 2016	No	CALTRANS
11	41440	SD	94	5.8	9.3	PA&ED Jan 2016	No	CALTRANS
11	41480	SD	8	0.1	2	PA&ED Over Due as of 12/2015	No	CALTRANS
11	41480	SD	805	0.1	2	PA&ED Over Due as of 12/2015	No	CALTRANS

11	41550	SD	5, 8, 15, 52, 54, et al	Traffic Management System Modifications			Construction	No	CALTRANS
11	41600	SD	5, 7, 8, 15, 52, et al	Traffic Management System Modifications			Construction	No	CALTRANS
11	41680	SD	163	3.6	3.6		Design	No	CALTRANS
11	41851	IMP	8	41.1	65		PA&ED due 1/19/2016	No	CALTRANS
11	41852	IMP	8	83.1	90		PA&ED Feb 2016	No	CALTRANS
11	42160	SD	78	13	14.1		PA&ED Jan 2016	No	CALTRANS
11	2T170	SD	5	37.5	51.4		Design	YES	CALTRANS
11	2T171	SD	5	37.5	51.4		Design	YES	CALTRANS
11	2T172	SD	5	37.5	39.6		Design	YES	CALTRANS
11	2T175	SD	5	28.7	28.7		Design	YES - VAR	CALTRANS
11	2T210	SD	5	38	51.2		Design	YES	CALTRANS
11	2T211	SD	5	43.4	47.5		Design	YES	CALTRANS
11	2T212	SD	5	47.5	51.2		Design	YES	CALTRANS
11	2T215	SD	5	28.4	29.5		Design	YES	CALTRANS
11	2T260	SD	805	4.4	10		Design	No	CALTRANS
11	2T270	SD	805	12.6	15.9		Design	No	CALTRANS
District 12									
12	0C110	ORA	57	19.9	21.5		Design	City of Brea	City of Brea
12	0C560	ORA	91	7.9	9.5		Construction	No	CALTRANS
12	0C571	ORA	91	0.9	5.4		PAED - Feb 2016	OCTA	OCTA
12	0C890	ORA	5	30.3	34		Design	OCTA	CALTRANS
12	0F04A	ORA	57	12.3	15.2		PA&ED April 2016	OCTA	OCTA
12	0F96A	ORA	5	3	3.7		Construction	OCTA	CALTRANS
12	0F96C	ORA	5	3.7	6.2		Construction	OCTA	CALTRANS
12	0F96E	ORA	5	6.2	8.7		Construction	OCTA	CALTRANS
12	0H045	ORA	405	2.4	3.9		PA&ED March 2016	Yes - OCTA	CALTRANS
12	0H100	ORA	405	10.2	24		Design	Yes - OCTA	OCTA
12	0H20U	ORA	55	2	5.9		Construction	No	CALTRANS
12	0H530	ORA	5/1	Interchange			Design	No	CALTRANS
12	0J340	ORA	55	6.2	10.3		Design	Yes - OCTA	CALTRANS
12	0K021	ORA	5	12.4	14.5		Design	Yes - OCTA	CALTRANS
12	0K022	ORA	5	14.5	17.1		Design	Yes - OCTA	CALTRANS
12	0K023	ORA	5	17.1	18.9		Design	Yes - OCTA	CALTRANS
12	0K330	ORA	91	17.8	18.2		Construction	No	CALTRANS
12	0L92U	ORA	5	0	29.6		Construction	NO	CALTRANS
12	0L090	ORA	57	11	22.5		Design	NO	CALTRANS
12	0L720	ORA	74	2.9	5.1		Design	NO	CALTRANS
12	0L74U	ORA	55	2	11.8		Construction	No	CALTRANS
12	0L850	ORA	5	33.9	43.4		Design	Yes - OCTA	CALTRANS
12	0M120	ORA	5	28.4	28.4		Construction	No	CALTRANS
12	0M340	ORA	73	16.5	16.6		Construction	No	CALTRANS
12	0M350	ORA	405	2.6	6.5		Design	No	CALTRANS
12	0M470	ORA	1	22.7	24.6		Design	No	CALTRANS
12	0M490	ORA	5	1.2	2.2		Design	No	CALTRANS
12	0M500	ORA	55	1.2	17.9		Design	No	CALTRANS
12	0M610	ORA	91	8.9	9.4		Design	No	CALTRANS
12	0M960	ORA	73	22.5	25.7		Design	NO	CALTRANS
12	0N040	ORA	91	7.5	18.9		Design	Yes - OCTA	CALTRANS
12	0N080	ORA	5	33.3	34.5		PA&ED Feb 2016	No	CALTRANS
12	0N110	ORA	133	9.5	9.5		Construction	No	CALTRANS

12	0N270	ORA	91	13.8	13.8	PA&ED April 2016	No	CALTRANS
12	0N280	ORA	22	33.7	33.7	Design	NO	CALTRANS
12	0N330	ORA	5	12.8	21.6	Construction	No	CALTRANS
12	0N340	ORA	57	10.8	21.8	Construction	NO	CALTRANS
12	0N360	ORA	91	1	5.4	Design	No	CALTRANS
12	0N480	ORA	1	19.6	19.8	PA&ED April 2016	YES - City of Newport Beach	City of Newport Beach
12	0N540	ORA	405	8.4	8.4	Construction	No	CALTRANS
12	0N580	ORA	57	14.9	15.2	Design	NO	CALTRANS
12	0N590	ORA	39	11.7	12.2	Design	No	CALTRANS
12	0N640	ORA	5	34.5	37.4	PA&ED March 2016	No	CALTRANS
12	0N670	ORA	5	2.1	3	Design	OCTA	CALTRANS
12	0N680	ORA	72	11.9	11.9	Design	No	CALTRANS
12	0N710	ORA	39	5.7	5.7	PA&ED Jan 2016	No	CALTRANS
12	0N821	ORA	VAR	Traffic Management System Installation		Design	No	CALTRANS
12	0N822	ORA	VAR	Traffic Management System Installation		Design	No	CALTRANS
12	0N880	ORA	405	1.1	1.1	Design	NO	CALTRANS
12	0N910	ORA	1	18.2	18.2	PA&ED March 2016	No	CALTRANS
12	0N980	ORA	55	5.7	6	Design	NO	CALTRANS
12	0N990	ORA	39	1.88	1.88	PA&ED May 2016	NO	CALTRANS
12	0P020	ORA	1	24.3	24.3	PA&ED April 2016	No	CALTRANS
12	0P040	ORA	405	7.8	7.8	Design	NO	CALTRANS
12	0P140	ORA	1	19.8	21.5	PA&ED March 2016	YES - City Newport Beach	City of Newport Beach
12	0P190	ORA	5	13.6	13.6	Design	NO	CALTRANS
12	0P200	ORA	133	1.6	3.3	Design	NO	CALTRANS
12	0P210	ORA	5	24.8	24.8	Design	NO	CALTRANS
12	0P260	ORA	5	24.9	24.9	PA&ED Jan 2016	No	CALTRANS
12	0P330	ORA	74	6	6.4	Design	NO	CALTRANS
12	0P340	ORA	1	12.9	25.5	Design	NO	CALTRANS
12	0P460	ORA	39	3.6	7.1	PA&ED Dec 2015 overdue	No	CALTRANS
12	0P540	ORA	1	8.37	8.37	Design	NO	CALTRANS
12	0P710	ORA	1	12.9	33	Design	NO	CALTRANS
12	0P750	ORA	1	5.5	5.5	Design	NO	CALTRANS
12	0P770	ORA	55	11.7	12.1	Design	NO	CALTRANS
12	0P890	ORA	5	25	26.4	Design	NO	CALTRANS

APPENDIX





August 13, 2018

Rebecca Silva
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, CA 95742
Tel: (916) 852-9118
Fax:(916) 852-9132

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1802839
Client Reference : San Jose Creek Bridge Replacement, S1200-01-78

Enclosed are the results for sample(s) received on August 04, 2018 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,

A handwritten signature in black ink, appearing to read 'E. Rodriguez', written in a cursive style.

Eddie Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/13/2018

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B1-0	1802839-01	Soil	8/01/18 12:47	8/04/18 10:06
B1-1.5	1802839-02	Soil	8/01/18 12:49	8/04/18 10:06
B1-2.5	1802839-03	Soil	8/01/18 12:51	8/04/18 10:06
B2-0	1802839-04	Soil	8/01/18 12:57	8/04/18 10:06
B2-1.5	1802839-05	Soil	8/01/18 12:59	8/04/18 10:06
B2-2.5	1802839-06	Soil	8/01/18 13:01	8/04/18 10:06
B3-0	1802839-07	Soil	8/01/18 13:13	8/04/18 10:06
B3-1.5	1802839-08	Soil	8/01/18 13:15	8/04/18 10:06
B3-2.5	1802839-09	Soil	8/01/18 13:17	8/04/18 10:06
B4-0	1802839-10	Soil	8/01/18 13:25	8/04/18 10:06
B4-1.5	1802839-11	Soil	8/01/18 13:27	8/04/18 10:06
B4-2.5	1802839-12	Soil	8/01/18 13:29	8/04/18 10:06
B5-0	1802839-13	Soil	8/01/18 13:44	8/04/18 10:06
B5-1.5	1802839-14	Soil	8/01/18 13:47	8/04/18 10:06
B5-2.5	1802839-15	Soil	8/01/18 13:50	8/04/18 10:06
B6-0	1802839-16	Soil	8/01/18 13:54	8/04/18 10:06
B6-1.5	1802839-17	Soil	8/01/18 13:57	8/04/18 10:06
B6-2.5	1802839-18	Soil	8/01/18 14:00	8/04/18 10:06
B7-0	1802839-19	Soil	8/01/18 13:59	8/04/18 10:06
B7-1.5	1802839-20	Soil	8/01/18 14:01	8/04/18 10:06
B7-2.5	1802839-21	Soil	8/01/18 14:03	8/04/18 10:06
B8-0	1802839-22	Soil	8/01/18 14:07	8/04/18 10:06
B8-1.5	1802839-23	Soil	8/01/18 14:09	8/04/18 10:06
B8-2.5	1802839-24	Soil	8/01/18 14:11	8/04/18 10:06
B9-0	1802839-25	Soil	8/01/18 14:17	8/04/18 10:06
B9-1.5	1802839-26	Soil	8/01/18 14:19	8/04/18 10:06
B9-2.5	1802839-27	Soil	8/01/18 14:21	8/04/18 10:06
B10-0	1802839-28	Soil	8/01/18 14:23	8/04/18 10:06
B10-1.5	1802839-29	Soil	8/01/18 14:25	8/04/18 10:06
B10-2.5	1802839-30	Soil	8/01/18 14:27	8/04/18 10:06
B11-0	1802839-31	Soil	8/01/18 14:37	8/04/18 10:06
B11-1.5	1802839-32	Soil	8/01/18 14:39	8/04/18 10:06
B11-2.5	1802839-33	Soil	8/01/18 14:41	8/04/18 10:06
B12-0	1802839-34	Soil	8/01/18 14:43	8/04/18 10:06
B12-1.5	1802839-35	Soil	8/01/18 11:45	8/04/18 10:06



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/13/2018

B12-2.5	1802839-36	Soil	8/01/18 14:47	8/04/18 10:06
B13-0	1802839-37	Soil	8/01/18 14:49	8/04/18 10:06
B13-1.5	1802839-38	Soil	8/01/18 14:51	8/04/18 10:06
B13-2.5	1802839-39	Soil	8/01/18 14:53	8/04/18 10:06
B14-0	1802839-40	Soil	8/01/18 15:03	8/04/18 10:06
B14-1.5	1802839-41	Soil	8/01/18 15:06	8/04/18 10:06
B14-2.5	1802839-42	Soil	8/01/18 15:09	8/04/18 10:06
B15-0	1802839-43	Soil	8/01/18 15:12	8/04/18 10:06
B15-1.5	1802839-44	Soil	8/01/18 15:15	8/04/18 10:06
B15-2.5	1802839-45	Soil	8/01/18 15:18	8/04/18 10:06
B16-0	1802839-46	Soil	8/01/18 15:22	8/04/18 10:06
B16-1.5	1802839-47	Soil	8/01/18 15:25	8/04/18 10:06
B16-2.5	1802839-48	Soil	8/01/18 15:28	8/04/18 10:06



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/13/2018

Lead by ICP-AES EPA 6010B

Analyte: Lead

Analyst: PT

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-01	B1-0	42	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:36	
1802839-03	B1-2.5	4.1	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:37	
1802839-05	B2-1.5	3.1	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:37	
1802839-06	B2-2.5	3.8	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:38	
1802839-07	B3-0	37	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:38	
1802839-08	B3-1.5	29	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:39	
1802839-11	B4-1.5	7.4	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:40	
1802839-12	B4-2.5	6.0	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:42	
1802839-13	B5-0	120	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:42	
1802839-14	B5-1.5	37	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:43	
1802839-15	B5-2.5	11	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:45	
1802839-16	B6-0	330	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:45	
1802839-18	B6-2.5	5.4	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:46	
1802839-19	B7-0	110	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:47	
1802839-20	B7-1.5	12	mg/kg	0.99	1	B8H0256	08/09/2018	08/10/18 09:47	
1802839-21	B7-2.5	4.9	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:49	
1802839-22	B8-0	220	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:50	
1802839-23	B8-1.5	67	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:51	
1802839-24	B8-2.5	5.8	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:51	
1802839-25	B9-0	210	mg/kg	1.0	1	B8H0256	08/09/2018	08/10/18 09:52	
1802839-26	B9-1.5	6.5	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 09:58	
1802839-27	B9-2.5	6.6	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 09:59	
1802839-28	B10-0	320	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:00	
1802839-29	B10-1.5	5.6	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:00	
1802839-30	B10-2.5	5.5	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:01	
1802839-32	B11-1.5	3.9	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:01	
1802839-33	B11-2.5	3.1	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:02	
1802839-34	B12-0	130	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:03	
1802839-35	B12-1.5	3.7	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:03	
1802839-36	B12-2.5	5.5	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:05	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/13/2018

Lead by ICP-AES EPA 6010B

Analyte: Lead

Analyst: PT

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-37	B13-0	130	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:07	
1802839-39	B13-2.5	4.2	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:08	
1802839-40	B14-0	160	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:08	
1802839-41	B14-1.5	4.7	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:09	
1802839-42	B14-2.5	3.8	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:10	
1802839-43	B15-0	160	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:10	
1802839-44	B15-1.5	ND	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:11	
1802839-46	B16-0	78	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:13	
1802839-47	B16-1.5	7.7	mg/kg	0.99	1	B8H0257	08/09/2018	08/10/18 10:14	
1802839-48	B16-2.5	3.7	mg/kg	1.0	1	B8H0257	08/09/2018	08/10/18 10:14	

Mercury by AA (Cold Vapor) EPA 7471A

Analyte: Mercury

Analyst: KEK

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-02	B1-1.5	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 13:50	
1802839-04	B2-0	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 13:59	
1802839-09	B3-2.5	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:01	
1802839-10	B4-0	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:03	
1802839-17	B6-1.5	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:09	
1802839-31	B11-0	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:11	
1802839-38	B13-1.5	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:13	
1802839-45	B15-2.5	ND	mg/kg	0.10	1	B8H0214	08/08/2018	08/08/18 14:15	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B1-1.5

Lab ID: 1802839-02

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Arsenic	1.9	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Barium	40	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Chromium	12	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Cobalt	2.6	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Copper	5.0	2.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Lead	14	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Nickel	9.4	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Vanadium	12	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	
Zinc	18	1.0	1	B8H0211	08/08/2018	08/08/18 14:14	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/13/2018

Client Sample ID B2-0
Lab ID: 1802839-04

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Arsenic	1.8	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Barium	78	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Chromium	12	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Cobalt	3.0	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Copper	12	2.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Lead	80	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Nickel	12	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Vanadium	15	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	
Zinc	58	1.0	1	B8H0211	08/08/2018	08/08/18 14:19	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B3-2.5

Lab ID: 1802839-09

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Arsenic	1.9	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Barium	64	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Chromium	13	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Cobalt	4.4	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Copper	7.7	2.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Lead	5.1	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Nickel	16	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Vanadium	16	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	
Zinc	24	1.0	1	B8H0211	08/08/2018	08/08/18 14:23	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B4-0
Lab ID: 1802839-10

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Arsenic	2.3	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Barium	72	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Chromium	17	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Cobalt	4.4	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Copper	11	2.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Lead	50	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Nickel	20	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Vanadium	19	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	
Zinc	57	1.0	1	B8H0211	08/08/2018	08/08/18 14:24	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B6-1.5

Lab ID: 1802839-17

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Arsenic	5.9	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Barium	79	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Chromium	18	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Cobalt	3.9	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Copper	8.4	2.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Lead	50	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Nickel	19	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Vanadium	16	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	
Zinc	28	1.0	1	B8H0211	08/08/2018	08/08/18 14:26	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B11-0

Lab ID: 1802839-31

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Arsenic	3.1	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Barium	78	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Chromium	13	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Cobalt	3.4	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Copper	11	2.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Lead	51	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Molybdenum	1.1	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Nickel	13	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Vanadium	17	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	
Zinc	38	1.0	1	B8H0211	08/08/2018	08/08/18 14:27	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Client Sample ID B13-1.5
Lab ID: 1802839-38

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Arsenic	3.7	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Barium	80	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Chromium	17	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Cobalt	5.6	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Copper	9.2	2.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Lead	4.3	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Molybdenum	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Nickel	22	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Vanadium	21	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	
Zinc	29	1.0	1	B8H0211	08/08/2018	08/08/18 14:28	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/13/2018

Client Sample ID B15-2.5
Lab ID: 1802839-45

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg)	PQL (mg/kg)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Arsenic	5.0	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Barium	170	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Beryllium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Cadmium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Chromium	24	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Cobalt	6.1	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Copper	15	2.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Lead	2.5	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Molybdenum	3.1	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Nickel	26	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Selenium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Silver	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Thallium	ND	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Vanadium	23	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	
Zinc	36	1.0	1	B8H0211	08/08/2018	08/08/18 14:29	



Certificate of Analysis

Geocon Consultants, Inc.

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

3160 Gold Valley Drive, Suite 800

Report To : Rebecca Silva

Rancho Cordova , CA 95742

Reported : 08/13/2018

QUALITY CONTROL SECTION

Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
---------	-------------------	----------------	----------------	----------------	------------------	-------	-----------------	-----	--------------	-------

Batch B8H0211 - EPA 3050B_S

Blank (B8H0211-BLK1)

Prepared: 8/8/2018 Analyzed: 8/8/2018

Antimony	ND	2.0	0.51	
Arsenic	ND	1.0	0.12	
Barium	ND	1.0	0.12	
Beryllium	ND	1.0	0.03	
Cadmium	ND	1.0	0.14	
Chromium	ND	1.0	0.26	
Cobalt	ND	1.0	0.07	
Copper	ND	2.0	0.19	
Lead	ND	1.0	0.18	
Molybdenum	ND	1.0	0.12	
Nickel	ND	1.0	0.18	
Selenium	ND	1.0	0.40	
Silver	ND	1.0	0.12	
Thallium	ND	1.0	0.38	
Vanadium	ND	1.0	0.06	
Zinc	ND	1.0	0.15	

LCS (B8H0211-BS1)

Prepared: 8/8/2018 Analyzed: 8/8/2018

Antimony	42.5299	2.0	0.51	50.0000	85.1	80 - 120
Arsenic	41.2483	1.0	0.12	50.0000	82.5	80 - 120
Barium	45.4395	1.0	0.12	50.0000	90.9	80 - 120
Beryllium	41.8083	1.0	0.03	50.0000	83.6	80 - 120
Cadmium	41.1823	1.0	0.14	50.0000	82.4	80 - 120
Chromium	44.9246	1.0	0.26	50.0000	89.8	80 - 120
Cobalt	47.1545	1.0	0.07	50.0000	94.3	80 - 120
Copper	44.5287	2.0	0.19	50.0000	89.1	80 - 120
Lead	42.1031	1.0	0.18	50.0000	84.2	80 - 120
Molybdenum	43.3061	1.0	0.12	50.0000	86.6	80 - 120
Nickel	43.4276	1.0	0.18	50.0000	86.9	80 - 120
Selenium	40.9066	1.0	0.40	50.0000	81.8	80 - 120
Silver	41.1484	1.0	0.12	50.0000	82.3	80 - 120
Thallium	43.7084	1.0	0.38	50.0000	87.4	80 - 120
Vanadium	44.2277	1.0	0.06	50.0000	88.5	80 - 120
Zinc	42.1859	1.0	0.15	50.0000	84.4	80 - 120

Duplicate (B8H0211-DUP1)

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Antimony	ND	2.0	0.51	ND	NR	20	
Arsenic	2.00803	1.0	0.12	1.86694	7.28	20	
Barium	55.3214	1.0	0.12	39.9505	32.3	20	R
Beryllium	ND	1.0	0.03	ND	NR	20	
Cadmium	0.148996	1.0	0.14	0.146993	1.35	20	
Chromium	13.3671	1.0	0.26	11.8011	12.4	20	



Certificate of Analysis

Geocon Consultants, Inc.

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

3160 Gold Valley Drive, Suite 800

Report To : Rebecca Silva

Rancho Cordova , CA 95742

Reported : 08/13/2018

Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
---------	-------------------	----------------	----------------	----------------	------------------	-------	-----------------	-----	--------------	-------

Batch B8H0211 - EPA 3050B_S (continued)

Duplicate (B8H0211-DUP1) - Continued

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Cobalt	3.45992	1.0	0.07		2.58388			29.0	20	R
Copper	6.58008	2.0	0.19		4.98928			27.5	20	R
Lead	12.2627	1.0	0.18		14.2911			15.3	20	
Molybdenum	ND	1.0	0.12		0.147826			NR	20	
Nickel	13.1815	1.0	0.18		9.38082			33.7	20	R
Selenium	ND	1.0	0.40		ND			NR	20	
Silver	ND	1.0	0.12		ND			NR	20	
Thallium	ND	1.0	0.38		ND			NR	20	
Vanadium	15.0438	1.0	0.06		12.0939			21.7	20	R
Zinc	22.1781	1.0	0.15		17.6030			23.0	20	R

Matrix Spike (B8H0211-MS1)

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Antimony	83.9161	2.0	0.51	124.378	ND	67.5	28 - 99			
Arsenic	97.6730	1.0	0.12	124.378	1.86694	77.0	49 - 99			
Barium	151.507	1.0	0.12	124.378	39.9505	89.7	19 - 135			
Beryllium	96.2947	1.0	0.03	124.378	ND	77.4	53 - 99			
Cadmium	91.1438	1.0	0.14	124.378	0.146993	73.2	49 - 95			
Chromium	112.711	1.0	0.26	124.378	11.8011	81.1	41 - 114			
Cobalt	104.007	1.0	0.07	124.378	2.58388	81.5	44 - 106			
Copper	111.726	2.0	0.19	124.378	4.98928	85.8	42 - 120			
Lead	103.545	1.0	0.18	124.378	14.2911	71.8	36 - 121			
Molybdenum	98.6977	1.0	0.12	124.378	0.147826	79.2	49 - 102			
Nickel	104.795	1.0	0.18	124.378	9.38082	76.7	45 - 101			
Selenium	94.1235	1.0	0.40	124.378	ND	75.7	50 - 94			
Silver	101.345	1.0	0.12	124.378	ND	81.5	33 - 120			
Thallium	94.1055	1.0	0.38	124.378	ND	75.7	41 - 95			
Vanadium	115.160	1.0	0.06	124.378	12.0939	82.9	45 - 113			
Zinc	111.069	1.0	0.15	124.378	17.6030	75.1	26 - 117			

Matrix Spike Dup (B8H0211-MSD1)

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Antimony	80.8257	2.0	0.51	124.378	ND	65.0	28 - 99	3.75	20	
Arsenic	93.4630	1.0	0.12	124.378	1.86694	73.6	49 - 99	4.41	20	
Barium	142.034	1.0	0.12	124.378	39.9505	82.1	19 - 135	6.45	20	
Beryllium	91.9808	1.0	0.03	124.378	ND	74.0	53 - 99	4.58	20	
Cadmium	88.3766	1.0	0.14	124.378	0.146993	70.9	49 - 95	3.08	20	
Chromium	108.775	1.0	0.26	124.378	11.8011	78.0	41 - 114	3.55	20	
Cobalt	100.085	1.0	0.07	124.378	2.58388	78.4	44 - 106	3.84	20	
Copper	105.702	2.0	0.19	124.378	4.98928	81.0	42 - 120	5.54	20	
Lead	118.815	1.0	0.18	124.378	14.2911	84.0	36 - 121	13.7	20	
Molybdenum	94.2956	1.0	0.12	124.378	0.147826	75.7	49 - 102	4.56	20	
Nickel	101.064	1.0	0.18	124.378	9.38082	73.7	45 - 101	3.62	20	
Selenium	89.7234	1.0	0.40	124.378	ND	72.1	50 - 94	4.79	20	
Silver	96.1313	1.0	0.12	124.378	ND	77.3	33 - 120	5.28	20	
Thallium	89.8814	1.0	0.38	124.378	ND	72.3	41 - 95	4.59	20	
Vanadium	109.846	1.0	0.06	124.378	12.0939	78.6	45 - 113	4.72	20	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/13/2018

Title 22 Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
---------	-------------------	----------------	----------------	----------------	------------------	-------	-----------------	-----	--------------	-------

Batch B8H0211 - EPA 3050B_S (continued)

Matrix Spike Dup (B8H0211-MSD1) - Continued

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Zinc	110.738	1.0	0.15	124.378	17.6030	74.9	26 - 117	0.299	20	
------	---------	-----	------	---------	---------	------	----------	-------	----	--



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/13/2018

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes	
Batch B8H0256 - EPA 3050 Modified_S										
Blank (B8H0256-BLK1)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
Lead	ND	1.0	0.18							
Blank (B8H0256-BLK2)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
Lead	ND	1.0	0.18							
LCS (B8H0256-BS1)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
Lead	48.3390	1.0	0.18	50.0000		96.7	80 - 120			
Duplicate (B8H0256-DUP1)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
					Source: 1802839-25					
Lead	265.291	0.99	0.18		211.518			22.6	20	R
Duplicate (B8H0256-DUP2)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
					Source: 1802839-14					
Lead	29.3354	0.99	0.18		36.6957			22.3	20	R
Matrix Spike (B8H0256-MS1)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
					Source: 1802839-25					
Lead	551.493	1.0	0.18	252.525	211.518	135	36 - 121		M1	
Matrix Spike (B8H0256-MS2)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
					Source: 1802839-14					
Lead	273.898	1.0	0.18	250.000	36.6957	94.9	36 - 121			
Matrix Spike Dup (B8H0256-MSD1)					Prepared: 8/9/2018 Analyzed: 8/10/2018					
					Source: 1802839-25					
Lead	584.267	0.99	0.18	247.525	211.518	151	36 - 121	5.77	20	M1



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B8H0257 - EPA 3050 Modified_S									
Blank (B8H0257-BLK1)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	ND	1.0	0.18						
Blank (B8H0257-BLK2)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	ND	1.0	0.18						
LCS (B8H0257-BS1)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	48.3877	1.0	0.18	50.0000		96.8	80 - 120		
Duplicate (B8H0257-DUP1)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	3.62215	0.99	0.18		3.73972			3.19	20
Duplicate (B8H0257-DUP2)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	4.58886	0.99	0.18		5.45400			17.2	20
Matrix Spike (B8H0257-MS1)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	206.141	1.0	0.18	250.000	3.73972	81.0	36 - 121		
Matrix Spike (B8H0257-MS2)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	225.826	1.0	0.18	252.525	5.45400	87.3	36 - 121		
Matrix Spike Dup (B8H0257-MSD1)					Prepared: 8/9/2018 Analyzed: 8/10/2018				
Lead	207.064	0.99	0.18	247.525	3.73972	82.1	36 - 121	0.447	20



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/13/2018

Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	MDL (mg/kg)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B8H0214 - EPA 7471_S									
Blank (B8H0214-BLK1)					Prepared: 8/8/2018 Analyzed: 8/8/2018				
Mercury	ND	0.10	0.006						
LCS (B8H0214-BS1)					Prepared: 8/8/2018 Analyzed: 8/8/2018				
Mercury	0.890802	0.10	0.006	0.833333		107 80 - 120			
Duplicate (B8H0214-DUP1)					Prepared: 8/8/2018 Analyzed: 8/8/2018				
	Source: 1802839-02								
Mercury	0.012945	0.10	0.006		0.016129		21.9	20	R
Matrix Spike (B8H0214-MS1)					Prepared: 8/8/2018 Analyzed: 8/8/2018				
	Source: 1802839-02								
Mercury	0.980329	0.10	0.006	0.847458	0.016129	114 70 - 130			
Matrix Spike Dup (B8H0214-MSD1)					Prepared: 8/8/2018 Analyzed: 8/8/2018				
	Source: 1802839-02								
Mercury	0.999998	0.10	0.006	0.847458	0.016129	116 70 - 130	1.99	20	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/13/2018

Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
---------	------------------	---------------	----------------	------------------	-------	-----------------	-----	--------------	-------

Batch B8H0214 - EPA 7471_S

Post Spike (B8H0214-PS1)

Source: 1802839-02

Prepared: 8/8/2018 Analyzed: 8/8/2018

Mercury	0.007511		5.00000E-3	0.000194	146	85 - 115			M1
---------	----------	--	------------	----------	-----	----------	--	--	----



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/13/2018


Notes and Definitions

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.
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)

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.

CHAIN OF CUSTODY RECORD



Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

Method of Transport: Client, ATL, CA OverN, FedEx, Other: 9-ATL

Sample Condition Upon Receipt: 1. CHILLED 5.7, 2. SEALED, 3. HEADSPACE (VOA), 4. # OF SPLS MATCH COC, 5. CONTAINER INTACT, 6. PRESERVED

Client: Geocoin
Address: 3160 Gold Valley Drive, Suite 800
City: Rancho Cordova, State: CA, Zip: 95742
Project Name: San Jose Creek Bridge Replacement, Project #: S1200-01-78
Sampler: C. Deunig
Relinquished by: C. Deunig 9/3/18, 1500
Received by: C. Deunig 9/3/18, 1500
Date: 8/4/18, 1500

Special Instructions/Comments:
Caltrans Contract 06A2184
Homogenize Samples for metals analysis
Provide EDD

LAB USE ONLY:

LAB No.	Sample ID / Location	Date	Time
1502839-01	B1-0	8/1	1247
	B1-1.5		1249
	B2-0		1251
	B2-1.5		1254
	B3-0		1259
	B3-1.5		1301
	B3-2.5		1313
	B4-0		1315
	B4-1.5		1317
	B4-2.5		1325
	B5-0		1327
	B5-1.5		1329
	B5-2.5		1344
	B6-0		1347
	B6-1.5		1350
	B6-2.5		1354
	B7-0		1357
	B7-1.5		1400
	B7-2.5		1359
	B7-1.5		1401

Send Report To:
Bill To: _____
Attn: _____
Co: _____
Addr: _____
City: _____ State: _____ Zip: _____

Circle or Add Analyst(s) Requested:
CAM 17 Metals Total lead

Container(s):
TAT # Type
E 1 Baggie
SLEAVE
BAGGIE
SLEAVE
BAGGIE
SLEAVE
BAGGIE
SLEAVE
BAGGIE
SLEAVE
BAGGIE
SLEAVE
BAGGIE


Matrix:
WATER
GROUND WATER
WASTEWATER
SOIL

QA/QC:
RTNE
CT
SWRCB Logcode
OTHER

REMARKS:
TAT starts 8AM the following day if samples received after 3 PM

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY



Advanced Technology Laboratories
 3275 Walnut Avenue
 Signal Hill, CA 90755
 Tel: (562) 989-4045 • Fax: (562) 989-4040

Method of Transport
 Client ATL CA OverN FedEx Other: _____

Sample Condition Upon Receipt
 1. CHILLED 4. SEALED Y N
 2. HEADSPACE (VOA) 5. # OF SPLS MATCH COC Y N
 3. CONTAINER INTACT 6. PRESERVED Y N

P.O. #: _____ Date: _____
 Logged By: _____

Address: 3160 Gold Valley Drive, Suite 800
 City: Rancho Cordova State: CA Zip Code: 95742
 Tel: 916-852-9118 Fax: 916-852-9132

Attention: Rebecca Silva
 Project Name: San Jose Creek Bridge Replacement Project # S1200-01-78
 Relinquished by: (Signature and Printed Name) *Rebecca Silva* Date: 2/13/18
 Relinquished by: (Signature and Printed Name) *Rebecca Silva* Date: 9/3/18
 Relinquished by: (Signature and Printed Name) *Rebecca Silva* Date: 8/13/18
 Relinquished by: (Signature and Printed Name) *Rebecca Silva* Date: 8/14/18

Special Instructions/Comments:
 Caltrans Contract 06A2184
 Homogenize Samples for metals analysis
 Provide EDD

Send Report To:
 Attn: _____
 Co: _____
 Addr: _____
 City: _____ State: _____ Zip: _____

I hereby authorize ATL to perform the work indicated below:
 Project Mgr./Submitter: Rebecca Silva
 Date: 2/13/18

Sample/Records - Archival & Disposal
 Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
 ■ Sample: \$2.00 / sample /mo (after 45 days)
 ■ Records: \$1 /ATL workorder /mo (after 1 year)

LAB USE ONLY: T E M	Lab No.	Sample ID / Location	Sample Description	Date	Time	SPECIFY APPROPRIATE MATRIX		TAT #	Type	Container(s)	REMARKS
						WATER	SOIL				
	1302439-21	B7-2.5		8/1/18	1403						
	-22	B8-0			1407						
	-23	-1.5			1409						
	-24	B9-0			1411						
	-25	-1.5			1417						
	-26	-2.5			1419						
	-27	B10-0			1421						
	-28	-1.5			1423						
	-29	-2.5			1427						
	-30	B11-0.5			1434						
	-31	-1.5			1439						
	-32	-2.5			1441						
	-33	B12-0			1449						
	-34	-1.5			1450						
	-35	-2.5			1457						
	-36	B13-0			1459						
	-37	-1.5			1451						
	-38	-2.5			1453						
	-39	B14-0			1503						
	-40										

Preservatives:
 H=HCl N=HNO₃ S=H₂SO₄ C=4°C
 Z=Zn(Ac)₂ O=NaOH T=Na₂S₂O₃

Container Types: T=Tube V=VOA L=Liter P=Plastic M=Metal

Urgent 3 Workdays Critical 2 Workdays CT Routine 5 Workdays

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = D = E =

■ TAT starts 8AM the following day if samples received after 3 PM

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Advanced Technology Laboratories

3275 Walnut Avenue
Signal Hill, CA 90755

Tel: (562) 989-4045 • Fax: (562) 989-4040

P.O. #: _____ Date: _____
Logged By: _____

Method of Transport
 Client
 ATL
 CA OverN
 FedEx
 Other: _____

Sample Condition Upon Receipt
 Y N 4. SEALED
 Y N 5. OF SPLS MATCH COC
 Y N 6. PRESERVED

Client: Geoco
 Attention: Rebecca Silva
 Project Name: San Jose Creek Bridge Replacement Project # S1200-01-78
 Address: 3160 Gold Valley Drive, Suite 800
 City: Rancho Cordova State: CA Zip Code: 95742
 Tel: 916-852-9118 Fax: 916-852-9132

Sampler: C. Drury
 Received by: (Signature and Printed Name) *C. Drury* Date: 8/3/18 Time: 1500
 Relinquished by: (Signature and Printed Name) *C. Drury* Date: 8/3/18 Time: 1500
 Relinquished by: (Signature and Printed Name) _____ Date: _____ Time: _____
 Relinquished by: (Signature and Printed Name) _____ Date: _____ Time: _____

Special Instructions/Comments:
 Caltrans Contract 06A2184
 Homogenize Samples for metals analysis
 Provide EDD

Bill To: _____
 Attn: _____
 Co: _____
 Addr: _____
 City: _____ State: _____ Zip: _____

LAB USE ONLY:	LAB No.	Sample ID / Location	Sample Description	Date	Time	Circle or Add Analysis(es) Requested	Container(s)	TAT #	Type	REMARKS
	B14-1.5	B14-1.5		8/1/18	1506	X	CAM 17 Metals			
	B14-2.5	B14-2.5		8/1/18	1509	X				
	B15-0	B15-0		8/1/18	1512	X				
	B15-1.5	B15-1.5		8/1/18	1515	X				
	B15-2.5	B15-2.5		8/1/18	1516	X				
	B16-0	B16-0		8/1/18	1522	X				
	B16-1.5	B16-1.5		8/1/18	1525	X				
	B16-2.5	B16-2.5		8/1/18	1528	X				

Soil → WATER → GROUND WATER → WASTEWATER → SPECIFY APPROPRIATE MATRIX → PRESERVATION

Container(s): _____ Type: _____

REMARKS: _____

SWRCB Logcode: _____ OTHER: _____

RTNE: _____ CT: _____

QA/QC: _____

Preservatives:
 H=HCl N=HNO₃ S=H₂SO₄ C=4°C
 Z=Zn(Ac)₂ O=NaOH T=Na₂S₂O₃

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = CT Routine 5 Workdays

Container Types: T=Tube V=VOA L=Liter P=Plastic M=Metal

■ TAT starts 8AM the following day if samples received after 3 PM



August 21, 2018

Rebecca Silva
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, CA 95742
Tel: (916) 852-9118
Fax:(916) 852-9132

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1802839

Client Reference : San Jose Creek Bridge Replacement, S1200-01-78

Enclosed are the results for sample(s) received on August 04, 2018 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,

A handwritten signature in black ink, appearing to read 'E. Rodriguez', is written over a light gray rectangular background.

Eddie Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/21/2018

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2-0	1802839-04	Soil	8/01/18 12:57	8/04/18 10:06
B4-0	1802839-10	Soil	8/01/18 13:25	8/04/18 10:06
B5-0	1802839-13	Soil	8/01/18 13:44	8/04/18 10:06
B6-0	1802839-16	Soil	8/01/18 13:54	8/04/18 10:06
B6-1.5	1802839-17	Soil	8/01/18 13:57	8/04/18 10:06
B7-0	1802839-19	Soil	8/01/18 13:59	8/04/18 10:06
B8-0	1802839-22	Soil	8/01/18 14:07	8/04/18 10:06
B8-1.5	1802839-23	Soil	8/01/18 14:09	8/04/18 10:06
B9-0	1802839-25	Soil	8/01/18 14:17	8/04/18 10:06
B10-0	1802839-28	Soil	8/01/18 14:23	8/04/18 10:06
B11-0	1802839-31	Soil	8/01/18 14:37	8/04/18 10:06
B12-0	1802839-34	Soil	8/01/18 14:43	8/04/18 10:06
B13-0	1802839-37	Soil	8/01/18 14:49	8/04/18 10:06
B14-0	1802839-40	Soil	8/01/18 15:03	8/04/18 10:06
B15-0	1802839-43	Soil	8/01/18 15:12	8/04/18 10:06
B16-0	1802839-46	Soil	8/01/18 15:22	8/04/18 10:06



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/21/2018

TCLP Metals by ICP-AES EPA 6010B

Analyte: Lead

Analyst: GO

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-13	B5-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:28	D1
1802839-16	B6-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:45	D1
1802839-19	B7-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:47	D1
1802839-22	B8-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:48	D1
1802839-25	B9-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:50	D1
1802839-28	B10-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:51	D1
1802839-34	B12-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:53	D1
1802839-37	B13-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:54	D1
1802839-40	B14-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:55	D1
1802839-43	B15-0	ND	mg/L	0.25	5	B8H0546	08/18/2018	08/20/18 11:33	D1



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/21/2018

STLC Metals by ICP-AES by EPA 6010B

Analyte: Lead

Analyst: GO

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-04	B2-0	4.0	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:12	D1
1802839-10	B4-0	2.7	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:16	D1
1802839-13	B5-0	6.3	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:18	D1
1802839-16	B6-0	24	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:19	D1
1802839-17	B6-1.5	2.0	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:21	D1
1802839-19	B7-0	4.4	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:22	D1
1802839-22	B8-0	12	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:24	D1
1802839-23	B8-1.5	2.4	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:25	D1
1802839-25	B9-0	14	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:27	D1
1802839-28	B10-0	14	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:28	D1
1802839-31	B11-0	3.8	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:29	D1
1802839-34	B12-0	8.7	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:33	D1
1802839-37	B13-0	4.3	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:35	D1
1802839-40	B14-0	10	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:36	D1
1802839-43	B15-0	11	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:38	D1
1802839-46	B16-0	4.4	mg/L	1.0	20	B8H0572	08/20/2018	08/20/18 16:39	D1

pH by EPA 9045C

Analyte: pH

Analyst: LV

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1802839-16	B6-0	7.5	pH Units	0.10	1	B8H0480	08/15/2018	08/16/18 18:13	H4
1802839-22	B8-0	7.3	pH Units	0.10	1	B8H0480	08/15/2018	08/16/18 18:13	H4
1802839-28	B10-0	7.7	pH Units	0.10	1	B8H0480	08/15/2018	08/16/18 18:13	H4
1802839-43	B15-0	7.2	pH Units	0.10	1	B8H0480	08/15/2018	08/16/18 18:13	H4



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/21/2018

QUALITY CONTROL SECTION

TCLP Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B8H0546 - EPA 3010A_S										
Blank (B8H0546-BLK1)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
Lead	ND	0.050	0.0047							
Blank (B8H0546-BLK2)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
Lead	ND	0.050	0.0047							
Blank (B8H0546-BLK3)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
Lead	ND	0.050	0.0047					NR		
LCS (B8H0546-BS1)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
Lead	0.947495	0.050	0.0047	1.00000		94.7	80 - 120			
Duplicate (B8H0546-DUP1)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
										Source: 1802839-43
Lead	ND	0.25	0.024		ND			NR	20	
Duplicate (B8H0546-DUP2)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
										Source: 1802839-13
Lead	ND	0.25	0.024		ND			NR	20	
Matrix Spike (B8H0546-MS1)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
										Source: 1802839-43
Lead	2.22964	0.25	0.024	2.50000	ND	89.2	76 - 108			
Matrix Spike (B8H0546-MS2)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
										Source: 1802839-13
Lead	2.24122	0.25	0.024	2.50000	ND	89.6	76 - 108			
Matrix Spike Dup (B8H0546-MSD1)										
										Prepared: 8/18/2018 Analyzed: 8/20/2018
										Source: 1802839-43
Lead	2.58431	0.25	0.024	2.50000	ND	103	76 - 108	14.7	20	



Certificate of Analysis

Geocon Consultants, Inc.
 3160 Gold Valley Drive, Suite 800
 Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
 Report To : Rebecca Silva
 Reported : 08/21/2018

STLC Metals by ICP-AES by EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B8H0572 - STLC_S Extraction									
Blank (B8H0572-BLK1)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	ND	1.0	0.094						
Blank (B8H0572-BLK2)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	ND	1.0	0.094						
LCS (B8H0572-BS1)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	1.87947			2.00000		94.0 80 - 120			
Duplicate (B8H0572-DUP1)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	6.54348	1.0	0.094		9.95722		41.4	20	R
Duplicate (B8H0572-DUP2)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	ND	1.0	0.094		ND		NR	20	
Matrix Spike (B8H0572-MS1)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	11.3731			2.50000	9.95722	56.6 44 - 130			
Matrix Spike (B8H0572-MS2)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	1.95957			2.50000	-0.164574	78.4 44 - 130			
Matrix Spike Dup (B8H0572-MSD1)					Prepared: 8/20/2018 Analyzed: 8/20/2018				
Lead	11.5244			2.50000	9.95722	62.7 44 - 130	1.32	20	



Certificate of Analysis

Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova , CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78
Report To : Rebecca Silva
Reported : 08/21/2018

pH by EPA 9045C - Quality Control

Analyte	Result (pH Units)	PQL (pH Units)	MDL (pH Units)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
---------	----------------------	-------------------	-------------------	----------------	------------------	-------	-----------------	-----	--------------	-------

Batch B8H0480 - Prep_WC1_S

Duplicate (B8H0480-DUP1)

Source: 1802839-16

Prepared: 8/15/2018 Analyzed: 8/16/2018

pH	7.34000	0.10	0.10		7.50000			2.16	20	H4
----	---------	------	------	--	---------	--	--	------	----	----



Certificate of Analysis

Geocon Consultants, Inc.

3160 Gold Valley Drive, Suite 800

Rancho Cordova, CA 95742

Project Number : San Jose Creek Bridge Replacement, S1200-01-78

Report To : Rebecca Silva

Reported : 08/21/2018

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
H4	Change order analysis requested past the sample holding time.
D1	Sample required dilution due to possible matrix interference.
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)

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.

Dominic Mata

From: Gemma Reblando [reblando@geoconinc.com]
Sent: Tuesday, August 14, 2018 9:38 AM
To: Dominic Mata; customer.relations@atlglobal.com
Cc: Rebecca Silva
Subject: Results/Invoice - San Jose Creek Bridge Replacement, S1200-01-78 (ATL# 1802839)

Hi Dominic – please analyze the following soil samples (16 samples) for WET soluble lead and TCLP lead and pH (as noted) under standard TAT.

B2-0
B4-0
B5-0 (plus TCLP lead)
B6-0 (plus TCLP lead and pH)
B6-1.5
B7-0 (plus TCLP lead)
B8-0 (plus TCLP lead and pH)
B8-1.5
B9-0 (plus TCLP lead)
B10-0 (plus TCLP lead and pH)
B11-0
B12-0 (plus TCLP lead)
B13-0 (plus TCLP lead)
B14-0 (plus TCLP lead)
B15-0 (plus TCLP lead and pH)
B16-0

Thank you.



Gemma Reblando | Project Geologist
Geocon Consultants, Inc.
3160 Gold Valley Drive Suite 800, Rancho Cordova, CA 95742
Tel 916.852.9118 Fax 916.852.9132 Cell 916.396.8476
reblando@geoconinc.com / www.geoconinc.com / [Facebook](#) / [LinkedIn](#)

Bay Area - Sacramento - Fairfield - Los Angeles - Orange County - Riverside County - Palm Desert - San Diego

Geotechnical Engineering Environmental Services Engineering Geology Construction Inspection
Land Development Transportation Infrastructure Institutional Brownfields/Redevelopment Natural Resources

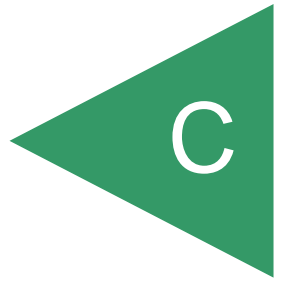
From: Dominic Mata [<mailto:dominic@atlglobal.com>]
Sent: Monday, August 13, 2018 4:49 PM
To: Rebecca Silva
Cc: Gemma Reblando; customer.relations@atlglobal.com
Subject: Results/Invoice - San Jose Creek Bridge Replacement, S1200-01-78 (ATL# 1802839)

Good afternoon Rebecca,

Please find your results and invoice for the above project attached. If I can further assist, please let me know.

Thanks,

APPENDIX



	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT											
4	Date/Time of Computation		ProUCL 5.18/14/2018 10:43:31 AM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Number of Bootstrap Operations		2000									
9												
10												
11	0 to 0.5 foot - SB Shoulder											
12												
13	General Statistics											
14	Total Number of Observations				8		Number of Distinct Observations				6	
15							Number of Missing Observations				0	
16	Minimum				42		Mean				103.9	
17	Maximum				160		Median				105	
18	SD				47.1		Std. Error of Mean				16.65	
19	Coefficient of Variation				0.453		Skewness				-0.0481	
20												
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic				0.893		Shapiro Wilk GOF Test					
28	5% Shapiro Wilk Critical Value				0.818		Data appear Normal at 5% Significance Level					
29	Lilliefors Test Statistic				0.21		Lilliefors GOF Test					
30	5% Lilliefors Critical Value				0.283		Data appear Normal at 5% Significance Level					
31	Data appear Normal at 5% Significance Level											
32												
33	Assuming Normal Distribution											
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
35	95% Student's-t UCL				135.4		95% Adjusted-CLT UCL (Chen-1995)				131	
36							95% Modified-t UCL (Johnson-1978)				135.4	
37												
38	Gamma GOF Test											
39	A-D Test Statistic				0.436		Anderson-Darling Gamma GOF Test					
40	5% A-D Critical Value				0.719		Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic				0.246		Kolmogorov-Smirnov Gamma GOF Test					
42	5% K-S Critical Value				0.295		Detected data appear Gamma Distributed at 5% Significance Level					
43	Detected data appear Gamma Distributed at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)				4.856		k star (bias corrected MLE)				3.118	
47	Theta hat (MLE)				21.39		Theta star (bias corrected MLE)				33.31	
48	nu hat (MLE)				77.7		nu star (bias corrected)				49.89	
49	MLE Mean (bias corrected)				103.9		MLE Sd (bias corrected)				58.82	
50							Approximate Chi Square Value (0.05)				34.68	
51	Adjusted Level of Significance				0.0195		Adjusted Chi Square Value				31.5	
52												
53	Assuming Gamma Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50))					149.5	95% Adjusted Gamma UCL (use when n<50)					164.5
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.891	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.24	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					3.738	Mean of logged Data					4.537
65	Maximum of Logged Data					5.075	SD of logged Data					0.515
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					169.6	90% Chebyshev (MVUE) UCL					162.6
69	95% Chebyshev (MVUE) UCL					188.8	97.5% Chebyshev (MVUE) UCL					225.2
70	99% Chebyshev (MVUE) UCL					296.6						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					131.3	95% Jackknife UCL					135.4
77	95% Standard Bootstrap UCL					129.2	95% Bootstrap-t UCL					134.7
78	95% Hall's Bootstrap UCL					125.5	95% Percentile Bootstrap UCL					129
79	95% BCA Bootstrap UCL					131.5						
80	90% Chebyshev(Mean, Sd) UCL					153.8	95% Chebyshev(Mean, Sd) UCL					176.5
81	97.5% Chebyshev(Mean, Sd) UCL					207.9	99% Chebyshev(Mean, Sd) UCL					269.6
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL					135.4						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												
91	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
92	reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.											
93												

	A	B	C	D	E	F	G	H	I	J	K	L				
1	UCL Statistics for Uncensored Full Data Sets															
2																
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT															
4	Date/Time of Computation			ProUCL 5.18/14/2018 10:45:31 AM												
5	From File			WorkSheet.xls												
6	Full Precision			OFF												
7	Confidence Coefficient			95%												
8	Number of Bootstrap Operations			2000												
9																
10																
11	1.5 to 2 feet - SB Shoulder															
12																
13	General Statistics															
14	Total Number of Observations				8				Number of Distinct Observations				8			
15									Number of Missing Observations				0			
16	Minimum				0.495				Mean				5.237			
17	Maximum				14				Median				4.1			
18	SD				4.057				Std. Error of Mean				1.434			
19	Coefficient of Variation				0.775				Skewness				1.61			
20																
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use															
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.															
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).															
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1															
25																
26	Normal GOF Test															
27	Shapiro Wilk Test Statistic				0.838				Shapiro Wilk GOF Test							
28	5% Shapiro Wilk Critical Value				0.818				Data appear Normal at 5% Significance Level							
29	Lilliefors Test Statistic				0.303				Lilliefors GOF Test							
30	5% Lilliefors Critical Value				0.283				Data Not Normal at 5% Significance Level							
31	Data appear Approximate Normal at 5% Significance Level															
32																
33	Assuming Normal Distribution															
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)									
35	95% Student's-t UCL				7.955				95% Adjusted-CLT UCL (Chen-1995)				8.469			
36									95% Modified-t UCL (Johnson-1978)				8.091			
37																
38	Gamma GOF Test															
39	A-D Test Statistic				0.448				Anderson-Darling Gamma GOF Test							
40	5% A-D Critical Value				0.726				Detected data appear Gamma Distributed at 5% Significance Level							
41	K-S Test Statistic				0.227				Kolmogorov-Smirnov Gamma GOF Test							
42	5% K-S Critical Value				0.298				Detected data appear Gamma Distributed at 5% Significance Level							
43	Detected data appear Gamma Distributed at 5% Significance Level															
44																
45	Gamma Statistics															
46	k hat (MLE)				1.773				k star (bias corrected MLE)				1.192			
47	Theta hat (MLE)				2.953				Theta star (bias corrected MLE)				4.395			
48	nu hat (MLE)				28.37				nu star (bias corrected)				19.07			
49	MLE Mean (bias corrected)				5.237				MLE Sd (bias corrected)				4.797			
50									Approximate Chi Square Value (0.05)				10.17			
51	Adjusted Level of Significance				0.0195				Adjusted Chi Square Value				8.571			
52																
53	Assuming Gamma Distribution															

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50))					9.822	95% Adjusted Gamma UCL (use when n<50)					11.65
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.861	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.286	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data Not Lognormal at 5% Significance Level					
61	Data appear Approximate Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					-0.703	Mean of logged Data					1.348
65	Maximum of Logged Data					2.639	SD of logged Data					0.96
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL				20.44	90% Chebyshev (MVUE) UCL					11.56	
69	95% Chebyshev (MVUE) UCL				14.23	97.5% Chebyshev (MVUE) UCL					17.94	
70	99% Chebyshev (MVUE) UCL				25.22							
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL				7.596	95% Jackknife UCL					7.955	
77	95% Standard Bootstrap UCL				7.466	95% Bootstrap-t UCL					11.1	
78	95% Hall's Bootstrap UCL				23.35	95% Percentile Bootstrap UCL					7.713	
79	95% BCA Bootstrap UCL				8.338							
80	90% Chebyshev(Mean, Sd) UCL				9.54	95% Chebyshev(Mean, Sd) UCL					11.49	
81	97.5% Chebyshev(Mean, Sd) UCL				14.19	99% Chebyshev(Mean, Sd) UCL					19.51	
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL				7.955							
85												
86	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
87	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
88												
89	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
90	Recommendations are based upon data size, data distribution, and skewness.											
91	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
92	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
93												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT											
4	Date/Time of Computation		ProUCL 5.18/14/2018 10:46:52 AM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Number of Bootstrap Operations		2000									
9												
10												
11	2.5 to 3 feet - SB Shoulder											
12												
13	General Statistics											
14	Total Number of Observations			8			Number of Distinct Observations			7		
15							Number of Missing Observations			0		
16	Minimum			2.5			Mean			3.838		
17	Maximum			5.5			Median			3.8		
18	SD			0.872			Std. Error of Mean			0.308		
19	Coefficient of Variation			0.227			Skewness			0.536		
20												
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic			0.938			Shapiro Wilk GOF Test					
28	5% Shapiro Wilk Critical Value			0.818			Data appear Normal at 5% Significance Level					
29	Lilliefors Test Statistic			0.214			Lilliefors GOF Test					
30	5% Lilliefors Critical Value			0.283			Data appear Normal at 5% Significance Level					
31	Data appear Normal at 5% Significance Level											
32												
33	Assuming Normal Distribution											
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
35	95% Student's-t UCL			4.421			95% Adjusted-CLT UCL (Chen-1995)			4.407		
36							95% Modified-t UCL (Johnson-1978)			4.431		
37												
38	Gamma GOF Test											
39	A-D Test Statistic			0.339			Anderson-Darling Gamma GOF Test					
40	5% A-D Critical Value			0.716			Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic			0.21			Kolmogorov-Smirnov Gamma GOF Test					
42	5% K-S Critical Value			0.294			Detected data appear Gamma Distributed at 5% Significance Level					
43	Detected data appear Gamma Distributed at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)			22.18			k star (bias corrected MLE)			13.94		
47	Theta hat (MLE)			0.173			Theta star (bias corrected MLE)			0.275		
48	nu hat (MLE)			354.8			nu star (bias corrected)			223.1		
49	MLE Mean (bias corrected)			3.838			MLE Sd (bias corrected)			1.028		
50							Approximate Chi Square Value (0.05)			189.5		
51	Adjusted Level of Significance			0.0195			Adjusted Chi Square Value			181.7		
52												
53	Assuming Gamma Distribution											

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50))					4.517	95% Adjusted Gamma UCL (use when n<50)					4.712
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.948	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.226	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					0.916	Mean of logged Data					1.322
65	Maximum of Logged Data					1.705	SD of logged Data					0.229
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					4.571	90% Chebyshev (MVUE) UCL					4.775
69	95% Chebyshev (MVUE) UCL					5.199	97.5% Chebyshev (MVUE) UCL					5.788
70	99% Chebyshev (MVUE) UCL					6.945						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					4.344	95% Jackknife UCL					4.421
77	95% Standard Bootstrap UCL					4.312	95% Bootstrap-t UCL					4.478
78	95% Hall's Bootstrap UCL					4.66	95% Percentile Bootstrap UCL					4.338
79	95% BCA Bootstrap UCL					4.388						
80	90% Chebyshev(Mean, Sd) UCL					4.762	95% Chebyshev(Mean, Sd) UCL					5.181
81	97.5% Chebyshev(Mean, Sd) UCL					5.762	99% Chebyshev(Mean, Sd) UCL					6.904
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL					4.421						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

	A	B	C	D	E	F	G	H	I	J	K	L		
1	UCL Statistics for Uncensored Full Data Sets													
2														
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT													
4	Date/Time of Computation		ProUCL 5.18/14/2018 2:17:55 PM											
5	From File		WorkSheet.xls											
6	Full Precision		OFF											
7	Confidence Coefficient		95%											
8	Number of Bootstrap Operations		2000											
9														
10														
11	0 to 3 feet - SB Shoulder													
12														
13	General Statistics													
14	Total Number of Observations				24		Number of Distinct Observations				19			
15							Number of Missing Observations				0			
16	Minimum				0.495		Mean				37.65			
17	Maximum				160		Median				4.5			
18	SD				54.49		Std. Error of Mean				11.12			
19	Coefficient of Variation				1.447		Skewness				1.404			
20														
21	Normal GOF Test													
22	Shapiro Wilk Test Statistic				0.682		Shapiro Wilk GOF Test							
23	5% Shapiro Wilk Critical Value				0.916		Data Not Normal at 5% Significance Level							
24	Lilliefors Test Statistic				0.335		Lilliefors GOF Test							
25	5% Lilliefors Critical Value				0.177		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				56.71		95% Adjusted-CLT UCL (Chen-1995)				59.35			
31							95% Modified-t UCL (Johnson-1978)				57.24			
32														
33	Gamma GOF Test													
34	A-D Test Statistic				2.225		Anderson-Darling Gamma GOF Test							
35	5% A-D Critical Value				0.805		Data Not Gamma Distributed at 5% Significance Level							
36	K-S Test Statistic				0.294		Kolmogorov-Smirnov Gamma GOF Test							
37	5% K-S Critical Value				0.188		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)				0.516		k star (bias corrected MLE)				0.479			
42	Theta hat (MLE)				73.02		Theta star (bias corrected MLE)				78.61			
43	nu hat (MLE)				24.75		nu star (bias corrected)				22.99			
44	MLE Mean (bias corrected)				37.65		MLE Sd (bias corrected)				54.4			
45							Approximate Chi Square Value (0.05)				13.08			
46	Adjusted Level of Significance				0.0392		Adjusted Chi Square Value				12.56			
47														
48	Assuming Gamma Distribution													
49	95% Approximate Gamma UCL (use when n>=50))				66.16		95% Adjusted Gamma UCL (use when n<50)				68.93			
50														
51	Lognormal GOF Test													
52	Shapiro Wilk Test Statistic				0.855		Shapiro Wilk Lognormal GOF Test							
53	5% Shapiro Wilk Critical Value				0.916		Data Not Lognormal at 5% Significance Level							

	A	B	C	D	E	F	G	H	I	J	K	L
54	Lilliefors Test Statistic					0.246	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.177	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					-0.703	Mean of logged Data					2.402
60	Maximum of Logged Data					5.075	SD of logged Data					1.66
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					148.5	90% Chebyshev (MVUE) UCL					88.27
64	95% Chebyshev (MVUE) UCL					110.6	97.5% Chebyshev (MVUE) UCL					141.7
65	99% Chebyshev (MVUE) UCL					202.7						
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					55.94	95% Jackknife UCL					56.71
72	95% Standard Bootstrap UCL					55.21	95% Bootstrap-t UCL					60.49
73	95% Hall's Bootstrap UCL					55.71	95% Percentile Bootstrap UCL					57.12
74	95% BCA Bootstrap UCL					59.89						
75	90% Chebyshev(Mean, Sd) UCL					71.02	95% Chebyshev(Mean, Sd) UCL					86.13
76	97.5% Chebyshev(Mean, Sd) UCL					107.1	99% Chebyshev(Mean, Sd) UCL					148.3
77												
78	Suggested UCL to Use											
79	95% Chebyshev (Mean, Sd) UCL					86.13						
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	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

SUMMARY OF STATISTICAL ANALYSIS
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

SB Shoulder

Total Lead UCLs (mg/kg)

Sample Interval (feet)	95% UCL
0 to 0.5	135.4
1.5 to 2	8.0
2.5 to 3	4.4

Excavation Scenarios

Excavation Depth	95% UCL	
	Total Lead (mg/kg)	Predicted WET Lead* (mg/l)
0 to 0.5 foot	135.4	7.6
Underlying Soil (0.5 to 3 feet)	58.2	2.8
0 to 1 foot	135.4	7.6
Underlying Soil (1 to 3 feet)	39.0	1.6
0 to 2 feet	103.6	5.6
Underlying Soil (2 to 3 feet)	6.2	<1.0
0 to 3 feet	71.1	3.6

Notes:

UCL = Upper Confidence Limit

95% UCL applicable for risk assessment and offsite disposal

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = Soluble (WET) lead concentrations were predicted using slope of the regression line,
 where y = predicted soluble (WET) lead and x = total lead

Regression Line Slope:

$$y = 0.0622 x - 0.8043$$

	A	B	C	D	E	F	G	H	I	J	K	L				
1	UCL Statistics for Uncensored Full Data Sets															
2																
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT															
4	Date/Time of Computation			ProUCL 5.18/14/2018 10:57:46 AM												
5	From File			WorkSheet.xls												
6	Full Precision			OFF												
7	Confidence Coefficient			95%												
8	Number of Bootstrap Operations			2000												
9																
10																
11	0 to 0.5 foot - NB Shoulder															
12																
13	General Statistics															
14	Total Number of Observations				8				Number of Distinct Observations				8			
15									Number of Missing Observations				0			
16	Minimum				37				Mean				174.6			
17	Maximum				330				Median				165			
18	SD				113.5				Std. Error of Mean				40.14			
19	Coefficient of Variation				0.65				Skewness				0.259			
20																
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use															
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.															
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).															
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1															
25																
26	Normal GOF Test															
27	Shapiro Wilk Test Statistic				0.913				Shapiro Wilk GOF Test							
28	5% Shapiro Wilk Critical Value				0.818				Data appear Normal at 5% Significance Level							
29	Lilliefors Test Statistic				0.185				Lilliefors GOF Test							
30	5% Lilliefors Critical Value				0.283				Data appear Normal at 5% Significance Level							
31	Data appear Normal at 5% Significance Level															
32																
33	Assuming Normal Distribution															
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)									
35	95% Student's-t UCL			250.7			95% Adjusted-CLT UCL (Chen-1995)			244.6						
36							95% Modified-t UCL (Johnson-1978)			251.3						
37																
38	Gamma GOF Test															
39	A-D Test Statistic				0.324				Anderson-Darling Gamma GOF Test							
40	5% A-D Critical Value				0.724				Detected data appear Gamma Distributed at 5% Significance Level							
41	K-S Test Statistic				0.193				Kolmogorov-Smirnov Gamma GOF Test							
42	5% K-S Critical Value				0.297				Detected data appear Gamma Distributed at 5% Significance Level							
43	Detected data appear Gamma Distributed at 5% Significance Level															
44																
45	Gamma Statistics															
46	k hat (MLE)				2.17				k star (bias corrected MLE)				1.44			
47	Theta hat (MLE)				80.47				Theta star (bias corrected MLE)				121.3			
48	nu hat (MLE)				34.72				nu star (bias corrected)				23.03			
49	MLE Mean (bias corrected)				174.6				MLE Sd (bias corrected)				145.5			
50									Approximate Chi Square Value (0.05)				13.12			
51	Adjusted Level of Significance				0.0195				Adjusted Chi Square Value				11.27			
52																
53	Assuming Gamma Distribution															

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50))					306.7	95% Adjusted Gamma UCL (use when n<50)					356.9
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.907	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.201	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					3.611	Mean of logged Data					4.915
65	Maximum of Logged Data					5.799	SD of logged Data					0.819
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					481.6	90% Chebyshev (MVUE) UCL					341.5
69	95% Chebyshev (MVUE) UCL					414.1	97.5% Chebyshev (MVUE) UCL					514.9
70	99% Chebyshev (MVUE) UCL					713						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					240.6	95% Jackknife UCL					250.7
77	95% Standard Bootstrap UCL					237.1	95% Bootstrap-t UCL					261.9
78	95% Hall's Bootstrap UCL					246.4	95% Percentile Bootstrap UCL					238.8
79	95% BCA Bootstrap UCL					234.6						
80	90% Chebyshev(Mean, Sd) UCL					295	95% Chebyshev(Mean, Sd) UCL					349.6
81	97.5% Chebyshev(Mean, Sd) UCL					425.3	99% Chebyshev(Mean, Sd) UCL					574
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL					250.7						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

	A	B	C	D	E	F	G	H	I	J	K	L				
1	UCL Statistics for Uncensored Full Data Sets															
2																
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT															
4	Date/Time of Computation			ProUCL 5.18/14/2018 10:59:34 AM												
5	From File			WorkSheet.xls												
6	Full Precision			OFF												
7	Confidence Coefficient			95%												
8	Number of Bootstrap Operations			2000												
9																
10																
11	1.5 to 2 feet - NB Shoulder															
12																
13	General Statistics															
14	Total Number of Observations				8				Number of Distinct Observations				8			
15									Number of Missing Observations				0			
16	Minimum				5.6				Mean				26.81			
17	Maximum				67				Median				20.5			
18	SD				23.05				Std. Error of Mean				8.15			
19	Coefficient of Variation				0.86				Skewness				0.777			
20																
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use															
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.															
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).															
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1															
25																
26	Normal GOF Test															
27	Shapiro Wilk Test Statistic				0.874				Shapiro Wilk GOF Test							
28	5% Shapiro Wilk Critical Value				0.818				Data appear Normal at 5% Significance Level							
29	Lilliefors Test Statistic				0.24				Lilliefors GOF Test							
30	5% Lilliefors Critical Value				0.283				Data appear Normal at 5% Significance Level							
31	Data appear Normal at 5% Significance Level															
32																
33	Assuming Normal Distribution															
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)									
35	95% Student's-t UCL			42.25			95% Adjusted-CLT UCL (Chen-1995)			42.61						
36							95% Modified-t UCL (Johnson-1978)			42.63						
37																
38	Gamma GOF Test															
39	A-D Test Statistic				0.434				Anderson-Darling Gamma GOF Test							
40	5% A-D Critical Value				0.73				Detected data appear Gamma Distributed at 5% Significance Level							
41	K-S Test Statistic				0.208				Kolmogorov-Smirnov Gamma GOF Test							
42	5% K-S Critical Value				0.299				Detected data appear Gamma Distributed at 5% Significance Level							
43	Detected data appear Gamma Distributed at 5% Significance Level															
44																
45	Gamma Statistics															
46	k hat (MLE)				1.419				k star (bias corrected MLE)				0.971			
47	Theta hat (MLE)				18.89				Theta star (bias corrected MLE)				27.63			
48	nu hat (MLE)				22.71				nu star (bias corrected)				15.53			
49	MLE Mean (bias corrected)				26.81				MLE Sd (bias corrected)				27.22			
50									Approximate Chi Square Value (0.05)				7.63			
51	Adjusted Level of Significance				0.0195				Adjusted Chi Square Value				6.283			
52																
53	Assuming Gamma Distribution															

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50))					54.56	95% Adjusted Gamma UCL (use when n<50)					66.26
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.893	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.192	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					1.723	Mean of logged Data					2.897
65	Maximum of Logged Data					4.205	SD of logged Data					0.991
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					105.9	90% Chebyshev (MVUE) UCL					56.66
69	95% Chebyshev (MVUE) UCL					69.94	97.5% Chebyshev (MVUE) UCL					88.38
70	99% Chebyshev (MVUE) UCL					124.6						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					40.22	95% Jackknife UCL					42.25
77	95% Standard Bootstrap UCL					39.33	95% Bootstrap-t UCL					47.75
78	95% Hall's Bootstrap UCL					42.06	95% Percentile Bootstrap UCL					40.31
79	95% BCA Bootstrap UCL					41.14						
80	90% Chebyshev(Mean, Sd) UCL					51.26	95% Chebyshev(Mean, Sd) UCL					62.34
81	97.5% Chebyshev(Mean, Sd) UCL					77.71	99% Chebyshev(Mean, Sd) UCL					107.9
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL					42.25						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

	A	B	C	D	E	F	G	H	I	J	K	L				
1	UCL Statistics for Uncensored Full Data Sets															
2																
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT															
4	Date/Time of Computation			ProUCL 5.18/14/2018 11:00:45 AM												
5	From File			WorkSheet.xls												
6	Full Precision			OFF												
7	Confidence Coefficient			95%												
8	Number of Bootstrap Operations			2000												
9																
10																
11	2.5 to 3 feet - NB Shoulder															
12																
13	General Statistics															
14	Total Number of Observations				8				Number of Distinct Observations				8			
15									Number of Missing Observations				0			
16	Minimum				4.9				Mean				6.288			
17	Maximum				11				Median				5.65			
18	SD				1.977				Std. Error of Mean				0.699			
19	Coefficient of Variation				0.314				Skewness				2.439			
20																
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use															
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.															
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).															
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1															
25																
26	Normal GOF Test															
27	Shapiro Wilk Test Statistic				0.672				Shapiro Wilk GOF Test							
28	5% Shapiro Wilk Critical Value				0.818				Data Not Normal at 5% Significance Level							
29	Lilliefors Test Statistic				0.312				Lilliefors GOF Test							
30	5% Lilliefors Critical Value				0.283				Data Not Normal at 5% Significance Level							
31	Data Not Normal at 5% Significance Level															
32																
33	Assuming Normal Distribution															
34	95% Normal UCL						95% UCLs (Adjusted for Skewness)									
35	95% Student's-t UCL				7.612				95% Adjusted-CLT UCL (Chen-1995)				8.082			
36									95% Modified-t UCL (Johnson-1978)				7.712			
37																
38	Gamma GOF Test															
39	A-D Test Statistic				0.972				Anderson-Darling Gamma GOF Test							
40	5% A-D Critical Value				0.716				Data Not Gamma Distributed at 5% Significance Level							
41	K-S Test Statistic				0.288				Kolmogorov-Smirnov Gamma GOF Test							
42	5% K-S Critical Value				0.294				Detected data appear Gamma Distributed at 5% Significance Level							
43	Detected data follow Appr. Gamma Distribution at 5% Significance Level															
44																
45	Gamma Statistics															
46	k hat (MLE)				15.3				k star (bias corrected MLE)				9.645			
47	Theta hat (MLE)				0.411				Theta star (bias corrected MLE)				0.652			
48	nu hat (MLE)				244.8				nu star (bias corrected)				154.3			
49	MLE Mean (bias corrected)				6.288				MLE Sd (bias corrected)				2.025			
50									Approximate Chi Square Value (0.05)				126.6			
51	Adjusted Level of Significance				0.0195				Adjusted Chi Square Value				120.3			
52																
53	Assuming Gamma Distribution															

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (use when n>=50)					7.664	95% Adjusted Gamma UCL (use when n<50)					8.069
55												
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.759	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.818	Data Not Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.271	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.283	Data appear Lognormal at 5% Significance Level					
61	Data appear Approximate Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					1.589	Mean of logged Data					1.806
65	Maximum of Logged Data					2.398	SD of logged Data					0.257
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					7.64	90% Chebyshev (MVUE) UCL					7.973
69	95% Chebyshev (MVUE) UCL					8.748	97.5% Chebyshev (MVUE) UCL					9.824
70	99% Chebyshev (MVUE) UCL					11.94						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					7.437	95% Jackknife UCL					7.612
77	95% Standard Bootstrap UCL					7.355	95% Bootstrap-t UCL					10.68
78	95% Hall's Bootstrap UCL					12.66	95% Percentile Bootstrap UCL					7.538
79	95% BCA Bootstrap UCL					8.313						
80	90% Chebyshev(Mean, Sd) UCL					8.385	95% Chebyshev(Mean, Sd) UCL					9.335
81	97.5% Chebyshev(Mean, Sd) UCL					10.65	99% Chebyshev(Mean, Sd) UCL					13.24
82												
83	Suggested UCL to Use											
84	95% Adjusted Gamma UCL					8.069						
85												
86	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
87	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
88												
89	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
90	Recommendations are based upon data size, data distribution, and skewness.											
91	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
92	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
93												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT											
4	Date/Time of Computation			ProUCL 5.18/14/2018 2:19:33 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	0 to 3 feet - NB Shoulder											
12												
13	General Statistics											
14	Total Number of Observations				24		Number of Distinct Observations				22	
15							Number of Missing Observations				0	
16	Minimum				4.9		Mean				69.24	
17	Maximum				330		Median				20.5	
18	SD				99.76		Std. Error of Mean				20.36	
19	Coefficient of Variation				1.441		Skewness				1.76	
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic				0.687		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value				0.916		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic				0.285		Lilliefors GOF Test					
25	5% Lilliefors Critical Value				0.177		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				104.1		95% Adjusted-CLT UCL (Chen-1995)				110.6	
31							95% Modified-t UCL (Johnson-1978)				105.4	
32												
33	Gamma GOF Test											
34	A-D Test Statistic				1.468		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value				0.797		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic				0.223		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value				0.187		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)				0.599		k star (bias corrected MLE)				0.552	
42	Theta hat (MLE)				115.6		Theta star (bias corrected MLE)				125.5	
43	nu hat (MLE)				28.75		nu star (bias corrected)				26.49	
44	MLE Mean (bias corrected)				69.24		MLE Sd (bias corrected)				93.21	
45							Approximate Chi Square Value (0.05)				15.76	
46	Adjusted Level of Significance				0.0392		Adjusted Chi Square Value				15.18	
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))				116.4		95% Adjusted Gamma UCL (use when n<50)				120.9	
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic				0.864		Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value				0.916		Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54	Lilliefors Test Statistic					0.205	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.177	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					1.589	Mean of logged Data					3.206
60	Maximum of Logged Data					5.799	SD of logged Data					1.501
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					212.4	90% Chebyshev (MVUE) UCL					148.3
64	95% Chebyshev (MVUE) UCL					183.9	97.5% Chebyshev (MVUE) UCL					233.3
65	99% Chebyshev (MVUE) UCL					330.3						
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					102.7	95% Jackknife UCL					104.1
72	95% Standard Bootstrap UCL					101.6	95% Bootstrap-t UCL					118.9
73	95% Hall's Bootstrap UCL					103.7	95% Percentile Bootstrap UCL					102.4
74	95% BCA Bootstrap UCL					107.7						
75	90% Chebyshev(Mean, Sd) UCL					130.3	95% Chebyshev(Mean, Sd) UCL					158
76	97.5% Chebyshev(Mean, Sd) UCL					196.4	99% Chebyshev(Mean, Sd) UCL					271.9
77												
78	Suggested UCL to Use											
79	95% Chebyshev (Mean, Sd) UCL					158						
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	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

SUMMARY OF STATISTICAL ANALYSIS
 EA 05-1C360
 STATE ROUTE 217 SAN JOSE CREEK BRIDGE REPLACEMENT PROJECT
 SANTA BARBARA COUNTY, CALIFORNIA

NB Shoulder

Total Lead UCLs (mg/kg)

Sample Interval (feet)	95% UCL
0 to 0.5	250.7
1.5 to 2	42.3
2.5 to 3	8.1

Excavation Scenarios

Excavation Depth	95% UCL	
	Total Lead (mg/kg)	Predicted WET Lead* (mg/l)
0 to 0.5 foot	250.7	14.8
Underlying Soil (0.5 to 3 feet)	118.8	6.6
0 to 1 foot	250.7	14.8
Underlying Soil (1 to 3 feet)	85.9	4.5
0 to 2 feet	198.6	11.5
Underlying Soil (2 to 3 feet)	25.2	0.8
0 to 3 feet	140.8	8.0

Notes:

UCL = Upper Confidence Limit

95% UCL applicable for risk assessment and offsite disposal

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = Soluble (WET) lead concentrations were predicted using slope of the regression line,
 where y = predicted soluble (WET) lead and x = total lead

Regression Line Slope:

$$y = 0.0622 x - 0.8043$$

Sample ID	Total Lead (mg/kg)	WET Lead (mg/l)	Predicted WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B2-0	80	4.0	4.2	-0.17	0.03
B6-1.5	50	2.0	2.3	-0.30	0.09
B16-0	78	4.4	4.0	0.36	0.13
B5-0	120	6.3	6.7	-0.36	0.13
B4-0	50	2.7	2.3	0.40	0.16
B14-0	160	10	9.1	0.86	0.74
B8-0	220	12	12.9	-0.87	0.76
B8-1.5	67	2.4	3.4	-0.96	0.92
B12-0	130	8.7	7.3	1.42	2.02
B11-0	51	3.8	2.4	1.43	2.06
B7-0	110	4.4	6.0	-1.63	2.67
B9-0	210	14	12.3	1.75	3.06
B15-0	160	11	9.1	1.86	3.45
B13-0	130	4.3	7.3	-2.98	8.86
B6-0	330	24	19.7	4.29	18.40
B10-0	320	14	19.1	-5.09	25.90

